ORIGINAL

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OFFICE OF THE PUBLIC COUNSEL

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JACK SHREVE
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August 27, 2002

Blanca S. Bayo, Director
Division of the Commission Clerk
and Administrative Services
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

Re: Docket No. 992015-WU

Dear Ms. Bayo:

Enclosed for filing in the above-referenced docket is the original and 15 copies of the prefiled direct testimony of Ted L. Biddy, P.E./P.L.S.

Please indicate the time and date of receipt on the enclosed duplicate of this letter.

Sincerely,

Stephen C. Reilly
Associate Public Counsel

SCR:bsr
Enclosure

PREFILED TESTIMONY
OF
TED L. BIDDY, P.E. / P.L.S.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

ON BEHALF OF THE

CITIZENS OF THE STATE OF FLORIDA

DOCKET NO. 992015 –WU

In Re: Application for Limited Proceeding to Recover Costs of Water System Improvements in Marion County By Sunshine Utilities of Central Florida, inc.

August 29, 2002

Q. WHAT IS YOUR NAME AND BUSINESS ADDRESS?

A. My name is Ted L. Biddy. My business address is 2308 Clara Kee Boulevard, Tallahassee, Florida 32303.

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

A. I am 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 their Tallahassee Office from April 1991 until February 1998. I left the employment of BDI on September 30, 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 acre

development in Lake County, FL; a 1,200 acre 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. As senior project manager while employed by Baskerville-Donovan, my projects included the complete refurbishment of the water supply and distribution system for the City of Apalachicola; the complete refurbishment of the wastewater collection system and treatment plant for the City of Apalachicola; water and wastewater system improvements at Carrabelle; water supply and several distribution systems for developments on St. George Island; water and wastewater systems at correctional facilities for the Florida Department of Corrections; and numerous smaller water and wastewater projects. A resume detailing my background and experience is attached hereto as Exhibit TLB – 1.

Q. WHAT ARE YOUR PROFESSIONAL AFFILIATIONS?

A. I am a member of the Florida Engineering Society, National Society of Professional Engineers, Florida Institute of Consulting Engineers, American Consulting Engineers Council and the American College of Forensic Examiners.

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. 940109-WU, 950495-WS, 950387-SU, 951056-WS, 950387-SU, 960329-WS, 960545-WS, 971065-SU, 991643-SU, 991437-WU and 010503-WU on various engineering issues, water quality issues and used and useful analyses.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to offer testimony on the prudence, or lack thereof, of Sunshine Utilities of Central Florida, Inc., (Sunshine or Utility) proposal to spend approximately $2,000,000 to consolidate five of its water systems into a "South Marion County Regional Water System" and seek general rate increases from all of its customers in Sunshine's 21 water systems in Marion County to pay for this cost. I will also provide testimony on the correct and appropriate rationale for calculating used and useful percentages for the proposed consolidated system and furnish correct used and useful percentage calculations.

Q. WHAT DOCUMENTS HAVE YOU REVIEWED AND WHAT INVESTIGATIONS HAVE YOU CONDUCTED IN PREPARATION FOR YOUR TESTIMONY?

A. I have studied all the PSC filings by Sunshine, including the direct testimonies and exhibits of Sunshine's Engineer Harold Barrineau; Accountant Robert Nixon; President James Hodges; former employee Joann Schneider and the

testimony of Florida Department of Environmental Protection's (FDEP) Timothy Banks. I also reviewed the recommendations given by the PSC Staff at the April 23, 2002 agenda and the Commission's Proposed Agency Action of May 14, 2002.

I obtained and studied Sunshine's annual reports for 1997, 1998, 1999, 2000 and 2001. I also visited the Orlando Office of the FDEP and copied documents from the Sunshine systems' files including permits, sanitary reports and other documents of interest. While at the Orlando FDEP office, I also interviewed Britt Williams and Paul Morrison of FDEP's Drinking Water Compliance and Enforcement division concerning Sunshine systems. I also received and studied copies of Sunshine's responses to certain interrogatories and production of documents requests.

Q. PLEASE PROCEED WITH YOUR TESTIMONY CONCERNING THE PRUDENCE OF SUNSHINE'S PROPOSED CONSOLIDATION PROJECT.

A. I think that some discussion of the meaning of prudence in a utility rate case is first in order. The dictionary defines prudence as 1) Cautious, practical wisdom, good judgement, discretion; 2) Being prudent; and 3) Regard for one's own interest ; and then says, "Prudence is care, caution and good judgement as well as wisdom in looking ahead."

While obtaining a rate increase from its customers might fit the definition of prudence from the Utility's self enrichment standpoint, it is obvious that in a

public utility rate making case the interest of the ratepaying customers must be equally considered along with the interests of the Utility, from the standpoint of fairness to both parties and whether any proposed project will benefit both parties. Therefore, in this case, the proposed consolidation project by Sunshine must be fair and beneficial to both the Utility and the customers if the project is to be truly prudent.

Q. BASED ON A CRITERIA OF FAIRNESS AND BENEFIT TO BOTH UTILITY AND CUSTOMERS, IS THE PROPOSED SUNSHINE CONSOLIDATION PROJECT PRUDENT?

A. No, the proposed consolidation project is not prudent at all for several reasons.

Q. WHY IS THE SUNSHINE PROPOSED CONSOLIDATION PROJECT NOT PRUDENT?

A. First, the proposed consolidation project, with a rate increase to pay the cost of the proposed project from all the customers in the 21 Sunshine systems, is not prudent for the 16 systems that will not be connected to the regional system. The customers in these 16 systems will receive no benefit at all from the consolidation, and as such, it would obviously be unfair to these customers to have their rates increased without receiving any benefit at all.

Secondly, the project is not needed by the five individual systems proposed by Sunshine for consolidation. Each of these five systems presently receive adequate water meeting all FDEP and USEPA standards from wells and treatment plants in each of the 5 individual systems. Contamination of the raw

well water of one of the 5 systems, Lakeview Hills, with 1,1-dichloroethylene from a closed Marion County Landfill was found, but in levels below the FDEP Maximum Contaminant Level (MCL). Marion County paid for and installed Activated Carbon Filters at the Lakeview Hills Well which reduces the contaminant to very low levels in the finished water. The finished water is essentially free of the contaminant and meets all water quality regulations. Moreover, Marion County reportedly has committed to maintain the filters at the well as long as needed. (Apparently a tacit admission that the County is responsible for the contamination of the well)

Therefore, since the consolidated project is not needed by any of the 5 systems proposed for consolidation, it is obvious that the proposed Sunshine $2,000,000 project is not prudent or justified since the ratepayers in these systems also would have their water rates increased to pay for the project.

