

MEMORANDUM

To: Board of Directors
From: Peter C. Gorham, P.E., Director of Engineering
Date: July 9, 2010
Re: Glenmore Tank Study
cc: James M. Bowling, IV

In October 2009 Michael Baker, Jr., Inc. (Baker) was given the task of conducting a tank siting study for the subdivision of Glenmore. The purpose of the study was to determine the storage volume to provide emergency storage based upon historical and projected water demands, identify potential tank sites given specific design criteria, perform hydraulic modeling and provide recommendations and cost estimates.

A copy of the final Glenmore Tank Siting Study has been distributed with your Board packets. The study area extended from the I-64/U.S. Rt. 250 interchange east to the Glenmore subdivision. Three areas were subjected to preliminary site screening: the I-64/U.S. Rt. 250 interchange, North Glenmore and South Glenmore. The I-64/U.S. Rt. 250 interchange was eliminated, at this stage, for not meeting the primary objective of reducing the vulnerability of the Glenmore subdivision to a major water outage.

The next stage of the study made a comparison of three sites within the Glenmore subdivision: the wastewater treatment plant, the Leake property and the Volunteer Fire Station. The advantages and disadvantages of each site were weighed with distinct advantages being highlighted for each potential site. After this analysis, the Volunteer Fire Station site was recommended as the preferred site to pursue discussions for determining land availability to construct either a ground or elevated storage tank with a reduced hydraulic grade line (HGL).

Baker then conducted a hydraulic analysis to evaluate the affect of a reduced HGL on the level of service for both domestic and fire protection usage. It was also used as a basis of comparison for the ground and elevated storage alternatives with regard to system operation. The model was also used to com-

pare the affect of the different tank alternatives on water age in the Glenmore subdivision which has already been identified as having elevated water age, due to its location at the end of a long dead-end water main extension. The hydraulic analysis showed that domestic service was not significantly impacted and that fire protection, though reduced at two hydrants, still exceeded the Insurance Service Organization (ISO) recommendations for one and two family dwellings that do not exceed two stories in height. The analysis also showed that the elevated storage tank cycled slightly more of its volume on a daily basis and increased the water age in the Glenmore system to a lesser degree than the ground storage tank.

Finally Baker conducted a cost analysis of the two tank alternatives. Even though the ground storage tank is less expensive to install, it requires a pump station with the associated annual costs of such a facility. Taking into account the present worth value of the ground storage tank, the elevated storage tank is the least expensive of the two alternatives by approximately \$160,000.

Based on the analysis in the study, Baker recommends constructing an elevated storage tank to limit costs, water age and simplify system maintenance and operations; however, both storage options are feasible. The next step is to launch a public outreach program to educate and inform the residents of the project needs and objectives.

Board Action

No Board action is required at this time.

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