Evaluation of Poinciana Utility System

Operations and Potential Transition to Toho Water Authority

Polk and Sarasota Counties, Florida

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I. INTRODUCTION

The goal of a water utility is to provide high quality water, in sufficient quantities to meet customer demands, at an affordable price. The public is the owner of the government-operated facilities, and thereby has a vested interest in operating the system at its highest efficiency, with facilities sized to meet demands and operating near capacity, but with sufficient capacity to meet near-term growth demands. This is a delicate balance in high growth areas. While the operations must meet growth demands, the operational efficiency of the system must match the restrictions imposed by ecological and climatic conditions and the myriad of regulations affecting water quality and operations. In keeping with the goal of high quality delivery of services to the customer. Utilities must evaluate options for this service delivery on an ongoing basis. To this end, the Toho Water Authority desires to evaluate the benefits and dis-benefits of acquiring the Poinciana utility system from the Florida Governmental Utility Authority, or the Osceola County part thereof. Acquisition of utilities and the transition of same to underlying governmental bodies like the Toho Water Authority is one of the underlying principles for the formation of the Florida Governmental Utility Authority in 1999.

The Florida Governmental Utility Authority is a legal entity and public body formed under the auspices of Chapter 163, Florida Statutes, pursuant to an interlocal agreement between several counties. This agreement was signed in February of 1999, at which time the authority officially came into being. On April 16 1999, the Florida Governmental Utility Authority acquired the assets of Florida Cities Water Company and Poinciana

Utilities, bringing these formerly private systems, into the public sector. Subsequently the FGUA has acquired utilities in Citrus and Lee Counties.

The FGUA is governed by a Board of Directors that meets on a regular basis. The operation of the utility system was contracted to Severn Trent - Avatar Utility Services, LLC. (ST-AUS), an entity that includes the former owner and operator of the system. This was done to ensure that there were no disruptions in service. The system is managed via contract by Government Services Group in Tallahassee. Legal representation is with Nabors Giblin and Nickerson (utility counsel) and Pennington, et al. (general counsel).

This report was complied as a result of a work authorization approved by the Toho Water Authority. The scope of services for this project requested the Public Utility Management and Planning Services, Inc.:

- Task 1 – Meet with Toho's primary consultant ("PBS&J") to:

    1) Discuss the Poinciana Utility System's history prior to and during its acquisition by the Florida Governmental Utility Authority
    2) Review documents on hand (including, but not limited to, current agreements);
    3) Review development that has occurred;
    4) Review relevant issues affecting acquisition of the system, and
    5) Develop strategy for evaluation of the Poinciana system.

- Task 2 - Provide documentation relating to the acquisition and initial operation of the Poinciana System by the FGUA from Avatar Holdings in 1999.

- Task 3 - Provide copies of the preliminary due diligence performed on the Poinciana Utility System and work with your consultant to update same. PUMPS will provide one copy of the photographs originally used for due diligence purposes

- Task 4 - Provide an analysis of the changes/improvements made to the Poinciana System since acquisition by the FGUA.

- Task 5 – Collaborate with PBS&J on preparation of the report dealing with acquisition issues and the preliminary guide on the separation of system operations between Polk County and Osceola County.

- Task 6 - Review and provide initial comments on the report directly to the TWA prior to its distribution to other parties.

- Task 7 - Provide copies, index and summaries of all executory contracts provided by the FGUA to PUMPS. PUMPS will also independently review FGUA Board actions and undertake discussions with FGUA consultants and developers to ascertain the existence of unexecuted contracts which may impact TWA's acquisition decisions.

- Task 8 - Provide a recommendation on the apportionment of outstanding bonds between Polk County and Osceola County for use later should Polk County wish to apportion or assume the debt.

- Task 9 - Provide guidance memo on the treatment and capacity issues for the anticipated separation of the systems.

This report expands that scope as a result of a need to move forward on the potential for transition of the Poinciana system, or a part thereof, to the Toho Water Authority in a timely fashion, preferably prior to December 31, 2005. This document serves as an evaluation of the FGUA's Poinciana utility system that addresses the local system setting and geology, the service area, regulation review, treatment, pumping and pipeline infrastructure, the distribution system and treatment needs assessment and the capital required to address same, current financial information and scenarios on how the system might be transitioned.

II. ENVIRONMENTAL ISSUES

In central Florida, abundant water supplies are present. The ecosystem depends on receiving the cyclical climatic patterns that distinguish the wet and dry seasons. Unfortunately, because of changes made by man, much of the rainfall drains to the Gulf of Mexico or Atlantic Ocean, without the historical replenishment of the environment or groundwater supplies. The net result is a reduction in available fresh water supplies during the dry season, which unfortunately coincides with increased winter population and peak irrigation season for lawns and agriculture. During the wet season, demand is low and rapid runoff does not permit as much water to recharge the aquifer system. This leads to the challenge of water management.

Despite this ongoing deficit, central Florida has extensive aquifer systems. Unlike South Florida, fresh water, which is totally dependent on rainfall for recharge, is available up to 600 feet below the surface. However, the recharge area may be considerably north of the withdrawal point which corresponds to areas that are relatively undeveloped or under developed at present. Groundwater replenishment is enhanced where extensive sand ridges exist as in northeastern Polk County. Deeper aquifers are brackish and much more expensive to treat. Future north Florida land use decisions and water usage may affect the water availability in central Florida.

III. SERVICE AREA

The Poinciana Utilities services Avatar Properties Inc.'s (API) Poinciana community. The Poinciana development crosses the Polk and Osceola County lines, west of Lake Hatchineha. The area is southwest of the City of Kissimmee and south of I-4, east of Lake Marion and north of CR 542 (see Figure 3.1). The Poinciana system occupies just over 30,000 acres of undeveloped, residential and light commercial property. The majority of the developed properties are single family residential homes. The limited commercial development consists of support facilities to the surrounding residents. Some industrial facilities are located in an industrial park on the northern end of the development (Area 1).

The Poinciana service area is unique not only because of the aerial extent of the development, but because it has two natural boundaries within it and is subject to two political jurisdictions. The northeastern part of the development is within Osceola County. At present, the majority of growth for single-family homes is in Osceola County due to access to public schools. Osceola County has seen to the location of an elementary school, as well as Poinciana High School, within the northern portion of the Poinciana Utilities service area. The major development continues to occur in southern Osceola County and in the SolaVita development in Polk County. SolaVita has been marketed as more of an upscale retirement community with a golf course than the rest of Poinciana.

The southern and western portions of the development are located within Polk County. Until 2000, there was virtually no development in the Polk County system, except right along the Polk/Osceola County line because the nearest Polk County schools were 14 miles away in Haines City. The SolaVita development has changed this and there are pressures to infill the many platted lots throughout the Polk County north section of Poinciana.

The two natural boundaries that exist in the development are Reedy Creek and Marion Creek. The Reedy Creek area consists of a system of wetlands and preserved lands that cover nearly a quarter of the Poinciana service area, and provides a physical boundary between the industrial park and the associated residential located just to south of the industrial park, and the remainder of the development. Reedy Creek traverses across from northwest to southeast through the service area.

Much of the remaining residential development, and the area that is growing most quickly in Poinciana at the present time, is occurring in the area just south of Reedy Creek, but north of the Polk County line. The area is served by Water and Wastewater Treatment Plants 2 and 3. The northern part of the Polk County portion is separated from Lake Hatchineha by Marion Creek. Marion Creek acts as another boundary that is not easily crossed, but does not contain nearly the preserved land area that exists within the Reedy Creek basin. The southerly area is Area 5.

Potential development includes single-family residential housing located just north and just south of the Reedy Creek Preserve area and a 10,000 units in the active adult community SolaVita located just south of the Polk County line.

1,000 acres are remaining in the Industrial Park and several hundred units are available in developments where agreements are in place with the FGUA, some of which are adjacent to, or in the service area of Water and Wastewater Plants No. 1. The remainder of the southern Osceola system and northern Polk system will gain between 1100 and 1200 units per year. The most southerly section (Area 5) does not grow significantly each year (less than 200 units per year at present). The entire development has traditionally been characterized as a middle class, working family community, although significant growth exists in the retiree arena. Most of the houses are in the $100-$200,000 range.

Florida Cities Water Company was the prior owner of the system. They were a private utility provider in the State of Florida that managed, owned and operated a number of water, sewer and natural gas utilities in Florida, including the Poinciana system. They continue to provide contract operations services under the auspices of Severn-Trent-Avatar Utility Services (ST-AUS). Less than half of Poinciana is served with public water service, but the majority of the property is undeveloped.

Insert Figure 3.1

IV. WATER TREATMENT

The Poinciana water treatment system includes fifteen water supply wells and six WTPs, with associated aeration, disinfection and chemical feed systems and associated pumping facilities. The locations of the WTPs for the Poinciana utility system are shown in Figure 4.1. The systems are generally interconnected. WTP 2 and WTP 3 have been interconnected for years. WTP 5 has recently been interconnected WTPs 2 and 3 by the FGUA, as WTP 5 has the most potential for expansion. The three plants operate in tandem, directed from common pressure sensors within the distribution system. WTPs 4 and 6 have recently been interconnected. WTP 1 will shortly be interconnected to the other areas to insure reliability.

Raw Water

The Poinciana water system uses groundwater as its source to provide drinking water to its customers. Raw water is obtained from thirteen wells, located in the proximity of each water treatment plant. Two wells each are dedicated to WTPs 1, 4, 5 and 6, while WTPs 2 and 3 are supplied by three wells.

The Poinciana system has a water use permit from the South Florida Water Management District (SFWMD). Water Use Permit No. 49-00069-W was renewed in 2000 and expires on November 9, 2005 The Water Use Permit allows a total system withdrawal of 2.125 billion gallons annually or 8.73 MGD for an average daily withdrawal and 8.73

5.82 MGD for a maximum daily withdrawal. For 2004, the average daily water demand was 4.55 million gallons per day (MGD).

Raw Water Quality and Water Sources

Overall, the raw water quality is good, allowing for low levels of treatment to meet drinking water quality criteria. The raw water quality is fairly uniform throughout the Poinciana utility area. Typical raw water quality data is presented as follows:

pH	Alkalinity (mg/L as $CaCO_3$)	Hardness (mg/L as $CaCO_3$)	Calcium (mg/L)	Color (PCU)	Chlorides (mg/L)
7.7	116	100	30	8	5

The water supply wells range in depth from 390 to 665 feet below land surface (bls). All of these wells are set into the Floridan aquifer. Capacities range from a 4-inch, 300 gallon per minute (GPM) well to a 2400 GPM well. The well data for the Poinciana system is summarized in Table 4.1.

Overall, the wells are in good condition. HoweverTwo issues are noted from past reports: a "Hand/On/Automatic" (H/O/A) switch needs to be installed at well IP-1A to operate the pump at the well and there are concerns about the integrity of Well WTP-4 at WTP No. 4, although its condition does not appear to have changed since 1999. The well should be inspected for excess sand, and rehabilitation should be done if needed. Based on field interviews with the operations staff and inspections, well V7-2 at WTP No. 5 oc-

casionally fails due to the communication system. Old reports indicate that WTP 5 occasionally experienced pressure problems, which were attributed to the failure of well V7-2 to turn on, and the jockey pump running continuously. The communication system has been upgraded and a new well has been installed, which should solve this problem.

One unresolved issue that needs to be addressed is that there appears to be an uncapped well at WTP No. 3. This situation should be reviewed and appropriate steps taken to seal the well at the surface (see Figure 4.16)

Based on location and surface activities, some of the wells have a higher risk of contamination than other wells. WTP No. 1 is located on the fringe of an industrial park and WTP No. 2 has reportedly had leaking fuel facilities at the treatment plant. Phase I Environmental Site Assessments were performed for all of the water treatment plants and recommendations for further activities were given o the FGUA and Poinciana Utilities some time ago. Based on the results of those assessments, it was recommended that limited soil and groundwater sampling and analyses programs be implemented to assess on- and off-site concerns for WTP No. 1 and WTP No. 2. The status of this recommendation is unknown and probably should be reviewed or re-assessed. In addition, a wellhead protection plan should be developed and implemented for all well sites and water plants for long-term water quality protection.