Q. WHAT WOULD BE THE MOST PRUDENT ACTION THAT THE UTILITY COULD TAKE IN CONNECTION WITH THIS MATTER?

A. Do nothing. All 21 Sunshine systems are receiving water from their individual systems meeting all regulatory requirements and the FDEP is satisfied with the water quality of all systems including the Lakeview Hills Well and Treatment Plant. In fact, when the Utility first approached FDEP concerning installing carbon filters at the Lakeview Hills treatment plant, FDEP by letter of June 23, 1999 (Exhibit TLB-2) stated to the Utility as follows, "The Department of Environmental Protection (DEP) does not object to this addition to the water

treatment system." "However, it should be understood this is *not a regulatory requirement* since the Maximum Contaminant Level (MCL) for 1,1-dichloroethylene was not exceeded." (Emphasis supplied)

Q. BASED ON YOUR STUDY OF ALL THE CASE MATERIALS AND YOUR INVESTIGATIONS, WHO WOULD BENEFIT FROM THE PROPOSED SUNSHINE CONSOLIDATION PROJECT?

A. From my review of all the case materials, my investigations of FDEP documents and my interviews with the FDEP officials in Orlando, it is obvious that Sunshine and Marion County are the two entities who would greatly benefit from the proposed consolidation project while the ratepayers would hardly benefit at all.

Q. PLEASE EXPLAIN.

A. It is clear that Marion County has tacitly admitted that it has caused the contamination in the Sunshine Lakeview Hills well and also has caused even greater contamination in 38 private wells in lots nearby the old county landfill. This tacit admission of responsibility is evidenced by the county paying for and maintaining activated carbon filters at the Lakeview Hills treatment plant and also furnishing bottled water to the other 38 lots that are outside Sunshine's service area. Furthermore, the county has reportedly agreed to furnish funding to connect the 38 contaminated well lots to the proposed Sunshine consolidated system. The installation of the proposed "South Marion County Regional Water System" by Sunshine would obviously be of great benefit to Marion County by

providing safe drinking water to all areas contaminated by the county landfill and relieving the county from potentially huge liabilities of lawsuits from these contaminated areas. The new consolidated system with new wells located remote from the landfill would also relieve the county from future responsibility and liability for contaminating Sunshine's Lakeview Hills well. It is my considered opinion that Sunshine should not relieve the county from its responsibilities and liabilities in this entire matter but should demand that Marion County pay for all the proposed improvements over and above whatever FDEP grants are available. Payment of a million dollars or more by Marion County to permanently "fix" the contamination problems that the county has created seems to me to be a huge bargain compared to the potential liabilities that may loom on the horizon. Sunshine's attempt to require the customers to pay for the consolidation project that will not benefit the customers seems to me to be unconscionable.

Sunshine Utilities, through its proposed consolidation of large areas around the South Marion County Lake Weir area, is attempting to parlay a minor contamination problem in one of its wells into the creation of a much larger service area and great benefits through future connections in new service areas, all at the expense of its existing customers. Sunshine's proposed interconnection of the five systems is more "empire building" than it is a response to a legitimate environmental problem.

Sunshine proposes to construct two large new wells, a very much oversized

500,000 gallon elevated storage tank and about 10 miles of connecting oversized mains between 5 small local systems. With new service areas certified for the connecting routes of these mains, Sunshine would be assured of all the water service for all future growth of this portion of Marion County, obviously a great benefit to the Utility.

Q. PLEASE EXPLAIN YOUR ASSERTION THAT MARION COUNTY HAS GREAT LIABILITIES AND RESPONSIBILITIES IN THIS MATTER.

A. The landfill in question is an old county landfill known as the Davis landfill. Marion County closed this landfill several years ago. The FDEP has very stringent regulations concerning the operation and closure of such landfills that are designed to prevent leachate from such a landfill from affecting surrounding properties or the aquifer below the landfill. From the contamination reported, it is evident that something went dreadfully wrong in either the operation or closure of this landfill. Required monitoring wells around the closed landfill probably forewarned the county of the impending contamination of the aquifer and surrounding properties, perhaps accounting for the county's cooperation and funding to date in connection with the contamination problems in the area.

Q. PLEASE EXPLAIN YOUR ASSERTION THAT SUNSHINE'S PROPOSED CONSOLIDATION PROJECT HAS A GREATLY OVERSIZED ELEVATED STORAGE TANK AND OVERSIZED CONNECTING WATER LINES BETWEEN THE FIVE SYSTEMS.

A. Sunshine's engineer, Harold Barrineau, in Exhibit HWB-4 to his direct

testimony develops an unexplained matrix for sizing the storage facilities at 500,000 gallons.. Mr. Barrineau uses a 20 year planning horizon and maximum flows in his sizing of the storage facilities, both of which are incorrect procedures. The statutory growth period for sizing is 5 years, not 20, and FDEP sizing rules are based on Average Daily Flows, not Maximum Flows.

The FDEP has adopted two guidelines for calculating the required size of storage facilities (demand). The first is the Recommended Standards for Water Works as published by the Great Lakes-Upper Mississippi River Board of State Public Health and Environmental Managers, known in the industry by short title as the "Ten States Standards." The second FDEP adopted guideline is the AWWA Manual of Water Supply Practices – M32.

Ten States Standards sets up a minimum storage equal to Average Daily Flow (ADF) for systems not providing fire flow. Ten States Standards also requires fire flow storage, if fire flow is provided, with this requirement being reduced for systems with standby power at the supply wells. AWWA M32 suggests that equalization storage of about 20 to 25 percent of ADF be provided. Since all supply wells by FDEP rules must have standby generators, the Ten States Standards guideline for reduction has been taken as one-half ADF plus fire flow. This storage amount would also satisfy the 20 to 25 percent of ADF as contained in AWWA – M32.

