

# Region 4

## Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee

### Assistance Improves Quality of Discharge to Gulf

#### Cedar Key Water and Sewer District, Florida

Cedar Key is a small island, only about one mile long, located in the Gulf of Mexico. The wastewater treatment plant is in the middle of downtown, disguised as a two-story condo, with a view of palm trees and ocean from the top. In 1993, the operators of the WWTP on Cedar Key were reporting bulky sludge and poor settling characteristics. In fact, effluent quality was so poor that half of the time operators could not meet the effluent parameters for discharge to their new drip irrigation system and, therefore, discharged effluent to the Gulf of Mexico.

Ed Toby, a 104(g)(1) technical assistance provider from the University of Florida Center for Training, Research, and Education for Environmental Occupations (UF/TREEO), assessed the facility and found that poor settleability, excessive nitrate levels, and insufficient digester detention time were the most pressing problems. Through operator training and minor equipment alterations these issues were improved dramatically. For instance, the plant's excessive return activated sludge rate was reduced from 500 percent to 75 percent. Toby even designed a software program to help operators learn about how sludge age affects plant performance.

Toby also determined that a flawed computer program was causing the plant to be operated as a totally aerobic process, rather than operating as it was designed, to alternate between anoxic and aerobic conditions. The program was altered, and the nitrate level was reduced from 17 mg/L to 5.3 mg/L. Finally, Toby trained the staff in jar testing to determine lime dosages for sludge stabilization, and the plant was brought into compliance with new sludge regulations.

**"In Florida we know a healthy environment is key to a strong economy and a good quality of life."**

—Connie Mack, U.S. Senator, Florida, July 1999

Within one year of initiating 104(g)(1) assistance, the difference in the plant's operation was significant. The operators were properly conducting process control tests and using the results for informed plant operation. Plant effluent was being directed entirely to the drip irrigation site rather than to the Gulf of Mexico. This project won second place in EPA's Most Improved Plant Awards for 1994.

## **Program Collaborates on Innovative Solution**

### **Waldo Wetlands Project, Florida**

During recent years, effluent from the City of Waldo's secondary wastewater treatment plant has failed to consistently meet its discharge permit levels. Percolation ponds were not working adequately and were overflowing into adjacent natural wetlands. This was particularly alarming since the affected wetlands are located within the headwaters to the Santa Fe River system, a designated Outstanding Florida Water.

In 1997, 104(g)(1) technical assistance providers from UF/TREEO evaluated the Waldo WWTP facility. It was decided that the City of Waldo should redesign the percolation pond system into a man-made wetland system for tertiary wastewater treatment. Construction began in February 1999. In addition to creatively solving the city's wastewater problem, the man-made wetland is expected to provide watershed protection, wildlife habitat, community recreation, and education opportunities.

During construction, UF/TREEO has been working with the operators to optimize performance of the old plant. Because dis-



charge to a natural wetland from a man-made wetland requires final effluent to meet stringent nutrient parameters, the UF/TREEO staff will train the City of Waldo operators in proper sampling and analysis techniques for these tougher limits. Staff will also be trained on removing nitrogen and phosphorus biologically and chemically.

The Waldo Wetlands project is possible only through a collaborative effort by federal and state agencies and institutions. In addition to the 104(g)(1) assistance provided by UF/TREEO, other groups contributing to the project include the Suwannee River Water Management District, the U.S. Environmental Protection Agency, the Florida Department of Environmental Protection, and the University of Florida Center for Wetlands.

## **Solids Wasting Program Improves Compliance**

### **Union Point WPCP, Georgia**

Union Point, Georgia, is a community of approximately 2,000 residents, located east of Atlanta. In early 1998, Union Point's wastewater treatment plant was struggling to meet its effluent discharge permit levels. That February, Joe Porter, a 104(g)(1) technical assistance provider with the Environmental Protection Division of Georgia's Department of Natural Resources, began assisting the small system to bring it back into compliance.

Porter worked with Union Point's operator to develop a solids wasting program. Together, they devised a sampling plan and reorganized the facility's daily operating worksheets. They also designed new process control and preventive maintenance programs.

After only eight months of 104(g)(1) assistance, the Union Point facility was operating in compliance with its discharge permit. Approximately \$5,100 of 104(g)(1) funds were used for this assistance—far less than the estimated \$18,000 it would have cost this small community for equivalent services from private consultants.

## Improved Operation Minimizes Use of Chemical Additives

### Vine Grove WWTP, Kentucky

Vine Grove, Kentucky, is a small community located just south of Fort Knox. In 1997, Vine Grove's wastewater treatment plant was teetering at the edge of non-compliance. Based on reported data, the plant was operating at 90 percent hydraulic capacity and was in danger of having enforcement action initiated.

Assessments by 104(g)(1) technical assistance providers from Kentucky's Department for Environmental Protection revealed that the facility's reported flows were double the actual flows, because an erroneous multiplier was being used for flow totalizer readings. Operators were manually adding chlorine and sulfur dioxide. The trainer suggested an alternative flow proportioned feed system to cut down on chemical additions.