Review of the well operating data does not provide substantial information of the condition of each well. The necessary data to determine the well performance has not been

collected on a regular basis, preventing sound conclusions to be drawn. As a result, a well testing, operation, and management plan should be initiated, which include water quality monitoring and measurement of the water levels so that a baseline of data can be collected for comparison in the future.

Water Treatment Facilities

FGUA operates six water treatment plants within the Poinciana system. The plants are permitted by the Florida Department of Environmental Protection (FDEP). Due to the good water quality in the area, the treatment plants essentially consist of wells with aeration, storage, and disinfection facilities. Water Treatment Plant No. 4 utilizes chemical addition for pH adjustment. Major expansions have been made recently to meet development needs. Following is a brief process description of each of the water treatment plants and the current condition of each facility. In the discussion of capital improvements, specific equipment manufacturers are recommended. These recommendations are based on conversations with the plant operators and the need to standardize equipment across the five water plants.

Water Treatment Plant No. 1

WTP No. 1 is located within an industrial park located off U.S. 17 and consists of one on-site well and one off-site well. Each well pump uses a 30-horsepower (hp) motor to deliver 1,000 GPM to the treatment plant. The well pumps deliver the raw water to an aera-

tor mounted on top of a 50,000-gallon steel storage tank. Aeration, using gravity-type cascading tray aerators, reduces the dissolved iron and sulfide concentrations. The capacity of the aeration system is 2250 gpm. The plant capacity is reported by the FGUA to be 2.804 MGD. The aerated water then is pumped from a 50,000 gallon storage tank by three 20-hp, 750 gpm high service pumps into the distribution system. Chlorination is handled on site through a new hypochlorite system. A 50-kilowatt generator and an above-ground diesel storage tank are also located on the site for backup power. An off-site 400,000-gallon elevated steel tank is used within the system to maintain pressure (Figures 4.2 and 4.3). The elevated tank was observed from the ground and appeared to be in good condition.

This facility is the second oldest Poinciana water plant and has some signs of mild deterioration. The ladder and man-way on the 50,000-gallon steel storage tank are corroded. There are pit marks on the tank as well. The tank should be sand blasted in these areas and repainted, while the ladder should be replaced. The inside of the tank has been inspected and corrosion was observed. The site is cramped and there is limited potential for expansion. Figures 4.4 to 4.9 are photographs of the current plant.

Water Treatment Plant No. 2

WTP No. 2 is located just north of the Polk/Osceola County line. Service areas for WTP No. 2 and WTP No. 3 are interconnected and controlled by pressure sensors within the system. The plant consists of production wells, tray aeration, on-site storage, high ser-

vice pumps, and chlorine disinfection. All three production wells are 1,000 GPM capacity. The raw water is pumped to a tray aerator and falls into two 600,000-gallon Crom pre-stressed storage tanks. One is about 15 years old and the other is less than three years old. They are in good condition. Three 20-hp high service pumps take water from the storage tank and pump it into the distribution system through a 10,000-gallon hydro-pneumatic tank. The pneumatic tank is used to keep approximately 60 pounds per square inch (psi) of pressure on the system to minimize wear on the high service pumps.

This plant is in good condition and appears to have been well maintained. The aerators are designed to aerate 2600 gpm each. There is a 250-kilowatt (kW) Cummins generator located within the pump building. There is a diesel day storage tank located in the building with the generator. This tank is connected to an above-ground diesel storage tank outside the building. An item of concern that was noted in the environmental site assessment was that the solenoid valve connecting the day tank and storage tank is allowing diesel to seep around the valve.

The system was rehabilitated in 2003 and the new storage tank and aerators added. A sodium hypochorite system was installed to replace the chlorine cylinders at the site, in part because the plant is located in the middle of a residential area. The plant capacity was expanded to 2.592 MGD and new high service pumps were added. However, this facility cannot be expanded beyond that which is currently on-site. The plant is in good condition. Figures 4.10 to 4.15 are photographs of the current plant with notes.

Water Treatment Plant No. 3

WTP No. 3 is located just south of the Polk/Osceola County line. The service area for WTP No. 3 is interconnected with the service area for WTP No. 2. These service areas cross county lines and pressure sensors within these areas direct the two sets of high service pumps at each WTP to pressurize the system. WTP No. 3 consists of three production wells, a 3600 gpm tray aerator, a 350,000-gallon Crom pre-stressed concrete tank, high service pumps, a 10,000 gallon hydro-pneumatic tank, and chlorination equipment. The raw water is pumped to the tray aerator mounted on the top of the Crom tank. Water from the Crom tank is pumped using the high service pumps, chlorinated, and sent through the hydro-pneumatic tank and into the distribution system. The hydro-pneumatic tank is used to keep pressure on the system near 68 psi and to minimize wear on the high service pumps. Auxiliary power is provided by a 125-kW Caterpillar generator with a belly tank.

The system has not been rehabilitate and is the only facility without the new sodium hypochlorite system. The hypochlorite system is supposed to be installed in 2005. The plant capacity is 1.58 MGD. The facility appears to be well maintained. The control building is not air conditioned and there are no restroom facilities on site, situations that will need to be addressed as the operators spend additional time at the facility. There is minimal potential for expansion to this facility as it is in the middle of a residential neighborhood. Figures 4.16 to 4.20 are photographs of the current plant with notes.

Water Treatment Plant No. 4

WTP No. 4 is located at the eastern edge of Poinciana. This facility was originally constructed to serve a development of approximately 240 homes, 220 of which have been constructed. and serves one subdivision. The processes at this facility starts with raw water pumping using a 300 and a 325 gpm well. A new 1200 gpm tray aerator was installed on the new, 0.25 million gallon glass-lined steel tank constructed in 2004. On-site hypochlorite have replaced chlorine cylinders. The plant capacity was expanded and new high service pumps were added in 2004. Plant capacity is 0.277 MGD until the new system is completed. A new generator is also located on site to provide emergency power. The site is interconnected with the new WTP 6 and with WTPs 2 and 3. Emergency fire protection flow is available through the second well directly into the distribution system, bypassing the treatment processes. Figures 4.21 to 4.24 are photographs of the current plant with notes. The old storage tank structure is on-site but needs to be removed.

Water Treatment Plant No. 5

WTP No. 5 is located in the southern portion of Poinciana. The plant has been increased in capacity in the last three years from 0.5 to 3.78 MGD. Included in the upgrade were refurbishments to the existing tanks, construction of a new, one million gallon prestressed concrete storage tank and a 7500 gpm aeration system, a new high service pumping system, conversion to hypochlorite for disinfected and the addition of a new 2400

gpm well with connecting 16 inch water main. An additional well can be added to the piping system. Pumping to the distribution system occurs through high service pumping and a new hydro-pneumatic tank. Six, new Fairbanks-Morse high service pumps have been installed with the following horsepower: 2 @ 25 HP, 2 @ 40 HP, and 2 @ 75 HP.A 250-kW Cummins generator is located on site for emergency power generation. The old aerator, steel tank and high service pumping facility have been abandoned, but remain on the site.

The site is designed for additional expansion beyond the current capacity of 3.78 MGD. Figures 4.25 to 4.31 are photographs of the current plant with notes.

Water Treatment Plant No. 6

WTP No. 6 is located north of Poinciana and primarily serves the corridor that includes Audobon and Bellagio – over 3000 units. This facility is two years old. It includes raw water pumping, aeration, storage, and chlorination, and distribution through high service pumping and a hydro-pneumatic tank. A ___-kW Caterpillar generator is located on site for emergency power generation. Included were construction of a new, 1.75 million gallon pre-stressed concrete, storage tank and 3800 gpm aeration system, sodium hypochlorite for disinfection and two 1400 gpm wells. The site is designed for additional expansion beyond the current capacity of 1 MGD. Figures 4.31 to 4.36 are photographs of the facility, with notes.

Summary of Water Plants

Each of the Water Treatment Plant sites is visited for a minimum of one hour every day because of the simplicity of the system. One weekend visit is made to each site. As a result, there is only one operator necessary. The utility advises that their operators generally have dual certifications for the water and wastewater, so the operators at the wastewater plants, which require a minimum of three hours per day, can double as the water plant operators.

System Capacity

The current treatment capacity, based on the current plant capacities, is 12.55 MGD. The total water treatment capacity is more than the raw water supply currently permitted by the SFWMD. Table 4.2 shows the demands over the past several years. Figure 4.37 shows the demands from 2001 to date. There is an upward trend. Figure 4.38 shows the projected demands over the next 10 years. Table 4.3 shows the current, 5 year and 10 year demand expectations. The major concern is that the peaks are high compared to average daily flows. Therefore the chemical feed and aerator systems must be designed for the peaks. Well capacity must also be available for the peaks.

There appears to be excess capacity on the system at this time, but capacity is consumed quickly on the Poinciana system. The average daily flow is approximately 36 percent of the design capacity. Storage capacity is greater than 50 percent of average daily flows (see Table 4.4). The improvements recommended in the 1999 Water Master Plan for

Poinciana Utilities, Inc., as prepared by Burns and McDonnell, Inc. and as updated in the strategic plan for Poinciana developed by the current staff at Public Utility Management and Planning Services, Inc.. have been implemented to maintain the facilities such that the average daily flow is well the system capacity. However the capacity may be needed at the maximum daily demands for the Poinciana system are high in part due to an extensive, routine flushing program. This program is designed to maintain residual chlorine levels in the remote portions of the non-looped distribution network. Also a review of agreements entered into by the FGUA indicates that the FGUA system is serving two developments that adjacent to Poinciana which have significant potential for expansion – O&S Water (Bellagio) and Audoban. Over 3000 units are planned, which is why WTP 6 was constructed. WTP 5 is proposed for expansion to 7 MGD by 2009. It also was noted that additional residential development is occurring around plant 1. Therefore WTP 6 is designed for potential expansion. The level of development should be monitored to ensure that the service area demand does not exceed the plant's capacity. The interconnect with WTP 2 and 3 resolves this problem.

The water treatment plants for the Poinciana water system have performed well. The finished water quality has met the majority of the primary and secondary standards as regulated by FDEP for the past three years. Finished water quality data for 2003 taken from consumer education information is summarized in Table 4.5. The finished water has an alkaline pH, which reduces the risk of lead and copper from leaching into the water system. This is shown in the past lead and copper test results for the water systems. All of the lead and most of the copper samples reviewed for the past three years were below the

action level as set by the FDEP and most samples were below the detection limits. The alkaline pH also reduces potential corrosion of the distribution system.

