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WATER AND SEWER IMPACT FEE STUDY



CITY OF DANIA BEACH, FLORIDA

FY 2007

Prepared by:

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EXECUTIVE SUMMARY

The public can best be served by a utility that is a self-sustaining enterprise adequately financed with rates based on sound, established engineering and economic principles. Proper fiscal planning involves comparing projected utility revenue sources with the revenue requirements. A multi-year projection will identify the need for additional sources of funding, alternative financing and steps to be taken to minimize impacts on the utility rates and charges to the customers.

The City of Dania Beach currently owns and operates several wells, a water plant, and water distribution and wastewater collection systems. The City of Dania Beach's impact fee rate analysis was based on data provided by the utility and developed by its consultants. The following were reviewed:

- Utility Consumer Data
- Water Use and Wastewater Flow Data
- Forecasts of Customer Growth, Water Consumption and Wastewater Generation
- Capital Improvement Needs
- Revenue Requirements

INTRODUCTION

Corporate Limits

The City of Dania Beach was incorporated under the laws of the State of Florida in 1963. The City consists of 7 square miles. Half of the City is served by the City's water and sewer system. The remaining area is served with water and sewer by Broward County. The community is primarily residential, with small concentrations of light industry, shopping and offices within the corporate limits.

Summary of the System

The City of Dania Beach currently owns and operates two wells. The City's wells withdraw water from the Biscayne aquifer. Southeast Florida is underlain by a series of interspersed rock formations with varying permeability. The uppermost formation generally encountered along the southeast coast is the Pamlico Sand formation. Beneath the Pamlico Sand, the entire south Florida plain is underlain by beds of porous limestone that absorb water standing on the land during the wet season (mostly in the Everglades) and transmit it to the coast. These formations compose the wedge-shaped Biscayne Aquifer, which gains thickness as it approaches the coast, where it can be as much as 200 feet deep. The City owns one 3.0MGD lime softening water treatment plant. The treatment plant contains 2 accelerators, filters, and chlorination facilities. The lime softening system is designed to remove color, hardness and certain quantities of organic matter that comes from the Everglades. The current treatment facility provides water that meets all current State and Federal drinking water standards. The City also owns and operates a water distribution system and sewer collection system that consists of over 40 miles of piping on each system. The City contracts with Broward County for wastewater treatment and disposal. The system serves nearly 4700 customers and 8000 equivalent residential connections (ERCs or ERUs). Water demands are under 0.8 billion gallons per year. Wastewater flows are slightly higher than water flows.

SCOPE OF WORK

The City of Dania Beach contracted with Public Utility Management and Planning Services, Inc. to perform the following services for completion of a water and sewer rate study:

1. Review Utility Consumer Data

Collect, review and evaluate historical and current records for the number of customer accounts currently on line to the water system and wastewater system, and proposed growth on the system.

2. Review Water and Wastewater Infrastructure and Utilization Data

Review current infrastructure and utilization of same. This will include the use of inventory data developed by Public Utility Management and Planning Services, Inc. Compile historical flow data for the water and wastewater systems. This includes a review of characteristics of utility customers in the City service area to identify any relationships to historical and current trends in water demand and consumption and wastewater generation data.

3. Review Capital Requirements

In order to estimate the appropriate impact fee levels, proposed capital improvements, a determination whether these improvements are for rehabilitation of the current system or for growth needs (or percentages thereto), will be developed. Public Utility Management and Planning Services, Inc. will review the capital improvement program costs for the next five (5) years for each utility.

4. Develop Impact Fee

Utilizing the above information and the base methodology used by the City's rate consultant, update the impact fee calculations.

5. Develop Letter Report for same.

Public Utility Management and Planning Services, Inc. will develop a brief letter report outlining its conclusions based on the above.

This document serves as the final report for this project. This technical report includes the data and tabular displays of the analysis listed above.