In my Exhibit TLB-3 attached hereto, I calculated the ADF of the 5 systems proposed for consolidation from the Utility's 2001 Annual Report to the PSC. I

also calculated the excessive (over 10%) unaccounted for water for these 5 systems from the 2001 Annual Report. I found the net ADF for the 5 systems to be 167,006 gallons per day (GPD) in 2001. I then applied my calculated 2% per year growth factor for 5 years to obtain the ADF in 2006 of 184,388 GPD.

I then calculated the required size of storage facilities by taking one-half of the 2006 ADF and adding fire flow of 60,000 gallons. Fire flow was taken as the minimum fire flow required by the county for new systems at 500 GPM for 2 hours duration as testified to by Mr. Barrineau at page 7, line 19 of his direct testimony. The total storage capacity that I obtained by applying the proper sizing criteria amounted to 152,194 gallons which I rounded to 160,000 gallons. This 160,000 gallon storage is only 32% of the 500,000 gallon storage proposed by Mr. Barrineau and would likely only cost 35-40% of the $525,000 which was estimated for the 500,000 gallon elevated storage tank.

My assertion that the proposed consolidation project has oversized connecting water lines between the five systems is simply quoting Mr. Barrineau's Exhibit HWB-4 at page 34 of 115 where he admits that some of the lines are oversized by one size. He also discusses that he sized these line for his projected future growth. The projected future growth as discussed above was based on a 20 year planning horizon. Since the entire consolidation project is so obviously imprudent from the customers standpoint, I have not spent the time and effort to calculate the proper sizes for the proposed interconnecting lines.

Q. WHAT IS YOUR VIEW OF THE PROPOSED CONSOLIDATION

PROJECT FROM AN ENGINEERING STANDPOINT AND THE BENEFITS TO SUNSHINE AND MARION COUNTY?

A. The proposed elevated storage tank and connecting distribution lines are both oversized and appear to be intentionally over-designed by Sunshine's engineer Barrineau in order to be able to serve all areas between the existing 5 small systems for a 20 year growth. This is a most ambitious project and one that should not involve the existing ratepaying customers. The decision of whether to construct the consolidated project appears to me to be purely a business decision by the Utility as to whether the future connections to be gained by the consolidation will justify the cost of installing the regional water system. Sunshine has the added advantage of some funding promised by Marion County, a large grant and a low interest loan possible from the FDEP if economic justification is proven. Also, I believe that Sunshine should get the county more involved in the funding through some hard negotiations since the county bears large responsibility for Sunshine's alleged contamination problem and further contamination of wells outside Sunshine's service area. Certainly all of the benefits of the proposed project would be to Sunshine and Marion County and little if any benefit to the existing customers.

Q. IF THE UTILITY DETERMINES THAT THE PROPOSED CONSOLIDATION PROJECT IS NOT ECONOMICALLY JUSTIFIED WITHOUT A RATE INCREASE FROM ITS CUSTOMERS, IS THERE A PROJECT OF LESSER SCOPE THAT WOULD SOLVE BOTH THE

CONTAMINATION IN THE LAKEVIEW HILLS SYSTEM AND THE CONTAMINATION IN THE 38 PRIVATE WELLS NEAR THE COUNTY'S LANDFILL?

A. Yes, an obvious solution to the contamination problems occurred to me as soon as I read the materials and realized that the consolidation project as proposed was not prudent for the existing customers. The Lakeview Hills System is a very small system with only 56 connections and a well supply of 80 GPM and an ADF of only 14,994 GPD in 2001. An obvious solution would be to install a new well at a remote location from the landfill and also extend the distribution lines for the Lakeview system to reach the 38 lots with private contaminated wells near the landfill. The new well would need to be about 100 to 150 GPM capacity with a hydropneumatic tank. This scaled back project could be installed at a fraction of the cost of the consolidation project and Sunshine could no doubt receive funding from Marion County and FDEP for most, if not all of the cost.

Q. DURING YOUR INVESTIGATIONS INTO THIS CASE, WHAT DID YOU DETERMINE FROM FDEP CONCERNING SUNSHINE'S OVERALL OPERATION AND SUNSHINE'S STATEMENT THAT THERE WERE WATER QUALITY PROBLEMS IN THE OCKLAHAWA WELL SUPPLY?

A. I interviewed Britt Williams, an Environmental Specialist in the Orlando FDEP office who performs regular inspections on all of the 21 Sunshine systems. He stated that Sunshine ran a good operation with only minor items noted to be in

need of attention during his inspections. His only negative comment was that Sunshine did not keep neat and tidy installations at their well supply and treatment plant sites.

I also interviewed Paul Morrison of FDEP's Drinking Water Compliance and Enforcement Division. I specifically asked Mr. Morrison about the alleged water quality problems in the Utility's Ocklawaha water supply. The Utility's Engineer, Harold Barrineau stated in his testimony at page 7, lines 2-11, that the Ocklawaha water supply contained sulfur content that caused water quality problems and that the proposed consolidation project would solve this problem. Mr. Morrison was unaware of any such problem. He searched his files on the Ocklawaha system for the years 2000 and 2001 and did not find a single complaint for taste and odor problems or anything about sulfur or hydrogen sulfide.

Q. DO YOU HAVE ANY COMMENTS CONCERNING THE UTILITY'S CLAIM OF A 3% ANNUAL GROWTH IN ERCs AND WATER CONSUMPTION?

A. Yes. The Utility's engineer, Mr. Barrineau first showed an assumption of an annual population growth of 3% in his water usage projections in Exhibit HWB-4, page 29 of 115 which he then uses in calculating growth in Exhibit HWB-5. No explanation or proof is given for the 3% growth factor. Answers to interrogatory question posed seeking proof of the claimed growth were vague and insufficient.

While the interrogatory question asked for proof of the alleged 3% growth factor, the only answers given were that Engineer Barrineau had: 1) Collected demographic data from available property appraisal maps; 2) Supplemented these maps with field surveys to identify occupied parcels; 3) Reviewed historical customer records for growth trends and 4) Held meetings with the Marion County Building Department and acquired data on building permits for 1999, 2000 & 2001. Nothing in the interrogatory response mentioned any study of Sunshine's historical growth records or any analysis performed to project future growth from these historical records. Another interrogatory question asking for historical ERCs for the various systems first met with objection and then a set of nonsensical data from annual reports was furnished. These copies from annual reports had nothing to do with historical ERCs in each system .

