ORIGINAL

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Application for a rate increase for North Ft. Myers Division in Lee County by Florida Cities Water Company - Lee County Division.	)))))	Docket No. 950387-SU Filed: October 13, 1998

REMAND TESTIMONY

OF

TED L. BIDDY, P.E./P.L.S.

ON BEHALF OF THE CITIZENS OF THE STATE OF FLORIDA

Jack Shreve
Public Counsel

Office of the Public Counsel
c/o The Florida Legislature
111 West Madison Street
Room 812
Tallahassee, Florida 32399-1400

(850) 488-9330

Attorney for the Citizens
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DOCKET NO. 950387

October 13, 1998

Q. WHAT IS YOUR NAME AND BUSINESS ADDRESS?

A. My name is Ted L. Biddy. My business address is Route 5, Box 65, Havana, Florida 32333.

Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?

A. I am currently self-employed as a professional engineer and land surveyor.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE?

A. I graduated from the Georgia Institute of Technology with a B.S. degree in Civil Engineering in 1963. I am a registered professional engineer and land surveyor in Florida, Georgia, Mississippi and several other states. I was the vice-president of Baskerville-Donovan, Inc. (BDI) and the regional manager of Tallahassee Office from April 1991 until February, 1998. Before joining BDI in 1991, I had operated my own civil engineering firm for 21 years. My areas of expertise include civil engineering, structural engineering, sanitary engineering, soils and foundation engineering and precise surveying. During my career, I have designed and supervised the master planning, design and construction of thousands of residential, commercial and industrial properties. My work has included: water and wastewater facility design; roadway design; parking lot design; stormwater facilities design; structural design; land surveys; and environmental permitting.

I have served as the principal and chief designer for numerous utility projects. Among my major water and wastewater facilities designs have been a 2,000 acres development in Lake County, FL; a 1,200 acres development in Ocean Springs, MS; a 4-mile water distribution system for Talquin Electric Cooperative, Inc. and a 320-lot subdivision in Leon County, FL.

Q. WHAT ARE YOUR PROFESSIONAL AFFILIATIONS?

A. I am a member of the Florida Engineering Society, National Society of Professional Engineers, and Florida Society of Professional Land Surveyors.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE A STATE OR FEDERAL COURT AS AN ENGINEERING EXPERT WITNESS?

A. Yes, I have had numerous court appearances as an expert witness for cases involving roadways, utilities, drainage, stormwater, water and wastewater facilities designs.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION (PSC OR COMMISSION) FOR USED AND USEFUL ANALYSIS AND OTHER ENGINEERING ISSUES?

A. Yes, I have testified before the PSC for Docket Nos. 950495-WS, 950387-SU, 951056-WS and 960329-WS on engineering issues and used and useful analysis.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to provide additional engineering testimony on

the used and useful calculation issues for this rate case. In particular, I address why it is appropriate, from an engineering perspective, to use annual average daily flow in both the numerator and denominator of the used and useful calculation for Florida Cities Water Company's (FCWC) wastewater treatment plant.

Q. DO YOU AGREE WITH THE USED AND USEFUL METHODOLOGY PROPOSED BY THE FCWC FOR ITS WASTEWATER TREATMENT PLANT (WWTP), AND EXPLAIN WHY?

A. No, I do not. FCWC asserts that the average daily flow of the maximum month (ADFMM) should be used for the numerator in the calculation of used and useful percentage, regardless of how the plant capacity (denominator) is permitted or designed. FCWC argues that ADFMM should be used even though the plant is permitted on the basis of annual average daily flow (AADF). It is clear that AADF and ADFMM are not the same basis.

A wastewater treatment plant's capacity can be permitted as AADF or ADFMM by the Florida Department of Environmental Protection (FDEP). Likewise it can be designed by the engineers as AADF or ADFMM. I can not agree with FCWC's proposal because it does not match the flow with the permitted capacity of the plant.

Q. WHAT ARE THE APPROPRIATE NUMBERS TO BE USED FOR THE

NUMERATOR AND DENOMINATOR IN CALCULATING THE USED AND USEFUL PERCENTAGE FOR A WASTEWATER TREATMENT PLANT?

