

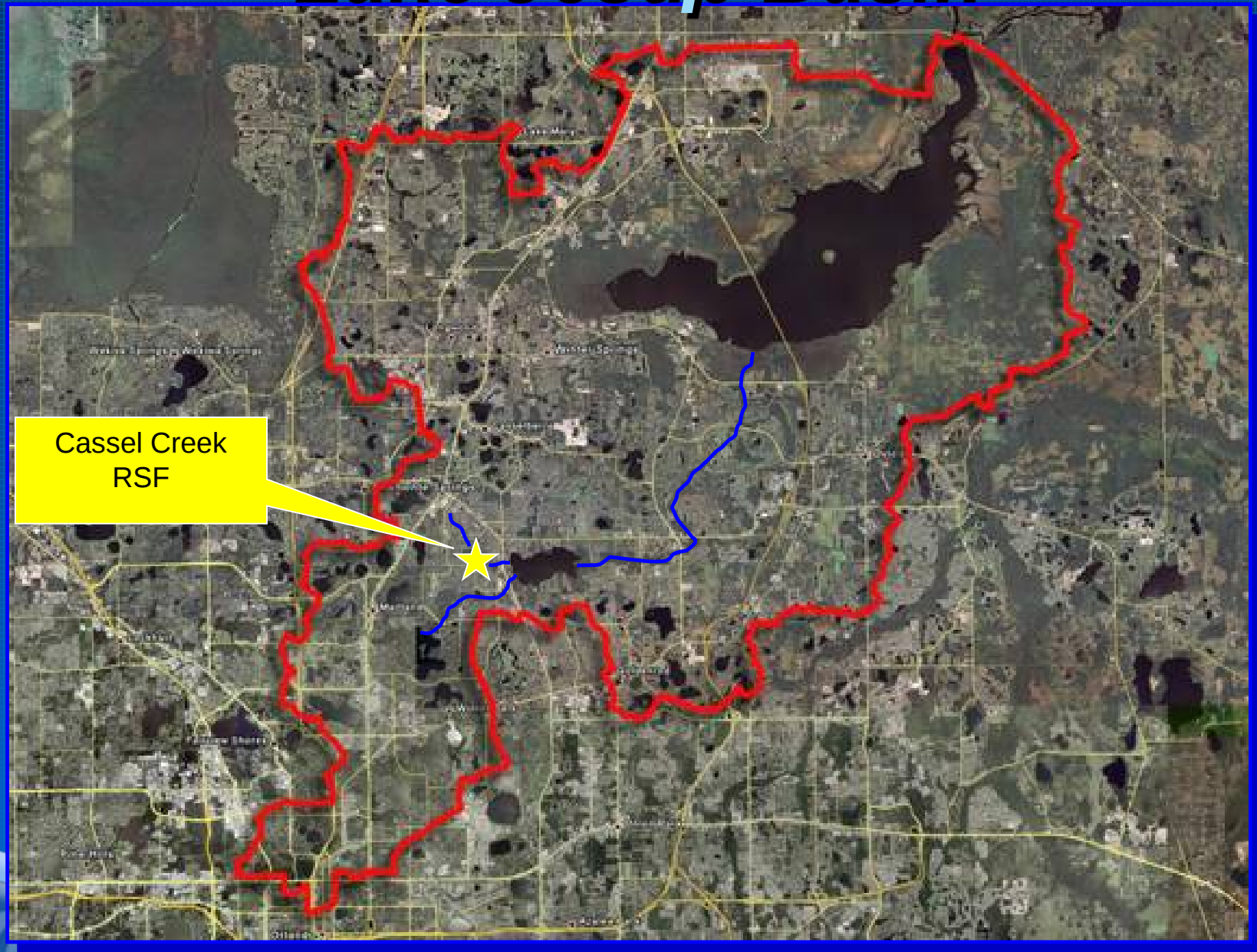


Lake Jesup BMAP Cassel Creek Regional Stormwater Facility



***Robert Walter, P.E., CFM
July 31, 2014***

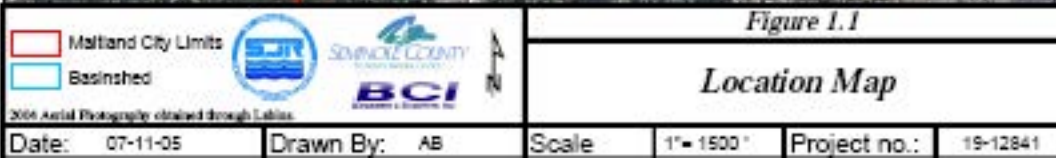