I very much doubt the accuracy of the 3% growth factor. With the limited information I have available from Sunshine's annual reports, I prepared Exhibit TLB – 5, attached hereto. In this exhibit, I prepared first an analysis of the growth of ERCs in the 21 Sunshine systems based on each 5/8" meter equivalent from the annual reports being equal to an ERC. I calculated this analysis for a 5 year period available from the annual reports on file with the PSC. I then prepared an analysis in similar fashion of the growth of ERCs in the 5 systems proposed for consolidation. Only the three years of 1999, 2000 and 2001 had data for these individual systems in the annual reports.

The results of my analyses in Exhibit TLB – 5 revealed a simple average annual growth of 1.29% for all the Sunshine systems and a simple average annual growth of 1.92% for the five systems proposed for consolidation. There was not enough data available to perform a meaningful regression analysis for either of these growths as normally required. Both analyses showed a trend towards a very low to negative growth over the last two years.

In all my used and useful calculations herein, I have used a 5 year growth in demand based on a 2% average annual growth. This 2% growth factor represents a rounding of the 1.92% that I calculated for the simple average of growth of the 5 systems over a three year period. I believe the 2% annual growth to be more accurate than the 3% proposed by the Utility.

Q. DO YOU HAVE ANYTHING ELSE TO ADD CONCERNING THE PRUDENCE ISSUE?

A. I would just like to point out that the total estimated construction cost of the proposed consolidation project as shown in Exhibit HWB-4 at page 40 of 115 amounts to $1,630,522 with soft costs such as engineering, permitting, contingencies, etc. making the total estimated project cost be $2,015,339. Ninety-four percent (94%) of the estimated construction cost is contained in two items, namely, 1) The proposed 500,000 gallons capacity elevated storage tank at an estimated construction cost of $525,000 and 2) about 10 miles of distribution piping connecting the five systems at an estimated construction cost of $1,012,597. Since we now know that both of these items were greatly

oversized and over-designed, the project would not be prudent even if the project was beneficial and fair to the ratepaying customers.

Q. WILL YOU NOW ADDRESS THE USED AND USEFUL ISSUES?

A. Yes I will.

Q. HOW DID THE UTILITY CALCULATE THE USED AND USEFUL PERCENTAGES FOR THE VARIOUS ITEMS?

A. The Utility's engineer, Harold Barrineau, states in his testimony on page 18 at lines 21 – 25 that Sunshine employed the Commission Staff's used and useful formula and obtained a 75.96% used and useful percentage for the water plant and a 51.88% used and useful percentage for the water distribution system.

Q. DO YOUR HAVE ANY PROBLEMS WITH THE STAFF'S FORMULAS USED BY SUNSHINE IN THE CALCULATION OF USED AND USEFUL PERCENTAGES?

A. The formula for calculating the used and useful percentage of a water distribution system by comparing total connected ERCs to total ERCs available for service by the system is a long established and settled rationale for calculating distribution system used and useful percentages. Sometimes there are differences in the count for connected and potential connections but I have no problem with the basic rationale. The difference in my calculated U/U percentage from the Utility's calculation is due to the lower average growth rate that I used (2% v. 3%)

I do have a basic disagreement with staff concerning the formula or rationale

used to calculate used and useful percentages for water plants. Within the last two years, at the direction Mr. Bob Crouch, retired PSC Engineering Supervisor, staff engineers have developed a rationale for calculating the used and useful percentages for a water treatment plant that combines supply wells, treatment facilities, storage facilities and pumping into one overall plant used and useful percentage. This rationale considers the demand to be the average 5 max days of max month flow, adjusted for five years growth, added to fire flow, and then compared to a firm reliable plant capacity that is developed from the flow of the smallest well pumping for only 12 hours, added to the capacity of the storage facility. This hybrid and novel rationale does not follow any FDEP sizing criteria for the various components of a water plant, and the overall plant used and useful percentage obtained is often an inordinately high and unjustifiable percentage. I contend that the sizing criteria required by the regulatory agencies should be utilized in the U/U calculation rationale, since these criteria directly control the size of components required to be installed by the Utility. Sizing any of the plant components grossly larger than required for the demand, with an already built in 5 years growth, is an expense that is unreasonable and the customers should not have to pay for these large components, often installed by the utility for distant future growth.

The Sunshine case is a prime example of obtaining inordinate and unjustifiably high U/U percentages for components of the water plant using this more recent Staff's rationale for an "overall plant" U/U percentage. The Utility obtained an

overall 76.0% U/U percentage for the water plant using Staff's formulas and then Staff increased this percentage to 80.3% . This means that the overall plant, including the 500,000 gallon capacity elevated storage tank which is oversized by a factor of at least 300%, would be considered as 80.3% used and useful if one accepts these calculations. Making bad matters worse, the estimated cost of the elevated tank at $525,000 is more than seven (7) times the $74,425 estimated cost of the two wells.

I contend that individual U/U percentages should be calculated for each major component of a water plant and that proper demands and capacities be used and comparisons made in line with the sizing criteria which controls the required sizes of the components. I will explain below the rationales for calculating U/U percentages for the various water plant components with due consideration for the regulatory requirements for the minimum required sizes. As a comparison to the U/U percentages calculated by the Utility, my calculations yield a U/U percentage for the wells of 51.43% and 32.0% for the elevated storage tank.

Q. WHAT IS THE PROPER METHOD FOR DETERMINING THE USED AND USEFUL PERCENTAGE FOR SOURCE OF SUPPLY AND PUMPING?

A. The proper method is to evaluate the source of supply and pumping in accordance with the FDEP rule for design of these facilities. This rule is a FDEP design guideline under Chapter 62-500, FAC, which sets forth Section 3.2.1.1 of *Ten States Standards* as the governing rule which is as follows:

Section 3.2.1.1 of *Ten States Standards* states: "The total developed groundwater source capacity shall equal or exceed the design maximum day demand **and** equal or exceed the design average day demand with the largest producing well out of service." (Firm Reliable Capacity)

From this rule, it is clear that two comparisons are required, namely Total Maximum Day Demand to Total Capacity and the Average Day Demand to the Firm Reliable Capacity. It is obvious that the largest percentage of the two comparisons must be used to satisfy the Ten States Rule.

