

# TROUBLESHOOTING WASTEWATER LAGOONS SYSTEMS

## **This workshop has the following objectives:**

- Give class members an understanding of the basic biology and chemistry of lagoon systems and to leverage that understanding to solve problems in lagoons. Assist class members in understanding that each microbe has a unique function to perform, and why water quality changes spatially throughout a lagoon system because of it.
- Familiarize students with proper testing procedures. Discuss where to test in a lagoon system, how to properly test, and why. Covered is the meaning of each test and its value to operators when trying to understand test results. Understand the role of testing and how to use test results to diagnose lagoon problems.
- Improve operator's skill in testing to solve BOD<sub>5</sub> problems, TSS problems, fecal problems and other problems common to wastewater lagoon systems.
- Provide knowledge and skill in determining if more load can be added to a lagoon. Specific causes of BOD<sub>5</sub> problems and their solutions are discussed.
- Provide in depth knowledge of the causes of TSS problems and solutions to high TSS. Inpond management strategies to control algae are discussed. Chemical and engineered solutions to TSS problems are discussed. Discussion of lagoon colors and their meaning.
- Discuss the consequences of short-circuiting in pond systems. Explain how pond temperature affects pond mixing. Teach operators what to do about short-circuiting problems.
- Case study and lecture on the problems associated with sludge accumulation. Class members are taught how to determine sludge volume and mass, and how to sludge judge lagoons. Calculations are given to help the student determine sludge mass and volume.
- Sludge removal options are presented.
- Understanding of the role of oxygen in a lagoon system is discussed. Strategies for odor control are presented. Case studies on changes in lagoon dissolved oxygen are discussed.
- Causes and solutions to low dissolved oxygen are reviewed.
- How to troubleshoot and optimize a lagoon system for nutrient removal, and pathogen removal. Lagoon maintenance and cold weather operations strategies are presented.