LSC Drainage Observations 3/28/2018

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The now six-month-long road/drainage project just had its final layer of chip-and-seal finished yesterday. Over night into this morning we had a series of violent thunderstorms that trained right over us. In the four hours between 11PM and 3AM, we had just under 4 inches of rainfall, at rain rates peaking at nearly 4 inches per hour. We got another inch of rain between 8:30AM and 9AM, with the rain rate again nearing 4 inches per hour. I was out driving inside and outside of the park frequently between 1:30AM and 9AM, observing drainage patterns.

Culverts: the new culverts which the LSC purchased and the county installed under the NW neighbor's driveway and under CR 5227 worked as we had hoped. At the peak flow rates during the storm, both sets of culverts reached about half full with good flow on into Parker Creek. At no time did the ditch along the north side of the park back up enough to cause water to flow across the western part of the park. The telephone pedestals were sitting in about 3 inches of water at the height of the flow.

Northeast Corner: A large lake formed in the road at the intersection of PR 5240 and PR 5247. This was due to the new ditch from the corner on north into the road ditch outside the park not being wide enough going under the north fence. That area needs to be dug out, probably by hand. Once the rain slacked off, the accumulated water was able to drain out into the road ditch as planned.

Southeast Corner: A large lake formed in the road at the intersection of PR 5247 and PR 5248, and there was some water encroachment onto the front parts of lots 50, 51, and 52 . This was due to the limited capacity of the sump pump at that intersection. On-line research indicates that this pump is likely a Goulds WS1512D4 240VAC 1Ph 1.5 HP Submersible Sewage Pump. It has a capacity of about 200 gallons per minute, depending on the back-pressure (head) on its output. It has an oil-filled motor that can run continuously while submerged (for cooling). It can handle solids up to 3" in diameter, so leaves are not a problem and the screens added to the existing grates can be removed so leaves don't block them up. With the pump's rating and the area it's draining in the park, it can keep up with a 1/3" per hour rainfall rate. The 5" rainfall we had took 14 hours to dispose of, with a lake forming in the meantime. Indeed, by the start of the 8:30AM second wave of the storm, the lake had greatly diminished. Unfortunately, the second wave caused the lake to enlarge again as the rain rate was again much higher than the pump capacity. The entire lake was gone by 1:30PM and the float switch shut the pump down. The new drain box and grate we installed a couple of months ago kept the pump submerged and running until the entire intersection was drained.

The motor controller has a light fixture on its outside to show when the pump is running; that light was found to be burned out and was replaced with a LED light at 5AM to restore the indicator.

West end: At the height of the runoff the west field appeared to be mostly a lake. Water was backed up to the red storage shed. However, the west row of lots were being protected from the flooded field by the berm of dirt that forms the drainage channel through the field. There still remains a portion of the field that isn't draining, and will need a outlet formed on the south side.

Road drainage channel problems: On three of the north-south roads on the west side, there was leakage from the the road into a few lots due to the new drainage channels not being deep enough or having the west edges too low to contain the flow. The affected lots are 79 to 81 on PR 5244, lots 94-95 and 96-98 on PR 5243, and lots 112-114 on PR 5242. These problems were also discovered when the road crew did water flood testing in the last few weeks, but nothing was done to remedy the problem. It will probably take an added 2” high berm along the west side of the drainage channel to contain the flow.

Another problem is that the center of the drainage channel down the center of PR 5240, between PR 5241 and PR 5243, where one and sometimes both new layers of chip-and-seal have been peeled away by the water flow. These will need to be repaired.

Aside from the problems mentioned above, the drainage in the park worked quite well in this severe storm. Many of the roads and ranches in the local area around the park were flooded by this storm.