S E W A N E E U T I L I T Y D I S T R I C T

Of Franklin & Marion Counties, Tennessee

LONG RANGE & STRATEGIC PLAN

OCTOBER 28, 2008

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Long Range & Strategic Plan

Following a serious drought in 1954, which year was preceded by two years of drought, and following a time when water trucks delivered drinking water to Sewanee from Monteagle, the following report was made:

"The completion of O'Donnell Lake has added a most wonderful recreational facility and beauty spot to our already exceptionally beautiful campus. The dam was completed and the valves closed on December 19. The Lake was filled by February 6…..According to our estimates the top foot of water in the Lake would supply the entire needs of the community for nearly two months if there were no other source of supply at all, and since all that we really need is a little supplement during the Fall, it looks as if our water supply problem is solved for all times."

Vice-Chancellor McCrady
Report to the Trustees
University of the South
June, 1956

VISION

It is the vision of Sewanee Utility District to be a leader in providing public health protection and environmentally sound and innovative water and wastewater utility services using state – of-the-art technologies, proven operational expertise, resource planning and excellent customer service in a cost effective manner.

Rainbow over Sewanee

University of the South

Sunset over Sewanee Utility District

MISSION

The Sewanee Utility District (SUD) is committed to providing its customers with high quality drinking water and wastewater collection, treatment and disposal services in a cost-effective manner that meets or exceeds all regulatory requirements. SUD seeks to insure long-term security, reliability, sustainability, and quality of these services while providing for future growth. These will be provided through exploration, progressive planning, fiscally responsible system improvements, conservation, customer education, and communicating its plans to the public in an open and responsive manner.

CORE VALUES

- SUD will maintain a qualified and competent General Manager and staff and will provide them with a place to work that is both appropriate and satisfactory and the resources necessary to accomplish their jobs.

- SUD is dedicated to providing customer satisfaction through reliable operations and leadership, and will be accountable for results.

- SUD will be open with the public and with the communications media in all its operations and management functions.

- SUD will be diligent in providing a reduced-stress working environment and will respect the workers.

- SUD will strive for excellence, always with honesty, integrity and reliability.

- Employees are encouraged to seek and develop new and innovative operating methods. No one will be penalized for trying something new.

- Differences between Board members and staff members will be resolved internally, not externally. A friendly environment will be provided for resolution of differences. SUD will speak with a single voice.

GREEN COMMITMENT

SUD, in seeking to affirm its direction as a true partner in our region's conservation of natural resources and environmental stewardship, has formally adopted the following Green Commitment Policy:

Policy: SUD's Green Commitment is to:

- Pursue and encourage environmental best practices – operating and developing in ways that ensure that future generations can continue to enjoy the earth's resources;
- Protect and improve the quality of our local surroundings;
- Meet and, where possible, improve upon the environmental standards set down by law:
- Continually strive to improve our environmental performance; and
- Work in partnership with our customers, government agencies, and our community to promote environmental best-practices.

POLICIES

In furtherance of management and operations directed by established policy statements, and particularly to accomplish long range and strategic planning, the SUD Board has established the following policies:

- Annual Rate adjustment
- Who pays for growth
- Decentralized wastewater service
- Approval of water line extensions when they are of direct benefit to SUD's existing customers
- Approval of sewer line extensions when they are of direct benefit to SUD's existing customers
- Creation of Infrastructure Repair and Replacement Reserve
- Water meter change out funding
- Watershed protection
- Water conservation
- Regional cooperation

These and many other policies are included in the District's Policy Manual.

OBJECTIVES OF THE STRATEGIC AND LONG RANGE PLAN

1. To develop sufficient financial reserves to reduce the District's exposure to financial risk of being able to obtain, timely, reasonable cost capital for infrastructure repair and replacement in the face of liquidity crisis, difficult credit environments, and severe budget constraints on the part of Federal and State government.

