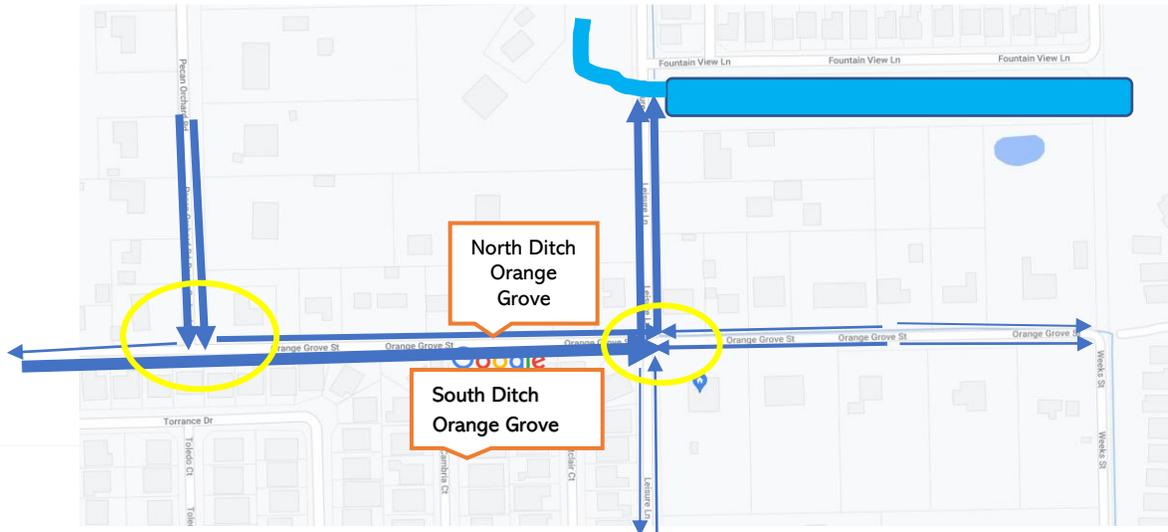


Project DR2102 Drainage Improvements Orange Grove- Leisure Lane

Concerns – Questions needing clarification after public meeting dated May 19, 2021.

- 1) Existent Conditions Simulations Modeling at the corner of Orange Grove-Leisure Lane is inconsistent with the reality observed and lived through during major rain events.



Gauge Engineering simulations consistently show that the North Ditch, running alongside Orange Grove through Leisure Lane corner, has the biggest runoff amount of water. As a homeowner who has lived alongside these intersections for more than ten years, *this simulation is different than what we have observed and lived through during major rain events.*

The biggest amount of water runoff happens alongside the South side of the open ditch. This side running alongside the back of Victory Lakes (VL) flowing towards the corner of Orange Grove and Leisure Lane.

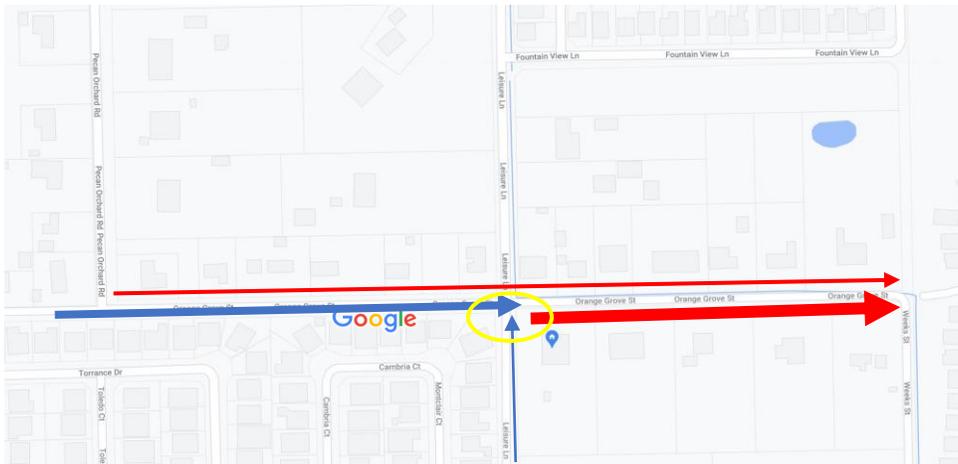
An engineering model should support what we have seen and experienced in every major event of heavy rain. Heavy runoff water does not turn 90 degrees simply because there is a North ditch in Orange Grove, but rather rushes across Orange Grove St and settles on the South open ditch against the back of Victory Lakes homes. All of the South ditch alongside Orange Grove runs towards the corner of Orange Grove and Leisure Lane.

