SSU
Southern States Utilities

BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 950495 - WS

APPLICATION FOR A GENERAL RATE INCREASE

VOLUME I
BOOK 20 OF 22

MINIMUM FILING REQUIREMENTS
PREFILED DIRECT TESTIMONY

Containing

CRAIG J. ANDERSON

DIRECT TESTIMONY OF CRAIG J. ANDERSON

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

ON BEHALF OF

SOUTHERN STATES UTILITIES, INC.

DOCKET NO. 950495-WS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Craig J. Anderson and my business address is 255 Enterprise Road, Deltona, Florida 32725.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION?

A. I am employed by Southern States Utilities, Inc. ("Southern States") as Manager of the Bert T. Phillips Analytical Laboratory.

Q. PLEASE SUMMARIZE YOUR EDUCATION.

A. I received my Bachelors degree in 1973 from College of St. Scholastica Duluth, Minnesota with a major in chemistry and minor in mathematics. In 1982, I received my Masters degree in Biochemistry from the University of Minnesota - St. Paul - Gray Freshwater Biological Institute.

In addition, I have specialized training in Ground Water Chemistry and Ground Water Transport Modeling; Management of Chemical Laboratories; Management of Technical People; Environmental Regulations; Risk Analysis and Its Uses in Environmental Regulations; Utility Design and Operations; Electric Utility Economics and Environmental Property Assessments.

Q. WHAT ARE YOUR PROFESSIONAL AFFILIATIONS?

A. I am a member of the American Chemical Society, American Water Works Association, Water Environment Federation and the Environmental Auditing Roundtable. I am a Registered Environmental Manager with the National Registry of Environmental Professionals.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I will describe Southern States' investment in the central lab facilities constructed in Deltona, Volusia County as well as the decision-making process which lead to the Company's construction of the facilities.

The Analytical Laboratory has been designed to provide analytical support services for Southern States. Southern States owns and/or operates more than 150 water and wastewater treatment plants in the State of Florida. Samples from every one of these plants will be analyzed at the lab for both regulatory compliance purposes and operational support purposes. Even though Southern States already has several regional labs that perform analyses of the basic environmental parameters, most of the samples are currently sent to outside, independent labs for analyses.

An initial study was reported in June 1993 that summarized the following information: types of chemical, physical and biological tests performed for Southern States' operations including current costs to send the samples to outside, independent labs for analyses; types of testing equipment that would be required to analyze the samples mentioned above (including costs for the equipment); level of staffing for a laboratory to do the Southern States samples; several scenarios for constructing, equipping and staffing the facility; and ongoing operating and maintenance expenses.

Data from the study options were submitted for financial analyses. The most favorable option was locating the facility in an existing building

and opening the facility as soon as possible.

Construction of the facility began in September 1994 on the second floor of Southern States' Deltona office building. The remodeling included new partitions, new plumbing, new electrical, new heating/ventilating/ air conditioning, new flooring and new ceilings. Five separate air-conditioning units were installed to handle the required fresh air for operation of the facility.

We are on schedule regarding construction and approximately one month behind on lab certification at this time. At this time, we are analyzing our EPA Proficiency Evaluation sample for wastewater parameters. We should be receiving our potable water proficiency sample in the near future. We have already made application for certification to the Florida Department of Health and Rehabilitative Services (HRS). The Quality Assurance Manual was sent to HRS in April for their review. Once we are able to demonstrate successful analysis of the blind samples, HRS will schedule an on-site inspection. With a successful inspection we will be certified to analyze wastewater and potable water for all of Southern States' facilities.

Lab operations are divided into six departments: sample management, microbiology, inorganics, organics, data management and quality assurance. Sample management personnel coordinate when and where the samples are taken, how they are delivered and where they are

stored once they arrive at the lab. Microbiology includes both potable water and wastewater sample analyses. Inorganics include minerals, nutrients, metals, and physical characteristics of the water. Organics include the volatile compounds, industrial solvents, pesticides, herbicides, synthetic organic compounds, and chlorinated disinfection by-products. Results from the sample analyses are stored and maintained on a computerized data base as part of the data management. The data base software will be used to collect data directly from the analytical instrumentation and write reports of data from the historical database. The status of any current sample in the lab can also be tracked with the program. Quality assurance is a process used in the lab to ensure that the testing performed at and data reported from the lab represent the best quality data available from the facility.

