What are Stormwater Treatment Areas (STAs) and Why You Should Care?

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The Refuge faces two dimensions to water challenges: water quantity and water quality. Water quantity is a challenge because we sometimes have too much water, and we sometimes have too little. One way to respond to these extremes is to build reservoirs like the EAA reservoir. While reservoirs help with managing water quantity, they don't do a great job of improving the quality of the water that surrounds the Refuge. One important way to improve the quality of this water is to build Stormwater Treatment Areas (STAs) as described in this brief video.

As explained by the South Florida Water Management District (SFWMD), STAs are constructed wetlands that remove and store nutrients through plant growth and the accumulation of dead plant material that is slowly converted to a layer of peat soil. Five STAs south of Lake Okeechobee are now removing excess nutrients from agricultural runoff water and, in some cases, runoff from urban tributaries, before discharging it into the Everglades and other natural areas. Two more STAs north of Lake Okeechobee are now in the planning stage.

STAs are comprised of parcels of land with compartments or cells with different plants predominating in each cell. Plants that are primarily above water (a.k.a., emergent plants), like cattails, pickerel weed, and bulrush, remove nutrients and store them in peat-like soils as they decay. Submerged plants, including hydrilla, southern naiad, and chara, also take phosphorus directly from the water in STAs.

A class of organisms referred to as periphyton, which includes algae or bacteria found on or in the emergent and submerged vegetation, are another important component of STAs that remove nutrients from the water. Typically, water is moved first through cells with emergent vegetation, then through cells with submergent vegetation. Water moves from one cell or compartment to the next and at each stage gets cleaner.

As shown on the diagram, most of the five STAs are adjacent to a Water Conservation Area (WCA), which will be discussed in a future article. They are designed to serve multiple purposes, including receiving flood waters from adjacent areas, storing the water and making it available for beneficial uses.

At present, the five STAs south of Lake Okeechobee have an effective treatment area of 57,000 acres. Those STAs are:

- STA-1 East: 5,000 acres, northeast of the Arthur R. Marshall Loxahatchee National Wildlife Refuge
- STA-1 West: 6,500 acres, northwest of the Arthur R. Marshall Loxahatchee National Wildlife Refuge
- STA-2: 15,500 acres west of Water Conservation Area 2
- STA-3/4: 16,300 acres in western Palm Beach County, the largest constructed wetland in the world

  STA-5/6: 13,700 acres in Hendry County, west of Rotenberger Wildlife Management Area

In case you missed it: Almost 2,000 acres in the Everglades Headwaters National Wildlife Refuge has been put into conservation. See more.