

## Technical Memorandum

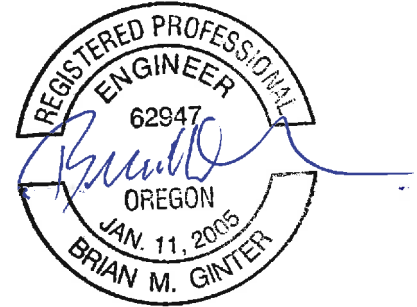
**Date:** February 24, 2020

**Project:** 20-2737.0402

**To:** Mr. Tony Doran, Engineering Associate  
Ms. Kim McMillan, PE, City Engineer  
City of Tualatin

**From:** Brian Ginter, PE  
Claire DeVoe

**Re:** Water System Capacity Analysis – Tualatin Industrial Park



RENEWS: 6/30/2021

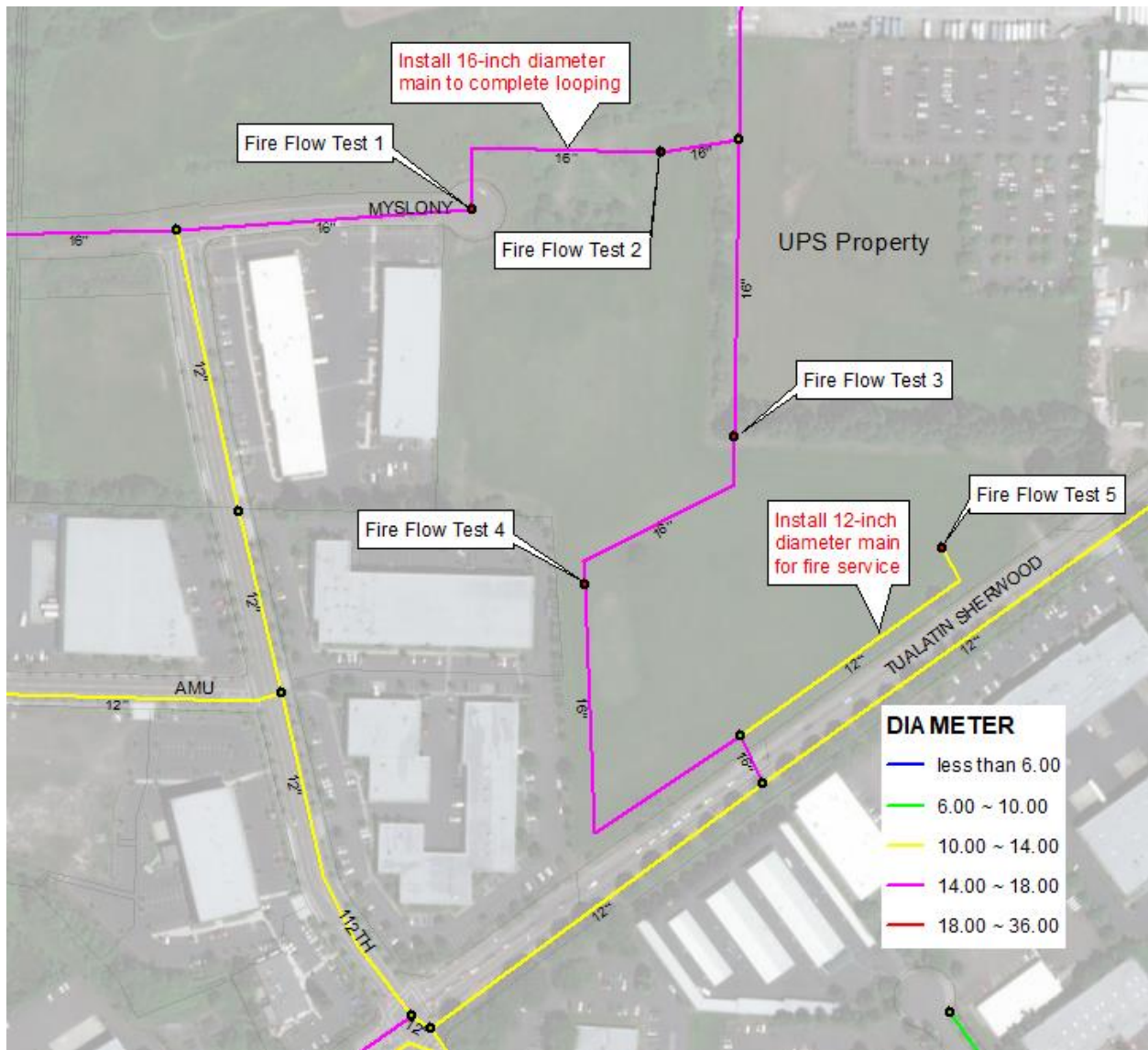
### Introduction

As requested, this memorandum has been prepared to present the findings of our analysis of the water service to the proposed Tualatin Industrial Park located north of Tualatin-Sherwood Road with road access off Myslony Street near the intersection with 112<sup>th</sup> Avenue. 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 maximum day demand conditions with fire flow events evaluated at the site. The model was updated to include the existing 16-inch diameter mains connecting Myslony St and 112<sup>th</sup> Ave, and the 16-inch diameter main in Myslony extended to the end of the cul-de-sac at the Industrial Park. Onsite piping was added in the model per the Utility Plan provided by AAI Engineering and Phalen Development including: a 14-inch diameter main connecting Myslony east to the 16-inch existing line at the back on the UPS property, a 16-inch line extending from the existing 16-inch line at the back of the UPS property south to a connection with the 12-inch line in Tualatin-Sherwood Road, and an 8-inch line extending along Tualatin-Sherwood Road to supply a fire hydrant on the northeast side of Building B.

The proposed development is a set of two warehouses. 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 296 feet above mean sea level (msl). Figure 1 illustrates the development site, adjacent water system infrastructure, and the location of the three fire flow tests modeled.



**Figure 1. Proposed Industrial Development Site and Water System Infrastructure**

## Analysis and Findings

The hydraulic model was updated as described above and fire flow performance tested at five locations onsite (shown in Figure 1).