IMPACT FEES (from Bloetscher, 2006, unpublished)

Impact fees are charges imposed against new development or connections to provide the cost of capital facilities made necessary by that growth. Based on case law derived from *City of Dunedin v. Contractors and Builders Association of Pinellas County*, where a utility's "water and sewer facilities would be adequate to serve its present inhabitants were it not for drastic growth, it seems unfair to make the existing inhabitants pay for new systems when they have already been paying for the old ones." This case is the basis for much of the impact fee law that currently exists in both Florida and nationwide.

Impact fees have been extensively litigated within the State of Florida; less so in other locales. Still the Florida case law is cited in impact fee cases throughout the nation and the basic tenets are upheld. As developed under this case law, impact fees must meet the dual rational nexus test. The first prong of the test requires that there be a reasonable connection between the anticipated need for additional facilities and anticipated growth (*Hollywood, Inc. v. Broward County*). The second prong requires that there be a reasonable connection between the expenditure of impact fee revenues and the benefits derived by new connections (*Hollywood, Inc. v. Broward County*). In addition, case law requires that these fees be just and equitable. As a result, a profit cannot be earned on impact fees; they must be related to the actual cost of providing the service as defined in the second prong of the dual rational nexus test.

Utilities have instituted impact fees as a method to generate contributions from new customers for financing major facility construction necessitated by the addition of those new customers. To meet the dual rational nexus test, these charges are typically based on the incremental or marginal costs of providing the service, an average cost to provide an incremental portion, or estimate of the cost of the construction to be provided. Because facility planning timelines may be extensive, and because of the geographical variance in growth demands, a multi-year estimate is utilized to forecast needed expenditures and proper impact fee amounts.

The driving force behind impact fees is the sentiment to have growth pay for growth. The magnitude of impact fees varies throughout the country, depending on the municipality or the utility's desire to encourage growth. For utilities in Florida, impact fees gained considerable favor after passage of the 1985 Growth Management Act, which requires localities to have capital infrastructure, including water and sewer service, available at the time development actually occurs. These large facilities are generally paid for with both bonds and impact fees.

In establishing impact fees for water and sewer services, the findings that are typically made by governing bodies contemplating the use of impact fees, are:

- That the land regulations and policies require owners of land to connect to regional facilities when they become available;
- That the future demands on the system from growth must contribute their fair share to the cost of improvements and additions to the regional system;

- That these contributions are an integral and vital element of the regulatory and growth management plan;
- That capital improvement planning is an evolving process defined by a level of service adopted by the governing body;
- That the impact fees will protect the interests of the citizens currently served or intended to be served by the utility system, which enhances the health, safety and general welfare of the residents and landowners within the utility's service area;
- That the imposition of the impact fees is an important source of revenue; and
- That the deficiencies that exist between the existing system and the adopted level of service cannot be funded through impact fees.

Impact fees are typically limited to major treatment and transmission system improvements required to accommodate future connections or demand as a result of new development, or the connection of existing areas without service to the system.

During growth cycles, collection of impact fees can be considerable. However, since they are tied to growth, significant fluctuations may occur from year to year, based on local and national economic conditions. As a result, the revenues are not always predictable, making pledges toward debt service of these funds difficult without supplemental revenue pledges. In addition, high levels of impact fee collections may or may not coincide with the expansion of new facilities, which typically require 3 to 5 years to plan, design and construct.

High impact fees may discourage the growth that impact fees are intended to pay for. In areas that are trying to grow in order to continue the growth of the tax base and services, high impact fees are a problem. However, having a subsidy by current ratepayers to encourage growth may be equally unsatisfactory. In other areas where growth is too rapid, impact fees charged at the full cost of providing the facilities (not subsidized), may help to control growth.

There are a number of instances where impact fees logically do not apply to as they have no regional benefits. Such facilities would include:

- Small gravity sewer lines;
- Local water lines;
- Neighborhood pump stations and attendant force mains;
- Interconnecting transmissions lines and other facilities typically installed and dedicated to the utility at the time of construction of subdivisions or developments by developers, by assessment districts, municipal services taxing or benefits units (MSTU/MSBUs), or like similarly or specially funded projects in areas determined to need new installations or retrofits; or
- Connections to the utility system.

