



S. SANTA FE & LAS FLORES WATER SUPPLY STUDY

LN 2022-004

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Approvals: PSW

GENERAL POLICY STATEMENT

This water supply study is based on current criteria. It is not a representation, expressed or implied, that the Vista Irrigation District (District) will furnish water at a future date. Applications for service are governed by separate rules and regulations, and are the subject of separate District proceedings, apart from this water supply study.

The location of existing improvements and the recommendations of this hydraulic analysis are presented in schematic form only. It is the responsibility of the Developer/Engineer to design the final improvements, including independent investigation of existing conditions.

This Study is based on the current adopted land use utilized in the City of San Marcos's General Plan, adopted in 2012 (General Plan). The study addresses the incremental facility impacts of this Project only and does not include or consider any additional projects within District's service area that have deviated from General Plan land uses. Any land use changes within the vicinity of the Study area may necessitate a revision to the Study. The District shall determine if and when revisions to the Study are necessary. Costs for revising this Study shall be borne by the Developer.

INTRODUCTION AND PURPOSE

The proposed development at 2972 and 2982 S. Santa Fe Avenue (Project) consists of 54 multi-family residential units on 2.23 acres (APNs 217-161-18 & 19). Another 0.27 acre of the Project is being dedicated as public right-of-way along Las Flores Drive. The property is located on the northwestern side of the S. Santa Fe Avenue and Las Flores Drive intersection in the City of San Marcos. The Project is located within the District's Sphere of Influence and water service boundary.

The purpose of this study is to serve as a nexus document for setting development conditions. It evaluates the configuration of the proposed water system, District service rights, and the ability of the existing water distribution system to serve the Project during peak hour and maximum day plus fire flow demand conditions. Evaluation includes:

- Water distribution system; including the need to upsize or install new pipelines and appurtenances.

- Access and utility easements; including evaluation of the adequacy of existing easements, and the need for new easements.

SOURCE OF WATER, PROPOSED FACILITIES, AND EASEMENTS

The proposed Project lies completely within the District's 837 Pressure Zone, which is supplied by gravity from the 20.0 million gallon (mg) Pechstein Reservoir and multiple pressure regulating stations. Figures 1 through 3 show the development's location, existing water infrastructure within the vicinity of the development, and the proposed facilities.

The site is currently vacant and undeveloped; however, 2972 S. Santa Fe Avenue is served by a 5/8-inch domestic meter (account #3745-0261) on the southern side of the parcel that is connected to the District's 10-inch pipeline within S. Santa Fe Avenue. In addition, 2982 S. Santa Fe Avenue is served by a 1-inch domestic meter (account #3745-0265) and a 1-inch irrigation meter (account #3745-0139) on the eastern side of the parcel which are both connected to the District's 10-inch pipeline within N. Las Flores Drive. The Developer proposes to remove the two domestic services while keeping the irrigation service. Based on the utility site plan provided by the Developer, new domestic water service and fire service (size to be determined) lines would connect to the District's 10-inch pipeline within S. Santa Fe Avenue. The fire service would supply two private on-site fire hydrants. An extension of the public water system is not considered necessary to allow a connection point for the new services.

The proposed Project lies within the District's Blanket Easement BF59 and Specific Easement SW24. Since an extension of the public water system is not necessary, the District does not need any access and utility easements for the Project. However, the District will require being signatory on any mapping for the Project.

WATER FLOW PROJECTIONS AND DESIGN CRITERIA

The existing zoning designations by the City of San Marcos's General Plan are commercial for 2972 S. Santa Fe Avenue and light industrial for 2982 S. Santa Fe Avenue. The District's 2018 Potable Water Master Plan (Master Plan) based its water demand planning on these approved land uses. The Project developer proposes to build 54 multi-family residential townhomes on 2.23 acres, which equates to approximately 24 dwelling units per acre. In order to accommodate this dwelling unit density, the developer is proposing a General Plan Amendment to modify the property's land use to Multi-Family Residential.

Based on the unit demand factor of 3,650 gallons per day (gpd)/acre developed in the Master Plan for multi-family residential land use and site size of 2.23 acres, the projected average annual water demand for the Project is 8,140 gpd.

The Master Plan outlines the District's water system design criteria, which are as follows:

Peaking Factors

- | | |
|------------------------|--------------------------------|
| ➤ Maximum day demands: | 200% of average annual demands |
| ➤ Peak hour demands: | 300% of average annual demands |

System Pressure

- Peak hour demand conditions: 40 pounds per square inch (psi) minimum
- Maximum day demand plus fire flow: 20 psi minimum
- Static: 150 psi maximum

Fire Flow

- The City of San Marcos Fire Marshal has set the required fire demand at 1,500 gallons per minute (gpm) for the Project.

Pipeline Fluid Velocity

- Peak hour demand conditions: 8 feet per second (fps) maximum
- Maximum day demand plus fire flow: 16 fps maximum

Pipeline Diameter

- Short dead-end, no hydrants: 4-inch diameter minimum
- Feeding hydrants: 8-inch diameter minimum

HYDRAULIC ANALYSES

A hydraulic analysis was performed on the District's distribution system with the Project's proposed water demands on the District's 10-inch pipeline within S. Santa Fe Avenue. The analysis was carried out using the District's InfoWater® v12.4 water distribution computer model. The modeled pressure results are summarized in the table below.

Hydraulic Modeling Results

Node Location	Elevation (ft)	Static Pressure (psi)	Peak Hour Pressure (psi)	Max Day + FF Pressure (psi)*
S. Santa Fe Water Main South of Project	492.3	149	110	N/A
Proposed Fire Hydrant #1 in Project	495.5	148	N/A	80**
Proposed Fire Hydrant #2 in Project	528.0	134	N/A	60**

*Simulated fire flows are within the distribution system water mains, analyses do not represent actual flow available through a fire hydrant assembly or fire sprinkler system.

**Maximum day plus fire flow pressure results for the private infrastructure within the limits of the development assumes a 15-psi headloss through the reduced pressure detector assembly (RPDA) and an 8-inch private fire service pipeline.

No existing system deficiencies were identified in any pipe segments in the vicinity of the development during any scenario. Results from the analysis show that the required fire flow

demand of 1,500 gpm can be met at both of the proposed private fire hydrants within the development.

The District makes no guarantee that the available fire flow and pressures are presently available, nor guarantee that the flow and pressure will be available in the future due to continued growth that places additional demands for water on the water distribution system. Availability of flow and pressure is also subject to shutdowns and variations required by the operation of the District's distribution system.

CONCLUSION AND CONDITIONS

The Project is proposing a General Plan Amendment to modify the property's land use to Multi-Family Residential. Based on the unit demand factor of 3,650 gpd/acre for multi-family residential development and site size of 2.23 acres, the projected average annual water demand for the Project is 8,140 gpd.

The Study did not identify any existing system deficiencies within the Project limits or in the vicinity of the development during peak hour demand or maximum day plus fire flow demand scenarios. The following improvements were assumed to be constructed as part of this development:

- Installation of a water service and master meter sized to accommodate the development, and connected to the District's 10-inch main in S. Santa Fe Avenue. The site is currently served by a 5/8-inch domestic meter and a 1-inch domestic meter, both of which will be removed.
- Installation of an RPDA and fire service connected to the District's main in S. Santa Fe Avenue.
- Installation of an 8-inch minimum private fire system sized to serve the 54 multi-family residential units.