Lake Jesup Basin



Cassel Creek
RSF

Cassel Creek Basin

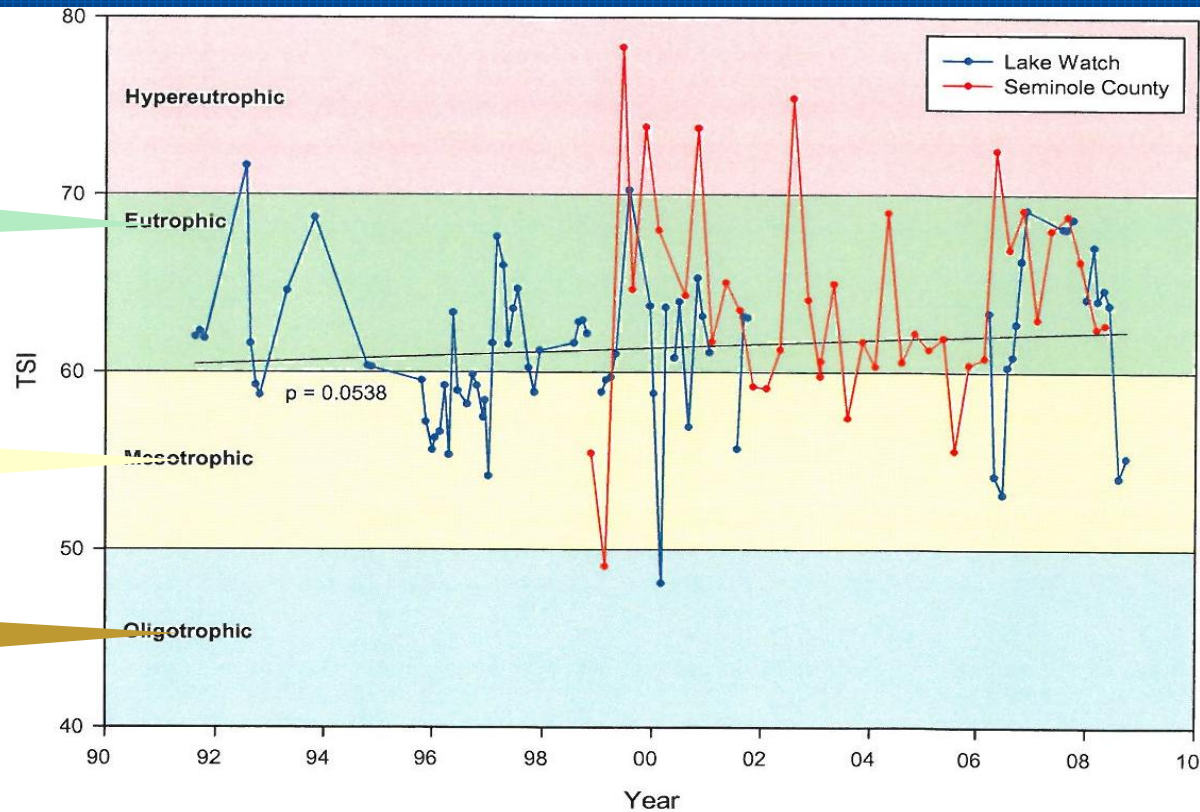
- Total basin 824 ac
- SubBasin to Cassel Creek 499 ac



Maitland Wastewater Treatment Plant (2008?)