These improvements serve a limited geographical area. They are generally termed "subdivision infrastructure." All properties that are connecting to a regional system are subject to payment of impact fees at the time of connection to the regional system, in

addition to any costs for installation of subdivision infrastructure (normally both are paid as a part of new lot costs).

In determining the value of an impact fee, an important consideration for any defense in the event of a challenge, is that the impact fee should reflect the incremental costs to provide the treatment and transmission capacity for the consumer. As such, the present worth of any debt service amounts that would be paid for during the life of a customer being connected to this system on a current debt should be deducted from the impact fee value. For example, assuming that a single family home requires an average of 350 gallons per day of water service, 350 gallons of treatment plant capacity must be set aside for the house. Assume this cost is determined to be \$850, based on the cost of expanding the treatment plant, divided into 350 gallon increments. Next, assume the transmission and pumping costs for the storage tanks, high service pumps and major transmission system to get the water to the local area is \$500.00. The impact fee value would then be \$1,350.00. However, if there is an outstanding bond issue that the new customer will pay on as part of his monthly service charge, the present worth value of that bond issue should be deducted from the \$1,350.00, otherwise the customer is paying twice, both for his expansion needs and for infrastructure already in place, and the impact fee can be invalidated under challenge. Typically the present worth of debt paid as a part of periodic water bills over a 20 year period amounts to between \$150-\$250. Therefore, case law would limit the value of the impact fee in this case to about \$1,100.00.

Likewise, commercial customer impact fees need to be determined by a similar methodology. For commercial users, meter sizing is an appropriate method to calculate impact fees as meter size represents the average and maximum available water supply at that address. Since the use at the property may change over time, unless the meters are changed, there is a certain maximum amount of water that can utilized and remain within the design parameters of the meter. This then is the rational nexus for establishing impact fee rates using meter size, although proper sizing of the meter must be assured.

In developing the appropriate funding levels for impact fees, the options for funding the capital projects anticipated to meet future demands must be established. This would include separating repair and replacement projects, deficiencies in the current system and future growth into the appropriate funding mechanisms, whether that is bonds, operational transfers, impact fees or other revenues levied in accordance with generally-accepted accounting principles or utility and legal precedents, and utilizing counsel and financial people as necessary. Appropriate funding levels must then reflect the true cost of growth.

DANIA BEACH IMPACT FEE CALCUATION

The City of Dania Beach's rate analysis was based on data provided by the City and developed by its consultants. The attached tables are summarized as follows:

Table 1 outlines the current asset values of the infrastructure the City uses. His includes both treatment and transmission infrastructure, as well as subdivision infrastructure for which impact fees may not be used. 10.6 percent of the water lines would be considered transmission, and 9.4% of the sewer lines, based on the criteria of the pipes being 12 inches or more in diameter.

Table 2 outlines the current and proposed capacity of the water systems. The water system is operating at capacity 26.4 MGD of the 3 MGD of total available capacity. It is assumed the remaining 0.36 MGD of capacity is available. Sewer use in 2005 was 3.12 MGD, which means that nearly 1/4 of the sewer capacity is available. The latter data was derived from the City of Hollywood which treats Dania Beach's wastewater.

Table 3 outlines the capital plan, separating the projects between treatment and transmission, and growth versus rehabilitation. A couple assumptions were made:

- The high service pumps are being upgraded from 6 to 9 MGD, so a 33% growth factor was included.
- 75% of the new transmission lines are for growth/water supplies to the CRA corridor. The remaining amount is for reinforcement of the existing system.
- The 12% factor for water improvement to existing facilities or to upgrade them, is based on unused capacity in the system.

Tables 4 and 5 outline the calculation of the impact fees for water and sewer based on the treatment plant capacity needed and the transmission capacity. No wastewater transmission capacity of any significance is planned. Wastewater treatment plant capacity is in Hollywood. Table 6 outlines the proposed impact fee rate schedule to be adopted by the City. These figures tie to Table 4 and 5.