A number of different samples will be analyzed from potable water and wastewater plants. For potable water, samples will be collected at the supply well, after water treatment, within the distribution system and at the customer's tap. For wastewater processing, samples will be collected at the inlet to the plant, within the treatment process, at the outlet of the plant and from residues leaving the plant.

To perform these analyses, a number of instruments and support systems have been purchased and installed. One of the primary aspects of the lab is the laboratory deionized water system. It has the ability to clean

water of all contaminants so it can be used as blanks for the tests. Then containers and glassware used for sample collection and subsequent analyses must be clean enough to contain zero levels of the parameter being tested. During experiments, safety equipment and safety procedures are available to ensure and allow safe operation of the equipment during experimentation. Next, enough work area is available to allow ample space to perform the numerous experiments at the Lab.

Instruments have been purchased to perform the following analyses: Volatile chemicals: Perkin Elmer Autosystem gas chromatograph with ElCD and PID detectors fitted with a Tekmar ALS-2016 and LSC 2000 autosampler. Data collection is performed by computer and the Perkin Elmer Turbochrom software.

Volatiles confirmation: Perkin Elmer Q-Mass 910 System 2 gas chromatograph/mass spectrophotometer fitted with a Tekmar ALS-2016 and LSC 2000 autosampler. Data collection is performed by a computer and the Perkin Elmer Q-Mass 901 analytical workstation software along with the NIST compound reference library.

Pesticides and PCBs: Perkin Elmer Autosystem gas chromatograph with an NPD and ECD detectors and an autosampler. Data collection is performed by computer and the Perkin Elmer Turbochrom software.

Pesticides and PAHs: Perkin Elmer Autosystem gas chromatograph with an NPD and FID detectors and an autosampler. Data collection is

Conductivity: Orion 140, Orion 160 and YSI 35 Conductivity meters with automatic temperature compensation capabilities.

Chemical Oxygen Demand: Hach COD reactor that digests samples at 150 C.

Bench parameters - gravimetric and volumetric: Various ovens, balances, desiccators, distillation glassware to perform required sample analyses such as alkalinity, hardness, total dissolved solids, total suspended solids, total solids, volatile solids, oil and grease, salinity, temperature, etc.

Microbiology: Membrane filter (MF), multiple fermentation tube (MFT), presence/absence (P/A), MMO-MUG methods for drinking water, water and wastewater residuals. Other general microbiology methods are Plate Counts and microscopy staining procedures such as the Gram stain method. Microscopes, incubators and counting equipment are also available.

Data management will be performed with the Perkin Elmer Labworks data management software using a 486 PC platform and a network of eleven 486 Pcs. Each work area has several data jacks leading to the file server location. The computer network is based on Windows for Work Groups software. Several of the computers and the file server are loaded with the Windows based software Microsoft Office Suite; Word, Excel, Power point and Access. Quality assurance procedures will be performed with the Northwest Analytical Inc. Quality Analyst,

comprehensive software for statistical quality control.

Bar coding software for sample identification and tracking also will be used. Software was purchased that allows data to be downloaded directly to the Labworks program. After sample data is verified and all the scheduled tests are complete, sample data is downloaded to the database software Access and made available to other Southern States corporate users in this format. Results tracking will be performed using compliance flags for parameters with MCLs or permit limits.

Q. COULD YOU IDENTIFY THE DECISION-MAKING PROCESS WHICH LEAD TO THE DECISION TO CENTRALIZE THE LAB TESTING?

A. Yes. First, it should be understood that Southern States previously had taken steps to bring testing in-house in certain areas of the state for several reasons. Some facilities were already doing process control analyses. Process control samples are required to monitor plant operations on a real-time basis. Closely related to the process control samples are certain tests, often identified as basic environmental tests, that can be run with a minimum of testing equipment. Both testing categories could be performed at wastewater treatment plants. Plant operators are taught many of these tests during their certification training. Operators use the information from these tests to determine whether their plants are operating efficiently and in compliance with regulatory standards.

By 1994, we had nine certified labs in operation in Amelia Island, Beacon Hill, Deltona Lakes, Lehigh Acres, Marco Island, Marion Oaks, Spring Hill, Sunny Hills, and University Shores. Some of these labs also provide testing for numerous Southern States' facilities located through-out the State. These labs perform the following tests: biological oxygen demand, carbonaceous biological oxygen demand, Ph, chlorine residuals, turbidity, specific conductance, fecal coliforms, total suspended solids, and total coliforms. Spring Hill also performs sulfate, chloride and total dissolved solids.

