

(Formerly WRS Infrastructure & Environment, Inc.)

March 24, 2017

Mr. Raymond Sciortino, PE  
Jacobs Engineering Group  
3300 PGA Boulevard, Suite 780  
Palm Beach Gardens, FL 33460

**SUBJECT: ASCE Engineers in Government Night 2017  
Project of the Year Nomination  
Everglades Agricultural Area A-1 Flow Equalization Basin (EAA A-1 FEB)**

Dear Mr. Sciortino:

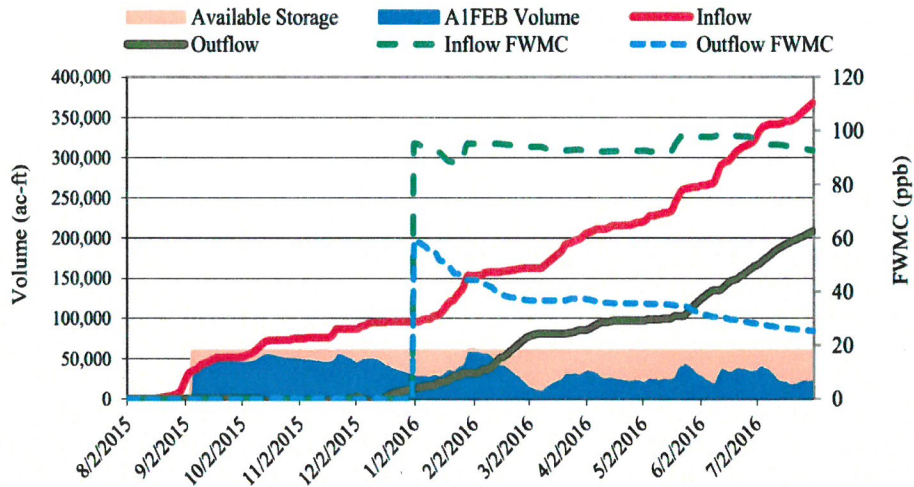
NorthStar Contracting Group, Inc. (NorthStar) is proud to nominate the EAA A-1 FEB project for the ASCE Engineers in Government Night, Project of the Year. The following is why we, NorthStar, believe that this project should receive the award.

In order to reduce phosphorous concentrations in waters that are received by the Everglades, the South Florida Water Management District (SFWMD) has constructed and is currently operating roughly 57,000 acres of Stormwater Treatment Areas (STAs). Since 1994, Everglades STAs have reduced average annual total phosphorous concentrations from approximately 170 parts per billion (ppb) to 19 ppb, with some individual STAs as low as 12 ppb. This has had a significant impact in achieving overall restoration goals for the Everglades. However, Everglades STAs are typically subject to large and sustained flow pulses due to the hydrological and land use characteristics of south Florida that can result in undesirable STA water depths, damage to treatment vegetation, and reduced phosphorus removal performance. During the dry season the STAs can dry out causing soil oxidation, P-flux upon rewetting, and impact STA vegetation reducing treatment performance. Therefore, supplemental water deliveries are needed during dry periods to sustain vegetation and maintain treatment performance.

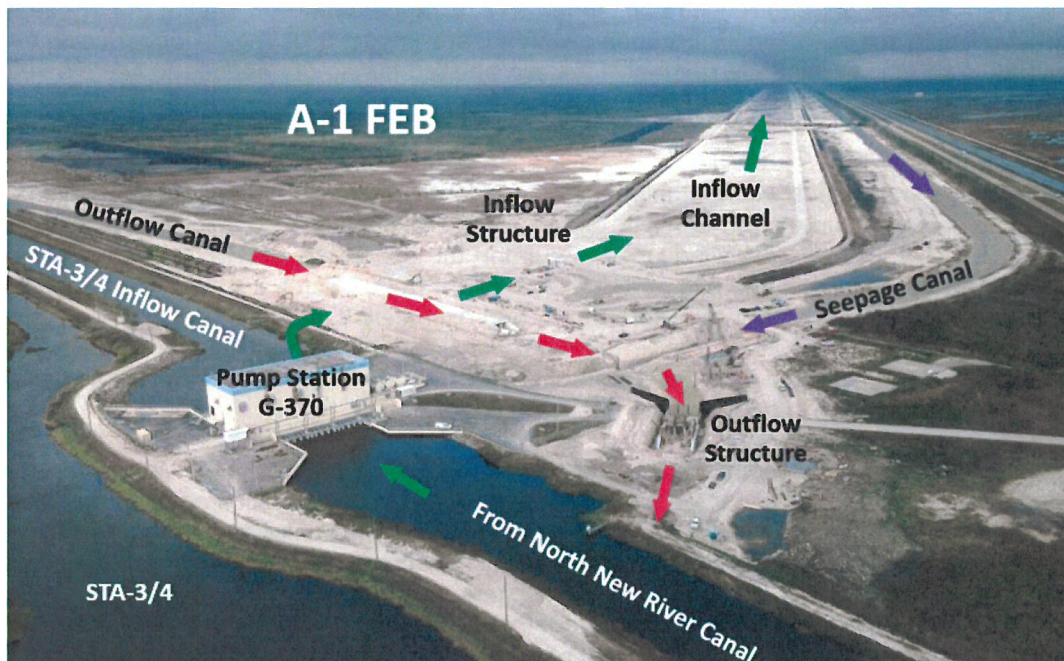
To address these and other issues, SFWMD is implementing the Restoration Strategies initiative, where the performance of existing water quality infrastructure continues to be optimized and a suite of additional water quality projects are being constructed in order to further reduce phosphorus concentrations. One of these projects, the EAA A-1 FEB, is specifically designed to support the operations of STA-3/4, the world's largest STA, and STA-2. The approximately 60,000 acre-foot A-1 FEB (15,000 acres x 4 feet deep) will attenuate peak flows and temporarily store stormwater runoff from approximately 275,000 acres of land in the central Everglades Agricultural Area collected by the North New River (NNR) and Miami Canals. The EAA A-1 FEB will then release water to STA-3/4 and STA-2 at a controlled rate, therefore improving water depths, vegetation conditions and phosphorus removal performance within the STAs.

