

Memorandum

Date: September 25, 2017

Project: 16-1826

To: Mr. Tony Doran, Engineering Associate
Ms. Carrie Severson, Management Analysis II
City of Tualatin

From: Brian Ginter, PE
MurraySmith

Re: Water System Hydraulic Analysis – AR17-0006 – IPT Tualatin, 12155 SW Tualatin-Sherwood Road

Introduction

As requested, this memorandum has been prepared to present the findings of our analysis of the water service to the proposed IPT Tualatin development located at 12155 SW Tualatin-Sherwood Road. This memorandum presents the findings of this analysis for the City's use in determining the water system improvements necessary to meet fire flow and pressure requirements.

Background

The City's water system hydraulic model was used to perform a hydraulic analysis of pressure and fire flow performance in the City's water system under peak demand conditions with fire flow events evaluated at the intersection of SW 124th Avenue and SW Cimino Rad, and at the location of the proposed main extension in SW Cimino Road to the planned domestic and fire protection services.

The hydraulic model was updated to include the proposed 8-inch diameter extension of the water main in SW Cimino Road east to a new node at the location of the proposed development. The proposed development is a large square footage (17, 230 square feet) building shell in an area zoned for General Manufacturing. It is understood that the proposed development will have an on-site fire suppression system. Based on the information provided, a fire flow rate of 4,000 gallons per minute (gpm) was assumed for this analysis, plus a with a domestic demand of 100 gpm.

The proposed development is located within the City’s existing Pressure Zone A, served by the A level reservoirs at a nominal hydraulic grade of 300 feet above mean sea level (msl).

Analysis and Findings

The hydraulic model was updated as described above and fire flow performance tested at the property frontage on the existing 12-inch diameter main in SW 124th Avenue and at the end of the proposed 8-inch diameter main extension in SW Cimino Road. Based on the preliminary plans, it is understood that a domestic water supply connection, private fire line and associated connection and one or more public hydrants at the street right-of-way will be installed in the SW Cimino Road extension.

A summary of specific model conditions for this analysis is presented below:

Demand Conditions: 2030 Maximum Day Demand (MDD)

Fire Flow: 4,000 gpm

Physical Condition: Existing facilities, proposed 8-inch diameter SW Cimino Road main extension, plus fire flow (combination of public hydrant and fire suppression system)

The model node representing the intersection of SW 124th Avenue and SW Cimino Road, the model node representing the proposed connection location, the fire flow capacity tested, and the calculated minimum pressure within the area influenced by the fire flow in Pressure Zone A are summarized in Table 1 below:

Table 1
Fire Flow Analysis Results

Model Node ID	Location	Fire Flow Rate (gpm)	Static Pressure under MDD (psi)	Minimum Residual Pressure (psi)	Available Fire Flow Rate @ 20 psi Residual (gpm)
J1060	Intersection of SW 124 th Ave and SW Cimino Rd	4,000	48	32	>5,000
J9000	Extension of SW Cimino Road	4,000	48	<20	2,500

Based on the findings of this analysis and a review of overall system improvement needs presented in the Water System Master Plan, the existing and proposed 8-inch diameter main/main extension in SW Cimino Road is inadequate for the projected fire flow rate required. Prior to approving the proposed development, actual required fire flow rates should be confirmed and sizing of

improvements in SW Cimino Road sized accordingly, including potential upsizing of the existing SW Cimino Rod main from SW 124th Avenue.

It is the developer's responsibility to size internal mains for adequate service pressure, private hydrants and fire suppression sprinkler systems as these facilities are outside the scope of this analysis.

Please do not hesitate to contact us if you have any questions or comments in this regard. We would be happy to meet with you personally to discuss the findings presented in this memorandum.