

This is the first installment of the *Water Treatment News*, a quarterly newsletter of TSG. Through this newsletter, TSG will bring to its customers and others in the industry up-to-date information about recent developments and projects of TSG and other items of note in the water and wastewater treatment industry. We encourage your questions and comments and look forward to hearing from you about any of the topics we may cover from time to time. For more information about anything in this newsletter, or about TSG generally, please visit our website at [www.tsqwater.com](http://www.tsqwater.com).

## **ABOUT TSG**

TSG specializes in the design, construction, renovation, operation and maintenance of water and wastewater treatment plants of all kinds, but we have special expertise in water and wastewater treatment utilizing membranes. Our staff of engineers, designers, builders and operators has the expertise and experience to handle any and all issues pertaining to water or wastewater treatment plants, whether new or existing. We pride ourselves on providing clients with the lowest lifecycle costs, the highest quality, and the most responsive service in the industry. Treatment plant services range from installation of specific process equipment to design and installation of total turnkey plants—including all associated facilities such as intakes, outfalls, storage tanks and distribution pumping systems—depending upon the precise needs and existing resources of each customer.

## **MARRIOTT ST. KITTS ROYAL BEACH RESORT 1.25 MGD SEAWATER DESALINATION PROJECT**

TSG Technologies, Inc., a wholly owned subsidiary of TSG Water Resources, Inc., has completed the design, construction, and commissioning of a 1.25 million gallon per day seawater reverse osmosis desalination plant on the island of St. Kitts under a design-build agreement with developers based in Toronto, Canada.

The plant provides both potable and irrigation water for the Marriott St. Kitts Royal Beach Resort and Spa, a 648 room hotel with an 18 hole golf course. The plant has been initially fitted with four trains of 250,000 gallon per day each for a total capacity of 1,000,000 gallons per day. The plant is designed so that a fifth train may be added to bring the total capacity to 1.25 million gallons per day.



## ***MARRIOTT ST. KITTS ROYAL BEACH RESORT (CONT.)***

The project has the following significant features:

- Pre-assembly of major subsystems in Gainesville, Florida to permit rapid equipment installation;
- Use of open seawater intake and inland pump station;
- First use of large diameter, fiberglass media filters;
- Pressure exchanger energy recovery equipment for extremely efficient operation;
- Inland lake flushing utilizing membrane brine and fresh seawater; and
- Web based remote monitoring capability.

For more information on this project, please go to  
[http://www.tsqwater.com/client\\_6.htm](http://www.tsqwater.com/client_6.htm).

## ***JEA--NASSAU COUNTY REGIONAL WASTEWATER TREATMENT FACILITY***

JEA, the water, sewer and electric utility serving Jacksonville, Florida, provides service to more than one million people on Florida's First Coast. It is the largest municipal electric utility in Florida, and it operates the second largest water and sewer system in Florida.

When JEA was planning upgrades to three of their wastewater treatment plants they contracted with TSG to help identify the best treatment technology for expanding each plant. JEA was considering using membrane bioreactors (MBRs) for these plants but had no experience with this technology. They called on TSG to evaluate the feasibility of MBRs and to compare it with conventional wastewater treatment systems. As a result of this study, JEA elected to expand the Nassau County Regional WWTF with MBRs. They contracted with TSG to prepare a preliminary design to submit for permitting and to assist JEA in the preparation of design/build specifications for this 2 mgd nutrient removal facility. Three membrane systems were pre-qualified for bidding, Zenon ZeeWeed, USFilter Memcor, and Enviroquip Kubota. The selected design-build team is using the Kubota system.

TSG has worked closely with both FDEP and JEA to help oversee permitting and implementation of this state of the art technology. This project is the first MBR system to be permitted by the Northeastern District of the Florida Department of Environmental Protection (FDEP) and one of the first MBR systems permitted to provide advanced nutrient removal as well as public access reuse.

