

## **An Update on People and Projects that Impact Our Water**

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The water surrounding the J.N. “Ding” Darling National Wildlife Refuge is absolutely beautiful, so it’s easy to forget the fact that the battle over improving our water quality and providing appropriate amounts of water is still being fought and that victory is far from assured. With that in mind, this article will provide an update on some of the people and projects that are central in the fight for a healthy water supply.

### **People**

#### Jennifer Reynolds

When we first met Jennifer Reynolds, she was a Lieutenant Colonel in the U.S. Army Corps of Engineers. Her responsibilities at the time included Everglades restoration, hurricane response and recovery, and water management. In that first meeting we quickly realized that Lt. Col. Reynolds, who had just returned from a tour in Iraq, was a dedicated professional with experience managing emergency operations and supporting the corps’ activities in more than 90 countries.

Managing Everglades restoration is an extremely demanding position due both to the technical and political challenges, as well as the conflicting and often contentious positions taken by stakeholders. As you would expect from someone with her rank and experience in the corps, Reynolds has continually demonstrated mastery of the technical and political challenges. What was a bit of a surprise -- due to the overall lack of such skills, particularly among people in a technical role -- is that Reynolds excelled at working with a wide range of stakeholders. In 2018, this skill was recognized by Audubon Florida when they honored Lt. Col. Jennifer Reynolds as the 2018 Champion of the Everglades. In September 2019, she was honored by the South Florida Water Management District (SFWMD) for her ability to speak eloquently on behalf of America’s Everglades at public forums to champion inclusiveness and transparency.

Reynolds visited the “Ding” Darling last August in part to better understand how the decisions that the corps makes impact the Refuge. In January 2020, Reynolds retired from the U.S. Army. In early March of this year she was named the Director of Ecosystem Restoration and Capital Projects for the SFWMD. It is a major win for Everglades restoration to have her back actively involved.

#### Rae Ann Wessel

Rae Ann Wessel has been a leader in the fight for a better environment for roughly 40 years. For the last 14 years, she has worked as the Sanibel and Captiva Conservation Foundation (SCCF), where she currently serves as their Natural Resource Policy Director. In that role, she brings SCCF’s scientific knowledge and research to bear in environmental policy discussions at the local, regional, state, and federal levels.

It would be difficult to overstate the impact that Rae Ann has had on the fight for a cleaner environment. We have, for example, heard multiple public officials publicly acknowledge that their knowledge of critical water-related topics is due to her tireless effort to educate them. She has also had a major impact on us, and not just because of the many insightful presentations she has given in a wide range of venues. She has also held private meetings with us on conservation issues related to the Refuge, we have joined

her on SCCF's Oxbow tour, and we have worked with her on both the Everglades Coalition and the effort to stop the Eden Oaks development.

Rae Ann Wessel is retiring from SCCF effective the end of May. She will be sorely missed.

## **Projects**

### Deep Injection Wells

The purpose of Deep Injection Wells (DIW) is to inject fluid underground into porous geologic formations. This technique has been discussed in the past by the SFWMD as a way to help reduce freshwater discharges from Lake Okeechobee. Because this approach has several drawbacks, such as not being able to get the water back once it is injected into the ground, it is currently not widely regarded as being an important tool for water management.

### Aquifer Storage and Recovery (ASR) Wells

ASR is a water resources management technique for storing water underground during wet periods and then recovering the water when needed, usually during dry periods. The SFWMD and the U.S. Army Corps of Engineers have been investigating the use of ASR for water storage to benefit the Everglades and other natural systems in South Florida. The jointly developed ASR Regional Study documents the results of more than a decade's worth of scientific and engineering investigations and incorporates results from two pilot ASR projects successfully constructed and tested along the Kissimmee River and the Hillsboro Canal.

The Lake Okeechobee Watershed Restoration Project (LOWRP) is the only Comprehensive Everglades Restoration Plan (CERP) project that influences the timing and distribution of water entering Lake Okeechobee. At a recent LOWRP meeting, the SFWMD discussed the Tentatively Selected Plan (TSP) to implement LOWRP. The TSP calls for the creation of 80 ASR wells with a combined storage capacity of 448,000 acre-feet of water. The creation of these wells is appealing in part because they would provide more water storage than the C-43 and EAA reservoirs combined.

There are many reasons to like ASR wells. One is that, unlike reservoirs such as the C-43 and the EAA, they require only small amounts of land. Another is that, in contrast to DIWs, it is possible to get water out of an ASR. A third is that some evidence exists that the process of injecting and then removing water from an ASR well reduces the amount of phosphorus in the water.

There are, however, some significant concerns with ASRs. One is that storing huge volumes of water underground could break up the limestone that comprises much of south Florida and could also negatively impact the aquifer. Another is that there is the potential to release substances such as arsenic when the wells are first put into operation. There is also concern that if ASR wells do indeed reduce the amount of phosphorus in the water, what happens to the phosphorous? Does it, for example, stay in the limestone and over time become a significant ecological hazard?

At the recent LOWRP meeting, the SFWMD stated that in 2020 the two ASRs which were previously successfully piloted, but which are currently sitting idle, will go through the permitting process for refurbishment. In addition, two new ASRs will go through design and permitting. At that meeting, the SFWMD acknowledged the concerns with ASR wells and discussed their intention to follow the ASR well design and implementation principals established by the National Academy of Science.

## **Conclusions**

Having Jennifer Reynolds take on the role of Director of Ecosystem Restoration and Capital Projects for the SFWMD is major win for Everglades restoration that is likely to pay big dividends over the next

decade. Having Rae Ann Wessel retire is a big loss for Everglades restoration in general and for the Refuge in particular.

The analysis of the viability of DIW was relatively straightforward. The analysis of ASR wells is more nuanced. When solving critical problems, there is always the temptation to rush to adopt a solution that is a *silver bullet*. However, rushing to adopt a solution increases the probability of unintended consequences that could be disastrous. For example, as discussed in [a previous article](#), in 1957 Florida experienced a major outbreak of red tide. To mitigate that outbreak, the U.S. Fish & Wildlife Service and the state of Florida used crop-dusting planes to drop copper sulfate on the bloom. That action did kill some of the red tide, but it also led to the release of toxins that killed marine life.

Relative to ASR deployment, we need the SFWMD to strike a middle ground between rushing to adopt a solution and getting caught up in paralysis by analysis. However, we recognize that it is immeasurably easier to make that statement than it is to effectively adopt it.

### **In Case You Missed It:**

A technique, purported to be a *magic bullet*, to remove phosphorus out of Lake Apopka is currently being trialed. See [here](#).