2. To remain a public utility with its own Manager and staff to operate the utility.

3. To extend present supply sources to meet as much of 50-year demand requirements as possible.

4. To explore effluent reuse options and costs to extend present supply sources.

5. To protect and steward present supply sources.

6. To manage the utility to avoid rate shocks to its customers.

7. To maintain adequate working capital to address unforeseen and unplanned events, such as increased costs due to drought emergencies, etc.

8. To establish "where we are going," and "how we will get there."

9. To provide a reference base for future decision-making.

10. To provide a cohesive and coordinated approach to management functions.

11. To provide integrated analysis of the District's needs.

12. To provide prioritization and assist in timing of budget decisions.

I. FIVE YEAR CAPITAL IMPROVEMENTS PLAN

The 5-year capital improvements plan provides details and schedules for all significant capital improvements to be accomplished for 5 years from FY 2008 through FY 2013. The following page breaks out capital allocations for each year in a format showing items in the following categories:

Administration, Water Supply & Treatment, Water Distribution, Wastewater Treatment, and Wastewater Collection.

The capital improvements plan is a very fluid document that undergoes revision each year. As one year comes to an end, a year is added to the range, and the whole plan is re-considered for priority. As time moves forward, items will move from the strategic plan into the scheduled capital improvements plan.

SEWANEE UTILITY DISTRICT
CAPITAL IMPROVEMENTS BUDGET
5 YEAR PROJECTION

DEPARTMENT	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
GOVERNANCE & PLANNING						
REGIONAL PLANNING INITIATIVE	$	$25000	$25000	$	$	$
MANAGERS TRUCK	$	$	$	$	$28000	$
WATER TREATMENT						
SUPPLY AUGMENTATION STUDY	$	$	$	$20000	$	$
FIX LEAK IN LAKE JACKSON DAM	$35000	$	$	$	$	$
NEW WATER TREATMENT PLANT	$1220000	$1220000	$ -	$ -	$ -	$ -
REWORK INTAKE AT LAKE O'DONNELL	$	$40000	$	$	$	$
WATERSHED PROTECTION	$	$	$10000	$10000	$10000	$20000
WATER CONSERVATION	$	$	$4000	$4000	$4000	$14000
DISTRIBUTION						
FARM TANK PAINTING	$	$	$	$60000	$	$
LEAK DETECTION AND REMEDIATION	$	$47500	$40000	$	$	$
LARGE METER REPLACEMENT	$	$30000	$	$	$	$
SMALL METER REPLACEMENT	$	$	$	$50000	$100000	$100000
REPAIR LAKE JACKSON PUMP BUILDING	$	$20000	$	$	$	$

REPLACE WORK TRUCK	$	$	$21000	$	$	$
WASTEWATER TREATMENT						
LAGOON MAINTENANCE AND REPAIR	$	$15000	$	$	$	$
NEW TRUCK FOR WWTP	$	$	$	$25000	$	$
REPLANT AND RESEED SPRAYFIELDS	$5000	$5000	$5000	$5000	$5000	$5000
STUDY OF WWT AUGMENTATION OPTIONS	$	$50000	$	$	$	$
STATE: CONSULTANTS & ENGINEERS REPLY TO CAP	$	$50000	$	$	$	$ -
STATE: REQUIRED UPGRADES & REMEDIATION	$	$35000	$	$	$	$
WASTEWATER COLLECTION						
INFLOW AND INFILTRATION REPAIRS	$35000	$20000	$20000	$200000	$200000	$240000
SEWER CAMERA AND WASHER EQUIPMENT	$	$	$30000	$	$	$
COLLECTION SYSTEM STUDY	$	$	$225000	$	$	$
BUILDING MAINTENANCE						
NEW COMPUTER SYSTEM AND SOFTWARE	$4000	$	$	$5000	$	$
LANDSCAPE AND PAVE NEW OFFICE PARKING LOT	$15000	$	$	$	$	$
MISCELLANEOUS REPAIRS	$5000	$5000	$5000	$5000	$5000	$5000
EQUIPMENT REPLACEMENT						
LINE LOCATION EQUIPMENT	$	$	$10000	$	$	$
MISCELLANEOUS EQUIPMENT	$4000	$4000	$4500	$4500	$4500	$5000
DEVELOPMENT OF SITE						
PIPE STORAGE AREA	$	$	$20000	$	$	$
FRANKLIN COUNTY GIS PROJECT	$5000	$1000	$1000	$1000	$1000	$1000
CONTINGENCY	$5000	$5000	$5000	$5000	$5000	$5000
TOTAL CAPITAL IMPROVEMENTS	$1333000	$1572500	$425500	$394500	$362500	$395000