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

**Demand Conditions:** 2030 Maximum Day Demand

**Fire Flow:** 3,000 gpm

**Physical Condition:** Existing facilities plus proposed connection

The hydrant locations, 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**

Fire Flow Test #	Location	Static Pressure (psi)	Residual Pressure at 3,000 gpm (psi)
1	Northwest corner of site @ Myslony St	50	43
2	Northeast corner of site @ proposed 14"	50	43
3	Central @ existing 16" main	47	40
4	Central @ proposed 16" main through site	45	38
5	Southeast corner of site along Tualatin-Sherwood @ proposed 8"	43	3
5a	Proposed 8" upsized to 12"	43	31

Based on the findings of this analysis and a review of overall system improvement needs presented in the Water System Master Plan, there are no required water distribution system improvements not located on the Industrial Site necessary to serve domestic and fire suppression flows to the proposed development. *Proposed 14-inch diameter piping should be re-sized as 16-inch diameter piping to complete a 16-inch diameter distribution system loop.* Proposed 16-inch diameter piping finishes the looping provided by the 16-inch diameter main at the back of the UPS property, the 16-inch diameter main located on Myslony St, and the 12-inch diameter main in Tualatin-Sherwood Rd. This network is adequate to serve the required fire flow for hydrants off these new 16- inch diameter mains and continue to meet flow and pressure requirements for the surrounding area without further improvements. Completion of these required extensions and connections at the size indicated is the minimum size required to meet fire flow requirements for the proposed development.

The proposed 8-inch diameter main parallel to Tualatin-Sherwood Rd is not adequate to serve a 3,000 gpm fire flow. *Upsizing this main to 12-inch diameter improves residual pressures to acceptable levels.*

It is the developer’s responsibility to size internal (private) fire and domestic 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.