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LEADERSHIP THROUGH SERVICE

AS CHIEF OPERATOR AT THE SHOAL CREEK WATER RECLAMATION FACILITY, JIMMY STEWART GUIDED HIS TEAM THROUGH TWO MAJOR PLANT UPGRADES

By Ted J. Rulseh

JAMES R. (JIMMY) STEWART ENTERED THE WASTEWATER TREATMENT PROfession for a simple, practical reason.

"The economy was bad in the early 1980s, and I needed a job," he says. He joined the Clayton County (Ga.) Water Authority in 1982 as an operator at what is now the Northeast Water Reclamation Facility.

By 2000, he had earned his Class I Wastewater license and had worked his way up to chief operator at the authority's 4.4-mgd Shoal Creek Water Reclamation Facility. That plant is part of an innovative and advanced system that treats wastewater and recycles it back to the drinking water supply (see sidebar).

At Shoal Creek, Stewart earned recognition for leading his team through major upgrades to the liquids and solids sides of the process.

In 2008, the Georgia Association of Water Professionals (GAWP) honored Stewart as Top Operator for District 3, which covers the north central part of the state near the Atlanta metropolitan area. In March 2009, the Water Environment Federation named him one of its Water Heroes — professionals who "protect public health and the environment by cleaning the world's water day after day." The plant itself has received the GAWP Platinum Award for 12 years of full compliance with its NPDES permit.

Stewart enjoys the recognition, but credits the members of his staff at Shoal Creek. "It was a good crew of operators who pulled together as a team," he says. "They wanted to be involved in the process, and it was really fun brainstorming with them and trying to figure out the different challenges we were facing. Any awards or recognition that I am receiving come from working with a great group of people."

Jimmy Stewart served for eight years as chief operator at the Shoal Creek Water Reclamation Facility, then stepped down and returned to an operator's role. While chief operator, he focused on leading his team and building their skills. (Photography by Harris Hatcher)

WINDING ROAD

Stewart voluntarily stepped down last year as chief operator and instead works the night shift as an operator at Shoal Creek. He looks back with great satisfaction on his eight years of leadership. He is especially proud that four operators earned their Class I licenses — the highest level in Georgia — during his tenure.

It was by no means a direct path that led Stewart to his current position. After high school, he worked in the hotel industry and tried his hand at electrical work before taking a job with the CCWA. He took his training at the authority's expense through the Georgia Water & Wastewater Institute, a subsidiary of the Georgia Association of Water Professionals.

He worked at what is now the Northeast facility until the early 1990s, when he decided to try selling cars. "I started selling Lincoln Town cars, but it didn't work out," he recalls. "They told me I was too honest to be a car salesman. And then the economy went south again, so I had to regroup, and I was able to go back to work at Clayton County Water.

"I left again in the mid-1990s for some work in downtown Atlanta with a ministry group that helped the homeless. After a short time, I had to regroup again, because I needed to feed my family." Once again he returned to CCWA.

Stewart was working the second shift at the W.B. Casey Treatment Plant in 2000 when the chief operator at Shoal Creek decided to step down. "He asked for my position on the second shift," Stewart says. "The department manager put me at Shoal Creek as acting chief operator. I got my Class I license that first year, and I've been here ever since."

profile

James R. (Jimmy) Stewart, Shoal Creek Water Reclamation Facility, Clayton County (Ga.) Water Authority

POSITION: Chief operator (2000-08)

EXPERIENCE: 24 years

CERTIFICATION: Georgia Class 1 Wastewater license

AWARDS: 2009 WEF Water Hero, 2008 Top Operator Award, District 3, Georgia Assoc. of Water Professionals

Stewart takes a clarifier blanket reading.

"Every wastewater treatment plant has its own characteristics — its own personality, if you will. The books give you a wide window of parameters that could work. Then you have to fine-tune it to get it to operate at its optimum performance."

JAMES R. (JIMMY) STEWART

The Shoal Creek plant has undergone major upgrades to its liquid and solids processes during Stewart's tenure.

Constructed wetland cells provide a final treatment step for effluent from the Shoal Creek Water Reclamation Facility.

Shoal Creek Water Reclamation Facility (PERMIT AND PERFORMANCE)

	PERMIT (MONTHLY AVG.)	ACTUAL
BOD	10 mg/l	1.4 mg/l
TSS	30 mg/l	3 mg/l
Total Phosphorus	2 mg/l	0.26 mg/l
Ammonia N	4 mg/l May-Oct 8 mg/l Nov-Apr	0.12 mg/l
Fecal coliform	100/100 ml	4/100 ml

ADAPTING TO CHANGE

It wasn't long before Stewart faced his first big challenge: The authority upgraded the Shoal Creek facility from a pair of simple package extended aeration plants with 2.2-mgd capacity to an advanced 4.4-mgd (design) facility with an entirely different process.