II. ADMINISTRATION & OPERATIONS

Goal: SUD intends to maintain a qualified and competent General Manager and public utility staff and to provide customers reliable water service through proactive planning and decision making, investing in timely repair and replacement of infrastructure, and ongoing education of staff and board members who are held accountable for results.

Present Situation:

- In 1994, the District faced certain bankruptcy due to decisions made by previous boards in the mid-1980's to build new distribution lines using debt financing for proposed new development in the District that did not materialize. To avoid takeover by the State Public Utility Board, the 1994 board authorized overnight service rate increases of over 80% to provide adequate debt coverage. This board also privatized operations, hiring a contract firm to manage and operate the utility. In the early years of this arrangement, maintenance procedures and scheduling were implemented, and the system was greatly improved. However, after a succession of ownership, maintenance and operation went into total neglect by failure of the owners to provide the necessary support to the staff. This arrangement lasted until 2006, when TDEC imposed a moratorium on new connections to the District's wastewater treatment plant due to poor operations management and lack of ongoing investments in repair and maintenance of existing infrastructure. In 2006, an engineering study also confirmed that the District's water treatment plant needed to be replaced, also, in part, due to lack of adequate investment in ongoing repair and replacement and, in part, because of the age of the existing plant and need to upgrade treatment technology to meet anticipated future treatment standards. For these reasons, the contract firm hired to run the utility's operations in 1994 was terminated in 2006, a new District General Manager was hired, Ben Beavers, and he in turn hired a dedicated staff to operate and administer the utility his purview.

- Regional planning. The recent droughts of 2005-2007 have demonstrated needs in most communities on the Southern Cumberland Plateau for additional water supplies. All the water utilities in this region, including SUD, experienced shortages in 2007. The most obvious solution can be accomplished through regional planning and shared source(s). Several attempts at regional planning have been initiated in the past year. The Board has developed a Policy statement committing to cooperate in regional planning efforts. To this end, 5-year capital improvements plan identifies $25,000 in FY 2009 and $25,000 in FY 2010 for the regional planning initiative. While the focus is primarily on water source(s) and supply, it is

quite possible that some attention will be provided for wastewater planning. This, too, is in critical stage in the region, and SUD wants to explore regional solutions.

- Personnel. Staffing of the District is "lean", but adequate for the present time. Excellent leadership is provided with the General Manager, and with senior operators at the water treatment plant, wastewater plant, distribution, collection and maintenance. Front office, to include bookkeeping and records, is very good. The staff takes pride in their work and is accommodating to the public. The staffing level is sufficient through the start-up and operation of the new water treatment facilities, currently scheduled to come on line in late 2009. As environmental regulations become more complex, and as more and more sampling, testing, and evaluations are required, it is expected that a need will evolve for a staff person, professionally trained, to fill these duties. SUD expects this to be required about FY 2014, or perhaps sooner.

- Vehicles. In this 5-year capital improvement plan three vehicles are planned to be replaced. Although it varies, the vehicles used by the District will provide satisfactory operation for approximately 150,000 miles, or 6 years. As these conditions approach, the vehicles will be scheduled for replacement.

- Offices and Maintenance Facilities: These facilities are quite adequate for the foreseeable future, with the office building being new.

Long Range Plan:

- Establish a combination of ongoing education, compensation, and employment incentives that are adequate to maintain a qualified and competent General Manager and public utility staff, given the increasing competition in the State for these qualified personnel.

- Maintain the utility's operations and ownership structure as a public utility and avoid privatization or public-private partnerships of either ownership and/or operations.

- Invest in adequate and timely repair and replacement of infrastructure necessary to provide customers reliable water service and avoid future rate shock due to unplanned and unforeseen infrastructure requirements.