When computing the maximum capacity and firm reliable capacity, the well pumping rate should be taken for the full 24 hour period since we are dealing with extreme cases of short duration and well pumps can operate at full flow for these periods. Modern pumps are guaranteed to run continuously for several thousand hours. Rarely are these pumps running continuously except perhaps during peak demand times since controls shut the pumps off for brief periods when enough pressure exists in the distribution system. Therefore, there is no reason to restrict the flow to a 12 hour period when calculating a firm reliable capacity of a well. The recently changed Staff rationale restricting the flow of the smaller well to 12 hours is simply without merit or reason and is probably due to a misunderstanding of a FDEP rule requiring operating personnel a minimum time on site of 12 hours, which bears no relationship to pump run time.

The demand in these calculations must be modified by three factors. First, by

Florida law, a five year growth factor must be added to the demand. Secondly, the appropriate fire flow must also be added to the demand. Finally, the demand flow should be reduced by any excessive unaccounted for water. In the current case, both the Utility and Staff ignored excessive unaccounted for water which is very large. (Up to 22%)

Finally, Staff and I have most always disagreed concerning the amount of fire flow to be included in the demand. Staff invariably will include a fire flow of 1,000 GPM for a two hour duration although certainly no fire flow is presently included in these small systems. I contend at most that the minimum fire flow of 500 GPM for a two hour duration should be included in the demand. It is interesting to note that the Utility's engineer testified to the minimum fire flow requirement of 500 GPM for two hours duration in his testimony at page 7 at line 19, but switched to a fire flow of 1,000 GPM for 2 hours duration in his U/U calculation in Exhibit HWB – 5. Such inconsistencies are indefensible.

Q. WHAT USED AND USEFUL PERCENTAGE DO YOU OBTAIN FOR THE SOURCE OF SUPPLY WELLS WHEN YOU USE THE TEN STATES STANDARDS RULE AND HOW DOES THIS COMPARE WITH THE UTILITY'S REQUESTED PERCENTAGE?

A. All of my calculations of used and useful percentages are shown in detail in Exhibit TLB-4. I computed the various flows that are necessary to evaluate the two comparisons required by Section 3.2.1.1 of *Ten States Standards* as follows:

Total Well Capacity = 820 GPM = 1,180,800 GPD

Firm Reliable Capacity = 330 GPM = 475,200 GPD

Maximum Day Flow: Use average of 5 max. days of max. month to avoid unusual flows. MDF = 440,269 GPD (From Exhibit HWB-5)

Average Day Flow (from 2001 Annual Report) = 184,388 GPD

Required Fire Flow (from HWB Testimony) = 500 GPM for 2 hours = 60,000 GPD

2001 Excessive Unaccounted for Water = 11,829 GPM (Already applied to ADF in calculations. (See Exhibit TLB-3)

Using these parameters, I computed the Maximum Day Flow to Total Capacity used and useful percentage as 41.26% and the Average Day Flow to Firm Reliable Capacity used and useful percentage as 51.43%. To meet the T*en States Criteria*, the larger percentage applies and the used and useful percentage for the wells should be 51.43%.

The Utility's calculations ignore the FDEP governing standards and simply use Staff's erroneous rationale by comparing Maximum Day Demand to Firm Reliable Capacity for a requested U/U percentage of 76.0%. This calculation obviously does not comport with required regulatory standards and should be rejected.

In the Proposed Agency Action of 5/14/02, the PSC Staff computed one used and useful percentage of 80.3% for the wells and treatment plant together. The calculation of U/U percentage is flawed because a higher than required fire flow was used and the only comparison attempted was maximum day flow to a total

plant firm reliable capacity. When all the parameters are known, a separate U/U percentage should always be computed for the wells, treatment plant and storage facilities. Sunshine's proposed used and useful percentages ignore the huge and grossly oversized elevated storage tank in the plant as well as large amounts of excessive unaccounted for water.

Q. WHAT IS THE APPROPRIATE METHOD FOR DETERMING THE USED AND USEFUL PERCENTAGE FOR THE STORAGE FACILITIES FOR THE SUNSHINE SYSTEM?

A. The FDEP recognizes both American Water Works Association (AWWA) and Ten States Standards guidelines for storage facilities and these criteria should both be evaluated for the storage facilities.

As discussed above, AWWA M32 suggests that equalization storage is about 20 to 25 percent of the Average Day Flow(ADF). Fire storage is to be included if fire flow is provided. Emergency storage is an owner's option and is not strictly required. Ten States Standards requires fire flow storage if fire flow is provided. Ten States sets up a minimum storage equal to ADF for systems not providing fire flow. This requirement may be reduced when the source of supply and treatment facilities have sufficient capacity with standby power to supplement peak demands of the system. Emergency storage is not mentioned in this reference.

When the system is furnishing fire flow, a half day ADF of storage is used in the test formula developed below. That amount is more than adequate for peak hour

demand storage compared to the 20 to 25 % ADF suggested in the AWWA M32. The one day ADF storage criteria mentioned in Ten States Standards was reduced to one half day because MDF design flow was used for supply wells and all wells are required to have emergency power. Fire storage was used. No emergency storage was included. Considering all the guidelines, the following U/U formulas for storage facilities have been developed by OPC.

For systems without fire flow:

U/U = One Day ADF / Total System Capacity

For systems with fire flow::

U/U = (½ ADF + F.F.) / Total System Capacity

The ADF is, of course, adjusted for 5 years growth and for excessive unaccounted for water.

Q. WHAT USED AND USEFUL PERCENTAGE DID YOU COMPUTE FOR THE STORAGE FACILITIES USING THE METHOD YOU DESCRIBED AND HOW DOES THIS U/U PERCENTAGE COMPARE WITH THE UTILITY'S REQUESTED PERCENTAGE?

A. Using the system's ADF, as adjusted for 5 years growth and excessive unaccounted for water, and fire flow as previously discussed, with total storage capacity of 500,000 Gallons, I computed a used and useful percentage of 32.0% which should be used for the storage facilities. The detailed calculation is included in Exhibit TLB-4.

