



## TECHNICAL MEMORANDUM - DRAFT

**Date:** January 27, 2021

**To:** City of Louisville, Brue Baukol

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**Subject:** TM2 City of Louisville and Redtail Ridge Water Treatment and Conveyance Infrastructure –  
Subject to Revision - DRAFT

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### INTRODUCTION

Redtail Ridge, a proposed development in southeastern Louisville, is estimated to produce a max month flow (MMF) of 1.02 to 1.39 MGD and a peak day flow (PDF) of 1.34 to 1.71 MGD. Total buildout MMF projections for the City of Louisville with the proposed Redtail Ridge Development range from 8.79 to 9.16 MGD. Total buildout Peak Day Flow (PDF) projections for the City and Redtail Ridge Development range from 10.99 to 11.36 MGD. A breakdown of the projected water flows by Phase with irrigation assumptions is provided in the “City of Louisville and Redtail Ridge Development Projected Water Demands” Technical Memorandum 1. It should be noted that the irrigation estimates included in TM1 assume that 30 percent of the development will require irrigation. Since the development of TM1, progress has been on the site development and the actual irrigated area is closer to 17 percent of the total land (see attached figure). Thus, the projects are conservative.

### Water Treatment Plant Capacities

The SCWTP was constructed in early 1980s with a rated capacity of 8.0 MGD. The HBWTP was constructed in 1993 with a rated capacity of 5.0 MGD. The City prefers to utilize one treatment facility at a time during periods of average water demands, however both facilities can be used during periods of high water demand. Water is distributed through three pressure zones and three storage tanks. In the instance of the SCWTP and HBWTP, backwashing is the limiting factor when determining plant capacity. Backwashing can result in decreased capacity depending on how often it is necessary. During max months, backwashing may be necessary every day depending on raw water quality. Filter firm capacity can be considered as the largest filter out of service with adequate storage. In this case, firm capacity is approximately 11 MGD assuming one filter offline at the HBWTP. Low to High projections for max month demands are below firm capacity and can be considered the maximum long-term demand. Peak day projections are at or slightly above firm capacity. Peak day demands are expected to seldomly occur, and not for extended periods of time. The lower demands from Redtail Ridge and capacity of the City’s potable water systems suggest Redtail Ridge will have minimal impact to the City’s water systems.

### Water Storage and Distribution Infrastructure Needs

In general, water utilities provide water treatment capacity to meet Maximum Day Demands (MDD), while providing storage volume to meet emergency and fire flow needs, as well as, operational volume for daily flow variations. In practice, considerations are made to provide the optimal balance between providing a

robust system, controlling capital costs, and managing water quality. The City's distribution system contains 3 storage tanks that store approximately 8.5 million gallons of water, as shown in **Table 1**.

**Table 1 - Distribution System Storage Volume**

<b>Zone</b>	<b>Water Storage Volume (MG)</b>
High Zone	2
Mid Zone	3.5
Low Zone	3
<b>Total Storage</b>	<b>8.5</b>

The addition of Redtail Ridge would contribute, at buildout, a MDD of 1.34 to 1.71 MGD, while total buildout MDD projections for the City and Redtail Ridge Development range from 10.99 to 11.36 MGD. The greatest source of uncertainty in system planning is the uncertainty of demand projections. The irrigation projections provide the

principal source of uncertainty in the Redtail Ridge demand projections. The most conservative irrigation projections for Redtail Ridge were used in this analysis, however, Redtail Ridge plans to implement xeric or low water landscaping which will decrease the irrigation demand.

The capacity of the City's potable water systems combined with the (lower) demands of the current Redtail Ridge development suggest the proposed Redtail Ridge development will have minimal impact to the City's water systems. The MDD plus fire flow demand analysis suggests the City would not require additional infrastructure to support Redtail Ridge projections.