- Make certain that growth actually pays for growth so as to not burden existing customers with the costs to the District associated with this growth.

- Incorporate life-cycle costing into financial decisions, rather than relying only on first order costs to determine which capital or operating option in which to invest the District's financial resources.

III. WATER SUPPLY, TREATMENT AND DISTRIBUTION

Goal: SUD intends to maintain an uninterrupted, publicly-owned and managed, water source and supply of potable water to our customers through an appropriate (50-year) period of time.

Present Situation:

- Today, one-third of the world's population is living without access to adequate supplies of freshwater. By 2025 up to two-thirds of people in the world may be facing serious water shortages, including people in 35 percent of cities in the United States. In 1978, federal funding of public utilities' needs constituted 78 percent of the cost of new water infrastructure. By 2007, the federal share had shrunk to just 3 percent. In the next 20 years, public utilities in the U.S. will require more than half a trillion dollars for infrastructure repairs and improvements. As public capital becomes harder to obtain, the privatization of public utilities is frequently considered as a solution. However, privatization can result in dramatic rate increases to customers, neglecting ongoing preventative maintenance to keep existing infrastructure in good working order, and failure to invest in needed new infrastructure. (See Tara Lohan, ed., Water Consciousness (San Francisco: AlterNet Books, 2008), 12, 45-46).

- The District's safe yield is 500,000 – 550,000 gpd average demand for planning purposes (based on the 2008 "Raw Water Source Study Phase II Calibration and Phase I Raw Water Yield Study" performed for the District by Consolidated Technologies, Inc.). Safe Yield is the maximum average daily demand (ADD) the supply can withstand under the precipitation assumptions given without depleting all supply in the supply reservoirs under consideration. This safe yield assumes inflow from the watersheds of Lakes O'Donnell, Jackson, and Dimmick and that during a drought the space rule would be implemented (proportionate

withdrawals from each reservoir) to enable maximum inflow to the reservoirs from precipitation events.

- The Lake Jackson reservoir is leaking ~100,000 gpd and losses from the distribution system are ~21% of total monthly demand of ~300,000 gpd. Thus, losses from the system are ~50% of total average day demand. Fixing both the reservoir leaks and distribution leaks are budgeted for during FY2008-FY2010.

- Under present new ERU demand of 266 gpd/ERU/day, the District can add ~500 ERUs to its system before requiring additional supply to maintain an adequate safe yield. At ERU average growth rate this may occur in ~30 years. This assumes that large new developments that may occur in the District of between ~500-1,000 ERUs will be asked to provide their own new raw water supply for the District's use to serve this large development.

- The District is building a new microfiltration water treatment plant with a peak capacity of 1 MGD that is expected to go online at the end of FY2009. This plant exceeds present regulatory standards and will meet future known standards. At present peak demand/ERU/day of 366 gpd, the new treatment plant will be able to accommodate an additional ~1,200 ERUs (See September 15, 2008 "System Development Charges" memo from Raftelis Financial Consultants, Inc.).

  Long Range Plan:

  - Determine if a combination of demand management (reducing waste in our water delivery infrastructure), water conservation measures, and working with nature to manage water resources can extend existing supply to fifty years or if additional raw water supply is needed to meet fifty-year demand estimates (see Table 1).

  - Explore watershed protection and management initiatives with landholders of the watersheds in order to protect existing supply quantity and quality.

  - Invest in appropriate and efficient technological approaches to increase water recycling and reduce water use and contamination.

  - Engage in regional water resource planning activities to develop alternatives to the requirement for the District affording the development new raw supply on its own.

- Accumulate financial reserves for future new capacity requirements, as well as a replacement reserve to self-fund a portion of the new wastewater treatment plant should begin now so that the District is not solely dependent on future debt financing.

- Continue to develop the District's drought management planning capability so that even in droughts worse than the 100-year drought of 2007, the District shall have adequate supplies for its customers.