A-1 FEB inflows are directed from south to north along its perimeter via two above-ground channels. Water then flows south through the FEB's interior for release to the STAs. This configuration ensures that stormwater will travel completely through the FEB before being released, which allows sufficient time for suspended solids to settle out. This increased travel time will also allow for ancillary water quality improvement from contact time with emergent aquatic vegetation that will naturally propagate within the FEB over time. The graph below shows the additional storage and water quality treatment that has been realized since the EAA A-1 FEB went into operation. As you can see, not only are the timing of the water delivers to the STAs improved, but also the water quality that is entering them for treatment.

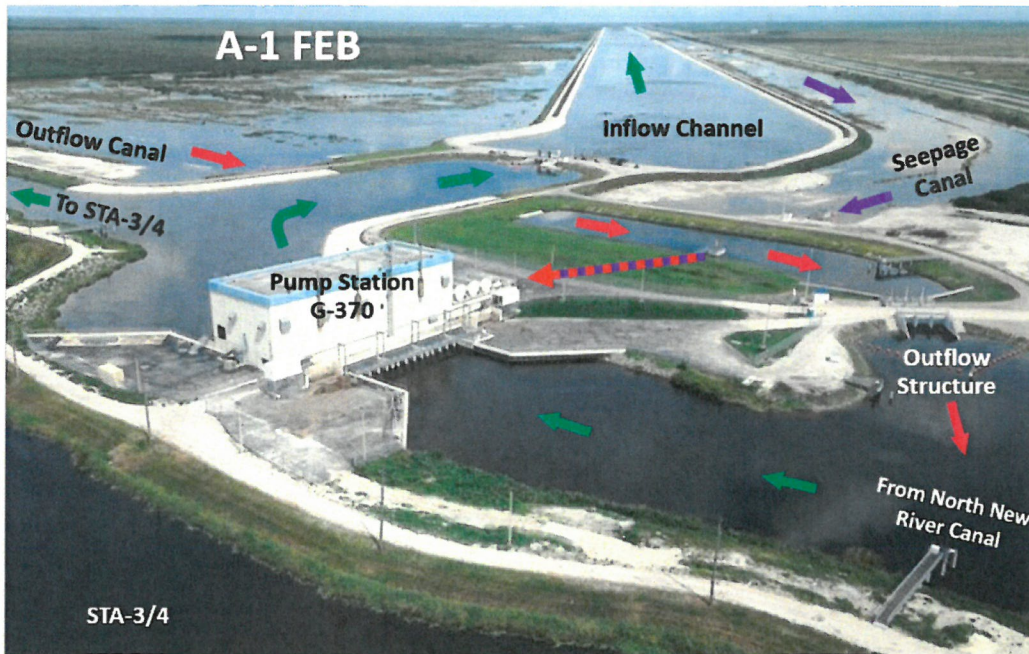
### Storage, Moving 365-day Volumes, and FWMC - A-1 FEB



One of the challenges with the design of the A-1 FEB was effectively utilizing existing canal and pump station infrastructure for its inflow and outflow operations to reduce construction, operation, and maintenance costs while also providing necessary operational flexibility. An example of these challenges was figuring out a way to utilize the existing G-370 Pump Station, which currently supplies water from the North New River Canal to STA-3/4, to simultaneously handle the FEB inflow, outflow, and seepage collection. This was achieved with two very large (several hundred feet each) conflict structures that were installed up to 25ft below existing grade. The following two images show the conflict structures being installed and them in operation after construction.







The A-1 FEB design further reduced operational and construction costs by utilizing solar-powered slide gates for the A-1 FEB discharge structures (10 Structures) that are located between the FEB and STA-3/4. These structures allow for the gravity discharge from the FEB to STA-3/4 reducing required pumping and at the same time eliminated the need of roughly seven miles of overhead power lines.

On behalf of our staff at NorthStar and the District, we want to thank for considering the EAA A-1 FEB as project of the year. If you have any questions regarding this project or require any additional information please contact me at 561-684-5474 or via email at [pkeith@northstar.com](mailto:pkeith@northstar.com).

Sincerely,



Patrick Keith  
Senior Engineer  
Licensed: AL, FL, TX