A. It depends on what basis the wastewater treatment plant capacity is permitted by FDEP or designed by the engineers. If the plant capacity is permitted or designed on the basis of AADF, then the test year AADF should be used for the numerator. On the other hand, if the plant capacity is permitted on the basis of ADFMM, then the test year average daily flow of maximum month (ADFMM) should be used. Generally, the designed capacity is the same as the FDEP permitted capacity.

This method will insure that both numerator and denominator are arrived at from the same basis, i.e. apples to apples or oranges to oranges. To compute the used and useful percentage as FCWC suggests would be to mix comparisons of ADFMM to AADF and would yield a percentage with no meaning, as would comparing apples to oranges.

Q. CAN YOU USE AN EXAMPLE TO DEMONSTRATE THE APPROPRIATE METHODOLOGY?

A. Yes. See the following examples for a simple demonstration.

Example 1 Wastewater Plant A:

Plant Design Capacity = 1.0 MGD on ADFMM basis

FDEP Permit Capacity = 1.0 MGD on ADFMM basis

Plant ADFMM = 0.9 MGD during the test year

Then, Used & Useful % = 0.9 MGD/1.0 MGD = 90%

Example 2 Wastewater Plant A:

Plant Design Capacity = 1.0 MGD on AADF basis

FDEP Permit Capacity = 1.0 MGD on AADF basis

Plant AADF = 0.7 MGD during the test year

Then, Used & Useful % = 0.7 MGD/1.0 MGD = 70%

Example 3 Wastewater Plant A:

Plant Design & Permit Capacity = 1.0 MGD on ADFMM basis

or 0.8 MGD on AADF basis

Plant AADF = 0.7 MGD during the test year

Plant ADFMM = 0.9 MGD during the test year

Then, Used & Useful % = 0.7 MGD/0.8 MGD = 87.5%

or 0.9 MGD/1.0 MGD = 90%

The inappropriate methodology requested by FCWC can be seen from the following example.

Example 4 Wastewater Plant A:

Plant Design & Permit Capacity = 1.0 MGD on AADF basis

Plant ADFMM = 0.9 MGD during the test year

Then, Used & Useful % = 0.9 MGD/ 1.0 MGD = 90%

This method of computing the used and useful percentage artificially inflates the results by using the ADFMM value in the numerator rather than the AADF value which would obviously be much lower.

Note: The above used and useful calculations do not include any adjustments for margin reserve, excess inflow and infiltration, etc.

Examples 1 and 2 illustrate the significance of plant flow design and permit basis in calculating the used and useful percentages. Example 3 demonstrates that the AADF match calculation generates a similar used and useful percentage as the ADFMM match to account for the peak flows. Example 4 illustrates a meaningless used and useful percentage.

Although the FDEP permit may be expressed in AADF, the plant still can handle a higher hydraulic peak flow as designed by the engineer. Therefore, it is fair and logical to use AADF flows to AADF capacity for the used and useful calculation. This certainly does not mean all hydraulic peak flows are ignored, it just assumes the peak flow to average flow ratio stays the same as designed by the engineer.

Q. DOES THE FDEP PERMIT ALWAYS HAVE A CLEAR DESIGNATION OF THE PLANT'S PERMITTED CAPACITY?

A. No. Sometimes the FDEP permits may not have a clear statement for each

wastewater plant's capacity; whether they are AADF or ADFMM. For example, the permit of Waterway Estate WWTP only says the plant is expanded to 1.5 MGD. It does not specify again that it is AADF, like the original plant's capacity of 1.0 MGD (annual average). See Exhibit TLB-1 for a copy of part of the permit which states the plant capacity. Therefore, technically someone could incorrectly argue that the 1.5 MGD capacity is for ADFMM. However, this confusion can be clarified by checking the original permit application. See the attached Exhibit TLB-2. It is clear that the Basis of Design Flow is checked for AADF.

