



**ENGINEERING/OPERATIONAL COMMITTEE MEETING AGENDA
TRABUCO CANYON WATER DISTRICT
ADMINISTRATION FACILITY
32003 DOVE CANYON DRIVE, TRABUCO CANYON, CA
JANUARY 8, 2025 AT 7:00 AM**

COMMITTEE MEMBERS

Glenn Acosta, Committee Chair
Mark Anderson, Committee Member
John Horst, Committee Member Alternate

DISTRICT STAFF

Fernando Paludi, General Manager
Michael Perea, District Secretary
Lorrie Lausten, District Engineer
Gary Kessler, Water System Superintendent
Oscar Ulloa, Wastewater Superintendent
Jason Stroud, Maintenance Superintendent

AGENDA NOTE:

Trabuco Canyon Water District (District) will make this Engineering/Operational Committee Meeting available by telephone audio as follows:

Telephone Audio: 1 (669) 900-6833

Access Code: 973-7562-7682

Persons desiring to monitor the Committee meeting agenda items may download the agenda and documents on the internet at www.tcwd.ca.gov. You may submit public comments by email to the Committee at mperea@tcwd.ca.gov. In order to be part of the record, emailed comments on meeting agenda items must be received by the District at the referenced e-mail address not later than 7:00 a.m. (PDT) on the day of the meeting.

CALL MEETING TO ORDER

VISITOR PARTICIPATION

Members of the public wishing to address the Committee regarding a particular item on the agenda are requested to submit public comments by email to the Committee at mperea@tcwd.ca.gov. The Committee Chair will call on the visitor following the Committee's discussion about the matter. Committees do not constitute a quorum of the Board of Directors and Committee Members cannot make decisions on matters. The Committee makes recommendations only to the Board of Directors. Members of the public will be given the opportunity to speak to the Committee prior to making a recommendation on the matter. For persons desiring to make verbal comments and utilizing a translator to present their comments into English reasonable time accommodations, consistent with State law, shall be provided. Please limit comments to three minutes.

ORAL COMMUNICATION

Members of the public who wish to make comment on matters not appearing on the agenda are requested to submit oral communication by email to the Committee at mperea@tcwd.ca.gov. Under the requirements of State Law, Directors cannot take action on items not identified on the agenda and will not make decisions on such matters. The Board President may direct District Staff to follow up on issues as may be deemed appropriate. For persons desiring to make verbal comments and utilizing a translator to present their comments into English reasonable time accommodations, consistent with State law, shall be provided. Please limit comments to three minutes.

COMMITTEE MEMBER COMMENTS

REPORT FROM THE GENERAL MANAGER

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING AGENDA | JANUARY 8, 2025

ENGINEERING MATTERS

PRESENTER(S): FERNANDO PALUDI, GENERAL MANAGER
MICHAEL PEREA, ASSISTANT GENERAL MANAGER
LORRIE LAUSTEN, DISTRICT ENGINEER

ITEM 1: ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP

RECOMMENDED ACTION:

Approve the following Engineering/Operational Committee Meeting Recap(s) and recommend that the Board receive and file same (Consent Calendar).

1. *December 4, 2024 Committee Meeting*

ITEM 2: SADDLEBACK MEADOWS DEVELOPMENT UPDATE

RECOMMENDED ACTION:

Committee to receive status updates. No action required.

ITEM 3: AGREEMENT AMENDMENT NO. 1 WITH W.M. LYLES FOR SCADA UPGRADE PROJECT – PHASE 2

RECOMMENDED ACTION:

Committee to recommend the Board of Directors approve and authorize the General Manager to execute Amendment No. 1 to the SCADA Integration Services Agreement with W.M. Lyles Co. for a not-to-exceed amount of \$59,695 plus a 10% contingency of \$5,970 for a total Amendment not-to-exceed amount of \$65,665, and a total Agreement not-to-exceed amount of \$283,535. (Action Calendar)

ITEM 4: QUARTERLY CAPITAL IMPROVEMENT PROGRAM UPDATE

RECOMMENDED ACTION:

Committee to receive status updates. No action required.

ITEM 5: OTHER ENGINEERING AND OPERATIONS PROJECT UPDATES

1. Golf Club SLS Improvement Project
2. Heritage SLS Improvement Project
3. County Public Works Trabuco Bridge Replacement Project
4. Other Projects

RECOMMENDED ACTION:

Committee to receive project status updates at the time of the Committee Meeting.



TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING AGENDA | JANUARY 8, 2025

OPERATIONAL MATTERS

**PRESENTER(S): GARY KESSLER, WATER SYSTEM SUPERINTENDENT
OSCAR ULLOA, WASTEWATER OPERATIONS SUPERINTENDENT
JASON STROUD, MAINTENANCE DEPARTMENT SUPERINTENDENT**

ITEM 6: WATER SYSTEM UPDATES

RECOMMENDED ACTION:

Committee to receive system status updates. No action required.

ITEM 7: WASTEWATER SYSTEM UPDATES

RECOMMENDED ACTION:

Committee to receive system status updates. No action required.

ITEM 8: MAINTENANCE DEPARTMENT UPDATES

RECOMMENDED ACTION:

Committee to receive system status updates. No action required.

REGULATORY AND OTHER MATTERS

ITEM 9: OTHER MATTERS/REPORTS

RECOMMENDED ACTION:

Hear Other Matters/Reports that may have arisen after the posting of the agenda.

ITEM 10: CLOSED SESSION: CONFERENCE WITH LEGAL COUNSEL - ANTICIPATED LITIGATION

Significant exposure to litigation pursuant to Gov. Code Section 54956.9(e)(2): one case, Saddleback Meadows development and storage requirement.

ITEM 11: REPORT OF ACTION(S) TAKEN IN CLOSED SESSION

RECOMMENDED ACTION:

Provide announcement(s) of action(s) taken in Closed Session(s), if any.

ADJOURNMENT

AVAILABILITY OF AGENDA MATERIALS

Agenda exhibits and other writings that are disclosable public records distributed to all or a majority of the members of the Trabuco Canyon Water District Board of Directors in connection with a matter subject to discussion or consideration at an open meeting of the Board of Directors are available for public inspection at the Trabuco Canyon Water District Administrative Facility, 32003 Dove Canyon Drive, Trabuco Canyon, California (District Administrative Facility) or will be posted online on the District's website located at www.tcwd.ca.gov. If such writings are distributed to members of the Board less than 72 hours prior to the meeting, they will be available online at www.tcwd.ca.gov at the same time as they are distributed to the Board Members, except that, if such writings are distributed immediately prior to or during the meeting, they will be posted online on the District's website located at www.tcwd.ca.gov.



**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING AGENDA | JANUARY 8, 2025**

COMPLIANCE WITH THE REQUIREMENTS OF CALIFORNIA GOVERNMENT CODE SECTION 54954.2

In compliance with California law and the Americans with Disabilities Act, if you need special disability-related modifications or accommodations, including auxiliary aids or services in order to participate in the meeting, or if you need the agenda provided in an alternative format, please contact the District Secretary at (949) 858-0277, at least 48 hours in advance of the scheduled Board meeting. Notification at least 48 hours prior to the meeting will assist the District in making reasonable arrangements to accommodate your request. The Board Meeting Room is wheelchair accessible.



**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 8, 2025**

ENGINEERING MATTERS

ITEM 1: ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP

RECOMMENDED ACTION:

Approve the following Engineering/Operational Committee Meeting Recap(s) and recommend that the Board receive and file same (Consent Calendar):

1. *December 4, 2024 Committee Meeting*

CONTACTS (staff responsible): PALUDI/PEREA



TRABUCO CANYON WATER DISTRICT ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP | DECEMBER 4, 2024

DIRECTORS PRESENT

Mike Safranski, Committee Chair
Don Chadd, Committee Member Alternate

STAFF PRESENT

Fernando Paludi, General Manager
Lorrie Lausten, District Engineer
Gary Kessler, Water Superintendent
Oscar Ulloa, Wastewater Superintendent
Jason Stroud, Maintenance Superintendent
Roseann Lejsek, Executive Assistant

STAFF ABSENT

Michael Perea, Assistant General Manager

PUBLIC PRESENT

None

CALL MEETING TO ORDER

Director Safranski called the December 4, 2024 Engineering/Operational Committee Meeting to order at 7:00 a.m.

VISITOR PARTICIPATION

No comments were received.

ORAL COMMUNICATION

No comments were received.

COMMITTEE MEMBER COMMENTS

None

REPORT FROM THE GENERAL MANAGER

None

ITEM 1: ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP

Mr. Paludi presented the Engineering/Operational Committee Meeting Recap for Committee review in accordance with the agenda.

RECOMMENDATION: The Committee recommended forwarding this matter to the Board of Directors (Consent Calendar).

ITEM 2: DOVE RECYCLED WATER PUMP STATION IMPROVEMENTS DESIGN AWARD

Mr. Paludi presented this matter for Committee consideration. Ms. Lausten provided a summary of Phase 1 of the project, and she provided an overview of the RFP process for phase 2. Mr. Lausten stated that the District solicited proposals from eight firms for Design Engineering Services and received two bids. Ms. Lausten provided a proposal comparison and discussion occurred regarding the difference in bid amounts. Ms. Lausten stated that staff is recommending that the project be awarded to JIG Consultants for Design Engineering Services.