Table 1: Data interpolated from 2008 CTI Study

AVERAGE DAY DEMAND GROWTH PROJECTIONS

YEAR	TODAY (2007)	10 YEARS	20 YEARS	30 YEARS	40 YEARS	50 YEARS
AVAILABLE YIELD (gpd) [Approximate]	500000	495000	490050	485150	480298	475495
ADD (gpd) @ 2% GROWTH	301045	366972	453551	545301	664719	821544
SURPLUS OR (DEFICIT) (gpd)	198955	128028	36499	-60152	*-184421*	-346049
ADD (gpd) @ 1.7% GROWTH: CONSERVATION		356321	421746	499183	590840	699325
SURPLUS OR (DEFICIT) (gpd)		138679	68304	-14034	-110542	-223830

IV. WASTEWATER TREATMENT

Goal: SUD will provide effective wastewater treatment for our customers and will operate and maintain these facilities in a manner that is environmentally sound and fully compliant with all of the environmental regulatory agency requirements. Adequate capacity will be provided, and the very best operating procedures will be utilized with no exceptions.

Present Situation:

- The District operates a spray irrigation land application WWT system. The wastewater permit allows treatment and disposal of 590,000 gallons per day. Both TDEC and SUD regard this figure as the capacity. Current wastewater flow is about 310,000 gpd. With our management of water levels in the treatment ponds, SUD is able to provide for at least 45 days storage, allowing us to store, rather than spray, in wet weather periods, and allows us to store peak flows with heavy rains and use averages for planning. Using the 2% growth planning figure, the spray fields will reach maximum capacity in ~30 years, and in ~20 years (2028) will reach the 80% capacity requirement by TDEC for planning new treatment works.

- However, the District is presently under a TDEC-imposed moratorium that prohibits any new connections to the system. In 2005, following several years of obvious neglect and maintenance failure, SUD was issued a Penalty Order and sewer moratorium by the Tennessee Department of Environment and Conservation (TDEC). These actions by TDEC were certainly warranted. TDEC required the development and completion of a Corrective Action Plan, a Capacity Assurance Plan, improvements to the collection system, and significant improvements to the operating procedures at the plant. The results are dramatic. All of the TDEC requirements were correctly implemented by mid-2007. Disposal areas are improved by re-seeding of cool-weather friendly vegetation, monitoring weirs were installed, remote sensing and alarms have been installed, operating cycles were modified and automated, operating pressures were adjusted, and the marginal spray areas were discontinued. Since early 2007, no overland off-site wastewater flows have occurred. These wastewater facilities are in complete compliance, and SUD awaits a decision by TDEC to release the Order and Moratorium. The remaining and obvious long range matter to be determined is how long to utilize the current wastewater disposal facilities, and what will be the "next generation" facilities to be developed.

Long Range Plan:

- For the long term, SUD will provide additional facilities by 2028. This does not mean the existing disposal fields will be discontinued; rather, it means that new or expanded facilities will be placed into use in addition to maintaining current treatment works. We will have the flexibility to divide the loading if needed. Accumulating cash reserves should begin now.

- A number of options exist: Additional spray areas, conventional wastewater treatment with discharge off the mountain, use of drip-field disposal, or wastewater reuse. It is the long range plan of SUD to develop a wastewater reuse program, as the next generation wastewater disposal, and to have it in operation prior to 2028. Decentralization will be the strategy in providing additional wastewater treatment until effluent reuse is established and utilized. Drip-fields will be the choice for any new de-centralized disposal requirements.

- Approach TDEC to get them to realize that compliance in 2008 with all of their requirements has already been achieved, and has been since early 2007. Work with these facts to get the Order and Moratorium released. This will be addressed in 2008-2009.

- Engage a consultant now to perform a feasibility study for wastewater reuse in Sewanee. In the same study, the consultant will evaluate operating performance and limitations of the existing treatment works. Study will be completed by the end of 2009.

V. WASTEWATER COLLECTION

Goal: SUD will continue the aggressive wastewater rehabilitation program that was launched in 2006. Specifically, the goal will be to minimize flows to the wastewater plant during periods of rainfall.

