



552 WEST BOBIER DRIVE WATER SUPPLY STUDY

LN 2024-045

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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 and limited to a cursory review of existing conditions and proposed facilities. It is the responsibility of the Developer/Engineer to design the final improvements, including independent investigation of existing conditions. Additional project requirements and improvements may be determined necessary by the District at its sole discretion during detailed review of the project's design and existing conditions.

This Study is based on the current adopted land use utilized in the City of Vista's General Plan 2030 (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 552 West Bobier Drive development (Project) consists of 15 single-family residential lots on a 1.72-acre parcel (APN 161-030-07). The property is located on the south side of West Bobier Drive between Sports Park Way and Marabou Lane in the City of Vista. 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 565 Pressure Zone, which is supplied by gravity from the 3.1 million gallon (MG) San Luis Rey Reservoir, the 0.6 MG E-1 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 proposed facilities.

The Project site is currently vacant and is served by a 3/4-inch water meter (account #7405-0150). This water meter is connected to the District's 10-inch water main in West Bobier Drive. Based on the Site Development Plan provided by the developer, the meter is to be removed with capacity credits going towards the water needs of the Project. A new private street connecting to West Bobier Drive is proposed that will serve as the primary access for the Project. The Project site will be divided into 15 single-family residential lots that will require individual water meters. Water services for the single-family residential units will connect to a new 8-inch PVC public water main within this private street. Fire service is to be provided from one fire hydrant within the development's private street as shown in Figure 3.

The proposed Project lies within District Blanket Easements C40 and R9. Since an extension of the public water system will extend into the development, a specific easement shall be required for the full width of the proposed private street from West Bobier Drive. The District will also need to be signatory to the Project's final map.

WATER FLOW PROJECTIONS AND DESIGN CRITERIA

The Project's existing zoning designation by the City of Vista's General Plan 2030 is Single Family Residential, which allows for up to 10 dwelling units per acre. The District's 2018 Potable Water Master Plan (Master Plan) based its water demand planning on this approved land use. The Project developer proposes to build 15 single-family residential units on 1.72 acres, which equates to 8.72 dwelling units per acre. Therefore, the Project is not proposing an increase to the approved land use density nor demand on the District's water system.

Based on the unit demand factor of 1,100 gallons per day (gpd)/acre developed in the Master Plan for single-family residential land use and site size of 1.72 acres, the projected average annual water demand for the Project is 1,892 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 Vista 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 proposed Project’s water demands incorporated. An 8-inch public pipeline extension from West Bobier Drive within the private street is proposed to provide water service for each lot, along with a one new fire hydrant approximately 120-feet into the Project.

The analysis was carried out using the District’s InfoWater® v12.5 water distribution computer model. The modeled pressure results at the project entrance at West Bobier Drive, at the proposed fire hydrant, and at the end of the proposed water mainline extension 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)*
Project Entrance on West Bobier Drive	457	46	39	N/A
Proposed Fire Hydrant #1	462	45	N/A	31
End of Proposed Private Street	456	47	40	N/A

*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.

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 the proposed fire hydrant within the development. However, results also show that the minimum desired peak hour pressure of 40 psi cannot be met throughout the development for pipeline and pad elevations above 457 feet. These low pressures result from the high elevations relative to the hydraulic grade line of the 565 Pressure Zone. If less than 40 psi pressures are considered too low by the developer, the installation of privately owned booster pumps (and backflow preventers at the meters) will be required.

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 proposed Project is not expected to increase water demands over ultimate flows projected in the Master Plan. Based on the unit demand factor of 1,100 gpd/acre for single-family residential development and site size of 1.72 acres, the projected average annual water demand for the Project is 1,892 gpd.

The Study did not identify any existing system deficiencies within the Project limits or in the vicinity of the development during the maximum day plus fire flow demand scenario. However, as noted above, slightly less than 40 psi pressures were found within the Project during peak hour demands. The following improvements and conditions were assumed and/or are required for the Project:

- Removal of the existing 3/4" water meter to the Project property per District standards.
- Installation of approximately 410 feet of 8-inch PVC water main from West Bobier Drive south through the development's private street.
- Installation of one public fire hydrant on the proposed 8-inch PVC water main within the development's private street.
- Grant of a specific easement in favor of the Vista Irrigation District over the limits of the development's private street.
- Purchase of water capacity and installation of water meter(s) sufficient to cover projected demands.
- Installation of backflow prevention devices per District standards and Cross-Connection Control Policy.