The water quality of Lake Howell does not meet state standards for swimmable, fishable lakes



Poor
Water
Quality

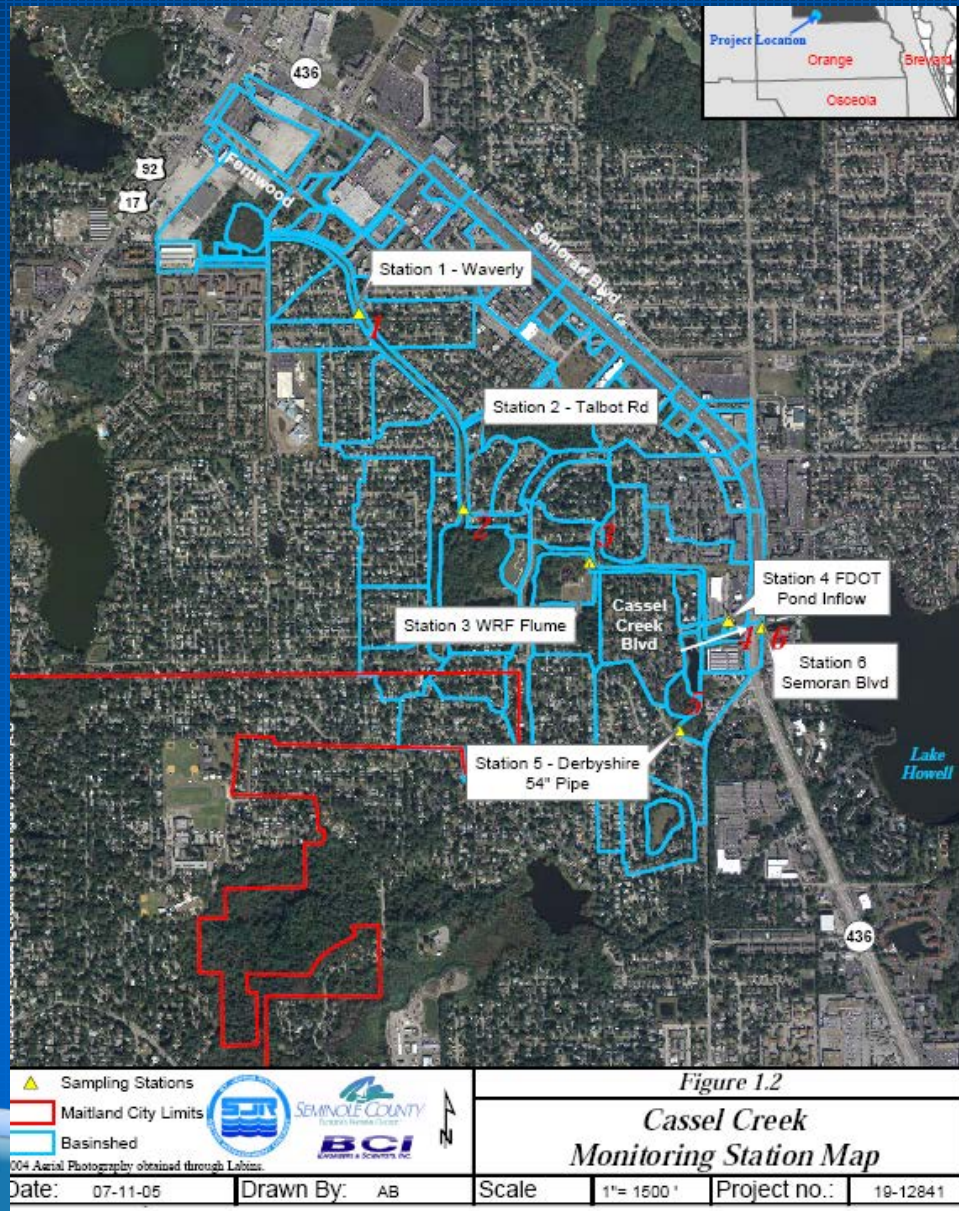
Fair
Water
Quality

Good
Water
Quality