RECOMMENDATION: Recommend the Board of Directors award a professional services agreement for the Dove Recycled Pump Station Improvements for Engineering Design to JIG Consultants in the amount of \$253,450, plus a 10% contingency of \$25,345, for a not-to-exceed amount of \$278,795 (Action Calendar).

ITEM 3: ROBINSON RANCH WASTEWATER TREATMENT PLANT EFFLUENT RESERVOIR OUTLET GATE SYSTEM REPAIR

Mr. Paludi presented this matter for Committee consideration, and he reported that this project has been completed. Ms. Lausten provided an overview of the project, and she stated that the Division of Safety of Dams has been notified of the repair. Ms. Lausten noted that this project was completed under budget.

RECOMMENDATION: None – Informational item only.

ITEM 4: ROBINSON RANCH WASTEWATER TREATMENT PLANT BLOWER MODIFICATIONS PROJECT – SOUND STUDY RESULTS

Mr. Paludi presented this matter for Committee consideration, and he reported that the design is being finalized for this project. Ms. Lausten provided a summary of the sound study results, and she stated that Scenario 4 would be the best option. Discussion occurred regarding unforeseen noise issues and potential solutions. Mr. Ulloa added that having the blowers outside will be a huge improvement for aeration during the summer months. The Committee requested that this item be added to the Regular Board Meeting agenda as an information item.

RECOMMENDATION: The Committee recommended forwarding this matter to the Board of Directors for informational purposes only (Action Calendar)

ITEM 5: OTHER ENGINEERING AND OPERATIONS PROJECT UPDATES

1. Golf Club SLS Improvement Project

Ms. Lausten provided an update on this matter, and she reported that this project will be completed at the end of the week. Ms. Lausten reported that although the project had a couple of change orders, the project came under budget of the projected CIP costs. Ms. Lausten added that staff will set up a tour for the Board of Directors in January.

2. Heritage SLS Improvement Project

Ms. Lausten provided an update on this matter, and she reported that this project is scheduled to be completed before the holidays. Ms. Lausten provided a brief overview of Phase 1 of the project, and she stated that she is working on plans for Phase 2. Ms. Lausten noted that completion of the project will be approximately two years, partly due to procurement lead times.

3. Other Projects

Dove/Tick Creek Improvements - Mr. Paludi reported that the Dove/Tick Creek Pump Station Improvements design RFP will be issued in the near future, and he stated that the District has received two grants which should cover the design costs.

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP | DECEMBER 4, 2024**

Dove Dam Improvements - Mr. Paludi reported that staff is waiting to hear back on its grant application for Dove Dam Outlet Structure Improvements, and that staff is working on putting the RFP together.

SCADA Project - Mr. Paludi reported that the District's contractor, W.M. Lyles Co., has provided recommendations in Phase 1 of the project and that Phase 2 will include the implementation of these recommendations. Mr. Paludi stated that staff will bring an amendment to the current agreement for final integration to the January Engineering/Operational Committee meeting. Mr. Paludi noted that the cost will be approximately within the \$400,000 that had been originally budgeted in FY 2023-24 for TESCO to finish this project.

RECOMMENDATION: None – Informational item only.

ITEM 6: WATER SYSTEM UPDATES

Mr. Kessler reviewed the projects and repairs for the prior month, and he reported that Water Operations staff had completed the following tasks:

1. Responded to and worked with contractor to repair 10" main break on Live Oak Canyon Road.
2. Reassembled filters 1 – 3 at Dimension Water Treatment Plant (DWTP) in an effort to get the plant back in service.
3. Responded again to major line break on 16" main transmission line leaving DWTP.

Mr. Kessler presented the Water System Summary for Committee review. Mr. Kessler reported that the 16" main transmission line has experienced four-line breaks, and he stated that more breaks can be expected on this very old pipeline. Mr. Kessler suggested slip-lining the pipe in critical areas as a more cost-effective solution than complete replacement. Discussion occurred regarding potential options to repair the pipeline in the short-term and long-term. Ms. Lausten added that the pipeline replacement was identified in Hazen Sawyer's asset condition assessment. Mr. Paludi stated that the District will need to plan for this level of expense. Discussion also occurred regarding the District's capacity at the Baker Treatment facility and District's current water supply costs.

RECOMMENDATION: None – Informational item only.

