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Dear Task Force Member:

At the February 25, 2019 meeting of the Crooked Lake Flooding Task Force, task force members and residents alike expressed concern over the cost effectiveness of impounding water on the property recently purchased by the Watson Drain Drainage District (commonly referred to as the “Jones Property”) on the north side of Delton Road. At the meeting, we reported that utilizing this property would reduce the water height on Upper Crooked Lake approximately 2.5 inches. This is a conservative estimate that assumes no infiltration of the impounded water. Accurately predicting infiltration rates requires a tremendous soil sampling effort that is not conducive to a short-term timeline. Regardless of the exact magnitude of relief provided by the Jones Property, the question remains: “Why spend money for 2.5 inches of relief?”

In answering this question, three main factors should be considered:

1. The exhaustion of more effective short-term solutions
2. The effectiveness as compared to other available short-term solutions
3. The impact of 2.5 inches

The exhaustion of more effective short-term solutions

Other short-term solutions that would result in greater relief to the water level of Upper Crooked Lake are undeniably available. Prior to even considering the Jones Property, six other more cost effective, short-term solutions were analyzed and pursued. Each of these prior options had multiple variations and many would have resulted in a greater water level reduction on the lake. One of these options, the Glasby Marsh, was utilized this past summer and fall, and proved to be effective. Despite receiving nearly 8 inches of rainfall during the time that M-43 was dammed and pumping occurred from the lake into the marsh, the water level on Upper Crooked Lake still decreased. The other five options were determined not feasible in the short-term for the reasons listed below:

Alternative	Major Limiting Factor(s)
Impounding water on West Gilkey Lake and Indian Lake	<u>Easements and Permitting</u> : This alternative would require approximately 20 individual flooding easements and cause excessive impacts to regulated wetlands, resulting in a lengthy permitting process and the need for mitigation.
Pumping water out of Lower Crooked Lake to Private Irrigation Systems	<u>Cost</u> : The estimate to hook into the two separate private irrigation systems south of Lower Crooked Lake was greater than \$400,000. A different pumping contractor has been asked for a second opinion to revisit this option for 2019.
Condemn/purchase flooded properties	<u>Cost</u> : It is estimated to cost \$6.2 million to purchase the approximately 35 homes subject to severe flooding around Upper Crooked Lake. Additionally, further water level increases would mean purchasing even more properties.
Impounding water on the Delton Drain between Pine Lake Road and Stevens Road	<u>Cost and Permitting</u> : This alternative would require extensive temporary infrastructure to convey water to Pine Lake Road and would cause excessive impacts to regulated wetlands, resulting in a lengthy permitting process and the need for mitigation.
Direct pumping to Spring Brook	<u>Cost, Easements, Permitting</u> : 90 days of pumping at the estimated maximum allowable discharge (without affecting aquatic habitat) would provide approximately 2.5 inches of relief on Upper and Lower Crooked Lake, and require 2 miles of temporary infrastructure, 2 pumps, a minimum of 8 easements, the use of a private irrigation lines, and would result in a lengthy permitting process due to impacts to Spring Brook and an upstream wetland area.

The effectiveness as compared to other available short-term solutions

Two low areas at the northeast corner of the Jones Property were also examined as potential short-term solutions after the elimination/completion of the six alternatives mentioned prior. It is estimated that purchasing these two low areas would provide approximately 0.4 inches of depth reduction on Upper Crooked Lake and result in approximately \$70,000 of land purchase and earthwork costs.

In comparison, utilizing the property recently purchased by the Drainage District will provide approximately 2.5 inches of depth reduction and result in approximately \$125,000 of land and earthwork costs. On a per inch basis, this is over three times as cost effective as the other short-term options still in consideration.

The impact of 2.5 inches

It is often easier to visualize depth reduction in terms of shoreline loss/gain. If a lawn slopes towards the lake at 5% slope, 2.5 inches of depth reduction would result in approximately 4 feet of gained shoreline. For some residents, the gain or loss of 4 feet of shoreline is nonconsequential. For others, this could be the difference between pumping or not pumping water from a first floor, crawl space or basement.

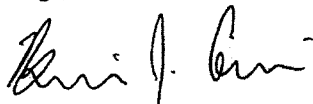
Summary

Ideally, several of the considered short-term solutions would have been executed last summer. Due to the date of the Watson Drain Board of Determination meeting (May 7) and the required 20 day appeal period, work on short term solutions could not begin until June of 2018. Despite this late start, we were able to get one of the short-term solutions permitted and installed in just over two months. During this time, the other five solutions were further explored but were eliminated from consideration due to environmental impacts, cost, and land acquisition concerns. As we entered 2019, a few short-term options remained on the table. The most efficient options having been eliminated, we were dealing with what we considered to be the least efficient alternatives. We thoroughly assessed these alternatives and proceeded with the most cost effective one.

The simple truth is that many properties may notice little impact. However, those properties on the verge of flooding will benefit from this action, and the Drain Commissioner will have been successful in protecting these vulnerable properties. As consultants to the Drain Commissioner, we will continue to search out solutions and execute the alternatives found to be the most cost effective in order to protect those who need it most. The overall cost for any work performed as part of this project, short-term or long-term, will continue to be closely monitored.

Sincerely,

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