Present situation:

- Along with the rest of the water and wastewater system facilities, the collection system suffered from maintenance neglect for a number of years leading up to the TDEC sewer connection moratorium, during which time the District used the services of a contract operations firm. This neglect resulted in broken, unreplaced collection lines that were exposed to inflow from creeks. Further problems existed with chronic wastewater lift station by-passes. Indeed, disrepair of the collection system was a major factor in the failures that led to the 2005 TDEC Order and Moratorium. About 25% of the collection system has effectively been replaced since 2005 at a cost of nearly one1 million dollars.

Long Range Plan:

- SUD has allocated $225,000 for a comprehensive study of collection system needs. This study will offer a basis to prioritize repair and replacement work that remains.

- SUD will continue a focused collection system repair and maintenance program as a permanent initiative. Wastewater lift stations will be repaired or replaced as required. A large portion of the collection system will be reworked and upgraded by 2013, on a prioritized approach, in addition to the 25% corrected since 2005. This will be in a concentrated effort to eliminate inflow and infiltration.

- Through 2018 SUD will aggressively continue to invest in collection system improvements to reduce excessive rainfall induced flows. After that year, SUD will undertake a sustained effort to be planned for perpetual maintenance.

VI. DEVELOPMENT

Goal: SUD intends to have growth pay for growth by assessing economically determined developer charges, requiring developers to pay for the full costs of water and sewer infrastructure within their developments, and by not allowing any privately owned and operated wastewater facilities or water treatment plants in its service area.

Present Situation:

- In 2005, SUD adopted a development policy requiring all development to pay for water and sewer infrastructure within their development. In 2007, this development policy was enhanced to include upfront developer charges for access to shared infrastructure. Thus, existing utility customers will not be asked to accept higher user rates and charges to subsidize any of the costs to construct new facilities and capacity required to serve new customers or development. The objective under this approach is that each new utility customer would be assessed a system development fee to fund the capital costs required to construct the specific increment of capacity required to serve the new customer, prior to that customer connecting to the utility. In 2008, the District passed a series of policies to clarify its ownership of any private wastewater facilities and water treatment plants in its service area and to identify situations where the District would provide infrastructure to existing homeowners not presently using SUD's services when public health needs dictated this approach.

- Commissioners' duty under the Tennessee Utility Enabling Act is to make decisions that are in the best interests of the District's present and future customers. Thus, utilities in Tennessee have a part in managing growth by the very nature of the services they provide. Even when a city or county has a planning commission, the planning commission has no authority over the utility providers. A planning commission may approve a particular development, but if the utility does not possess the capacity to serve what a planning commission may approve, then such a development will not go forward. In this sense a utility's role is the same whether a development is subject to a planning commission or not. It is the responsibility of the utility to determine whether it can serve a development, how it can serve a development and to impose any conditions on serving a development which are in the utility's best interests. This decision should be the same regardless of whether a proposed development must obtain approval from a local planning commission or not.

- Until SUD signs a contract with a developer, it has no obligation to supply water to that developer. There is no requirement to "treat every developer the same" in every respect. The law only requires that a utility's rules and policies not be unjustly discriminatory. In order to protect the district, large developments, by their very nature, may require special considerations. From SUD's Current Development Policy adopted in 2007: *When a developer requests a commitment for water and sewer service for a large development which will substantially impact the District's existing water supply capacity and/or sewer treatment capacity or which will require major improvements to the District's water treatment plant or distribution system and/or to the District's sewer treatment plant or collection system, such requests will be considered on a case-by-case*

basis. This Rule shall serve as a guideline for the consideration of the request for water and sewer service for a large development, but the District may modify or add to the provisions of this Rule in making its commitment for water and sewer service for a large development.

Long Range Plan:

- Each year, as part of its Rate Study Process, calculate the economic costs to the District for adding new connections to its existing system to establish Developer Charges for these new connections in order to make certain that growth actually pays for growth so as to not burden existing customers with the costs to the District associated.