Table 4.1 Summary of Water Supply Wells in Poinciana

Poinciana Water Supply Wells

WTP No.	Well No.	Year Inst.	Well Type	Well Depth (ft bls)	Casing Material	Boring Diam. (in)	Casing Depth (ft)	Casing Diam. (in)	Pump Design Capacity (GPM)	Pump Actual Capacity (GPM)
1	IP-1A	1988	open hole	450	carbon steel	12	115	8	1,000	1,000
1	IP-2	1972	open hole	390	carbon steel	12	127	8	1,000	1,000
2	V2-1	1988	open hole	89/500	carbon steel	20/12	64/146	8	1,000	1,000
2	V2-2	1990	open hole	80/500	carbon steel	20/12	64/148	8	1,000	1,000
2	Q-3	1999	open hole	400	carbon steel	12	150	12	1,000	1,000
3	CORE-1	1972	open hole	400	carbon steel	6	182	4	275	300
3	CORE-2	1974	open hole	435	carbon steel	8	209	6	500	450
3	CORE-3	1983	open hole	497	carbon steel	12	146	8	1,000	1,000
3	Q-4	1999	open hole	665	carbon steel	12	149	12	1,000	1,000
4	WTP-4	1986	open hole	402	carbon steel	8	160	12	400	400
4	WTP-4-Fire	1986	open hole	479	carbon steel	12	160	12	1,000	1,000
5	V7-1	1988	open hole	225/502	carbon steel	12	225	8	1,000	1,000
5	V7-2	1991	open hole	425	carbon steel	12	150	8	1,000	1,000
5	V7-3	2003	open hole	425	carbon steel	n/a	150	17	2,400	2,400
6		2004	open hole	800	carbon steel	n/a	150	17	1,400	1,000
6		2004	open hole	800	carbon steel	n/a	150	17	1,400	1,000

Source: Florida Department of Environmental Protection Sanitary Surveys, SFWMD Water Use Permit

Table 4.2 Flows 2002 to date

MONTH	WWTP ADF Total	WWTP MDF Total
Oct-01	1.85	3.15
Nov-01	1.8	3.1
Dec-01	1.85	3.15
Jan-02	1.9	3.12
Feb-02	1.88	3.05
Mar-02	1.87	3.03
Apr-02	1.85	3.0
May-02	1.85	3.0
Jun-02	2.6	3.9
Jul-02	3	4.3
Aug-02	3.3	4.6
Sep-02	3.5	4.8
Oct-02	2.3	3.6
Nov-02	2.4	3.7
Dec-02	3.3	4.6
Jan-03	2.7	4.0
Feb-03	2.4	3.7
Mar-03	3.2	4.5
Apr-03	2.5	3.8
May-03	2.2	3.5
Jun-03	2.8	4.1
Jul-03	2.9	4.2
Aug-03	3.8	6.0
Sep-03	2.8	4.5
Oct-03	2.2	2.7
Nov-03	2.2	3.2
Dec-03	2.2	2.9
Jan-04	2.2	3.2
Feb-04	2.6	4.0
Mar-04	2.5	3.5
Apr-04	2.2	3.1
May-04	2.3	3.7
Jun-04	2.4	3.6
Jul-04	2.8	4.5
Aug-04	3.8	6.5
Sep-04	4.0	9.1

Table 4.3 Projected Flows 2005- 2015

Year	Avg Ann Water Accts	Delta	Water Demands
2002	10868		
2003	12267	1399	2.7
2004	13823	1556	2.8
2005	15328	1505	3.2
2006	16783	1455	3.5
2007	18187	1404	3.8
2008	19541	1354	4.1
2009	20845	1304	4.4
2010	22095	1250	4.6
2011	23295	1200	4.9
2012	24445	1150	5.1
2013	25545	1100	5.4
2014	26595	1050	5.6
2015	27595	1000	5.8

Table 4.4 Capacity and Storage in The Poinciana System

Plant	Storage	Capacity
1	0.4	2.804
2	1.2	2.592
3	0.35	1.58
4	0.25	0.277
5	3.5	3.78
6	1.4	1.75
Sum	7.1	12.783
Storage %	56%	
ADF =	4.55	
% Capacity	36%	

Table 4.5 Water Quality data from 2003 consumer confidence reports

Parameter	SDWA	2003			
Plant	MCL	WTP 1	WTP 2/3	WTP 4	WTP 5
Alpha Emitters	15	ND	ND	1.5	1.9
Radium 226/228	5	ND	ND	0.8	0.9
Antimony	6	2.7	ND	ND	ND
Barium	2	0.025	0.012	0.012	0.019
Beryllium	4	ND	n/a	ND	0.9
Cadmium	5	ND	0.01	0.13	ND
Fluoride	4	0.17	0.085	0.114	0.1
Lead	15	ND	2.1	ND	ND
Nickel	100	ND	n/a	2.2	1.9
Nitrate	10	ND	n/a	ND	1.73
Sodium	160	3.03	3.39	4.21	6.02
THMs	100	n/a	26.7	n/a	n/a

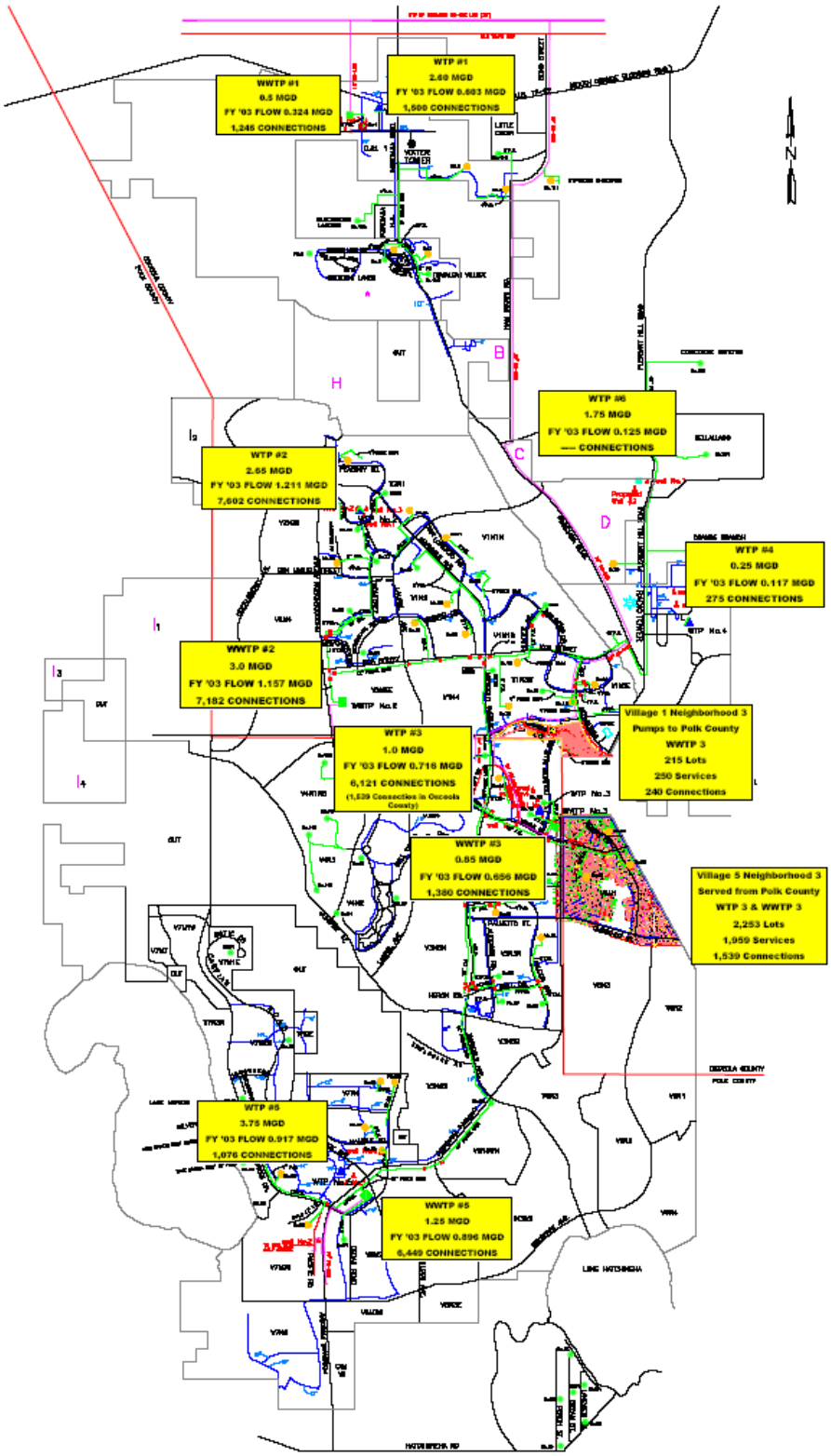

Figure 4.1 WTP Locations (source PBSJ)

Figure 4.2 - Elevated Storage tank WTP 1 Service Area

Figure 4.3 - Offsite 400,000 gal elevated tank. A series of cell phone towers have been added to the tank since 1999 which is a source of revenue for the system. If other elevated tanks are considered for fire protection purposes, these aerials should be considered for co-location..

Figure 4.4 - Well at WTP 1 off site. This well is in an industrial park with no wellhead protection measure.

Figure 4.5 - Onsite well at WTP 1

Figure 4.6 – 50,000 gallons storage tank and aerator at WTP no. 1. The aerator does not appear to have been upgraded to match the plant capacity.

Figure 4.7 - WTP 1 high service pumps (3 – 20 hp motors)

Figure 4.8 – New WTP 1 Sodium Hypochlorite system. Damage to roof caused by Hurricane in the fall of 2004 and will be repaired shortly.

Figure 4.9 - Generator at WTP 1

Figure 4.10 – One of the water supply wells for WTP 2 located off the plant site.

Figure 4.11 – Second WTP 2 well, also located off the plant site. Tank is located in the background

Figure 4.12 - WTP 2 old tank

Figure 4.13 – Newer 600,000 gallon tank and aerator at WTP 2 new tank and on-site well

Figure 4.14 - WTP 2 Sodium hypochlorite system

Figure 4.15 – High service pumps at WTP 2

Figure 4.16 - WTP 3 offsite well

Figure 4.16 - WTP 3 uncapped well casing

Figure 4.17 – On-site well at WTP 3

Figure 4.18 - 350,000 gallon storage tank and aerator at WTP 3

Figure 4.19 – 10,000 gallon hydropnuematic tank at WTP 3

Figure 4.20 WTP 3 Generator with belly tank at WTP 3 site. Hydropneumatic tank and finished water line from pump system shown on the edges of photograph.

Figure 4.21 – New well sanitary steel and pump base for 300 gpm well on the site of WTP 4. New glass-lined steel tank and new electrical/mechanical control building shown behind well

Figure 4.22 –1000 gpm well fire well with new sanitary seel and pump based at WTP 4

Figure 4.23 - New Glass lined 250,000 gallon tank and new aerator at WTP 4 – not in service as of December 2004.

Figure 4.24 – New sodium hypochlorite system at WTP 4. Old WTP 4 aerator and hydropneumatic tank shown in background (to be abandoned)

Figure 4.25 Old well at WTP 5 next to the old steel tank structure (now abandoned)

Figure 4.26 - New 2400 gpm well to provide raw water to WTP 5 located off-site. A generator is provided for this facility

Figure 4.27 - New one million gallon storage tank with aerator at WTP 5. Diesel generator and high service pumping building at right side of photograph)

Figure 4.28- New hydro-pneumatic tank, old steel storage tank and old high service pump building at WTP 5. The old tank and pump building have been abandoned

Figure 4.29 – New sodium hypochlorite system at WTP 5

Figure 4.30 - New Ops building WTP 5 that houses the high service pumps (6 pipes from high service pumps visible in photograph)

Figure 4.31 - New high service pumping room at WTP 5

Figure 4.31 – New well to service WTP 6

Figure 4.32 – 500,000 gallon storage tank and aerator for WTP 6

Figure 4.33 - WTP 6 sodium hypochlorite system

Figure 4.34 - Generator at WTP 6

Figure 4.35 – High service pumps for WTP 6. Note that only 3 of 5 possible pumps are installed (see Figure 4.36)

Figure 4.36 – Room for additional pumps in High service pumping facility at WTP 6