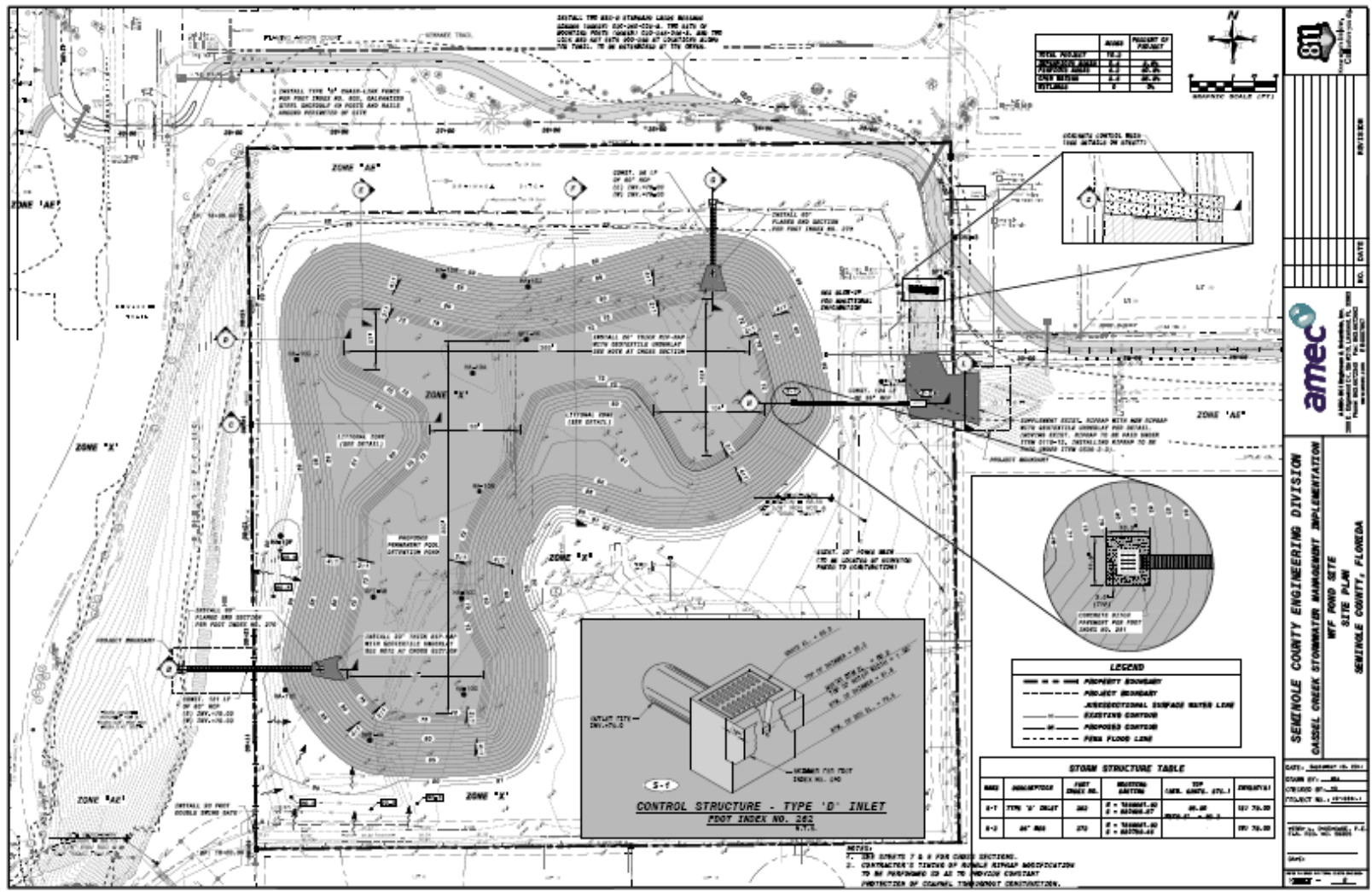
Figure from:
Lake Howell
Hydrologic/Nutrient
Budget Evaluation &
Water Quality
Management Plan
Final Report May
2009, Environmental
Research and
Design, Inc.