Table 1
Fixed Assets at Book Value

Asset Description	Plant-In-Service or Transmission / Distribution	Classification	Cost	Allocation Percent		Allocation Percent		T/D	Treatment	T/D Cost	Treatment Cost
				Water	Sewer	Water Cost	Sewer Cost				
<u>Water System</u>											
Water Mains	T/D	Transmission	\$3,276,598.00	100.0%	0.0%	\$3,276,598.00	\$0.00	100.0%	0.0%	\$3,276,598.00	\$0.00
2 inch and under 15,085 LF											
4 inch 8,760 LF											
6 inch 213,032 LF											
8 inch 80,220 LF											
10 inch 5,025 LF											
12 inch 34,860 LF											
14 inch 2,345 LF											
16 inch 910 LF											
Fire Hydrants			261,436.00	100.0%	0.0%	261,436.00	0.00	100.0%	0.0%	\$261,436.00	\$0.00
Elevated Water Tank	T/D	See CIP - Replacement	0.00	100.0%	0.0%	0.00	0.00	100.0%	0.0%	\$0.00	\$0.00
Water Treatment Plant 3.0 MGD	PIS	Treatment Plant	362,714.00	100.0%	0.0%	362,714.00	0.00	0.0%	100.0%	\$0.00	\$362,714.00
Land	PIS	Land	220,976.00	100.0%	0.0%	220,976.00	0.00	0.0%	100.0%	\$0.00	\$220,976.00
Shallow Wells 2 each	PIS	See CIP - Abandonment and Replacement	360,945.00	100.0%	0.0%	360,945.00	0.00	0.0%	100.0%	\$0.00	\$360,945.00
Meter Services	T/D	Excluded from Impact Fee Design	616,513.00	100.0%	0.0%	616,513.00	0.00	100.0%	0.0%	\$616,513.00	\$0.00
Total Water System			5,099,182.00			5,099,182.00	0.00			4,154,547.00	944,635.00
<u>Wastewater System</u>											
Force Mains	T/D	Collection	283,184.00	0.0%	100.0%	0.00	283,184.00	100.0%	0.0%	\$283,184.00	\$0.00
4 inch 0 LF											
6 inch 3,550 LF											
8 inch 8,170 LF											
10 inch 5,960 LF											
12 inch 6,100 LF											
14 inch 3,180 LF											
16 inch 4,976 LF											
20 inch 6,600 LF											
Pipes and Manholes	T/D	Collection	2,229,343.00	0.0%	100.0%	0.00	2,229,343.00	100.0%	0.0%	\$2,229,343.00	\$0.00
Services 3,841 LF											
8 inch Gravity Sewer 177,887 LF											
10 inch Gravity Sewer 3,067 LF											
12 inch Gravity Sewer 8,974 LF											
15 inch Gravity Sewer 700 LF											
18 inch Gravity Sewer 0 LF											
Manholes 767 each											
Infiltration and Inflow Correction	T/D	Collection	785,200.00	0.0%	100.0%	0.00	785,200.00	100.0%	0.0%	\$785,200.00	\$0.00
Lift Stations 16 each	T/D	Lift Stations/Telemetry	324,051.00	0.0%	100.0%	0.00	324,051.00	100.0%	0.0%	\$324,051.00	\$0.00
Total Wastewater System			3,621,778.00			0.00	3,621,778.00			3,621,778.00	0.00

Table 2
Water and Wastewater System
Development of Existing Production Facility
Capacity Allocable to Serve Customer Growth

Component	Water System	Wastewater System
Capacity of System		
Existing System (MGD)	3.000	4.200
Total Production	3.000	4.200
Adjusted to Reflect Average Daily Flow	2.571	3.599
Achievable Capacity (MGD)	3.000	4.200
Average Daily Flow (MGD) - Fiscal Year 2005	2.640	3.120
Remaining Capacity (MGD) at Existing Facilities	0.360	1.080
Percent of Total Capacity Allocable to Growth	12.00%	25.71%
Capital Costs of Treatment Facilities		
Existing Facility Costs	BV \$944,635	\$0
Additional Costs	0	0
Less Grant Funds	0	0
Total Capital Costs of Existing Facilities	944,635	0
Estimated Amount Allocable to Incremental Growth	\$113,356	\$0