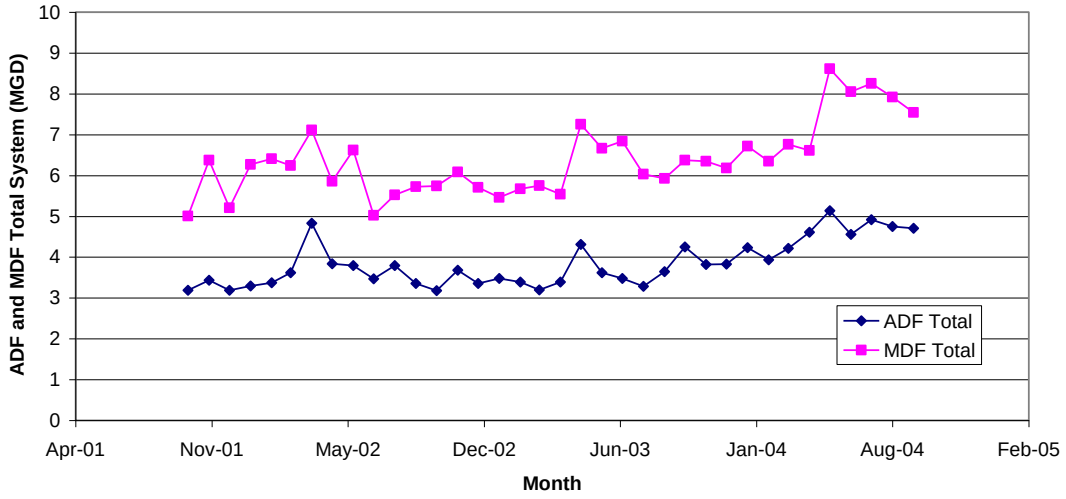

Figure 4.37 Actual Flows, 1996 to date

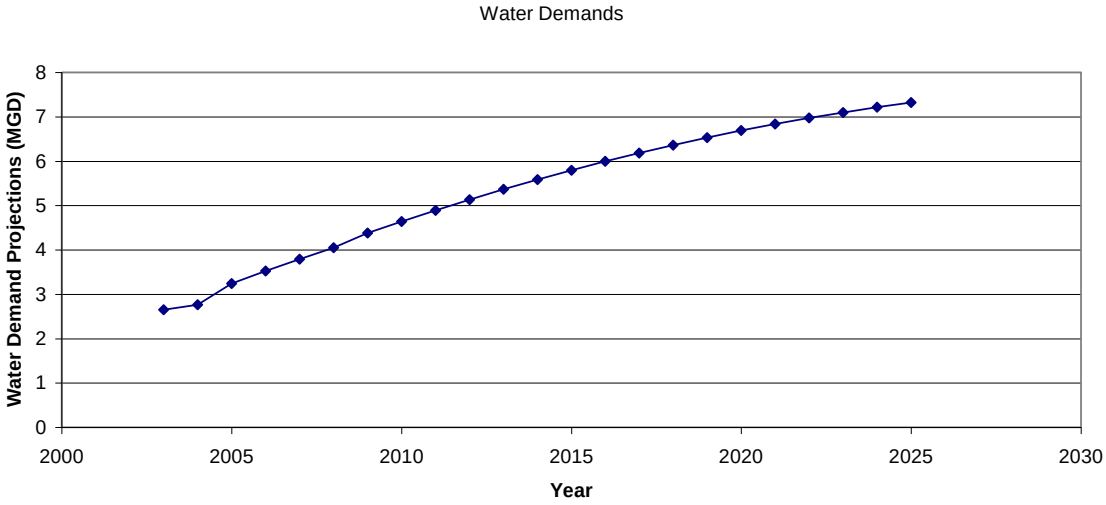

Figure 4.38 Projected Flows

V. WASTEWATER TREATMENT

Treatment Facilities

Four wastewater treatment facilities serve the Poinciana system. The total permitted treatment capacity is 5.55 MGD. The average daily flow for 2004 was 3.1 MGD or 56 percent of capacity, as shown in Table 5.1. The wastewater facilities are described by service area in the following sections.

Wastewater Treatment Plant No. 1

Wastewater Treatment Plant No. 1 is located within the same industrial park as Water Plant No. 1. More than 50 percent of the flow to WWTP No. 1 is from commercial/industrial users, which may be highly variable. The residential flow component has been increasing in recent years as a result of nearby subdivision construction. WWTP No. 1 operates under FDEP Permit No. FLA010968-001, which will expire February 25, 2009. The existing capacity is 0.5 MGD. This facility has been modified to include additional aeration brushes and a new hypochloirite system.

The wastewater is pumped directly from a master lift station for the system to the headworks. The headworks includes an influent screening drum system located on the eastern wall of the 0.5 MGD Lakeside oxidation ditch that discharges to the ditch. The influent box is made of stainless steel and is in good condition. Recent improvements to the site

include the addition of filters, a new aeration brush and a chlorine hypochlorite system to replace the gas system. All are in excellent condition.

The oxidation ditch was constructed as a pre-stressed concrete Crom facility in the early 1980s. Air is added via three brush aerators, the newest one is only 3 years old. The mixed liquor suspended solids are maintained between 3,000 and 3,500 mg/L and monitored utilizing dissolved oxygen level sensors.

Effluent is discharged over an effluent weir to two clarifiers. Two newer clarifiers were in installed in the late 1990s. Both are pre-stressed concrete tanks with a center feed clarifiers, utilizing Westech drives, circular aluminum weirs, and aluminum gates, railings, and grating. The tankage was designed to facilitate construction of an adjacent, equally-sized clarifier during future expansion. An older reinforced concrete clarifier located on the site. This rim feed clarifier contains a square steel weir structure. This structure is been converted to a sludge thickener. The chlorine system is also capable of dosing the newer clarifier effluent troughs for algal control and the oxidation ditch for control of filamentous bacterial growth.

Return activated sludge pumps are located adjacent to the clarifiers. The former return activated sludge pump system were modified to waste activated sludge pumps when the structure is converted to a thickener. The existing digester is located on site and the digested sludge is removed from the digester at a 1.5 to 2 percent solids concentration. Also on site is a 125-kW Cummins generator for emergency power requirements.

Despite a significant industrial wastewater contribution, WWTP No. 1 does not have an industrial pretreatment program. A pretreatment program is recommended at this time to assess the industrial contributions to the plant and to implement measures to protect the treatment facilities.

The existing drum screen on the oxidation ditch has no manual bypass screen. Therefore, the unscreened wastewater was bypassing the screen and discharging directly into the oxidation ditch. It was observed during the field visit that the influent flow was not being measured. An influent flow monitoring device needs to be installed.

Future expansion will be necessitated by residential growth. Interconnection with WWTP 2 will alleviate some concerns. Effluent from the filters goes to the chlorine contact chamber and the effluent is pumped to one of three sources. Wastewater meeting the requirements of 62-610 FAC go to one off-site pond or the reuse line to Toho Water Authority that is governed by an agreement with Toho Water Authority. If the water does not meet these requirements, the water goes to an off-site reject infiltration basin/percolation pond located approximately ½ mile from the site. The two ponds used to be interconnected and were the primary disposal source for the plant. The percolation ponds have seeped in the past. These ponds need to be evaluated and repaired as needed or the loading to the ponds needs to be reduced by diverting effluent. Figures 5.1 to 5.6 show the current facility with notes.

Wastewater Treatment Plant No. 2

WWTP 2 operates under FFDEP Permit No. FLA109843-004-DWIP. The capacity of the plant is 3 MGD. WWTP 2 is the model plant for Poinciana. It is a new SBR treatment facility installed in 2003. The 10 year old DAVCO 0.5 MGD pre-stressed concrete Crom tank package system was converted to clarifiers. Filters and a chlorine contact chamber were added in 2003. The gas chlorine was replaced with hypochlorite at the same time. The effluent is reused as golf course irrigation at SolaVita in Polk County, discharged to a 4.5 MG lined storage pond or treated effluent from the pond is pumped to an adjacent sod farm for disposal by spray irrigation although development pressures are reducing the potential for this option. The plant is located in southern Osceola County. The plant is expected to be expanded to 6 MGD by replicating the existing facilities.

Influent flow currently moves into the new headworks, which is expandable to 6 MGD. The current plant capacity is 3 MGD. Duplication of the SBR expansion will provide up to 6 MGD, which is the plan. Design is underway. Effluent disposal will be via reuse or discharge to the Toho Water Authority ponds via interlocal agreement. Figures 5.7 to 5.18 show the current facility with notes.

Wastewater Treatment Plant No. 3

Wastewater Treatment Plant No. 3 operates under FDEP Permit No. FL0036862-005-DWIP, which will expire on January 25, 2005 (renewal in process). It was first constructed in 1973 and is the oldest facility in the Poinciana System. It is the eastern-most

facility in Poinciana, serving a small portion of Osceola County and parts of Polk County. The facility is actually in Polk County. It is interconnected with WWTP 2. A series of force mains tie the subdivisions together. To separate the Counties, a new force main would need to be constructed. However WWTP 3 does not have the necessary capacity to serve the Polk service area so some form of bulk agreement would be necessary.

In the past 3 years, the facility has been completely rebuilt. The new 0.85 MGD package system is a sequence batch reactor (SBR) treatment facility, with filtration and high-level disinfection. The chlorine system is sodium hypochlorite. A cyclone grit removal system was installed as a part of the news headworks facility. The old 0.35 MGD steel package facility was converted to a digester tank to stabilize sludge. This tank remains in poor condition.

If the wetlands discharge remains, sulfur dioxide will continue to be used to dechlorinate the effluent. The wetlands discharge is introduced at the end of the pond before the water is discharged to the wetland area known as "the Boot." This wetland area is located about 1,000 feet from the plant site and consists of approximately 115 acres. The old wetland discharge is being abandoned because the current compliance requirements are burdensome to the facility, as significant monitoring of the wetlands is required. FDEP has noted compliance problems with this facility. Figures 5.19 to 5.26 show the current facility with notes.

Wastewater Treatment Plant No. 5

Wastewater Treatment Plant No. 5 operates under FDEP Permit No. FLA010979-002, which will expire November 11, 2007. WWTP No. 5 also has a Master Site Storm Water Permit No. MSS3-301290, which will expire in ____. There are two 0.5 MGD package anoxic contact stabilization systems with other support process units at the site. The overall permitted capacity is 1.2 MGD as a result of equalization and filter installations. The first of the tanks is a steel package system that is formerly part of the original treatment train, but was converted for use as an aerated holding tank during the 1998 construction. The second tank was constructed in 1998, as part of the expansion. The plant was recently upgraded by installing an equalization basin and sand filters to increase plant capacity to 1.2 MGD and to produce reclaimed water quality effluent. A hypochlorite system was also installed. The major limitation with this remote plant is the lack of disposal options.

The older of the two package systems was built in the early 1990s. It consists of an enclosed influent splitter box and bar screen, influent weir, aeration basin, re-aeration basin, and anoxic basin. The clarifier is located in the center of the package system. The newer package system was constructed in 1998. It has the same facilities in the same basic configuration as the older facility. Chlorination is provided in a new chlorine contact chamber. Chlorinated effluent is discharged to 50 acres of on-site percolation ponds. The site and ponds are located on the top of a sand ridge and percolation is excellent. The ponds

typically have little appreciable water in them. Solids handling is accomplished in two tanks.

The plant is located in the southern end of Poinciana in Polk County. It could be used as a regional facility for northeastern Polk County is disposal of the wastewater could be improved. Options appear limited beyond a few golf courses and percolation ponds. The percolation ponds work very well, but FDEP limits the amount of water that can be applied.

It was noted during the site visit that the berms for the percolation ponds located on the north side of the property appear to allow horizontal seepage into adjacent ditches. This seepage needs to be addressed to avoid potential impacts to surface waters. A review of site and equipment power should be considered. The mixer in the anoxic zone of the newer package system needs to be pulled occasionally for maintenance to remove rags and other material hung on the mixer. The mixers need to be evaluated to determine what improvements can be made.

Two bladder tanks and reuse pumps are located adjacent to the chlorine contact chamber out by the percolation ponds for discharge to reclaimed water customers, only there are two reclaimed water customers. The utility has concerns that at some point API will want to utilize the ponds for development, since the land is located on such a high area. As a result the current expansion includes installation of an equalization basin and filters.

A 250 kW Detroit generator with belly tank was installed in 1990, and exists at present on the site to provide backup power. Figures 5.27 to 5.33 show the current facility with notes.