Q. IN YOUR USED AND USEFUL CALCULATIONS, DID YOU USE

MAXIMUM DAY FLOW OR AVERAGE 5 DAYS OF MAXIMUM MONTH FLOW FOR THE SYSTEM'S MAXIMUM FLOW AND WHY DID YOU USE THIS FACTOR.

A. It is always better and more representative of the true maximum day flow to use the average of the five maximum days of the maximum month, and that is what I used for the maximum flow. Using the average of the five maximum days of the maximum month rather than the single maximum day of the year lets one avoid such anomalies as fire flow, broken mains or other large leaks.

Q. WHAT IS THE APPROPRIATE ALLOWANCE FOR UNACCOUNTED FOR WATER FOR THIS WATER SYSTEM AND WHAT DID YOU USE IN YOUR CALCULATIONS?

A. A maximum allowance of 10 percent of ADF is reasonable for unaccounted for water for any reasonably maintained water system. In this case, the Utility reported in its annual report for 2001 excessive unaccounted for water during the test year of 11,829 GPD. I applied this excessive unaccounted for water to all calculations of system demand.

Q. WHAT IS THE APPROPRIATE METHOD FOR DETERMINING THE USED AND USEFUL PERCENTAGE FOR THE SUNSHINE WATER DISTRIBUTION SYSTEM?

A. The appropriate method to calculate a fair U/U percentage is to compare Total Connected Equivalent Residential Connections (ERCs) to Total Available ERCs along the distribution system. As I discussed above, I have no differences with

the Staff or the Utility on the calculation rationale, but the different percentage growth factors used yield different U/U percentages. .

Q. HOW DID YOU DETERMINE THE TOTAL CONNECTED ERCs AND THE TOTAL AVAILABLE ERCs IN THE SUNSHINE PRPOPOSED CONSOLIDATED SYSTEM AND WHAT USED AND USEFUL PERCENTAGE DID YOU COMPUTE FOR THE DISTRIBUTION SYSTEM?

A. I accepted the Utility's reported ERCs connected to the system in the test year as shown in Exhibit HWB-5 and the total lots capable of being served because the data presented seemed to fit the annual reports and other reported data. From these data, I calculated the five year growth ERCs using an average annual growth percentage of 2% while the Utility's total ERCs at the five year growth period was determined using a 3% average annual growth percentage. The U/U percentage that I then calculated for the distribution system was 48.97% while the Utility's calculation was 51.9%. I believe that the 48.97% U/U percentage is more accurate by using a more reasonable 2% growth factor.

Q. DOES THIS COMPLETE YOUR DIRECT TESTIMONY

A. Yes, it does.

TED L. BIDDY, P.E., P.L.S.
Civil Engineer
2308 Clara Kee Blvd.
Tallahassee, Fl 32303

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CIVIL and FORENSIC ENGINEERING, INVESTIGATIONS, STUDIES, REPORTS

EDUCATION:

Topographic Surveying
The Engineer's School
Ft. Belvoir, Va, 1957

Bachelor of Science, Civil Engineering
Georgia Institute of Technology, 1963

Graduate Studies, Geodesy
Georgia Institute of Technology, 1963

REGISTRATIONS:

Professional Engineer, Florida No. 17656
Professional Engineer, Georgia No. 12609
Professional Engineer, Mississippi No. 3984
Professional Engineer, Louisiana No. 18431
Professional Engineer, South Dakota No. 4747
Professional Engineer, Nebraska No. E-6974
Professional Engineer, Missouri
Professional Land Surveyor, Florida No. 2658
Professional Land Surveyor, Georgia No. 1421
Professional Land Surveyor, Mississippi No. 1429

FIELDS OF COMPETENCE:

Project Management
Forensic Engineering
Civil Engineering
Structural Engineering
Sanitary Engineering
Soils & Foundations Engineering
Highway Engineering
Construction Contract Administration
Surveying
Environmental Permitting

AFFILIATIONS:

Florida Engineering Society
American Consulting Engineers Council
Florida Society of Surveyors & Mappers
American College of Forensic Examiners

EXPERIENCE :

My 38 years career has been divided into four periods of professional experience as follows:

- 4/1//63 – 9/1/69 During the first 6.5 years following graduation from Georgia Tech, I worked for the Jackson, Mississippi Southern Division of the national consulting firm of Michael Baker, Jr., Inc. The work area included Georgia, North Carolina, Tennessee, Kentucky, Arkansas, Louisiana, Alabama, Florida and Mississippi. I began with the Baker firm as a design engineer and was a project engineer/manager when I left the firm in 1969. My experience with this firm included major agricultural industrial complexes; airports; industrial parks; marinas; subdivisions; water & wastewater systems; warehouses; ship terminals; and surveying. My final position with the Baker firm was that of Port & Harbor Engineer for the firm's Southern Division.

- 9/1/69 – 4/1/91 During the next 21.5 years, I operated my own consulting firm throughout the Southeast U. S. from offices located in Jackson, Mississippi and Tallahassee, Florida. I served as chief operating officer with full responsibility for all engineering operations. During this period, the firm varied in size from 10 to 50 employees and performed over 1500 projects for a wide variety of clients. My experience during this period included the following areas:
    - Corps of Engineering Survey Contracts
    - National Ocean Survey Tidal Datum & Tidal Gage Contracts
    - Major River Barge Terminal
    - Large Warehouse Projects
    - Large & Small Subdivisions
    - Surveying & Platting
    - Bridges
    - Cofferdams, Bulkheads & Waterfront Structures
    - Water Supply & Distribution Systems
    - Wastewater Collection & Treatment
    - Roadways
    - Rail Spurs
    - Buildings
    - Marinas
    - Master Planning
    - Stormwater, Drainage & Flooding Studies
    - Industrial Parks
    - Feasibility Studies & Engineering Reports
    - Expert Court Testimony
    - Local, State & Federal Agencies Permitting
    - Forensic Engineering

- 4/1/91 – 10/1/98 During these 7 ½ years I worked in the Tallahassee Regional office of the consulting firm of Baskerville-Donovan, Inc.(BDI). I began with BDI as a Senior Civil Engineer, was promoted to Regional Manager in September, 1991 and held this position until February, 1998. During this period I was made a vice-president of BDI. During this period the Tallahassee Regional office of BDI grew from a 6-man office to a 30 man plus office and from annual revenues of $250,000 to in excess of $3,000,000. New clients obtained included the City of Tallahassee; Leon County; FSU; FDEP Parks & Recreation; FDOT; Fl. Office of Public Counsel; Fl Game & Fresh Water Fish Commission; and the cities of Apalachicola, Carrabelle and Sopchoppy. A relevant sample of the projects for which I served as Senior Project Manager/Director during this period is as follows:

CLIENTS	PROJECTS
City of Tallahassee	Four Lane Widening of East Park Ave., Appleyard Dr., Conner Blvd., Richview Rd., Mission Rd And Lipona Rd..
City of Tallahassee	New Animal Shelter
City of Tallahassee	Water & Wastewater System Expansions
City of Tallahassee	Stormwater Improvements at several Locations
Leon County	Rehabilitation of Lake Munson Dam
Leon County	Four Lane Widening of Buck Lake Rd..
Leon County	Design of County SAFE Roads Program including Old Magnolia Rd., Rococo Rd., Cypress Landing Rd., Proctor Rd., Nabb Rd., & Swatts Rd.
Leon County	Design of County Parks at Woodville, Fl., Ft. Braden & Chaires
Leon County	Miscellaneous ROW & Acquisition Surveys
Florida State University	Environmental Audits
Florida State University	Site Engineering & Permitting for Campus expansion areas
Florida State University	Acquisition Surveys for Campus Expansion
Florida State University	Design of Bridge & Roadway Repairs
FDEP Parks & Recreation	Surveys for Henderson Beach Park
FDOT	PD&E Studies of U. S. Hwy 98 and State Rd. No. 79

FDOT	Design of U. S. 98 improvements
FDOT	Design of 5.5 miles of State Road No. 79, a four lane divided roadway
Office of Public Counsel	Studies and Expert Testimony for Several water & sewer rate cases before the Fl Public Service Comm.
Fl. Game & Fresh Water Fish Commission	Design of Water Control Structure & Dam at Lake Miccosukee
Fl Department of Corrections	Water & Wastewater Treatment Systems at several correctional Facilities
City of Apalachicola	Design & Permitting for new Wastewater Collection System, Treatment Plant, Water Supply and Distribution System
City of Carrabelle	Design of Water Distribution and Wastewater Collection System
St. George Is. Utilities	Design & permitting of new water Supply well and improvements to Treatment, Storage and Distribution Systems
Casa Del Mar Subdivision	Design of Major Subdivision on St. George Island
Tallahassee Developments	Design & permitting for numerous Residential & Commercial Developments in Leon County
Expert Witness Services	Studies and Expert Witness Services for various cases

- 10/1/98 – Present. After leaving the Baskerville-Donovan firm on September 30, 1998, I again entered private practice offering my services to the public in the fields of Civil, Structural & Forensic Engineering. The primary focus of my practice is studies, investigations, evaluations, reports, engineering designs and the offering of expert witness services. The following is a listing of the clients I presently serve and the professional services that I furnish to them.

CLIENTS	**PROJECTS**
Foley & Lardner Law Firm	Study, evaluation and expert testimony for structural engineering case
Alsobrook & Dove Law Firm	Studies, investigations, reports and

	Expert witness services for two cases
John Barley & Assocs. Law Firm	Studies, investigations, reports and Expert Witness services for one case
Fl. Office of Public Counsel	Studies, investigations and expert Witness services for 18 Utility rate cases
DiversiTech	Structural evaluation & retrofit designs for 3-story, 65 year old building in Quincy, Fl
Sweetbay Subdivision	Site Plan review, concurrency and Environmental Permitting
Meredith Lumber & Northstar	Design of retaining walls for Pensacola Street Realignment project
The Allen Morris Co.	Structural analysis of 10th floor roof Deck for inserts for new roof
Sawgrass Association	Studies & Forensic engineering for Wastewater Treatment Facilities & Environmental analysis of lake system.
Tarragon Realty Advisors	Structural analyses and retrofit designs for cure for wall movements for three story apartment building.
The Wetlands Company	Structural analysis & retrofit design to cure foundation problems at plant in Thomasville, Ga.
Mitch Covington	Structural analyses & retrofit designs to cure foundation & structural defects.
Miracle Hill Nursing Home	Studies, report and expert testimony of design and construction deficiencies at new Nursing Home Facility
Bouchelle Island	Design & Construction Administration for 2,800 ft. long Breakwater
Missouri Office of the Public Counsel	Investigations, report and expert witness services for 2 major cases
Miracle Hill Nursing Home	Design of Parking Facilities.
L & W Engineering, Inc.	Structural design of Large Retaining Wall and Bridge.

FILE

Department of Environmental Protection

Jeb Bush
Governor

Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

David B. Struhs
Secretary

June 23, 1999

Exhibit TLB - 2

Sunshine Utilities
10230 East Highway 25
Belleview, Florida 34420-5531

OCD-PW-99-0366

Attention: Pamela Christmas, Environmental Manager

Marion County – PW
Lakeview Hills
PWS ID No. 3424687

Dear Ms. Christmas:

Thank you for your letter of June 18, 1999 regarding the purchase and installation of a PC 13 Liquid Phase Carbon Vessel System for Well DPW-49. Sunshine Utilities would be responsible for the operation and maintenance of the system.

The Department of Environmental Protection (DEP) does not object to this addition to the water treatment system. However, it should be understood this is not a regulatory requirement since the Maximum Contaminant Level (MCL) for 1,1-dichloroethylene was not exceeded.

If the carbon vessel is added to the system, it will require a DEP construction permit. Please direct any permitting questions to Mr. Frank Huttner at 407/893-3300.