Please provide data justifying this incongruity between modeling presented and actual lived and observed rain runoff performance.

Response:

The analysis simulation supports the reported drainage patterns. The graphical results that show inundation do not communicate the complete story of flow rates and volumes. The flow rates in the Orange Grove north ditch heading east to Leisure Lane are 6 cfs, 21 cfs, and 39 cfs for the 2-yr, 10-yr and 100-yr events respectively. The flows rates in the Orange Grove south ditch heading east to Leisure Lane are 18 cfs, 24 cfs, 33 cfs for the 2-yr, 10-yr and 100-yr events respectively. These flow rates tell us that, in the 2-year and 10-year events, the southern ditch has more flow, or close to the same flow, as the northern ditch. In the 100-Year storm event, the flow rates in the two ditches are similar to each other, because at this point both ditches are fully inundated and are being influenced by the water in Bensons Bayou. In the graphics presented at the public meeting, the inundation boundary for the northern ditch seems larger than for the southern ditch because the lots north of Orange Grove and west of Leisure Lane are lower than the lots south of Orange Grove, thereby allowing water to leave the ditch, expand into the yards and give the appearance it is -larger than the south.

2) Improvement Option 2 – Replace Ditches with Box Storm Sewer



Option 2 shows installation of 5'x3' RCBs from Pecan Grove East ditch alongside the North Orange Grove ditch crossing Leisure Lane St and going all the way to Weeks ditch.

Yet, the South ditch alongside Victory Lakes homes in Orange Grove, the ditch which collects the most amount of runoff water, with an open ditch until after it crosses Leisure Lane St.

With Option 2, the chance to discharge some of the excess runoff water from the South Orange Grove ditch towards Leisure Lake Subdivision Pond is eliminated. Therefore, the amount of water on the South open ditch in Orange Grove crossing Leisure Lane will be increased and yet not contained until after it crosses Leisure Lane St. intersection.

a) How does this option address this problem?

- b) How does it address the added amount of excess runoff coming towards from the open ditch in Leisure Lane running also towards this corner on the East side of the Leisure Lane St. open ditch?
- c) Rushing water does not change directions easily. How does this option address the fact the RCB's will be located not in the same pathway of gushing runoff water coming down the South Orange Grove ditch and crossing Leisure Lane St. even stronger than before? How do we expect all this runoff water to MOVE about 16 ft to the south to fit into the RCB's placed on the South side of Orange Grove towards Weeks St?

Please provide specifics otherwise the mere problem we are trying to solve, repeated flooding of homes, will be increased at least for the lower slab homes close to the corner of Orange Grove and Leisure Lane St.

Response:

The exhibit showing the 5'x3' box under the south ditch on Orange Grove terminating east of Leisure Lane was a graphical mistake. The 5'x3' box is proposed to extend west across Leisure Lane to capture the south ditch flow. See graphic below showing the extension across Leisure Lane.



3) Discharge at Week's Ditch

The biggest amount of runoff water meeting at the end of Orange Grove St and Weeks St. will come from the South ditch in Orange Grove St. This is the most difficult discharge point and at this moment this area is limited by sheer square feet area available to make improvements.

Weeks's ditch is about 20 ft wide and having the biggest discharge meeting at a 90-degree angle close to the road bridge connecting our older neighborhood with the newer VL expansion homes is a sure recipe for water turbulence and poor water drainage conveyance.

The study mentions "ditch improvement" for Weeks's ditch area but achieving it and having the mere area to do improvements is different.

- a) Please provide specifics of *these improvements* more than anything for the South ditch connection coming from Orange Grove St.

North side of the Orange Grove ditch meeting with Weeks ditch has a lot more area to work with to create a smother transition.

Response:

Improvements to Weeks ditch are part of the overall solution. The ditch top width is proposed to be widened from 20-ft to approximately 35-ft. The overall flow area is increasing from 70 SF to approximately 120 SF. The study determined that there is adequate room to make the connections to the Week ditch from both the north and south ditches on Orange Grove. The proposed improvements to Weeks Ditch will require additional ROW. Additionally, the connection between the Weeks Ditch and the detention pond will be improved to increase the hydraulic efficiency and reduce potential for scour. A similar improvement is planned for the Leisure Lakes Pond connection with the ditches west of the pond along Leisure Lane.