Stabilized Class B biosolids are disposed of through hauling to Lake County. The old sludge fields that were used for year in the Polk County portion of Poinciana have been abandoned due to the proximity of development. A long-term sludge disposal program should be evaluated.

System Capacity

Figure 5.1 shows the Area 1 flow data. Because plants 2, 3 and 5 are connected together, the individual plant data is not helpful in determining capacity issues. A portion of the flow from WWTP Nos. 2 and 3 is re-directed to WWTP No. 5. Table 5.1 shows the combined flows for the facilities, and explains why WWTP 5 has recently been expanded despite having virtually no customers. The Poinciana wastewater system has a permitted treatment capacity of 5.55 MGD. The monthly average daily flow for 2004 was 2.6 MGD. This is approximately 47 percent of the design capacity of the system. The maximum monthly average daily flow was 4.2 MGD, or 74 percent of the plant capacity. Figure 5.34 outlines the flows over the past 4 years. Figure 5.35 shows the projected flows for the total system.

Condition of WWTPs

No overall significant problems with the wastewater utility facilities at the Poinciana System were noted. The wastewater system is in generally good condition typical of other systems of comparable age. The interconnections between WWTP Nos. 2, 3, and 5 make it difficult to evaluate flows versus treatment capacity at individual plants.

It appears that WWTP No. 1 runs well below capacity the majority of the time. There is a consistent increase in influent demand at WWTP No. 1, which, if continued, will require expansion of the plant in the next few years. The collection system serving WWTP No. 1 has had extensive infiltration and inflow correction work in recent years, which has resulted in little deviation between average and maximum daily flows.

WWTP No. 2 runs below capacity during average daily events, but periodically nears capacity on maximum daily events. Influent flows indicate that WWTP No. 2 has a generally increasing wastewater demand as it acts as a regional facility. WWTP No. 3 exhibits relatively stable flows with average daily flow below capacity. However, WWTP No. 3 periodically nears capacity on maximum daily flows. The combining of the influent flows to WWTP Nos. 2 and 3 indicates a consistent trend in wastewater flow growth. The addition of the proposed adult community will significantly increase the demand on the combined wastewater service area.

WWTP No. 5 consistently runs below capacity as a result of diversions in the northern section of Poinciana to WWTP No. 2. At present, the plant is limited by disposal capacity. Therefore, it will be desirable to evaluate the disposal option before initiating the next plant expansion project.

Table 5.1

Capacity of Wastewater Facilities in Poinciana

Plant	Capacity
1	0.5
2	3
3	0.85
5	1.2
Sum	5.55
ADF =	2.6
% Capacity	47%

Figure 5.1 - WWTP 1 Oxidation ditch and converted sludge thickener

Figure 5.2 – New WWTP 1 Clarifiers. The old clarifier now used as a thickener at left.

Figure 5.3 - New Clarifier at WWTP 1

Figure 5.4 - WWTP 1 Chlorine contact chamber

Figure 5.5 - Sodium Hypochlorite system at WWTP 1

Figure 5.6 – WWTP 1 Sludge thickener

Figure 5.7 – WWTP 2 Headworks – expandable by replication to 6 MGD

Figure 5.8 – New WWTP 2 Influent screw pumps

Figure 5.9 – New WWTP 2 Blowers for SBR facility (located in background)

Figure 5.10 - WWTP 2 SBR Tank (constructed 2003)

Figure 5.11 - WWTP 2 SBR – typical of 4 basins

Figure 5.12 - Edge of WWTP 2 SBR showing clarifers in the distance

Figure 5.13 - WWTP 2 clarifiers (converted from old aeration basins)

Figure 5.14 – New WWTP 2 Traveling Bridge Filter

Figure 5.15 – New WWTP 2 Chlorine Contact Chamber

Figure 5.16 - WWTP 2 Chlorine Contact Chamber and Reuse Pumps

Figure 5.17 – WWTP 2 Reuse pumps

Figure 5.18 – New WWTP2 Sodium Hypochlorite system

Figure 5.19 – New WWTP 3 influent and grit chamber. The new SBR facility is located beyond the wall on the left. The old package plant, now digester, is seen on the right

Figure 5.20 - New WWTP 3 SBR tank

Figure 5.21 – New WWTP 3 SBR Facility

Figure 5.22 – New WWTP 3 Traveling Bridge Filter

Figure 5.23 – New WWTP 3 Chlorine contact chamber

Figure 5.24 – New WWTP 3 Sodium Hypochlorite feed and control system. Note this is typical for all Poinciana hypochlorite facilities

Figure 5.25 – New WWTP 3 Generator

Figure 5.26 - Old WWTP 3 converted to digester

Figure 5.27 - Headworks WWTP 5

Figure 5.28 - Blowers WWTP 5

Figure 5.29 - WWTP Contact Aeration basin

Figure 5.30 - Current aeration basins and center clarifier WWTP 5

Figure 5.31 - New Traveling Bridge Filter at WWTP5

Figure 5.32 - New Chlorine contact chamber at WWTP5 and sodium hypo system

Figure 5.33 - Generator at WWTP 5

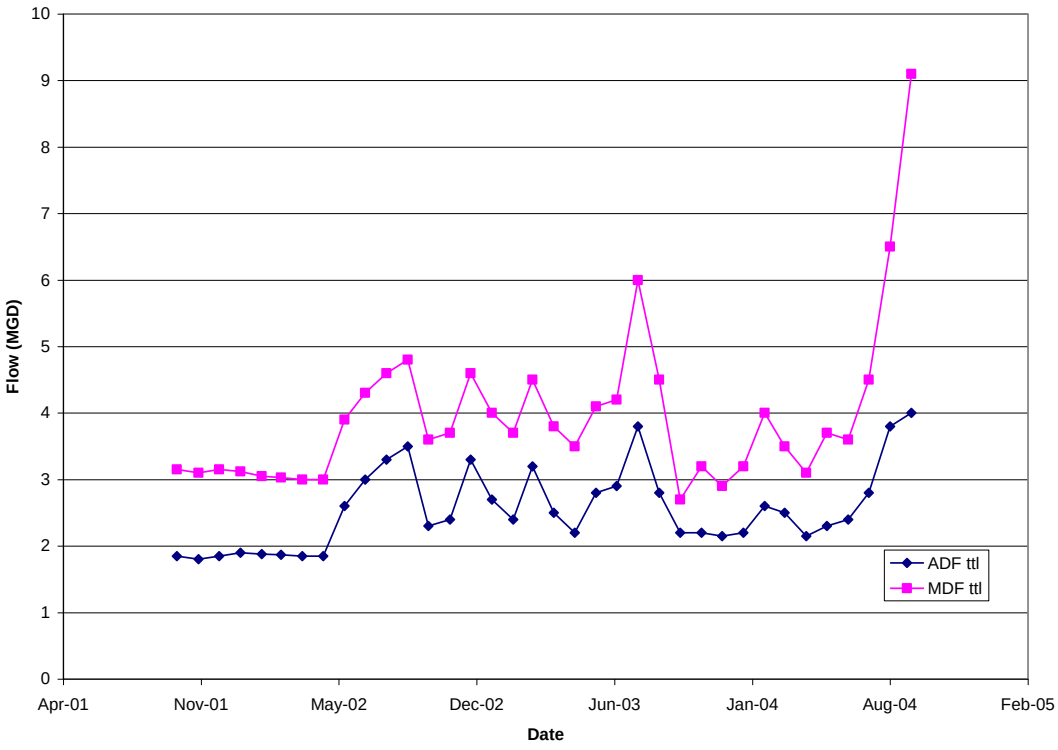

Figure 5.34 Actual Flows, 1996 to date

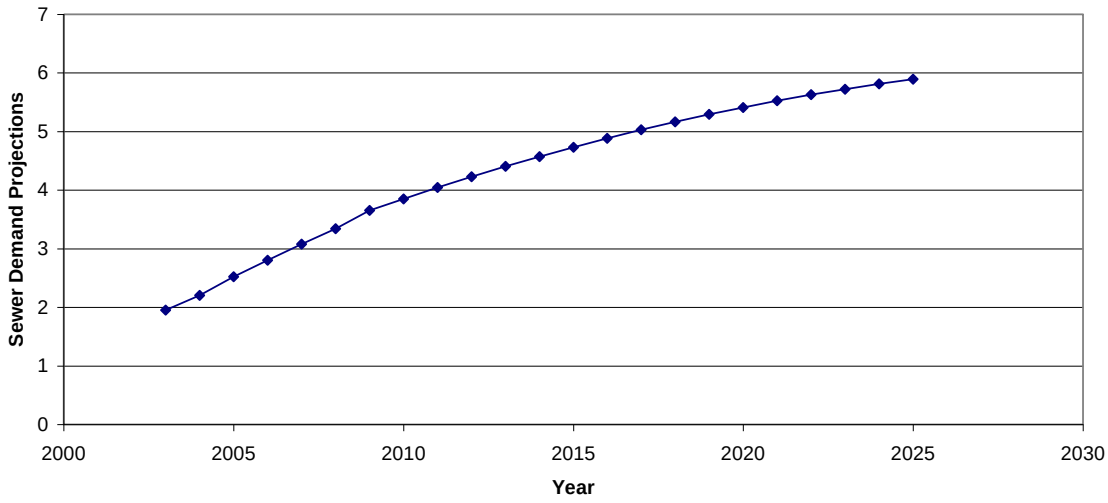

Figure 5.35 Projected Flows

VI. WATER DISTRIBUTION

The Poinciana utility system contains over 250 miles of water transmission and distribution lines ranging in size from 1½ to 16 inches in diameter, with approximately 1000 fire hydrants. A review of the water lines in the system indicate that most are relatively new and a number of large lines have been installed by the FGUA in the past 5 years linking large sections of Poinciana together. The new pipelines are PVC C900 or ductile iron. The remaining are poly-vinyl chloride, 3, 6 or 10 inches in diameter or asbestos cement pipe (AC), with some ductile iron pipe (DIP). Table 6.1 is an estimate of the current piping in the system.

The older, asbestos cement lines pose some potential for problems in the coming years. Asbestos cement pipe tends to show deterioration over time, resulting in brittleness and a tendency for shear breaks when disturbed. Direct tapping is not practical, and drilling into the pipe walls for service connections creates hazards for employees. Repair work on asbestos cement pipe can also be hazardous. Fortunately, most of the asbestos cement lines are not transmission mains for the water system.

There are no galvanized and copper pipes in the system, so the risk of lead and copper contamination in minimized, which is apparent in the testing results. Based on the records that were available for review, there have been no violations of the lead standards, but there have been rare, minor exceedences of the copper maximum contaminant levels (MCLs) at WTP No. 1 and No. 4 in the past.

One issue that is related to water distribution system adequacy is the lack of water lines along the developed side streets in certain areas adjacent to WTP No. 2 and No. 5. In these areas, only the large diameter transmission mains were installed. No water or wastewater lines were installed on the side streets. At some point in time, these pipelines will need to be installed. In accordance with a court decision regarding the bankruptcy of GAC Development, **API will be responsible for installing water and wastewater lines in the areas previously owned by GAC Development**. It is understood that the utility will not be responsible for any costs of extending such water and wastewater lines.

The process of repair and replacement has been ongoing for the water system operating personnel and appears to be beneficial based on the reported water loss records. In 1997, the average monthly unaccounted for water was approximately 7 percent of the total water produced. In 1998, the average monthly unaccounted for water was approximately 3 percent of the total water produced. However in 2002 the unaccounted-for water jumped to 16%. In 2003 it was reduced to 13% but it needs to be studied if developers are properly estimating the water used for construction of new utilities. Otherwise leak detection should be pursued or meter replacement (see Table 6.1).