The current facility uses the Schreiber continuous sequencing reactor (CSR) to achieve biological nutrient removal.

In essence, the process "constantly tortures the bugs in one tank," Stewart observes. It uses a single, round, 2.6-million-gallon aeration basin with a bridge that rotates around it, constantly agitating the mixed liquor. The bridge carries air headers with a fine-bubble diffuser. Automation turns the flow of air on and off to create alternating aerobic, anoxic and anaerobic conditions.

The system achieves a high degree of nitrogen, phosphorus, BOD and TSS removal, all without chemicals. "We have the capability to add ferric sulfate to remove phosphorus and to seed the system with acetic acid," says Stewart. "However, we've found that we can keep all the offending nutrients well below our permit requirements with no chemical addition."

Of course, adapting to the system wasn't always easy. "During construction and startup, it fell to me as the chief operator to learn how to operate all the new technology and process controls," says Stewart. "Then as I learned, I had to teach the other operators.

"My philosophy is to lead through service. As the chief operator, I figured out the technical manuals and translated them for the operators. The O&M manuals are normally written by engineers, so you have to dig through a lot of material to find the meat.

"In addition, every wastewater treatment plant has its own characteristics — its own personality, if you will. The books give you a wide window of parameters that could work. Then you have to fine-tune it to get it to operate at its optimum performance.

"Instead of just making all the decisions in a dogmatic way, I would involve the other operators who were interested. We would talk about the process, and we would brainstorm about different problems we were having. If an operator had an idea how to make a certain aspect of the operation run better, we would try it and see."

THE SOLIDS SIDE

In 2005, the team faced another test: adapting to a new solids process. The newly upgraded treatment plant used aerobic digestion followed by gravity thickeners to prepare biosolids for spray application to a 20-acre hay field, but that field was reaching the end of its useful life, and the authority decided to produce cake biosolids for composting.

"We built a new solids handling facility and installed two Andritz centrifuges," says Stewart. "Again, I was there to start up the facility and train the other operators. At the end, everybody in the plant knew how to operate that facility.

"The manual for the centrifuges said they wanted a feed concentration of three percent solids. About the best we could get out of the gravity thickeners was 1.6 to 1.7. The operators on the different shifts would come up with ideas on how to manipulate the thickeners so that we could have good-quality feed solids to the centrifuges."

A key to the solution was mixing the biosolids with waste alum sludge from the nearby J.W. Smith Water Production Plant — a material the Shoal

FULL CIRCLE

Treated water from the Shoal Creek Water Reclamation Facility eventually winds up flowing back through the faucets of homes in Clayton County.

After disinfection in a UV system (Trojan), plant effluent is pumped about a mile to the Panhandle Road Constructed Wetlands, where it is further purified in a series of wetland cells. After the last cell, it enters a clear well, from which it is pumped to one of the CCWA raw-water reservoirs. Water from the reservoir is in turn treated at the 12-mgd J.W. Smith Water Production Plant before being fed into the water distribution system.

The CCWA uses a surface water system, which means water production begins with the collection of rainfall that hits the surface and drains into one of five reservoirs. The authority also can withdraw raw water from the Flint River, which flows through the heart of the county. In total, the CCWA can produce up to 42 mgd of clean drinking water at its three water production plants.

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JAMES R. (JIMMY) STEWART

Creek plant was already responsible for handling.

"The alum sludge was a thicker material," says Stewart. "Most of the time it was in the three percent solids range. We wound up blending the two sludges and dewatering them together.

"The Andritz centrifuges are a very good, forgiving system. Through trial and error, we found that if we blended 75 percent biosolids and 25 percent alum sludge that gave us a good, consistent product. We were able to produce 22 to 23 percent cake solids, and the system ran very smoothly." Today, the finished product is sent to a private contractor for composting off site.

PROUD OF THE TEAM

Looking back on challenges like those, Stewart remains grateful to the team who worked with him during his eight years as chief operator. They included Curtis Price (Class I) then plant supervisor and now retired; day shift operators Lenny Clupper (Class I), now chief operator, and Tony Head (Class III); second shift operators Manuel Igbokwe (Class II) and Eddie Lane (Class I) retired; and midnight shift operators Billy Sumner (Class I) and Jody Pollock (Class I).

"It was great to work with such fine people," Stewart says. "The wastewater business is challenging because you never know what's coming down the sewer line. You're dealing with live bacteria. You have to keep everything balanced and in tune so the microorganisms can do their job properly.

"You've got to keep the bugs happy and all the equipment well maintained. It's good, steady work. And then every once in a while you get surprised with an award, or you wind up on an international Web page as a Water Hero." tpo

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