Appendix 1: Wastewater Treatment Plant History (Material Presented to TDEC at a meeting November 17, 2008)

History: The oldest parts of the Sewanee Utility District (SUD) sewer system date back to 1921. The bulk of the system was constructed in the mid 1950's with the construction of a conventional treatment plant where Bob Stewman lift station is currently located. The plant was plagued with problems over the years and in the mid 1980's, the decision was made to replace the plant.

SUD decided to pursue innovative treatment technologies for their new plant. SUD was awarded an EPA innovative technology grant which covered approximately 80% of the costs. The selected treatment process utilized effluent spray irrigation into a forested area. In 1987 the new treatment facility was completed and the existing plant was abandoned.

From 1987 until 2004, the plant was operated as originally designed. The plant consists of two facultative lagoons (A-Cell and B-Cell) which feed into a facultative polishing lagoon (C-Cell). The effluent is then sprayed through 461 spray heads delineated in 19 spray fields covering an area of approximately 63 acres of mostly forested land with varying terrain. Extensive soil testing was performed as part of the original design criteria to insure original application rates were sustainable. Standard irrigation procedures under the original operations plan were to apply effluent on four fields for four hours for a total of eight hours per day, Monday through Friday. Weekend operations only occurred during extreme conditions and lagoon storage was utilized but not often maximized. The facility operated under a State Operating Permit instead of NPDES since no direct discharge was performed.

From 1987 until 2004, no operational changes were made to the original design nor were any additions to equipment or fields made. Until 2004, all TDEC inspections were favorable and defects noted involved collection system failures.

How we got here: On June 4, 2004, the Tennessee Department of Environment and Conservation (TDEC) received a formal complaint from a property owner downstream of the Sewanee Utility District (SUD) wastewater treatment facility. The complainant stated that discolored water was flowing from the site and leaks from the spray facility were noticeable.

On July 6, 2004, TDEC personnel from the Chattanooga and Columbia field offices performed a Compliance Inspection Evaluation (CEI). During the inspection, several deficiencies were noticed primarily due to a failure in the operations and maintenance of the system. Major items noted included the following:

1. Multiple damaged spray heads resulting in direct run-off into streams within the spray area. Several of these heads had created erosion areas adjacent to the spray heads.

2. Several operating spray heads were located as such that spray from the heads would directly enter the streams within the facility.

3. Ponding and run-off within the spray area.

4. Need to address items such as laboratory procedures, signage, influent metering, and general record keeping.

5. Apparent seepage from C-Cell lagoon.

6. Watercourses within the spray site were visually impacted.

On July 19, 2004, TDEC issued a Notice of Violation requiring SUD to address the deficiencies found during the CEI. SUD responded with an action plan on August 6, 2004 and further correspondence after a Show Cause hearing on August 25, 2004. The action plan contained items addressing the operational and maintenance failures which led to the NOV.

SUD failed to respond in a timely manner to complete items documented during the first CEI. On March 30, 2005, personnel from various TDEC offices performed a second CEI. Again, multiple deficiencies were noted and a second NOV was issued April 18, 2005. Major items included the following:

1. Multiple spray heads were damaged resulting in direct run-off into streams within the treatment facility. Large holes were again eroded at the base of the spray heads.

2. Spray heads were again operating where spray was directly entering streams.

3. Ponding and run-off was again documented.

4. Watercourses within the spray fields were visually impacted.

As a result of the CEI's, an Agreed Order was entered into on January 27, 2006.

What TDEC Required: As part of the Agreed Order, SUD was required to perform several studies and perform certain operational changes. A summary of the major points are as follows:

1. Immediately institute a moratorium within the collection system

2. Within 180 days of the Agreed Order, complete a Corrective Action Plan (CAP) which included 12 major areas.

3. Within 90 days of the Agreed Order, complete and implement a Management, Operations and Maintenance Program (MOM).

4. Beginning in April 1, 2006 and continuing until April 1, 2011, SUD must complete an Annual Report outlining progress with the MOM program.

Each of these requirements carried a fine for failure to complete.