Figure 2-15. Summary of Trends in TN/TP Ratio and TSI Values in Lake Howell from 1991-2008.

Cassel Creek Sampling Locations



Construction Plans

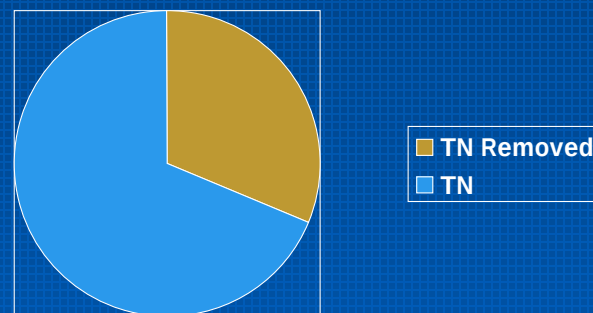


10.2 ac Site, 3 ac pond

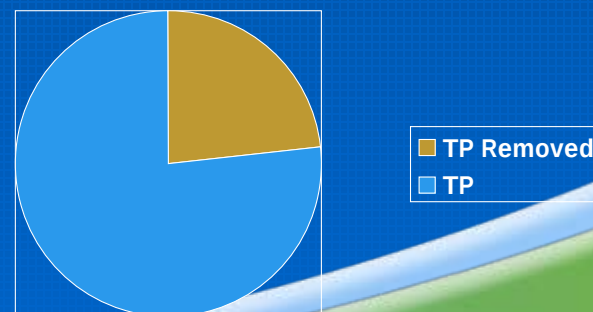
Pollutant Load & Removal Estimate for Proposed Pond

Pollutant	Annual Load (lbs)	Annual Removal (lbs)
Total Nitrogen (TN)	2,645	829
Total Phosphorus (TP)	436	102

Annual Percent Removal of TN



Annual Percent Removal of TP



Demo the existing facility



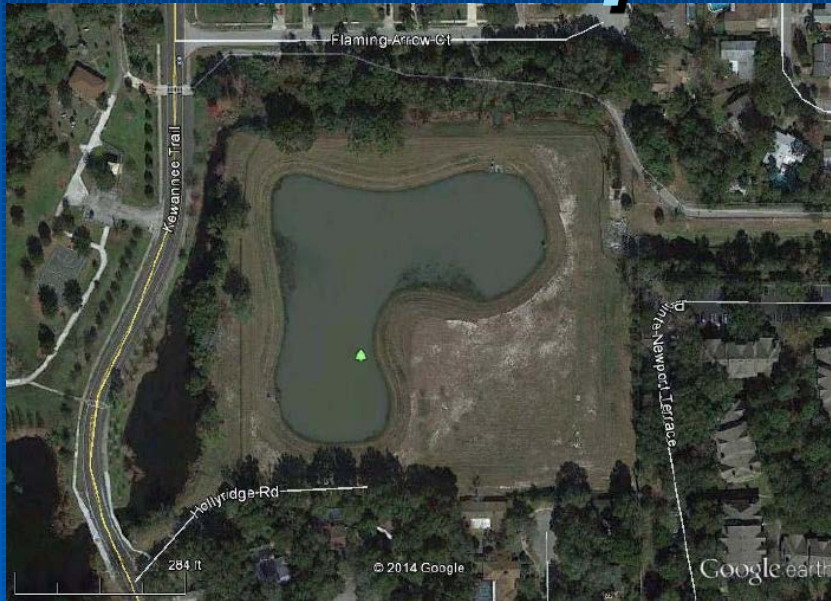
Construction



Construction



Completed Project



Completed Project

- Planted Littoral zones



Costs

- Design
 - Basin study, Sampling, Preliminary & Final design, Permitting \$395,000
- Construction
 - RSF \$927,000
 - Bridge \$527,000
 - Utilities \$31,000
- Inspection \$160,000