Water Storage Facilities

The Poinciana water system has over 3.5 million gallons (MG) of water storage capacity. This consists of ground storage and hydropneumatic tanks at each of the treatment plants,

with the exception of Water Plant No. 1, which has a ground storage tank on site and a 0.45 million gallon elevated tank within the distribution system. Most of the tanks appeared to be in good or new condition, the exception being the tank at WTP 1. The WTP 1 tank has corrosion inside and numerous pit marks on the outside. It is recommended that the ground storage tank at WTP No. 1 be inspected thoroughly to determine its useful life and any necessary repairs.

It is generally recommended that a water system have storage capacity equal to half its treatment capacity. As previously mentioned, the current capacity is 12.55 MGD, the existing usage 4.55 MGD and the existing storage volume exceeds 3.5 MG, which is greater than 12 hours storage (see Table 6.2). This amount meets permit criteria and good, utility practice. An evaluation of location and size of the storage tanks should be conducted considering future master planning efforts. Additional storage should be included with future facility expansions.

Table 6.1 Unaccounted-for Water

MONTH/ YEAR	TOTAL PRODUCTION	UTILITY USE	BILLED 3-1	BILLED 3-2	UNACCOUNTED FOR LOSSES	% UNACCOUNTED R WATER PERCE	YTD UNACCTF- FOR WATER (%)
October-01	101937	3000	55994	7623	35320	35%	
November-01	103713	3000	65621	31460	3632	4%	
December-01	102007	3000	50652	36868	11487	11%	
January-02	105297	3000	56640	27926	17731	17%	
February-02	100651	3000	54951	17468	25232	25%	
March-02	128439	3000	64702	43979	16758	13%	
April-02	132148	3000	78347	22373	28428	22%	
May-02	136389	3000	80906	25161	27322	20%	
June-02	103078	3000	81560	19969	-1451	-1%	
July-02	105666	3000	72292	18479	11895	11%	
August-02	105246	3000	57552	17304	27390	26%	
September-02	98922	3000	67055	19231	9636	10%	
October-02	105766	3000	56330	16546	29890	28%	16.1%
November-02	108390	3000	71323	20892	13175	12%	15.7%
December-02	101282	3000	66012	18384	13886	14%	16.3%
January-03	105794	3000	61225	21170	20399	19%	16.5%
February-03	99878	3000	62033	15795	19050	19%	16.7%
March-03	101545	3000	64783	18393	15369	15%	16.3%
April-03	109788	3000	65885	18714	22189	20%	16.5%
May-03	137222	3000	67760	22274	44188	32%	16.3%
June-03	108173	3000	86972	21335	-3134	-3%	17.6%
July-03	108267	3000	67641	24913	12713	12%	17.4%
August-03	103220	3865	74459	24817	79	0%	17.4%
September-03	110613	4500	65187	18650	22276	20%	15.3%
Oct-03	132171	28000	67292	22666	14213	11%	16.2%
Nov-03	112764	3000	95898	20568	-6702	-6%	14.7%
Dec-03	121853	7000	68621	20438	25794	21%	13.1%

VII. SEWER COLLECTION

Over 250 miles of gravity sewer lines and 94 active lift stations exist on the system. The sewer system is predominately made up of gravity sewer mains and submersible pumps in small pump stations. Portions of these gravity lines are constructed of vitrified clay pipe. Vitrified clay pipe was a standard material until the sixties, before polyvinyl chloride (PVC) piping began to replace it. Clay pipe does not deteriorate, but is very brittle, is laid in short lengths (hence many joints), and tends to develop leaks at joints in wet conditions. The groundwater table in Florida is high, so this clay pipe may be submerged in the groundwater most, if not all of the year near water bodies. If so, there is infiltration and inflow from these pipes. Newer pipes are SDR 26 or 35 polyvinyl chloride (PVC), which will help prevent the infiltration problem from spreading. Figure 7.1 is an estimated inventory of the sewer collection system.

The Poinciana system also has 100 lift stations serving the wastewater collection system. Because of the number of lift stations, this report does not list specific information on each of the lift stations. The lift stations are predominately small pump stations with submersible pumps. The utility has a systematic effort to install new boxes and telemerize all the lift stations. 60 percent have reportedly had new controls and telemetry added in the past three years (per FGUA). Figures 7.1 to 7.8 show the typical configurations, with commentary. The pumps range in size from 3 to 20 horsepower.

A series of lift stations were inspected on the utility system. The majority of lift stations were in fair to good condition. The master lift station for the industrial area (WTP 1) has the epoxy lining within the wet well.

Lift Station 27 is the master lift station that receives flows from three or four neighboring lift stations. This is one of the stations that is designed to go both north and south (Wastewater Treatment Plants 2 or 3). At one point in time, before Wastewater Treatment Plant No. 2 was built, the lift stations pumps directed the wastewater to Wastewater Treatment Plant No. 3. After Wastewater Treatment Plant No. 2 was built, the flows were then reversed. This is one of a number of stations that appears to be oversized for the service area, but it is not - its use has been changed. If flows from WWTP Area 3 are moved to WWTP Area 2, this flexibility this station offers may be beneficial. Lift Station 29 is similar.

Lift Station 65 is located at the southern end of the system. It is the station that interconnects Wastewater Treatment Plants 2 and 3 with Wastewater Treatment Plant 5, as Wastewater Treatment Plant 5. This is the only triplex station in the system; it is also the only system with an on-site generator and the only lift station with an ozone odor control system. The station has the epoxy coatings in both the wet well and the valve vault, as well as the new box (see Figures 7.9 and 7.10). Major improvements were made at this site in the past three years, which include variable frequency drives.

Several additional lift stations have had wet wells and dry wells installed, but are lacking the installation of pumps and valves. Many of the stations are being rehabilitated. The FGUA has an ongoing program to replace and rehabilitate the lift station control boxes. Some of the lift stations have new NEMA 4 stainless steel boxes with controls installed. Several of these stations have had their control boxes replaced within the last two years with new panels utilizing Plexiglas so that the operations staff can see the electronics without having to actually open the box. Several of the large lift stations in residential areas have been retrofitted with ozone odor control systems. Ozone systems could be a problem due to the corrosive nature of the gas. Future applications of ozone treatment for odor control will need to specify proper materials to avoid costly repairs. Telemetry is being installed as a part of the overall system automation. The lift stations are in fair to good condition. A series of additional improvements are planned for 2005 to 2010.

Figure 7.1 – Typical Lift Station Wet well

Figure 7.2 – Typical lift station lift station wet well with sonic level indicator

Figure 7.3 - Typical lift station with new standard control box

Figure 7.4 - Typical Lift station with portable generator

Figure 7.5 - New lift station installation

Figure 7.6 - New Lift station control box open

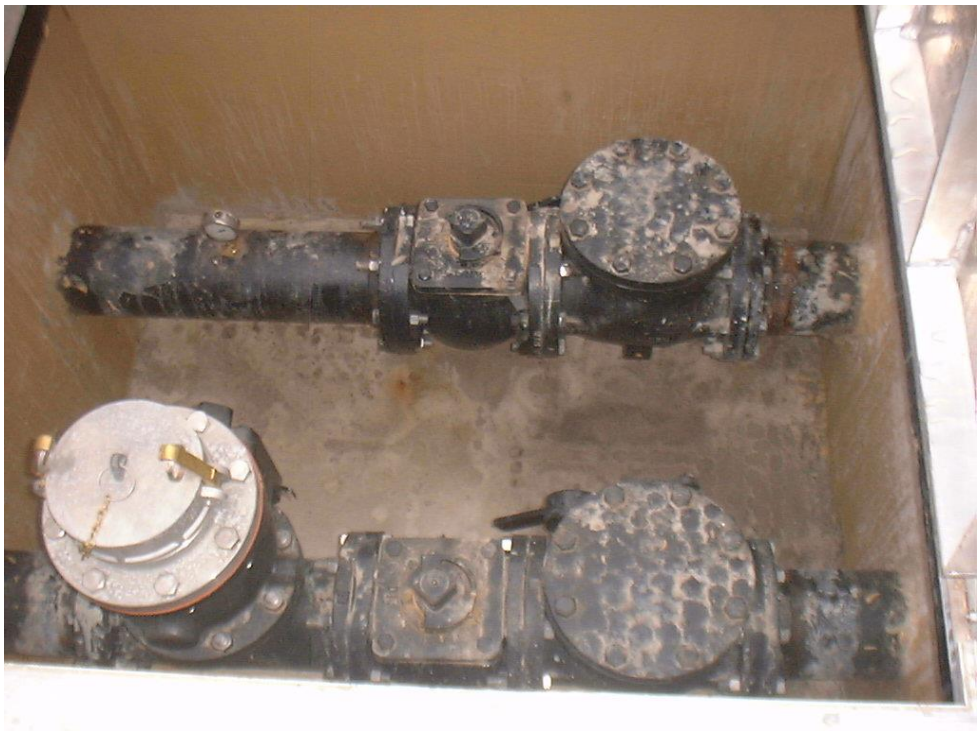

Figure 7.7 - New Lift station valve vault

Figure 7.8 Photograph of new Lift station wet well

Figure 7.9 - LS 65 control box

Figure 7.10 – Top of LS 65 wet well

VIII. CAPITAL IMPROVEMENT PROGRAM DISCUSSION

The FGUA has had an aggressive capital program for the Poinciana system over the past four years, and anticipates same in the future. As a result, the system has significant excess capacity for both the water and sewer systems, although it may not be in the best location. The major capacity for the wastewater system is in Osceola County, centrally located. However, there is not easy way to serve or separate the Polk County capacity from this plant. A limited number of the plants can be expanded at their current site, which makes WWTP 2 and WTP 5 valuable. WTP 5 is not centrally located.

The capital program for the future is outline in the appendices. The major upcoming projects from 2004 to 2009 include:

- Expansion of WWTP 2 to 6 MGD (design underway - $10.8 million)
- Expansion of WWTP 1 to 1 MGD (design underway - $2.3 million)
- Expansion of WTP 5 to 7.5 MGD
- New elevated storage tank ($2 million)
- Completion of interconnect piping ($3.0 million)
- Completion of control box replacement and telemetry on all lift stations ($5.5 million)
- Acquisition of a sludge site and sludge treatment ($5 million)
- Infiltration and inflow correction ($2.8 million)
- Reclaimed Water Line ($3.2 million)
- New 4 MGD WWTP 6 ($16.9 million)
- New WTP 7 ($6 million)
- New Force Main improvements ($2.6 million)

Work that has been completed recently includes the following:

2001

Infiltration and inflow

2002

12 mile 24 inch reuse pipe
4 mile 16 in interconnect for WTP 2, 3 an 5
Infiltration and inflow
WWTP 2 expanded to 3 MGD
WTP 5 expanded to 3.5 MGD
O&S Agreement/participation with API with WTP 6

2003

WWTP 2 expansion to 3 MGD complete
WTP 6 complete
WWTP 3 NOV resolved

2004

Hypochlorite systems complete
WTP 4 well complete
Interconnect WTP4 to WTP 6 complete
Lowe's WM complete
RTUs are LS 8, 20, 14

Over the period, FGUA has added over $25 million to the initial assets, not including developer contributions, which exceed $15 million over the same period.

IX. CUSTOMER BASE

The Poinciana system is primarily single family residential. There are 15,162 such units projects by PRMG for 2005. This is compared to 155 commercial users, and 25 other users. A large portion of the existing customers in Poinciana are middle income, working families. Commercial activity primarily exists to serve the residents of Poinciana. Schools and churches to serve residents are also present. Current estimates are that there are over 40,000 persons served by the system. For permitting purposes of the water system, one Equivalent Dwelling Unit (EDU) is 400 gallons per day (gpd) per unit; for wastewater, one EDU is 250 gpd. Both of these numbers are actually significantly less based on flow records from the utility (196 gpd and 157 gpd respectively). In the long term this may help with permitting capacity in the treatment facilities.