With the ever-increasing list and frequency of tests which the Company is required to perform, we decided to analyze the cost/benefit of bringing as much of the testing in-house as possible.

As an example, the following is a partial list of the routine testing required for drinking water: inorganic compounds (17 components), volatile organic compounds (21 components), pesticides and PCBs (30 components), secondary standards (14 components), group I unregulated organic contaminants (13 components), group II unregulated organic contaminants (23 components), group III unregulated organic components (11 components), lead and copper program testing, total coliforms, and other parameters. Some of the tests must be performed on a monthly basis, others are repeated quarterly, some annually, and some every three years.

Wastewater operations also require a battery of tests that are performed on a regular basis. As an example, treatment plant effluents must be tested for nitrates, total suspended solids, carbonaceous biological oxygen demand, and total coliforms at least monthly and in some situations on a daily basis. Residuals from the treatment process are tested for eleven heavy metals, nutrients, total solids, fecal coliform and other parameters. The frequency of sample collection varies from quarterly to once per year. Some effluents have requirements for regular bioassays. Ground water near the effluent disposal areas when the discharge does not go directly to surface water must be tested quarterly to determine whether the effluent disposal practices are contaminating the aquifer. These monitoring wells are checked for metals, nutrients, general water characteristics, organics and fecal coliform.

A number of the Consumptive Use Permits have requirements for regular monitoring. General water characteristics such as chloride, sulfate, calcium, sodium, total dissolved solids, etc., are checked on a regular (quarterly) basis.

Other samples that will be analyzed at the Lab will come from new well clearances, permit renewals, priority pollutants, process controls, pathogen analyses, and customer concerns.

At this time, most of these samples are sent to outside independent laboratories throughout the State of Florida. Southern States has had a

number of problems with this procedure. First, results from the tests have at times not met basic quality objectives. The numbers cannot be correct when results from one test contradict results from a second test performed on the same sample. We have experienced this on a regular basis. Second, results from some tests have not been received by the operating facility in time to make operational changes in a timely manner. The operator relies on the results to know when the facility is operating properly. Third, independent labs are not able to directly handle customer complaints regarding water quality. These samples are typically received on a weekly basis. We expect that our response time to customer complaints regarding water quality will be shortened dramatically by bringing this work to our own lab. Fourth, emergency samples (requiring a rapid turnaround time, frequently less than 24 hours) are difficult to coordinate with outside lab facilities and also are very expensive.

Considering the four benefits listed above, and the cost of sending the samples to the outside labs, a decision was made to study whether these same tests could be done in-house for less money and/or improved results and service than what we were experiencing using outside labs. Equipment would be purchased to perform most of the tests. Employees could be hired to not only perform these tests, but also act as consultants to the plant operators and respond directly to customers. Outside labs may or may not have the experience and expertise to do consulting in the

water/wastewater business.

Of all the testing requirements, we have decided that only four will not be performed at the lab. They are: dioxin, asbestos, bioassays, and radiologicals. Dioxin analyses are only required when a known source of dioxin (paper mill) may have contributed to the presence of the substance in the water. None of our facilities are near a dioxin source. Asbestos tests are required for potable water only when a known source may have contributed to the sample. If a known source is present (asbestos-cement pipe), waivers are available for many situations. When tests are required, they only need to be performed once every nine years. Bioassays are performed at only a few sites and only a few times a year. The low frequency for this test at this time did not seem to justify the expense of setting-up the test. Radiologicals in both drinking water and wastewater are performed on a regular basis. Plans have been made to continue studying the feasibility of performing this test in-house. A decision will be made later in 1995 whether to add radiological analysis capabilities to the lab.

A number of the instruments that were purchased for the lab will also be able to perform the analyses that have been proposed by EPA as future regulations. The disinfection by-products that have been listed in the regulations can all be performed with existing instrumentation. The additional metals and boron can also be analyzed. The additional

pesticides and other organic compounds can be analyzed. Some of the microbiological parameters that have been proposed cannot be tested at this time primarily due to the fact that an official test method has not been published. Once published, additional equipment may be required, for example, a particle counter, a fluorescence microscope, etc.

