Drainage Report

May 2024

Here we are post drainage study!
Quick recap of how we got here:
The conversation addressing the need for a comprehensive drainage study began before I was on the board or chairperson of the drainage committee in early 2024.
-A contract was in place for a hydro study to be conducted by EarthWorks, however was never executed.
-A special meeting was held in Nov of 2024 and the board voted 6-3 to approve the canal dredging contract from Carter Dredging. Most board members echoed the sentiment we should've had a drainage study done before having to vote.
-Rumblings about EW being to invested in our dredging project prompted an inquiry into other options. I engaged G3 Engineering to bid on a study.
-At the December 2024 meeting, I asked the board to use the remaining time before the expiration of the bids/contract to seek other inputs.
-I met with 2 hydrologists from the Clemson Extension and toured the property. It was during this time that I was also referred to Dr. David Ladner, an environmental engineer from Clemson University.
-Dr. Ladner discussed some options with the board and that's when the opportunity for a Capstone Project became available.
-The engineering students were supplied maps from our inventory and then they made a site visit to perform some field study. NATE NADEAU and I toured the plantation with the students, showing them inlets, outlets, and problem areas.
-The students worked for about 2 months compiling and reviewing data before giving us a presentation of their findings, followed by a one-on-one Q&A session.

Clemson gave us some very interesting visuals of how the plantation has changed in terms of development over the past 10 years. We are also able to understand our elevations and draw conclusions about watershed.

The Parcel Drainage map shows us where the drainage outlets for different sections of the neighborhood are in color codes.

Clemson asserted that the ditch/swale network, catch basin drains, ponds, and canals are all parts of the overall drainage system.

The action items we were presented with:
-Canal maintenance
-Infrastructure repair

Infrastructure Repair

Our infrastructure, catch basins/drains, ditches, swales, and culverts are subject to changes.

-Some due to end of useful life like metal culverts.

-Some are subject to environmental factors like vegetation growth and erosion; tree roots growing into ditches, sedimentation filling in swales, ect.

-Others are impacted by misuse and neglect; people using ditches as debris receptacles, filling them in to increase yard size, or driveway pipes that don't allow water to flow through.

The HOA has addressed some driveway pipe issues and its had a positive impact. We've also lowered drain box heights, capturing water more efficiently and moving through the system.

We have a plan for Wraggs Ferry that centers around the same concept of infrastructure maintenance. Thanks, Vince Morribit! We are working to install a trough to catch water and open up several blocked storm drains to move the water we're able to collect.

I recently visited several lots on Ricefield that need to be reverse engineered, possibly capping off an old swale and raising a catch basin.

Repairing and/or replacing infrastructure is going to be an on-going task since we were developed prior to modern day stormwater ordinances. We are going to implement a 5 yr plan for ditch and swale remediation. However, bringing this property into a modern day drainage system would require a million dollar budget.

Canal Dredging

Once we are able to move water effectively through the system via infrastructure repair, it has to be released somewhere.

-The canals are one of 3 major relief points; others being the marsh to the southeast and the swamp near the water tower.

-The outlet pipes in several of the canal fingers are the largest pipes in our infrastructure system and water from various parts of the plantation are channeled to them.

-Clemson noted that the transfer of tidal sediment contributes to the silting in of these canals as does local environmental contaminants like leaves.

-They did not have the means to perform a sedimentation study but they did conclude that maintenance of these canals is a best practice as they are part of the drainage system's design.

-The visit from Clemson Extension mentioned that many of our waterways are and will continue to see an increase of watershed and sedimentation proportionate to the development along these water fronts.

There are going to be water events that we just aren't build to handle. We live in a tropical climate, beside a river, near the ocean. This drainage system is dynamic and our plan for maintenance must be as well. Funding for maintenance and further studies will be necessary but we do have a path forward.