MGD = Million Gallons per Day

Table 3

New Capital Improvements
And Allocations to Growth and Rehabilitation

Line No.	Description	Budgeted	Adjustments	Total	Allocable to Growth		Allocable to Growth		Treatment	Water		Sewer		Total
					Existing	Growth	Existing	Growth [2]		Existing Growth	100.00%	100.00%	25.71%	
NEW WATER PLANT														
1	Water Storage Tank Removal & Replacement	\$3,600,000	\$0	\$3,600,000	88.00%	12.00%	\$3,168,000	\$432,000	Treatment	\$3,168,000	\$432,000	\$0	\$0	\$3,600,000
2	Water Plant Upgrade	\$5,886,000	0	5,886,000	0.00%	100.00%	0	5,886,000	Treatment	0	5,886,000	0	0	5,886,000
3	Chlorine System Upgrades	\$350,000	0	350,000	88.00%	12.00%	308,000	42,000	Treatment	308,000	42,000	0	0	350,000
4	Water Main Replacement	\$323,180	(323,180)	0	100.00%	0.00%	0	0	transmission	0	0	0	0	0
5	Refurbish Existing WTP	\$1,625,000	0	1,625,000	88.00%	12.00%	1,430,000	195,000	Treatment	1,430,000	195,000	0	0	1,625,000
6	Abandon Existing Plant Site Wells	\$25,000	(25,000)	0	100.00%	0.00%	0	0	Treatment	0	0	0	0	0
7	Construction of Well "I"	\$750,000	0	750,000	88.00%	12.00%	660,000	90,000	Treatment	660,000	90,000	0	0	750,000
8	Water Main Looping Upgrades	\$3,550,000	0	3,550,000	25.00%	75.00%	887,500	2,662,500	transmission	0	0	887,500	2,662,500	3,550,000
9	High Service Pumps	\$500,000	0	500,000	66.67%	33.33%	333,350	166,650	transmission	0	0	333,350	166,650	500,000
10	Other Capital Projects	0	0	0	100.00%	0.00%	0	0	Treatment	0	0	0	0	0
11	Other Capital Projects	0	0	0	100.00%	0.00%	0	0	Treatment	0	0	0	0	0
12	TOTAL NEW WATER PLANT	\$16,609,180	(\$348,180)	\$16,261,000			\$6,786,850	\$9,474,150		\$5,566,000	\$6,645,000	\$1,220,850	\$2,829,150	\$16,261,000

Table 4
Water Impact Fee Calculation

Description	Amount
Water Production and Treatment Facilities:	
Cost of Existing Facilities [1]	\$944,635
Existing Plant Capacity (GPD) (ADF) [2]	3,000,000
ERU Factor - GPD [3]	300
Estimated ERUs to be Served by Existing Facilities [4]	10,000
Percent Remaining Capacity of Existing Facilities [5]	12.00%
Allocation of Existing Facilities to Incremental Growth [5]	113,356
Rate per ERU Associated with Existing Facilities [5]	\$94.46
New Water Production and Treatment Facilities:	
Cost of New Facilities Allocable to Growth [6]	\$6,645,000
Plant Capacity Allocable to Growth (GPD) [6]	2,000,000
ERU Factor - GPD [3]	300
Estimated ERUs to be Served by Additional Facilities [4]	6,667
Cost per ERU Associated with New Facility	\$996.75
Total Cost per ERU of Water Production/Treatment Facilities	\$1,091.21
Primary Transmission/Distribution System:	
Existing Facilities [7]	\$4,154,547
New Transmission and Facilities	\$2,829,150
Estimated Capacity (GPD) (ADF) [6]	2,000,000
ERU Factor - GPD [3]	300
Estimated ERUs served by Transmission/Distribution Facility [4]	6,667
Total Cost per ERU of New Transmission/Distribution Facilities	\$424.37
Additional Costs Capitalized to Existing Facilities	\$ 52,846
Existing Capacity of Transmission and Distribution System (GPD) [8]	3,000,000
Existing Plant Capacity (GPD) (ADF) [2]	2,640,000
Percent Remaining Capacity of Existing Facilities	12.00%
Subtotal	\$44
Total Cost per ERU of Ex. Transmission/Distribution Facilities	\$468.41
Total Combined Cost per ERU	\$1,559.62
Proposed Connection Impact Fee per ERU [9]	\$1,557.00
Existing Fee per ERU	\$990.00
Proposed Adjustment	\$567.00