Sincerely,

Richard S. Lott, P.G., P.E.
Program Manager – Drinking Water

RSL:pp

2001 ADF for 5 Systems Proposed for Consolidation Based on Sunshine's Annual Report

System	Total Water Pumped (Gals)	Water Sold (Gals)	Unaccounted For Water (Gals)	Excessive Unaccounted For Water (Gals)
Beleview Oaks	7,347,000	5,954,000	1,393,000 (18.96%)	658,300
Hilltop	3,987,000	2,691,000	1,296,000 (32.51%)	897,300
Lakeview Hills	5,473,000	4,755,000	718,000 (13.12%)	170,700
Little Lake Weir	22,215,000	19,168,000	3,047,000 (13.72%)	825,500
Ocklawaha	26,253,000	21,862,000	4,391,000 (16.73%)	1,765,700
Totals	65,275,000			4,317,500

Total ADF = 65,275,000 Gals. / 365 = 178,835 GPD

Excessive UFW = 4,317,500 Gals. / 365 = 11,829 GPD

Adjusted ADF = 178,835 – 11,829 = 167,006 GPD

Adjustment for 2% Annual Growth for 5 Years:

Test Year 2001 ADF	=	167,006 GPD
2002 ADF	=	170,346 GPD
2003 ADF	=	173,753 GPD
2004 ADF	=	177,228 GPD
2005 ADF	=	180,773 GPD
2006 ADF	=	184,388 GPD

Sizing of Elevated Storage Tank

½(ADF of Year 2006)	=	184,388 GPD / 2	= 92,194 Gals.
Plus Fire Flow – 500 GPM for 2 hrs. Duration			
500 GPM x 60 x 2	=		60,000 Gals
	Total	=	152.194 Gals.
	Round To	160,000 Gals	

USED AND USEFUL CALCULATIONS

1. SOURCE OF SUPPLY WELLS AND PUMPING

   A. TOTAL WELL CAPACITY: 490 GPM + 330 GPM = 820 GPM
      820 GPM = 1,180,800 GPD

   B. FIRM RELIABLE CAPACITY (FRC): 330 GPM WITH THE 490 GPM WELL OUT OF SERVICE.
      FRC = 330 GPM = 475,200 GPD

   C. AVERAGE DAILY FLOW (ADF): FROM EXHIBIT TLB -3
      ADF for YEAR 2006 = 184,388 GPD

   D. MAXIMUM DAILY FLOW (MDF): USE AVERAGE OF 5 MAX. DAYS OF MAX. MONTH TO AVOID UNUSUAL HIGH FLOWS DUE TO FIRES, BROKEN MAINS, LARGE LEAKS, ETC. ADJUSTED FOR 5 YRS. GROWTH.
      MDF from EXHIBIT HWB –5 = 440,269 GPD

   E. REQUIRED FIRE FLOW (FF): FROM HWB TESTIMONY, PAGE 7, LINE 19: 500 GPM FOR 2 HRS. DURATION.
      FF = 500 gal/min x 60 mins. X 2 hrs. = 60,000 GPD

   F. FIVE YEAR GROWTH: TAKEN AS AVERAGE OF 2% PER YEAR AS THE ROUNDED AVERAGE OF 1.92% PER YEAR AS CALCULATED FROM ANNUAL REPORTS.

   G. EXCESSIVE UNACCOUNTED FOR WATER (UFW)

      YEAR 2001: 11,829 GPD FOR 5 CONSOLIDATED SYSTEMS FROM EXHIBIT TLB – 3.

      EXCESSIVE UFW FOR YEAR 2006 = 13,060 GPD BASED ON 2% ANNUAL GROWTH FACTOR.

   H. USED AND USEFUL RATIONALE:

      U/U = (MDF + FF + GROWTH – EXCESS UFW) / TOTAL CAPACITY

      U/U = (440,269 + 60,000 – 13,060) / 1,180.800

      U/U = 41.26 %

      OR

      U/U = (ADF + FF + GROWTH – EXCESS UFW) / FRC

U/U = (184,388 + 60,000) / 475,200

U/U = 51.43 %

LARGER PERCENTAGE CONTROLS TO MEET TEN STATES CRITERIA, THEREFORE:

U/U = 51.43 %

2. STORAGE FACILITIES:

2006 ADF = 184,388 GPD (AS ADJUSTED FOR EXCESSIVE UFW)

FF = 60,000 GPD

REQUIRED STORAGE = ½(184,388) + 60,000 = 152,194 Gals.
(Round To 160,000 GALs)

U/U = 1/2 (ADF + GROWTH) + FF / CAPICITY

U/U = 160,000 / 500,000 = 32 %

3. WATER DISTRIBUTION SYSTEM:

TOTAL 2001 CONNECTED ERCs = 838 (SUNSHINE'S 2001 ANNUAL REPORT SHOWING METER EQUIVALENTS)

Hilltop	=	40
Lakeview Hills	=	51
Little Lake Weir	=	348
Belleview Oaks	=	90
Ocklawaha	=	309
Total	=	838

TOTAL CONNECTED ERCs ADJUDTED FOR 5 YEARS GROWTH = 925 (838 X 2% ANNUALLY FOR 5 YEARS)

Year 2001	=	838 (Sunshine's 2001 annual report)
Year 2002	=	855
Tear 2003	=	872
Year 2004	=	889
Year 2005	=	907
Year 2006	=	925

TOTAL ERCs AVAILABLE FOR SERVICE:

1889 (PER EXHIBIT HWB-5)

U/U = 925 / 1889 = 48.97%

Sunshine's Overall 21 Systems Growth
(Based on Annual Reports Using One 5/8" Meter Equivalent Equaling One ERC)

YEAR (at 12/31)	TOTAL ERCs	GAIN/LOSS	PERCENTAGE CHANGE
1996	2,968.3		
		+12.5	+0.42%
1997	2,980.8		
		+99.2	+3.33%
1998	3,080		
		+125	+4.06%
1999	3,205		
		-59	-1.84%
2000	3,146		
		+15	+0.48%
2001	3,161	____	_____
		TOTAL =	**+6.45%**

Annual Average = 6.45 / 5 = 1.29%

Growth of ERCs in 5 Systems Proposed for Consolidation
(Based on Annual Reports Using One 5/8" Meter Equivalent Equaling One ERC)

SYSTEM	1999 (ERCs)	GAIN / % (ERCs)	2000 (ERCs)	GAIN / % (ERCs)	2001 (ERCs)
Hilltop	38	4 / 10.5%	42	-2 / -4.76%	40
Lakeview Hills	54	2 / 3.7%	56	-5 / -8.93%	51
Beleview Oaks	90	0 / 0%	90	0 / 0%	90
Ocklahawa	287	15 / 5.23%	302	7 / 2.32%	309
Little Lake Weir	338	13 / 3.85%	351	-3 / -0.85%	348
Totals	**807**	**34 / 4.21%**	**841**	**-3 / -0.36%**	**838**

Annual Average = +1.92%