What SUD Did: SUD complied with every aspect of the Agreed Order. The district has been has been in full compliance for almost two years and has proven the upgrades and current operational plan will provide successful operations in the future. SUD has fully implemented upgrades and plans as outlined in the Agreed Order including those contained within the Corrective Action Plan and Management, Operations and Maintenance plan.

To illustrate SUD's commitment, the following summarizes major accomplishments performed since the issuance of the NOV's and Agreed Order.

Administration:

1. Discontinued contract operations and reverted to public utility operations.
2. New general manager with professional degree directly related to wastewater operations.
3. Fully funded budget plan to complete all projects, totaling nearly 1.5 million dollars.
4. Instituted system wide maintenance program which allows for close monitoring.

Treatment Facility:

1. Performed all studies required within the order and adjusted operations based upon those findings.
2. Automated spray functions to shorten spray times from 4 hours to 1 hour. Easy to operate controls allow operators to change times and patterns as conditions change.
3. Removed 56 spray heads from service that were within 75 feet of waters of the State. Additionally, adjusted spray amounts based upon studies and visual results to prevent run-off and ponding.
4. Increased spray pressures and experimented with nozzle sizes which drastically reduced clogs in the spray heads. The increased pressure forces small debris through the spray head, instead of clogging.
5. Instituted intensive silviculture program throughout the system. Included was canopy thinning through commercial logging, planting of several thousand trees of favorable species and intensive planting of ground cover. Over 22 acres were harvested and replanted in addition to all fields receiving ground cover maintenance. SUD has a plan in place for perpetual silviculture maintenance to be provided by a professional forestry service.
6. Installed flow meters on each of three streams leaving the facility. Flow is monitored and compared to spray applications within the drainage area to insure no run-off is occurring. SUD has adjusted spray patterns based upon data collected from the meters.
7. Developed lagoon storage plan to maximize wet weather storage. Plan has been very successful during past two winter seasons. Lagoon levels are dropped during the drier summer months so they are at minimum level at the start of the winter season. Levels are gradually increased during wet periods to prevent overloading the spray fields. A mass balance was performed by Dr. Dennis George, with Tennessee Technology's Center for Management and Utilization of Water Resources.

8. Hired second full time operator dedicated to the treatment facility. Operations changed from five days per week to seven days per week. This allows for shortened application periods compared to previous operations. Additional personnel also provide increased visual monitoring during spray applications.

9. SUD developed a flow monitoring plan utilizing a master flow meter. All spray field combination flows are known. SUD experimented with different system failures which resulted in a monitoring plan. Operators are able to identify even the loss of a single spray head and respond. Additionally, operators manually check each field several times per day.

Collection System:

1. In 2005, SUD replaced 25% of the entire collection system, dramatically reducing inflow and infiltration into the collection system.

2. SUD continued this effort in 2006 and 2007. A large portion of the system was tested and repairs continued as outlined in the Annual Reports.

3. Controls were replaced at lift stations and remote monitors were installed. All by-passes recorded during the previous two year period were due primarily to control failure. This was further complicated by a lack of remote monitoring at two of the lift stations. SUD installed new controls at both lift stations which included auto dialers at each station.

4. SUD purchased a sub meter GPS system and has created a detailed accurate map of the system.

5. SUD has installed portable area velocity flow meters within the individual drainage basins. This allows SUD to target future expenditures where most needed.

As outlined above and contained within reports submitted to TDEC, SUD has completed all items required under enforcement actions. This has resulted in dramatic changes in the system. SUD has not a single hydraulic overload within the collection system in over two years. SUD has eliminated direct runoff into waters of the State.

Summary: SUD has accomplished, with complete success, all of the obligations of the Permit and the Order. The wastewater treatment and disposal facilities now work perfectly and are better than they ever were in previous years when they were used by the EPA and TDEC as a model to show visitors the successful operations of woodland disposal.

Conclusions: The Order and the Corrective Action Plan have been completely satisfied in all respects. The only outstanding obligation is the Annual Report outlining progress within the MOM program. SUD will continue this reporting until the requirement expires on April 1, 2011.

There is no longer a viable reason for TDEC to hold on to the Sewer Moratorium. It should be released.