NOTES

- [1] As calculated in Table 1 and based on the fixed asset schedule as provided by the City.
- [2] Represents the current capacity of the system as indicated in Table 2.
- [3] Based on information provided by the City, 300 gallons per day reflects the equivalent residential unit (ERU) factor
- [4] Calculated based on capacity and the City's ERU Factor of 300 GPD.
- [5] Remaining available capacity as calculated in Table 3.
- [6] As calculated on Table 3.
- [7] As calculated in Table 1 and based on the fixed asset schedule as provided by the City.
- [8] Total planned capacity of the system following completion of the water plant improvements and as indicated in Table 3.
- [9] Per Equivalent Residential Unit (ERU), 300 gallons per day, or one single family residence.
- [10] Assume only 10.6 percent of current distribution system is associated with large pipes fundable with Impact fees (percent 12 in and over)

Table 5
Sewer Impact Fee Calculation

Line No.	Description	Amount
1	Wastewater ERU Factor - GPD [1]	300
2	Cost per Gallon of New Wastewater Capacity [2]	\$ 2.34
3	Cost per ERU of Treatment/Effluent Disposal Facilities [3]	\$ 703
Primary Collection System Costs		
4	Existing Facilities [4]	BV \$ 3,621,778
5	Additional Costs Capitalized to Existing Facilities	0
6	Subtotal of Existing Facilities	\$ 3,621,778
7	Existing Capacity of Transmission and Distribution System (GPD) [5]	4,200,000
8	Existing Wastewater Treatment Flows (GPD) (ADF) [6]	3,120,000
9	<u>Percent Remaining Capacity for Future Growth</u>	<u>0.257</u>
10	Capacity Costs Allocated to Future Growth	\$ 87,544
	<u>Subtotal of Costs</u>	<u>\$ 87,544</u>
11	Estimated Capacity for Future Growth (GPD) (ADF)	1,080,000
12	ERU Factor - GPD [1]	300
13	Estimated new ERUs that can be served by Collection Facilities [7]	3600
14	Cost per ERU of Collection Facilities	\$ 24.32
15	Total Combined Cost per ERU	\$ 727
16	Proposed Connection Impact Fee per ERU [8]	\$ 725
17	Existing Fee per ERU	\$ 352
18	Proposed Adjustment	\$ 373

GPD = Gallons Per Day

Table 6

Proposed Impact Fee Schedule

Meter Size	ERUs	Prop. Water Impact Fee	Prop. Sewer Impact Fee	Ex. Water Impact Fee	Ex. Sewer Impact Fee
5/8"	1	\$ 1,557	\$ 725	\$ 990	\$ 352
1"	2.5	\$ 3,893	\$ 1,813	\$ 2,475	\$ 880
1-1/2"	5	\$ 7,785	\$ 3,625	\$ 4,950	\$ 1,760
2"	8	\$ 12,456	\$ 5,800	\$ 7,920	\$ 2,816
3"	16	\$ 24,912	\$ 11,600	\$ 15,840	\$ 5,632
4"	25	\$ 38,925	\$ 18,125	\$ 24,750	\$ 8,800
6"	50	\$ 77,850	\$ 36,250	\$ 49,500	\$ 17,600