

December 16, 2022

City of Tualatin - Engineering Department  
18880 SW Martinazzi Ave  
Tualatin, OR 97062



**Subject: Norwood Multi-Family Utility Capacity Analysis**

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The purpose of this letter is to assess the capacity of the existing sanitary sewer, stormwater, and water systems following the development of the subject site. The proposed development is located southeast of the intersection of SW Norwood Road and SW Boones Ferry Road and consists of existing institutional (Horizon Church) and single-family residential properties. Assumed frontage improvements in this analysis are per conversations with City staff and the Pre-Application Meeting Summary provided by City staff.

Analysis of the sanitary sewer system consisted of a review of the City's InfoSWMM sanitary sewer model for the Martinazzi Basin and the City's 2019 Sanitary Sewer Master Plan (SSMP). Analysis of the downstream stormwater system consisted of an assessment of predeveloped and post-developed conditions in the storm main downstream of the subject. Last, the analysis of the existing water system consisted of coordination with City staff on a hydraulic model to assess the serviceability of the site.

#### **Sanitary Sewer System**

For the purpose of analyzing the Norwood Multi-Family private sanitary sewer system, wastewater flows were determined by utilizing the West Yost Associates *South Tualatin Sewer Study*, dated September 2010. Per the South Tualatin Sewer Study, the wastewater unit flow factor of 200 gpd per dwelling unit was used in the sewer capacity analysis. Peak wet weather flow (PWWF) was calculated by multiplying average dry weather flow by a 2.2 peaking factor and adding an Inflow and Infiltration (I&I) factor of 4,000 gpd per acre (gpad). Last, the pipe capacity was determined by Manning's equation and verified with the values from the City's InfoSWMM model.

The InfoSWMM model was originally prepared by Jacobs Engineering as part of the City's 2019 Sanitary Sewer Master Plan (SSMP). This model was then provided to AKS to analyze the downstream sanitary system impacts for the neighboring Autumn Sunrise Subdivision, including the scenarios and existing flows and capacities shown in Exhibit A. For the subject development, the Martinazzi Basin (East of SW Boones Ferry Road, North of SW Norwood Road, and West of I-5) was analyzed to determine whether the existing downstream sanitary system had sufficient capacity to convey the net increase in flow for this multi-family development.

Per the attached Figures 1 & 2, the subject site will extend a public sanitary sewer main line in SW Boones Ferry Road, to the site upstream of conduit #98435 in the InfoSWMM model and 2019 SSMP. The subbasin downstream of this line was analyzed until the line size increased from 8" to 12", located downstream of conduit #1706. This is the same point where the southwestern portion of the Martinazzi Basin converges with the southeastern portion, which includes the neighboring Autumn Sunrise subdivision development and Horizon Church.

Excluding the existing scenario, the resulting PWWF was added to the modeled flows for each scenario in the City's InfoSWMM model. The remaining pipe capacity was determined for each conduit to assess the overall capacity of the system post-development. Per the summary in the attached Exhibit A, each conduit

has sufficient capacity in the 2025, 2035, and Full Build-Out scenarios to convey the increase in flow from the subject development.

### **Water System**

Per the Water System Capacity Analysis memorandum prepared by Murraysmith, upon completion of the planned city noted capital improvement projects and developer-constructed improvements, adequate water service for domestic and fire suppression will be available for this project. Refer to the memorandum in the attached Exhibit B for additional information.

### **Stormwater System**

Per the attached Figure 3, the proposed development will connect to the existing 18" public stormwater main in SW Boones Ferry Road via a new public storm manhole. Per Figure 4, the contributing basins for this analysis include portions of SW Boones Ferry Road, portions of SW Norwood Road, and the subject site. The subject site will utilize a combination of an existing on-site stormwater pond and a new detention facility to satisfy water quantity and hydromodification requirements. Additionally, as part of the anticipated frontage improvements to SW Norwood Road, new public facilities will be implemented to detain stormwater in accordance with CWS water quantity and hydromodification requirements.

The attached HydroCAD report in Exhibit C analyzes the existing storm system's capacity post-development. However, the site will be required to satisfy water quantity and hydromodification requirements per Clean Water Services (CWS) standards. Since the release from the subject site and SW Norwood Road following anticipated frontage improvements will be required to be less than or equal to the predeveloped condition, the predeveloped condition was used in this analysis. Additionally, a lower curve number for redeveloped impervious area will be used in the predeveloped analysis per CWS standards, therefore post-developed release rates will be less than the rates in the provided calculations. Per the attached HydroCAD report, the existing stormwater system downstream of the site will have sufficient capacity to convey runoff from the proposed development in accordance with CWS standards.

Sincerely,

**AKS ENGINEERING & FORESTRY, LLC**



Austin Cole, PE  
12965 SW Herman Road, Suite 100  
Tualatin, OR 97062  
(503) 563-6151 | [colea@aks-eng.com](mailto:colea@aks-eng.com)



RENEWS: DECEMBER 31, 2023

### **Attachments**

Sanitary Sewer Post-Developed Conduit Summary	(Exhibit A)
Murraysmith Water Capacity Memorandum	(Exhibit B)
HydroCad Analysis	(Exhibit C)
Conduit Map	(Figure 1)
Preliminary Sanitary Sewer Layout	(Figure 2)
Preliminary Stormwater Layout	(Figure 3)
Preliminary Basin Map	(Figure 4)