Post construction Monitoring

- QAPP approved by FDEP – Spring 2014
- Monitoring equipment installed – Spring 2014
- Monitoring - currently underway
- Final Report - expected late summer/2015

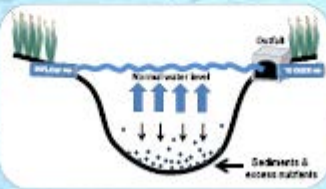


Public Education

Cassel Creek Stormwater Management
For more information, please visit: <http://www.seminolecountyfl.gov/pw>



Cassel Creek Watershed
 *Begins in US 17-92 & SR 436 area
 *Water flows from Cassel Creek through Lakes Keweenaw & Howell
 *Then flows through Lake Jesup, the St. Johns River, and to the Atlantic Ocean



Stormwater Pond
 *Improves water quality by settling sediments & nutrients
 *The outfall discharges cleaner surface water into creek
 *Shoreline plants absorb excess nutrients, provide wildlife habitat

Follow the educational trail to find all of the raindrops!

Beneficial Plants, Beneficial Wildlife, Flow, Invasive Species

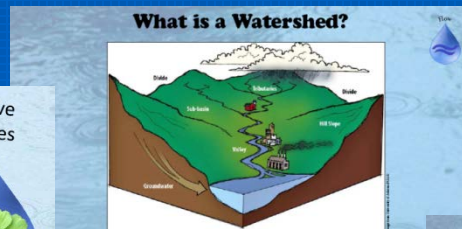


Education Walk

Beneficial Plants, Beneficial Wildlife, Flow, Invasive Species



Follow the signs to learn more about this aquatic habitat!



Watersheds are areas of land that drain to the same river, lake, or stream. Lake Keweenaw is part of the Howell Creek Watershed, one of the five watersheds in Seminole County. To learn more about watersheds and your local waterbodies, visit the Watershed Atlas at <http://www.sas.usf.edu/>.

Cassel Creek & Lake Keweenaw

Cassel Creek flows under Keweenaw Trail to connect Lake Keweenaw with Lake Howell. Lake Keweenaw holds 9,110,500 gallons of water, and has a surface area of just over 4 acres. If this sounds big, think about the 201 acres of Lake Howell, and 6,037 acres of Lake Jesup that the water flows into before it reaches the St. Johns River and Atlantic Ocean! Please help protect our precious waterways! (<http://www.seminole.watersheds.usf.edu/>)

Pickerelweed (*Pontederia cordata*)



Pickerelweed is an emergent plant (rooted in shallow water, has leaves above water) native to Florida. Its large flowering spikes of violet blue flowers provide nectar for butterflies, bees, and hummingbirds. Ducks eat the seeds, and the heart-shaped leaves and stems provide good cover for birds, swimming mammals, fish (including the namesake pickerel), reptiles, amphibians, and insects.

Alligatorweed (*Ruppia philoxeroides*)