The actual process we used to performed the cost/benefit analysis was done in three steps. First, a tally of the analytical requirements for existing permits and regulations was made (tally performed April 1993). Costs to do these tests with a reputable outside lab were used (without inflation) to project the expense for the years 1994 through 1999. Second, expenses for building, equipping, staffing and certifying a lab to perform these tests were estimated. Actual bids from various vendors were used to substantiate the estimates. Third, estimates of on-going operating expenses based on the number and type of samples (expenses were averaged over the 1994-1999 period) were gathered. This data was submitted to a financial analyses by in-house personnel. Results of that analyses indicated that an immediate build option in an existing building would be the most economical manner to handle testing statewide.

Q. WERE THERE ANY OTHER FACTORS WHICH PLAYED A CRITICAL ROLE IN THE COMPANY'S DECISION TO BRING TESTING ACTIVITIES IN-HOUSE?

A. Yes. Perhaps equally as important to economic considerations, we

examined intangible quality control aspects of testing. The financial analysis did not attempt to quantify these intangibles: rapid turn-around time, data quality objectives, customer service relationships, in-house problem solving expertise, operator training, etc.

I do have to mention at this point that some companies are finding that the costs of doing business with outside testing labs does make sense financially. The cost of operating and maintaining a facility can rise to the point that the in-house facility is no longer cost effective. In fact, while I was with Minnesota Power, I was responsible for closing an in-house laboratory for that very reason. After the financial analyses and considering the intangibles, our sample load had reached the point where closing the Minnesota Power facility was the best choice.

There are major differences between the operations of the company where I previously worked and the operations of Southern States. Southern States has multiple plants located across the State that each have different monitoring requirements. Our experience is that identifying and qualifying an outside lab to meet the intangible requirements and still meet our data quality/turn around requirements is difficult, at best. Unlike the plant lab closed at Minnesota Power, Southern States' statewide operations have enough sampling points to keep the analytical instrumentation busy at the central lab to the point that the number of tests will "pay" for the instrument.

Q. WHAT WERE THE RESULTS OF THE COMPANY'S COST/BENEFIT ANALYSIS?

A. SSU Financial Planning and Analysis staff performed various financial analyses of the laboratory project including the no action scenario. Each separate analysis became more favorable as the project evolved through the conceptual stages to the point where actual costs were available. As the costs for the project were identified, the original recommendation, immediate construction of the lab, was confirmed. For the study, the primary variables were timing of the construction, employee salaries, and equipment replacement costs and timing.

Costs of sending samples to outside labs was calculated from current DEP regulatory requirements for both potable water and wastewater plants. The impact of increased monitoring based on proposed regulations was not included. Also not included were the costs of analyses resulting from customer inquiries and special projects.

An inflation factor of 4.00% was assumed. Annual operating costs included sample shipment, labor, certification expenses, instrument maintenance contracts, chemicals/consumables and miscellaneous lab expenses.

For the ten year scenario, the net present value of the project was positive so the decision to build the central lab was made.

Q. COULD YOU DESCRIBE IN FURTHER DETAIL THE NON-

QUANTIFIABLE OR "INTANGIBLE" FACTORS WHICH YOU REFERRED TO EARLIER WHICH PLAYED A ROLE IN THE DECISION TO CONSTRUCT AND OPERATE A CENTRAL LAB?

A. I would like to provide for you an example I developed that I like to use when I discuss the reasons for establishing an in-house lab. The water and wastewater business may be broken into five primary segments: delivery, reliability, product, finance and quality. Delivery involves placing into service the pipes and treatment plants. This is commonly an engineering and construction function. Reliability is an operational aspect of the business. Product is in the pipe and is pumped to its final destination. Finance covers the dollars that are needed to pay for the delivery, reliability and service. Quality defines the acceptability/safety of the product that you are delivering to the customer in the form of potable water as well as the quality of the effluent that you are placing back into the environment after the customer has made the best use of the product. All of these segments come together to constitute the service SSU provides to our customers. Up until the internal lab was established, Southern States depended on outsiders to assess and communicate the quality of its primary product. I do not know of too many large businesses that do not know the quality of its products until an outsider has the time to do an assessment and communicate with them whether their product is acceptable. Southern States's products are primarily environmental

products. For most businesses, the environment is secondary to their primary product. For Southern States, environmental is its product. It sells environmental products. The safety of our customers and health of our environment depends upon us maintaining the high quality of our product. Therefore, we must assure ourselves that our product is tested timely, properly and efficiently to preserve our customers health, as well as the health of the environment and our business.

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes, it does.