Rates in the Poinciana system were initially held constant between Poinciana Utilities (ownership by Avatar Holdings) and FGUA. The rates were used to determine the amount of debt the system could support. This debt was the value placed on the system. At that time the rates were high compared to surrounding utilities. Increases in operations costs, new debt for capacity expansion and management and other factors has continued to increase the rates (an automatic 2.4% index is included for the coming year). The rates remain among the highest in central Florida. Table 9.1 outlines the debt on the system and the debt FGUA anticipates in the coming 5 years.

Each Year the FGUA has PRMG undertake a rate sufficiency analysis in conjunction with the annual budget process. A series of indexes is included in the operations and management agreements. These are automatically implemented. Table 9.2 outlines the current budget for the Poinciana system. Major constituents include the operations and maintenance contract, billing, management and legal fees. Table 9.3 outlines the projected budget for the coming 3 years as projected by GSG.

Utility systems charge a variety of rates, fees and charges for service. These include monthly service charges, impact fees, assessments and miscellaneous fees such as meter re-reads, connection fees, late payments and backflow testing. Each of these fees should have a basis for the charge generally consistent with the financial policy of the system. Only two fees have major legal constraints – impact fees and assessments.

The case law defines the use of user fees varies. The utility's rates not only must be reasonable, they must be non-discriminatory, although different user-classes can be charged differently provided a valid rationale exists for the difference. As a result of the established statutory and case law, there are a number of potential revenue sources that can be designated within a financing plan of a utility. "Capital recovery fees" generally meet the legal test for impact fees, which also may be termed "system development charges," "system capacity fees," "reserve capacity charges," or a variety of other names. These fees are collected from new customers who require increases in capital outlay. "Repair and Replacement" funds are funds utilized to collect capital in order to replace or upgrade existing infrastructure from existing rates. Repair and Replacement funds are collected

from existing customers to repair and/or replace the existing infrastructure at the requisite time. Periodic service charges, broken down in availability and volumetric portions, are utilized to collect the operation and debt service from customers receiving the service. Periodic changes for service are the costs collected on a regular basis from existing customers for the amount of service they receive. Billing for service can occur at any interval, but in Poinciana, they occur monthly.

Despite the growth in the system, the primary operating revenues are monthly water bills from residents as there is no subsidy from any other source. Wastewater fees are significantly higher than water fees as a result of capital construction and the debt associated with same. Impact fees are charged to developers for new development. Appendix _ includes the most recent PRMG report. The report is helpful in outlining the obligations of the utility, but not for strategic decision-making.

Table 9.1 Outstanding and Projected Debt on System

Bond Issue Date	Purpose	Amount	Debt Amount	Principal
1999	Acquisition	$ 28,035,000	$ 1,812,000	$ 550,000
2001	Capital	$ 18,065,000	$ 1,210,000	$ 365,000
2004	Capital	$ 7,900,000	$ 7,600,000	$ 320,000
	Total	$ 54,000,000		
	Outstanding 10/1/05	$ 49,370,000		
Projected				
2006	Capital + 2004 Ref	$ 25,845,000	$ 1,580,000	
2008	Capital	$ 19,566,000	$ 1,345,000	

Table 9.2 Budget 2003-2005

Budget Item	2003	2004	2005
Operations & Maint Contract	$ 2,380,785	$ 2,535,144	$ 3,012,000
Additiaonl O&M/Capital	$ 1,178,388	$ 1,521,416	$ 1,500,000
Billing & Customer Service	$ 658,782	$ 795,882	$ 939,203
Management	$ 283,670	$ 377,678	$ 402,227
Gen Counsel	$ 65,955	$ 53,860	$ 82,822
Utility Counsel	$ 48,714	$ 37,476	$ 52,100
Taxes to Local Govts	$ 692,600	$ 257,052	$ 392,800
Plan Review (GSG)	$ 186,940	$ 153,288	$ 157,887
All Others	$ 793,677	$ 776,403	$ 911,783
TOTAL	$ 6,289,511	$ 6,508,199	$ 7,450,822

Table 9.3 Projected Budget 2006-2008

Budget Item	2006	2007	2008
Operations & Maint Contract	$ 3,529,000.00	$ 4,158,000.00	$ 5,126,000.00
Additiaonl O&M/Capital	$ 1,695,000.00	$ 1,899,000.00	$ 2,107,000.00
Billing & Customer Service	$ 1,090,000.00	$ 1,238,000.00	$ 1,404,000.00
Management	$ 428,000.00	$ 456,000.00	$ 486,000.00
Gen Counsel	$ 64,500.00	$ 66,400.00	$ 68,400.00
Utility Counsel	$ 53,700.00	$ 55,000.00	$ 57,000.00
Taxes to Local Govts	$ -	$ -	$ -
Plan Review (GSG)	$ 162,600.00	$ 167,500.00	$ 172,500.00
All Others	$ 862,200.00	$ 865,100.00	$ 917,100.00
TOTAL	$ 7,885,000.00	$ 8,905,000.00	$10,338,000.00

X. REGULATORY ISSUES

As a public water supplier, the FGUA must meet all of the state and federal regulations for utility systems. The ones with the most impact are the Safe Drinking Water Act and the Clean Water Act.

In 1974, the Federal Government passed the Safe Drinking Water Act which established standards for public drinking water quality. The United States Environmental Protection Agency (EPA) and the State Department of Health require public water suppliers, like the Florida Governmental Utility Authority, to treat drinking water to remove potentially harmful contaminants. EPA and the Department of Health also require public water suppliers to monitor public drinking water quality and submit the results to these regulatory agencies. The Florida Governmental Utility Authority's local treatment plant has State Licensed Operators on site, or on call, 24 hours per day, 365 days per year, to insure that water supplies are treated properly, and to monitor the quality of drinking water supplied to the public.

The requirements of the Clean Water Act are directed to wastewater treatment plants. The Clean Water Act was passed by Congress in 1972 in response to deteriorated water quality in America's rivers and streams, and several examples of grossly polluted water bodies. The Act required US EPA to set limitations on discharges from municipal and industrial treatment facilities, and timelines for compliance, in addition to other provisions. EPA and the Florida Department of Environmental Protection (or their local dele-

gate) require local treatment facilities to monitor effluent quality and submit the results to these regulatory agencies. The Florida Governmental Utility Authority's local treatment plants have State Licensed Operators on site, or on call, 24 hours per day, 365 days per year, to insure that wastewater is treated properly, and to monitor the quality effluent.

Integrated resource management concepts are needed to strengthen traditional themes of water use, and address new water resource concerns and conservation issues. Growing population and increasing water demands require judicious government planning at every level, including more interagency cooperation, an ecosystem approach to decision-making and more sophisticated relations with public interest groups. Because no place is invulnerable to developmental abuses, a more systematic evaluation, including pollution prevention and waste reduction, is required to balance user needs with pressing environmental problems. In attempting to address the errors of the past, the South Florida Water Management District provides permits and establishes rules and regulations for the allocation of water resources to those desiring to utilize that water. As part of the permitting process, a consumptive use permit is issued to each user, denoting the amount of water that may be withdrawn from the aquifer, and the conditions for its use.

Water System

Regulatory compliance for a water system involves many different regulations that must be met. The water produced by a water system is required to meet the primary and secondary drinking water standards issued by the Environmental Protection Agency (EPA) under the Safe Drinking Water Act. Along with these requirements, water systems may be regulated under the Clean Air Act, the Clean Water Act, and by state and local authorities.

The Poinciana water system has an excellent record of compliance. The records review, for the previous three years, indicates that there have been no violations of the primary or secondary drinking water standards except for copper. Over the past year, there have been two violations of the copper standard, once at water plant 1 and once at water plant 4. These violations have been minor, exceeding the standard by 0.05 and 0.06 mg/L, respectively. Other requirements for water systems include testing for coliform bacteria, trihalomethanes, and lead. Based on the reviewed records, there have been no violations for these categories.

Another water quality issue is the residual chlorine in the distribution system. Residual chlorine is required so that pathogens and other contaminants in the system will be eliminated before being consumed by the customer. A review of the records for the previous three years indicates that the average chlorine residual in the distribution systems ranges from approximately 0.6 to 1.6 mg/L.

A maximum chlorine residual limit will also be established, as with the new MCL rules that go into effect in 2004 for groundwater systems. The new limit would require that the chlorine residual in the distribution system be less than 4.0 mg/L. This new rule should have minimal impact on the treatment process of the Poinciana water treatment plants. Currently, the residual chlorine is below the 4.0 mg/L threshold.

The Clean Air Act required that any facility that stores, manufactures, handles, or transports any of the regulated materials listed in 40 CFR Part 68 in quantities that exceed the specified threshold levels must implement a risk management program by June 21, 1999. The Poinciana water treatment plants uses sodium hypochlorite for disinfection. Stored quantities of chlorine are below the threshold level of greater than 2,500 pounds, it is not necessary to have a risk management program.

Another regulatory requirement water systems must meet is the local fire flow requirements. With the high service pumps at the treatment plants and the storage tanks within the water systems, existing flow and pressure requirements can be met. An area of concern is the volume of total storage for the water systems and what volume of water would be available over an extended period of time to provide fire flow. The local fire protection authorities perform periodic fire hydrant flow tests to determine the availability of the required fire flow. Based on the records reviewed, the fire protection authorities have not reported any deficiencies within the water systems.

Wastewater System

FDEP correspondence files concerning the Poinciana system were reviewed as a part of the due diligence investigation. Although the FDEP has not indicated any problem, there is no pretreatment program at WWTP 1 even though the plant has industrial customers. A pretreatment program should be initiated to satisfy regulators as well as to reduce the risk of potential unexpected plant upsets. The Boot wetland remains an issue for the Poinciana system. Most other issues have been resolved.

XI. MANAGEMENT

The Poinciana system has no employees. All aspects of the utility operations are conducted by contract entities. The majority of the appendices include copies of the agreements that may impact the utility in the future (excepting developers agreements for new development within the utility service area).

Management of the Poinciana system is within the purview of Government Services Group, Inc. as it has since the inception of the FGUA in 1999. GSG opened an office in the Orlando area in 2000 so provides some local supervision. The FGUA staff has grown significantly since 2001. GSG is paid a fee monthly, totaling $347,473 per year, adjusted annually based on 75% of the percent growth in the system (but not to exceed 4.5%), plus 3 percent on all capital engineering and other contracts. They get first rights on future acquisitions for the FGUA. Hence there is some benefit to GSG to overbuild capacity on the Poinciana system (it should be noted at Avatar Properties Inc also desires excess capacity on the system for sales and planning purposes – an agreement dealing with this will be discussed shortly). The GSG contract is updated periodically renewed. The current expiration is 9/30/2005, but can be renewed under the same terms and conditions for 24 additional months. The responsibilities of GSG include all administrative, Clerk to the Board, day-to-day management, data collection, budgeting and purchasing of services, Board meetings accounting and preparation of the capital program. There is an MOU between the FGUA and GSG regarding the Citrus County acquisitions in the appendices.

Operations has been conducted by Severn Trent, which acquired the old Avatar Utilities Inc. firm in 1999. The FGUA recently issued RFPs for renewal of the operations agreement. The disposition of this is yet to be settled but could have significant impact on a transition or acquisition of the Poinciana system by Toho Water Authority as the operations contract would be inherited. There is a fixed annual cost, plus change orders having to do with "capital" expenses. Basically this means that limited maintenance is performed on the system; that all piping, pumps, motors, etc. are capital that requires additional compensation. This agreement has been extended twice, to 12/15/2005

Customer service and billing is a second contract under the purview of Severn Trent. This agreement has been extended to 12/15/2005. This contract also is subject to an RFP that is currently out, and may subject potential acquiring entities to maintaining the contract.

Two law firms are engaged in the FGUA. Nabors, Giblin and Nickerson is the utility counsel. They attend Board meetings, provide advice on policies and ordinances, review all agenda items, prepare acquisition and disposition documents, participate in bond sales and other borrowing as such matters. NGN used to own GSG, but has since disposed of their ownership in same. Their contract was renewed in 2004,and now expires 9/30/2006,with two annual renewals. NGN is paid $1800 per month (assumes 12 hours) plus ½ time for travel, plus additional work.