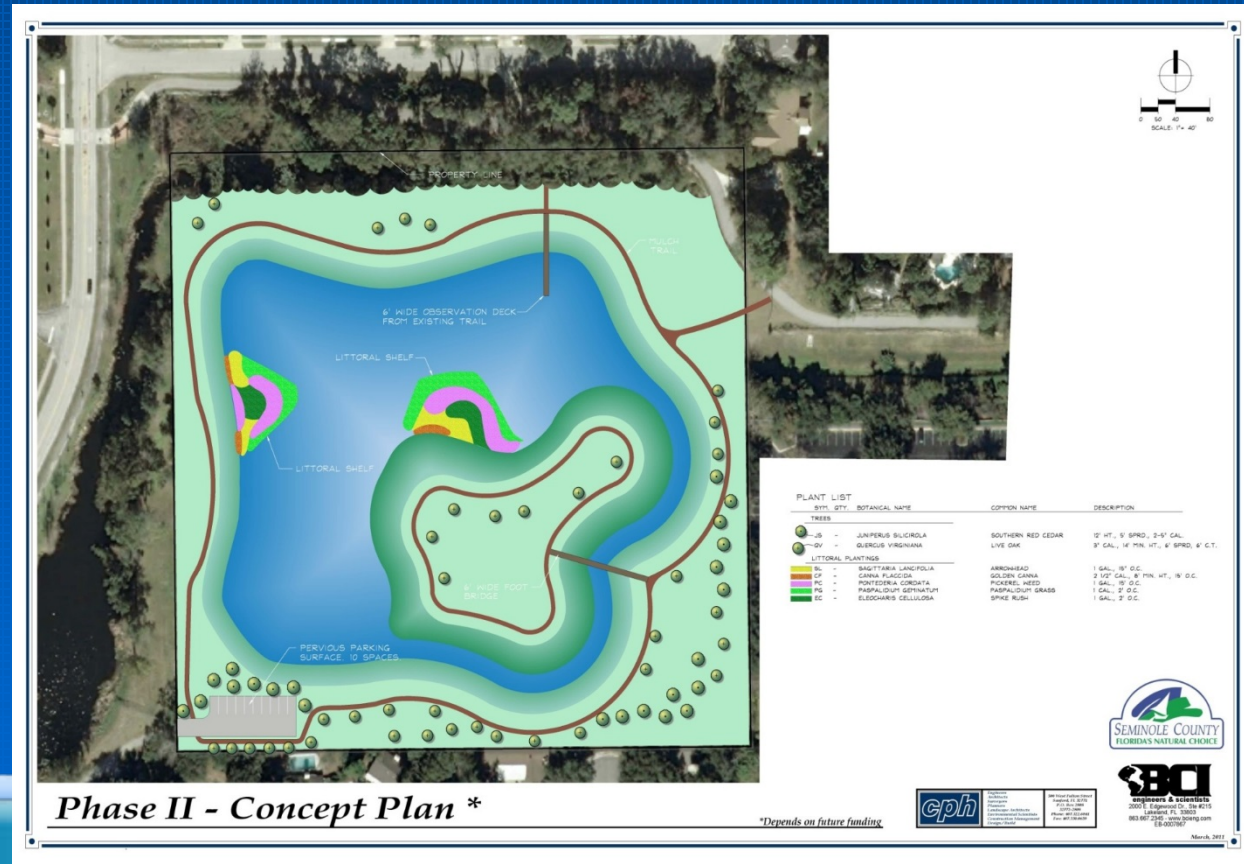


INVASIVE!

Alligatorweed, a non-native invasive species, is thought to have been accidentally introduced from South America into Florida via ships. It can outcompete native vegetation, and it spreads easily because its hollow stems fragment and can form new patches of the plant. Fortunately, this species is managed with the Alligatorweed Flea Beetle, an insect also known to eat the plant in South America.

Future - Phase II

- Increase pond size
- Add park amenities
- Open to public
- Tie into trail (ped/bike)





Questions ?



Water Quality Projects at Lake Jesup

General Location	Project	Status
North Lake Jesup	Navy Canal RSF	Complete
	Cameron Ditch RSF	Complete
West Lake Jesup	Soldiers Creek Alum Facility	Design/Permitting
Lake Howell	Red Bug Lake Road /Deer Run Outfall RSF	Complete
	Cassel Creek RSF (Old Maitland Wastewater Treatment Facility)	Complete
Howell Creek	Howell Creek Alum Facility	Proposed
	Howell Creek Dam Erosion Control – NRCS	Complete
	Red Bug Lake Road @ Tuskawilla Erosion Control	Engineering/Permitting
	Eagles Point Erosion Control - NRCS	Complete
South Lake Jesup	Solary Canal	Complete
	Pay for Performance (SJRWMD)	