In recent years, the FDEP permits are very clear on the plant capacity basis as either AADF or ADFMM. Therefore, there should be nothing to dispute or argue about in the wastewater plant's used and useful calculation. It is all dictated by the FDEP permits and/or the design capacities. Utilities certainly have taken advantage of the ADFMM to AADF mismatch to obtain higher used and useful percentages in past rate cases. Therefore, it is appropriate for the PSC to correct the previously mismatched used and useful calculation for wastewater treatment plants. In the case of FCWC, however, in Order No. PSC-96-1133-FOF-SU, the PSC correctly matched the AADF to AADF in the used and useful calculation.

Q. DOES THE METHODOLOGY PROPOSED BY FCWC INFLATE THE

USED AND USEFUL PERCENTAGE AND ADVERSELY IMPACT THE CURRENT CUSTOMERS?

A. Yes, the mismatch of ADFMM to AADF will create a higher used and useful percentage than the correct match of AADF to AADF calculation. Therefore, the current customers will pay higher rates because the rate base will be inflated.

Q. WILL THE CORRECT MATCH OF AADF PLANT FLOW TO AADF PLANT CAPACITY OR ADFMM PLANT FLOW TO ADFMM PLANT CAPACITY GENERATE UNFAIR USED AND USEFUL PERCENTAGES FOR UTILITIES?

A. No, there will be no unfair used and useful percentages calculated for the utilities. The correct match of plant flows to plant capacities will generate fair used and useful percentages for the customers and the utilities. The reason is that a WWTP is designed by engineers, and the FDEP uses the engineer's preliminary design report to rate the permit capacity. In the preliminary design report, the plant design flow is determined by engineers: it could be AADF, ADFMM, three-month average daily flow or other flows as permitted by FDEP. The engineers also determined the appropriate design influent characteristics: such as biochemical oxygen demand (BOD), total suspended solids (TSS), total nitrogen, total phosphorous, etc. for the particular flow designed for.

FDEP generally will not reduce or increase the plant capacity in its

permit unless the design is so abnormal that FDEP has to make adjustments to the design capacity. Therefore, the wastewater plant can handle the permitted capacity unquestionably. However, sometimes the FDEP permit capacity is less than the design plant capacity due to a limited effluent disposal capacity. Waterway Estate WWTP is an typical example of this limitation.

Q. IS THERE ANY BENEFIT THE UTILITY CAN ENJOY FROM THE CORRECT MATCH OF PLANT FLOW TO PLANT CAPACITY CALCULATION?

A. Yes. The PSC is only comparing the hydraulic loading rate to the WWTP's capacity which is based on both hydraulic loading and biological loading rates, i.e. the design flows and wastewater strength. Normally during rain storm events, WWTP's will have higher flows and the wastewater concentration is diluted due to the excess inflow and infiltration. Therefore, the WWTP still can handle more flows with diluted wastewater, but the design plant capacity is still used as the denominator for the used and useful calculation. Utility witness Mr. Cummings testified that the Waterway Estate WWTP was designed to handle a hydraulic flow rate at twice that of the designed AADF rate.

In reality, the PSC could increase the plant capacity and lower the used and useful percentage, however, I would not recommend that because it will be a time consuming and controversial task. Some components in a WWTP are

designed for not just the maximum day flow but the peak hourly flows, although an equalization tank is already designed to dampen the peak hourly flows. Most of the time, the PSC calculates a single used and useful percentage based on the total plant design capacity instead of separate used and useful calculations for each component of the plant. Therefore, I believe that the utilities still benefit from the correct match of plant flows to plant design capacities for used and useful calculations.

Q. DOES THE PSC'S CORRECT MATCH FOR PLANT FLOW TO DESIGN CAPACITY SUGGEST THAT A WWTP SHOULD BE DESIGNED SOLEY ON AADF?

A. No. The PSC is just using the available information from the MFR's and documents provided by the Utility. AADF information for plant flows and plant capacity is available from the MFR's and FDEP permit. If FCWC can provide documented peak flows, with excess inflow/infiltration adjustments, and design peak month flow capacity, then the PSC could use this information to calculate the used and useful percentage. Nevertheless, there is generally not a big difference between the calculations because the ratio of average annual daily flow to the designed average daily flow capacity should be the same or close to the ratio of actual peak flows to the designed peak flow capacities of the plant. Therefore, the used and useful percentages which compare FCWC's average

flows to its designed average flow capacity should be approximately the same as its peak flows to its designed peak flow capacities.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

CERTIFICATE OF SERVICE
DOCKET NO. 950387-SU

I certify that a true copy of the foregoing REMAND TESTIMONY OF TED L. BIDDY, P.E./P.L.S. was served by United States Mail, or where the party is denoted by an asterisk (*) by hand delivery upon representatives of the following parties on this the 13th day of October, 1998.