The second law firm is Pennington, Moore, Wilkinson, Bell and Dunbar. They are general counsel. They attend Board meetings, provide advice on policies and ordinances, review all agenda items, prepare acquisition and disposition documents, participate in bond sales and other borrowing as such matters. Hence all matters before the Board are reviewed by both firms. Their contract was renewed in 2004, and now expires 9/30/2006, with two annual renewals. They are paid $1800 per month (assumes 12 hours) plus ½ time for travel, plus additional work. In both cases, the firms are paid in excess of $18,000per year.

Other agreements include a bulk service agreement with O&S Water (a private utility) to provide services to the Bellagio and Audobon properties, that appears to have resulted from potential litigation between FGUA and O&S Water. Indexing is included in the agreement. Potential acquisitions should consider this agreement carefully.

API has an agreement that permits them to develop excess capacity in the Poinciana system. The result is that the utility has lost some rights to control growth. This is another reason there is so much excess capacity in the system. API also has some rights as to operations within Poinciana.

There are a series of contracts with engineers for design services. The most recent set of these were approved in 2004. They are all general services agreements that permit the FGUA to use the services for a variety of water and sewer design purposes.

There are a series of developer agreements as well. These are noted on Table 11-1.

Table 11- 1 Existing Contracts with Poinciana /FGUA system

Agreement	What it is for	Date
Blackstone Landing	Developer	12/17/2004
Hatchneha Estates	Developer	1/25/1999
Little Creek	Developer	2/2/2000
O&S Utilities	Bulk Service	1/16/2003
Quaker Oats	Developer	7/19/2001
Wal Mart	Developer	2/19/2004
Audoban Reserve	Developer	5/21/2004
Cypress Shadows	Developer	5/21/2004
Lowes	Developer	2/19/2006
Trafalger VII	Developer	12/17/2004
Avatar Holdings	Developer/Capacity Expansion	4/1/1999
Nabors Giblin & Nickerson	Legal Counsel	4/2/1999
Pennington, et al	Legal Counsel	4/3/1999
Severn Trent	Operations	4/4/1999
Severn Trent	Billing and Customer Service	4/5/1999
Government Services Group	Management	4/6/1999
Toho Water Authority	Effluent Disposal	n/a

NOTE: Engineering agreements included in appendices

XII. OPTIONS ***(section incomplete)***

There three options that can be pursued: do nothing, transition the system to Toho Water Authority or split the systems between counties.

DO NOTHING

The do nothing alternative would leave the Poinciana system in the hands of the FGUA. The FGUA was not created to be a utility per se, but as a mechanism to allow local governments to acquire private utility systems. Hence, the do nothing alternative frustrates this goal. The ratepayers will continue to pay high rates (blending rates is not permitted between FGUA systems), the excess capacity of the system will continue to be significant, and the current personnel and contracts will remain in place. This scenario has not been problematic for residents or developer. Compliance has been high with regulatory mandates. Capital has been spent and the system appears to be in good shape.

TOHO ACQUISITON

The Poinciana system, or at least the Osceola portions, logically should transition to the Toho Water Authority that is immediately adjacent to the north boundary of the Poinciana system. Toho currently provides effluent capacity to FGUA and the Toho Water Authority personnel are familiar with the utility and the area. The Toho Water Authority is

a county-wide utility for Osceola County with extensive experience with utility operations. To make the transition occur, the following would need to be accomplished:

- Both Polk and Osceola Counties would need to agree to it
- Toho would refinance the cost of all outstanding debt the FGUA has incurred, including the initial acquisition costs and all subsequent debt. Currently this amount is just under $50 million
- A transition plan would need to be developed to maintain contracts that need to remain in place for some period of time (such as Severn Trent's and a portion of GSG's), the amount of time the agreements will remain, and those contracts that are not required (NGN, Pennington and some of the many engineering contracts).
- Polk COPnty would want funds to come to the General Fund of the County (as is done with their utility). Some means to address this option needs to be developed.

The most difficult issue is the Polk County agreement. Poinciana is a large utility system for Polk County. The fact that it is remote to the remainder of the system may not be very consequential to Polk County, although an argument can be made that since Toho is so much closer than the bulk of the Polk County utility system, it makes reasonable sense to create some agreement to let Toho manage and operate the system on behalf of Polk County. Once the Polk County issue is resolved, removal of the Poinciana system from the FGUA becomes a legal issue. The transfer of operations and interconnection of the Toho system with Poinciana is a relatively straight-forward issue. A transition plan could be developed as a separate appendix to this report.

SPLITTING THE POINCIANA UTILITY SYSTEMS

Post Buckley Schuh and Jernigan (PBSJ) was tasked with evaluating the utility system with regard to splitting it. The system was actually set up to permit relatively easy split-

ting if the two Counties involved wished to do so. However, the capacity is not ideally located for same. The following outlines PBSJ's conclusions:

> "Wastewater
>
> The current wastewater collection facilities have several locations where wastewater is pumped from Osceola County into Polk County. All of these are within the WWTP No. 3 service area. In Village 5, Neighborhood 1 (V5N1), pump stations 48 (1,012 lots), 49 (413 lots) and 50 (828 lots) pump through a common manifolded force main on Walnut Street to Country Club Road and then to the WWTP. It is assumed that the currently undeveloped V5N2 and V5N3 areas will also use this same force main in the future. In V1N3, pump stations 40 (commercial area) and 41 (215 lots) pump to gravity sewers in V3N3 (Polk County) via greenways and side lot line easements.
>
> To redirect these wastewater flows to WWTP No. 2 in Osceola County, a force main is required just inside the Osceola County line from the manifolded force main on Walnut Street northward and then westward to the 12" force main on Marigold Avenue. Available plat maps indicate that there are greenways at the rear of the lots abutting the county line that could be used for this. This force main will need to be sized to accommodate future flows from V5N2 and V5N3 as well, with a southward extension into those areas. The westward run will intercept the force mains from pump stations 40 and 41. Since all five of the existing pump stations will be pumping further and/or into force mains rather that gravity sewers, high head pumps (larger motors) will likely be required.
>
> The V1N3 area above is shown in the WWTP No. 3 service area and the three V5 areas are shown in the WWTP No. 5 area. The FGUA Annual Report for FY 2003 indicates that the Polk County WWTP's are more heavily loaded in terms of percent of capacity, with No. 3 at 77% and No. 5 at 75%. Diverting some flows to Osceola County's WWTP No. 2 (at 39%) would be advantageous.
>
> Reclaimed water from WWTP No. 3 in Polk County as well as Nos. 1 and 2 in Osceola County goes via a common pipeline to Kissimmee. This can remain as it is.
>
> Water
>
> The water distribution system crosses the county lines in two locations, Marigold Road and Country Club Road. These crossings can be severed

without much effect. WTP No. 3 and 5 in Polk County are interconnected (also with No. 2 in Osceola County). WTP Nos. 4 and 6 in Osceola County are interconnected, with No. 1 being added currently.

To serve those areas in Osceola County that are now served from WTP No. 3 in Polk County, a water main will be required parallel to the proposed force main in the above wastewater section. It should also be sized for future growth in the undeveloped V5 areas.

Figure 1 from the Series 2001 Bond Feasibility Report by Geraghty & Miller shows generalized service areas for the WTP's. The V1N3 area and the three V5 areas are shown in Polk County's WTP No. 3 area, and part of V4N1 and westward is shown in Osceola County's WTP No. 2 area. These cross-overs are nearly equal in size and may cancel out. The FGUA Annual Report for FY 2003 indicates that the Polk and Osceola County WTP's are loaded nearly the same in terms of percent of capacity, 30% and 29% respectively. Diverting current and future flows by county may not pose any problems in terms of plant capacity."

Resolving the problem of redirecting flows is purely and economics exercise. The situation is not as easy with the treatment facilities, especially wastewater. Effluent disposal limits the options at WWTP 5 at present. Much of the Polk County development is actually closer to WWTP 2 than much of the Osceola County development. A bulk agreement seems appropriate for at least some period of time to allow the needed effluent disposal capacity to be created at WWTP 5. In addition, the following would need to be resolved:

- Toho would refinance the cost of all outstanding debt the FGUA has incurred, including the initial acquisition costs and all subsequent debt for the Osceola portion only. Unfortunately the system has never been split in this manner. When the FGUA acquired the system, it was based on the ability of the system to support debt, not on the value of the infrastructure in place. There is no rational nexus between infrastructure and cost. This was done because it maximized the receipts of monies to Avatar Holdings without increasing rates, and because a tabulation of the existing infrastructure was difficult to accomplish. FGUA has not tracked additions since April 1999, further complicating the issue. However, if

the system is split based on the percent of the debt that can be supported by each County, rates would not seem to be adversely affected. However, practically, Polk County would need to acquire wastewater capacity by contract or new construction. Since the Poinciana rates are among the highest in central Florida, this would not be a palatable option.

- A transition plan would need to be developed to maintain contracts that need to remain in place for some period of time (such as Severn Trent's and a portion of GSG's), the amount of time the agreements will remain, and those contracts that are not required (NGN, Pennington and some of the many engineering contracts).
- How Polk County manages the system, or allows the FGUA to do so would require significant effort to modify agreements, and would accelerate the installation of the piping noted above. Likewise bulk agreements would need to be developed. The current interconnects would remain in place as emergency interconnect, which comports with the intent of the utility's operating permits for water and wastewater. Development of these issues could occur as a subsequent report as the option above. Significant legal and financial expertise would need to be involved.

XIII. CONCLUSINS AND RECOMMENDATIONS

The field review and engineering analysis of the Poinciana water and wastewater systems indicated that:

- The systems are in relatively good conditions
- Capital improvement have proceeded in a timely manner
- There is significant excess capacity on the system
- There is significant demand for capacity based on growth pressures
- Disposal of wastewater effluent is an issue with WWTP 5
- The system could be split between Polk and Osceola County, but some efficiencies may be lost.
- There is a need for capital improvements within each system.

Chapter VIII outlined the capital improvement program for the FGUA. Some system improvements can be interpreted as either capital improvements or renewal and replacements. Because of this, only improvements that do not occur on a regular basis and cost more than $100,000 were included as capital improvements.

Budgeting for renewal and replacements was included in the financial feasibility for the system acquisition. The bond resolution states that a fund must be established and maintained to cover the cost of refurbishing or replacing existing equipment. It is recommended in the bond resolution that 5 percent of the annual operating revenues of the system be deposited into this fund. In addition, the following need t be addressed:

Water System

Unaccounted for water issues need to be addressed.

Wastewater System

- The Poinciana wastewater system, though in generally good condition, is in need of certain capital improvements to prevent situations that would cause compliance problems or the risk of sewage spills. The expansion of capacity needs to be further considered
- A variety of sewage lift stations have also been identified as requiring refurbishing.
- A capital improvement that needs to be continued is the infiltration/inflow (I/I) program. The purpose of this program is to identify and repair portions of the wastewater collection system that allow either stormwater or groundwater to enter the collection system. This extra water reduces the treatment capacity of the associated treatment facilities. By reducing the I/I component of the waste stream, collection and treatment capacity may be recovered.

Renewal and Replacement

As mentioned above, improvements that occur on a regular basis are considered to fall into the category of renewal and replacement. This would include upgrades made to the utility system to improve operating efficiency and reliability. Also it would include a water service meter change-out program. Based on the water loss records, it is apparent that the system meters are in need of replacement and the plant meters are in need of annual calibration. Other major water system improvements include service line replacement; water main replacements; routine maintenance; repairs to pumps, motors, and electrical

equipment; control box replacements and various improvements to continue efficient service.

RECOMMENDATION

To come after discussion with TWA reps.