



The Droplet

Florida Water Environment Association Integrated Water Resources Committee

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Featured Project: Water Reclamation Facility Process Conversion and Reclaimed ASR Wells

The City of Cocoa Beach is in the final stages of constructing the treatment plant component of its most recent integrated water resource management project. It is a \$20 million effort which is being funded by the Florida Department of Environmental Protection's State Revolving Fund (SRF) loan program.

The City of Cocoa Beach was required to lower nutrient levels discharged to the Banana River for compliance with USEPA Total Maximum Daily Load (TMDL) legislation. The existing biological treatment process was an Anoxic/Oxic process, which reduced nutrients but was unable to meet the annual loading limits of 4,022 lbs/yr and 1,063 lbs/yr, total nitrogen and phosphorous, respectively. Treatment upgrades were required to achieve advanced wastewater treatment (AWT) standards and produce a 5-5-3-1 wastewater effluent (for BOD5, TSS, TN and TP, respectively). The reduced waste load allocation also required further reduction of effluent discharged to the Banana River. The extremely low allocations required a modification of the existing treatment process and additional effluent discharge reductions, which could only be accomplished by virtually eliminating wet season discharges to the Banana River; doing so requires seasonal storage of effluent during wet periods.



The City already has 21 million gallons of ground storage, with little available real estate for construction of more. The massive volume of
(Continued on page 2)

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AUTHOR: Brad Blais, P.E. is President of Quentin L. Hampton Associates, Inc. (QLH), a consulting engineering firm based in Port Orange, Florida. QLH specializes in water resource engineering and has been providing professional services to utilities in Central Florida since 1964. Email: bblais@qlha.com.
For further information about this project, contact Darby Blanchard, Water Reclamation Director, City of Cocoa Beach at (321) 868-3308.



Featured Project

(Continued from page 1)

storage required to handle seasonal availability and demand fluctuations made Aquifer Storage and Recovery (ASR) an attractive option. Due to potential water quality concerns, the City of Cocoa Beach elected to pursue reclaimed water ASR within a non-potable aquifer, specifically, the Lower Floridan Aquifer. The following is a description of the unique treatment and storage systems being constructed in Cocoa Beach.

The treatment process upgrade selected incorporates a 4-stage biological process with Integrated Fixed Film Activated Sludge (IFAS) suspended growth media installed in the aerobic basins. The basis of design was the Anox/Kaldness process marketed by Kruger. Process design was able to utilize the existing AO structures for most of the treatment volume and an additional basin was constructed for post anoxic treatment and reaeration. This process is designed to treat 6 MGD AADF to AWT standard with minimal chemical feed.

The plant upgrades include installation of new equipment for grit removal, secondary clarifiers, turbo blowers, fine screening of MLSS, biosolids thickening and digestion. The project affects and upgrades all phases of the Water Reclamation Facility (WRF) and one off-site lift station. Virtually all mechanical and electrical equipment is being replaced and a fiber optic network will be installed for state of the art monitoring and control of all components and processes. In addition to the biological process improvements, a sludge centrifuge was added and a solar drying facility is being erected to achieve Class AA biosolids. The first process train, post-anoxic reactor and fine screens were placed into service in August 2012. The treatment process is producing effluent with total nitrogen and total phosphorous concentrations below 1.0 mg/l and 0.5 mg/l, respectively. The project is scheduled for completion in March 2013.

The reclaimed water ASR well system will ultimately consist of an 18" diameter Test/Production Well (TPW), an 8" diameter Storage Zone Monitoring Well (SZMW) and three (3) 6" diameter Upper Floridan monitoring wells. The TPW and SZMW will be constructed in the Lower Floridan Aquifer. The estimated casing set depth is 1,200 ft below land surface (bls) and the estimated total depth will be 1,400-1,500 ft bls. The well will allow the City to store and recover reclaimed water to meet the shortfall between demand and supply during the dry season in addition to reducing effluent discharges during the wet season. The SZMW has been drilled to 1,200 ft and testing is scheduled to commence in December 2012.

The City's consulting engineer, Quentin L. Hampton Associates, Inc. (QLH) provided comprehensive planning, design, permitting, funding, bidding, and CEI services for all phases of this project. MWH provided hydrogeological services for the ASR well. A SRF loan for \$22 million was approved for construction of the treatment plant upgrades, ASR wells, technical services during construction, and contingencies. The treatment plant contract award amount for the base bid plus bid alternate #1 (centrifuge) was \$15,140,000. The award amount for the ASR wells was \$2.39M.

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IWRC Membership

If you would like further information about the IWRC or are interested in becoming a member, please email any of our officers (see contact information in left margin) or visit our website at http://www.fwea.org/integrated_water_resources.com.php.

IWRC Goals and Focus

The goals of the IWRC are:

- To further the dialogue between water professionals throughout Florida to meet our growing needs in all areas of water resources.
- To provide timely, high-quality information and education on water as a valuable resource that can be used to meet current and future water resources and water supply challenges throughout Florida.
- To provide rewarding leadership opportunities to water professionals at all levels of experience.

The focus of the IWRC encompasses the following areas of water resources practice:

- | | |
|---|--|
| <ul style="list-style-type: none"> • water quality • watershed and stormwater management • water supply • water conservation and reuse • ecological and hydrologic restoration | <ul style="list-style-type: none"> • groundwater recharge • hydrologic and hydraulic modeling • funding and grant opportunities • regulations and policies |
|---|--|

Officer Contact Information

Chair Leslie Gowdish
leslie.gowdish@atkinsglobal.com

Vice Chair Gabriel Retana
gretana@brwncald.com

Secretary: Saurabh Srivastava
srivastava@pbworld.com

Treasurer: Jason Christopherson
JChristopherson@Geosyntec.com

Website: Beth Whitehart
bwhitehart@gmail.com

Newsletter: Lee Smith
ismith@ectinc.com

Newsletter: Alonso Griborio
agriborio@hazenandsawyer.com

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IWRC Calendar of Events

| <u>Date</u> | <u>Description</u> |
|-------------------|--|
| November 28, 2012 | IWRC Teleconference – Planning for next Conference |
| December 5, 2012 | IWRC Monthly Teleconference |
| January 8, 2013 | IWRC Monthly Teleconference |
| February 5, 2013 | IWRC Monthly Teleconference |