Kenneth Gatlin, Esquire
3301 Thomasville Road, #300
Tallahassee, Florida 32312

Jerilyn Victor
1740 Dockway Drive
North Fort Myers, Florida 33903

Cheryl Walla
1750 Dockway Drive
North Fort Myers, Florida 33903

Ralph Jaeger, Esquire*
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Harold McLean
Associate Public Counsel

EXHBIT LIST

EXHIBIT TLB-1	FDEP CONSTRUCTION PERMIT DC36-237227
	Page 1 of 15
EXHIBIT TLB-2	OPERATON PERMIT APPLICATION FORM
	Page 2A-3
	Page 2A-6

For Exh. TLB-1,
see Hrng Exh. 42

9. Municipalities or Areas Served

Name of Municipality or Area	Population Served
North Ft. Myers (Approx.)	5,000
Total Population Served	5,000

10. Reclaimed Water Reuse and Effluent Disposal

Method of Reuse or Disposal	Number of Reuse or Disposal Points	Total Design Capacity (mgd)	Basis of Design Flow
Surface Waters - Excluding Ocean Outfalls and Wetlands (Rule 62-600.510, F.A.C.)	1	1.25 1.5	Annual Avg. Max. Month
Ocean Outfalls (Rule 62-600.520, F.A.C.)			
Wetlands (Rule 62-600.620, F.A.C.)			
Reuse of Reclaimed Water and Land Application (Rule 62-600.530, F.A.C.)	1	0.25	Annual Avg.
Ground Water Disposal by Underground Injection (Rule 62-600.540, F.A.C.)			
Other (Describe.)			
Total Item 7	2	1.25 1.5	Annual Avg. Max Month

11. Number of Seasonal or Periodic Discharges n/a

12. Flows to Another Wastewater Facility N/A

a. Does part of the facility's flow go into a collection/transmission system or reclaimed water distribution system under another responsible organization? ____Yes __x__No

Serial Number(s) R001/D001

SECTION 2. TREATMENT FACILITY DESCRIPTION

1. **Description**

Waterway Estates AWTP is an advanced wastewater treatment plant that provides reclaimed water with high level disinfection to public access reuse and has a surface water discharge to the Caloosahatchee River with basic disinfection. The plant has a design capacity of 1.25 MGD.

2. **Treatment Codes**

S	M	J	AS	WN
WNA	WP	WC	N	F
WNC	P	I	IP	D
DD	DL	X	XA	

3. **Design Capacity of the Treatment Facility**

Current Design Capacity	1.25 mgd
Proposed Incremental Design Capacity	mgd
Proposed Total Design Capacity	= 1.25 mgd

4. **Basis of Design Flow**

X Annual Average Daily Flow
Maximum Monthly Average Daily Flow
Three-Month Average Daily Flow
Other

If other, specify.

5. **Design Treatment Levels**

Parameter	Effluent Concentration	Units	Basis	Percent Removal
Surface Water pH	6.5 - 8.5	Standard Units		
$CBOD_5$	167	lbs/day	Annual Average	90
TSS	167	lbs/day	Annual Average	90
Total Nitrogen	25	lbs/day	Monthly average	
Total Phosphorus	4.2	lbs/day	Monthly Average	
Fecal Coliform	200	colonies/100 ml	Annual Average	
Reclaimed water TSS	5.0	mg/L	Daily Maximum	
Fecal Coliform	25	colonies/100 mls	Daily Maximum	
Chlorine residual	1.0	mg/L	Daily Minimum	