Newly implemented process control procedures for determining solids inventories and wasting rates resulted in lower levels of total suspended solids and biochemical oxygen demand levels in the facility's effluent—levels that normally have been in the single digits since the 104(g)(1) assistance.

## Program Applies Solutions to Plants With Similar Problem

### Pembroke WWTP, North Carolina

A great benefit of the 104(g)(1) program is the technology transfer that takes place. Technical assistance providers apply lessons learned from one facility's troubles to a large number of facilities with similar problems. This is what happened at the Pembroke Wastewater Treatment Plant in southern North Carolina.

Tony Arnold, a 104(g)(1) technical assistance provider with the North Carolina Department of Environment and Natural Resources' Division of Water Quality, assessed the out-of-compliance facility in early 1999. Arnold found that the major problem involved improper sludge settling in the plant's clarifiers.

"After investigating [the] Pembroke situation I found that several plants with this type of sludge redrawing system experienced problems with an imbalance in the sludge collection system," Arnold wrote in his assessment of the facility. Drawing on his experiences with other plants, Arnold was able to suggest a fix for the sludge problem, in addition to improvements in several other weak areas. The town also received a list of recommended repairs designed to improve the Pembroke facility's operation.

## **Expert Training Brings Plant Back into Compliance**

### **City of Darlington WWTP, South Carolina**

The City of Darlington is a small community of approximately 3,040 families in northeastern South Carolina. In 1997, the City's wastewater treatment plant was struggling because its solids discharge levels were exceeding the plant's permit requirements.

Technical assistance providers from South Carolina's Environmental Training Center assessed the plant's problems. During monthly on-site visits, the Darlington operators were trained in proper solids handling techniques. Laboratory personnel were trained to test for biochemical oxygen demand, total suspended solids, and fecal coliform levels. The trainers recommended alternative solids loading strategies and ways to reduce the plant's infiltration and inflow problems. A trainer also helped develop an operation and maintenance program for the struggling plant.

The 104(g)(1) assistance brought the Darlington facility back into compliance by 1999. Approximately \$30,000 of 104(g)(1) money was spent on this facility during that time, a huge savings over the estimated \$180,300 that private engineering consultants would have required to do the same work. In addition, the City was able to save by avoiding enforcement action and fines for non-compliance.



## **Region 4 Contacts**

### **U.S. Environmental Protection Agency**

James Adcock  
EPA Region 4 Coordinator  
Municipal Facilities Branch  
Mail Code GPTSB-4WMD  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street  
Atlanta, GA 30303-8960  
(404) 562-9900  
adcock.james@epa.gov  
<http://www.epa.gov/region4>

### **Alabama**

Not currently participating in the 104(g)(1) program

### **Florida**

Ed Toby  
University of Florida TREEO Center  
3900 S.W. 63rd Boulevard  
Gainesville, FL 32608-3848  
(352) 392-9570, ext. 115  
etoby@treeo.doce.ufl.edu  
<http://www.doce.ufl.edu/Treeo>

## Georgia

Gaynell Hill  
Georgia Environmental Protection Division  
Suite 110  
4244 International Parkway  
Atlanta, GA 30354  
(404) 362-2629  
gaynell\_hill@mail.dnr.state.ga.us  
<http://www.georgia.org/dnr/environ>

## Kentucky

A. Charles Clark  
Operator Certification Section  
Kentucky Division of Water  
14 Reilly Road  
Frankfort, KY 40601  
(502) 564-3410, ext. 362  
acharles.clark@mail.state.ky.us  
<http://water.nr.state.ky.us/dow/dwhome.htm>

## Mississippi

Nick Gatian  
Mississippi Department of Environmental  
Quality  
1141 Bayview Avenue, Suite 208  
Biloxi, MS 39530  
(228) 432-1056, ext. 105  
nick\_gatian@deq.state.ms.us  
[http://www.deq.state.ms.us/newweb/  
homepages.nsf](http://www.deq.state.ms.us/newweb/homepages.nsf)

## North Carolina

Tony Arnold  
North Carolina Water Pollution Control  
System Operators Certification Commission  
1618 Mail Service Center  
Raleigh, NC 27699-1618  
(919) 733-0026, ext. 315  
tony.arnold@ncmail.net  
<http://www.ehnr.state.nc.us/EHNR>

## South Carolina

Cindy Murphy and Nancy Bishop  
Environmental Training Center  
Central Carolina Technical College, South  
Carolina  
506 North Guignard Drive  
Sumter, SC 29150-2499  
(803) 778-7873  
cynthiadmurphy@netscape.net  
<http://www.sum.tec.sc.us/test2/scet.htm>

## Tennessee

Roger Lemasters  
Tennessee Division of Water Pollution  
Control  
LNC Annex - 6th Floor  
401 Church Street  
Nashville, TN 37243-1534  
(615) 532-0625  
rlemaster@mail.state.tn.us  
[http://www.state.tn.us/environment/  
index.html](http://www.state.tn.us/environment/index.html)

