Historically, the tidal Caloosahatchee River and upriver (oligohaline) estuary were covered with vast submerged beds of tape grass, *Vallisneria americana* also known as eel grass and wild celery. Research has shown that these *Vallisneria* beds provided habitat for shrimp, crabs, bayou snails, over 40 species of fish. They also provided forage for threatened manatees, migratory waterfowl, freshwater turtles, and many other aquatic herbivores. Since 2001, the Caloosahatchee estuary has lost over 1,200 acres of *Vallisneria* beds due to a combination of factors including anthropogenic discharges of freshwater from Lake Okeechobee, reductions in base flow, and droughts in 2001 and 2007-08 resulting in abnormally high salinity levels (~20 ppt) for several weeks or months. There has been no documented *Vallisneria* pandalid (clam) mortality since 1999 and the sediment seed bank appears completely exhausted, with little prospect for natural recovery. Several small pilot restoration projects were conducted between 2002-2009 with two slightly larger projects completed in 2013 and each found that excessive grazing pressure was controlling growth and recovery of *Vallisneria*, both in the estuary and freshwater sections of the Caloosahatchee. The most recent, and larger pilot restoration project (2015-2018) was conducted at four freshwater sites upstream of the S-79 control structure using ten (10) Grow SAV™ exclosures at each site. Grazing and seed production was observed in four months, but only inside exclosures. *Vallisneria* shoot densities inside exclosures peaked at 1,700 shoots/square meter within 16 months of planting. After three years, there was no growth outside of exclosures due to grazing pressure. Primary grazers include freshwater turtles, manatees, crabs, fishes and the invasive non-native apple snail, Pomacea maximus. It became clear that a much larger scale up of the restoration was needed to ensure establishment of plants and allow for flowering and seed production. Such scaled up *Vallisneria* restoration have been successful in King’s Bay, Citrus County, Florida. A scaled-up 20-acre *Vallisneria* restoration project is currently underway at three sites in the Caloosahatchee River estuary funded by the State of Florida. The project represents a unique public/private/academic partnership with the not-for-profit Angler Action Foundation administering the project for the State of Florida. Sea and Shoreline LLC constructed Grow SAV™ exclosure cages and installed >12,500 *Vallisneria americana* plants in 500 exclosures (~25/exclosure), as well as planting 75,000 individual plugs along with 25,000 *Ruppia maritima* out-plugs. Johnson Engineering ecologists are integrating research and restoration by quantifying ecosystem services provided by *Vallisneria* beds through monitoring fish and macroinvertebrate communities, C. TN and TP uptake, water clarity, and plant growth and reproduction. Florida Gulf Coast University faculty and graduate students have teamed with Johnson Engineering to quantify ecosystem services provided by the *Vallisneria* restoration. The restoration project was initiated in October 2018 with initial planting completed in January 2019. The study includes three years of maintenance and monitoring.