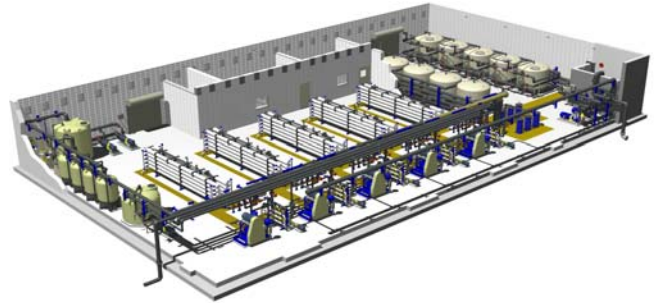
For more information on this project, please go to  
[http://www.tsqwater.com/client\\_10.htm](http://www.tsqwater.com/client_10.htm)

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***TEMENOS ANGUILLA, A ST. REGIS RETREAT  
1.25 MGD SEAWATER DESALINATION PROJECT***

As an integral part of the design team, TSG was asked by Flag Anguilla Luxury Properties, LLC to design and construct a 1.25 million gallon per day reverse osmosis desalination plant to support a new St. Regis luxury golf resort planned for Anguilla, British West Indies.

This resort will include an 18-hole golf course designed by Greg Norman, a St. Regis Retreat and luxury condominiums and individual residences. The plant will have the flexibility of producing up to 480,000 gallons per day of potable water, with the remainder being used for irrigation. All piping and pumping systems to the plant will be designed and installed by TSG. The RO building was designed by TSG and is now under construction by the owner. Equipment fabrication is underway, with installation scheduled to begin in September 2004.



For more information on this project, please go to [http://www.tsgwater.com/client\\_9.htm](http://www.tsgwater.com/client_9.htm).

***SOUTHLAKE WATER AND WASTEWATER TREATMENT PLANT UPGRADES***

Southlake is a residential community southwest of Orlando, Florida. This community has been experiencing tremendous growth in recent years and has outstripped the capacity of its water and wastewater plants. The owner approached TSG to assist them with the upgrade and expansion of both of these plants.

The expansion of the wastewater plant involves a rehab and expansion of the existing plant from 0.6 MGD to 1.5 MGD, as well as adding a new chlorine contact basin, headworks, operations building and standby power. Water plant additions include a ground storage tank with aeration, yard piping, new operations building, hypochloride disinfection system, instrumentation and control system, and standby power. TSG has been retained to handle all of the necessary design and permitting work and will be providing construction management for the entire project. The projected completion date for the two projects is January 2005.

For more information on this project, please go to <http://www.tsgwater.com/press.htm>.

## **ELYSIAN AND BLUEBEARD'S RESORTS UPGRADE OF WASTEWATER PLANTS TO TERTIARY TREATMENT**

The Elysian Beach Resort and Bluebeard's Beach Club & Villas Resort, both located on St. Thomas in the U.S. Virgin Islands. The Elysian is a timeshare resort with 182 units and two restaurants. Bluebeard's is an 84 room timeshare resort on 24 acres.

Prior to its renovation, The Elysian Resort plant produced wastewater flows of up to 20,000 gallons per day using 1970's technology consisting of an RBC (rotating biological contactor) and a sand filter to produce grey water effluent for flushing toilets and landscape irrigation. Due to its condition and seasonally varying flows, the plant could not consistently achieve adequate quality effluent. The plant at Bluebeard's was of similar size and was a traditional extended aeration plant. This plant was antiquated, in disrepair and also had difficulty producing consistently high quality effluent.

Rather than trying to simply repair the existing plants, Fairfield enlisted TSG's assistance to upgrade the plants to provide tertiary treatment for public access reuse. At the Elysian, TSG removed the RBC and sand filter and modified the plant's process to operate as an extended aeration plant. At Bluebeard's, TSG replaced aging pumps and blowers, and repaired and replaced piping and basins, in order to improve its operation. In addition, TSG installed membrane bioreactors (MBR) at each plant as a polishing filter to provide high quality effluent to meet EPA's stringent requirements for high level disinfection and public access reuse.



TSG is now providing monthly operation and maintenance services to both the Elysian and Bluebeard's Resorts. For more information on this project, please go to <http://www.tsgwater.com/press.htm>.

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