ITEM 7: WASTEWATER SYSTEM UPDATES

Mr. Ulloa reviewed the projects and repairs for the prior month, and he reported that Wastewater Operations staff had completed the following tasks:

1. Repaired a 3" air vent for Wastewater Treatment Plant (WWTP) Reservoir valve.
2. Assisted divers in the repairs and operation of the sluice gate at the WWTP Reservoir.
3. Made repairs and cleaning of polymer pump for the belt press at the WWTP.
4. Bypassed Golf Club Lift Station and assisted with the installation of a flowmeter assembly on the force main.

Mr. Ulloa presented the Recycled Water System Summary for Committee review, and he reported that the Reservoir was at elevation 1,262 feet and Dove Lake had approximately 12 feet of freeboard. Mr. Ulloa reported that the pump at Dove Lake has been shut off, and he noted that a "turning-over" of the lake occurred but that the lake is healthy in terms of water quality.

RECOMMENDATION: None – Informational item only.

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP | DECEMBER 4, 2024**

ITEM 8: MAINTENANCE DEPARTMENT UPDATES

Mr. Stroud reviewed the projects and repairs for the prior month, and he reported that Maintenance staff completed the following tasks:

Projects and Repairs

Maintenance staff performed and/or completed the following tasks and projects:

Water Operations

1. High wind event 4th-7th. Setup mobile emergency generator at Field Office Pump Station.
2. Preventative Maintenance (PM) tasks on DWTP electric motors, grease zerk fitting, and replacing a small ROTRON blower.
3. PMs on Ridgeline Booster Pump Station (BPS) electric motors, grease zerk fittings.
4. Electrical Manual Transfer Switch installed at Falcon BPS with contractor Hydrotech Electric.
5. Meeting with Orange County Public Works, County Department of Health and Water Emergency Response of Orange County (WERO) at the Groundwater Treatment Facility to discuss potential flooding and debris flow strategies.

Wastewater Operations

1. Divers at WWTP recycled water reservoir.

District Fleet Upgrades & Other Projects

1. ARC flash re-labeling with contractor P2S.
2. PMs on brush/weed abatement equipment.
3. Attended the WERO Water Distribution Emergency Meeting at the Emergency Operations Center.
4. Attended the Quarterly WERO meeting at Municipal Water District of Orange County.

RECOMMENDATION: None – Informational item only.

ITEM 9: OTHER MATTERS/REPORTS

Mr. Paludi reported that the County has been proactive in responding to the berm reinforcement in front of the Groundwater Treatment Facility, and he stated that the County has drawn up plans and will complete the project. A brief discussion occurred regarding the submission of a reimbursement claim through the County.

Director Safranski thanked Director Chadd for his many years of service to the District and wished him all the best.

Director Chadd thanked Director Safranski for his comments.

RECOMMENDATION: None

ADJOURNMENT

Director Safranski adjourned the December 4, 2024 Engineering/Operational Committee Meeting at 7:58 a.m.

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 8, 2025**

ENGINEERING MATTERS

ITEM 2: SADDLEBACK MEADOWS DEVELOPMENT UPDATE

The proposed residential development known as Saddleback Meadows is located within Trabuco Canyon Water District (District) on 222 acres of property (Property) on the east side of El Toro Road, approximately 1,000 feet south of the Live Oak Canyon Road intersection within the Foothill-Trabuco Specific Plan area in unincorporated Orange County. The Property has been owned by California Quartet Ltd. (Developer) since 1993 and the current development plan includes the construction of 181 single family homes (Project). The Developer has submitted Final Tract Map No. 15230 to the County of Orange for processing.

A Sub Area Master Plan for the Project was prepared for the District by consultant Psomas in December 2021 (2021 SAMP) and approved by the District’s Board of Directors in January 2022. The 2021 SAMP (included as Exhibit 1) was prepared consistent with the District’s 1999 Water, Wastewater, and Reclaimed Water Master Plan, which has since been superseded by the 2022 System-wide Master Plan Update. An update to the 2021 SAMP is pending. The District has not issued a Will-Serve Letter or Conditional Will-Serve Letter for the Project.

The 2021 SAMP concluded that the quantity of additional water storage required to serve the Project is approximately 755,082 gallons (subject to revision) to be constructed either on-site or off-site. The SAMP discussed how the proposed onsite storage location is “not feasible” based on landslide analysis, and in turn discusses offsite locations, but notes that “recommendations in this SAMP relative to water supply and storage should therefore be considered preliminary until these issues are resolved.” The most feasible off-site option identified in the 2021 SAMP was a contribution to a District storage project at the existing Harris Grade Reservoir site.

The District’s Capital Improvement Program (CIP) had included a project to increase system-wide water storage to meet the District’s storage criteria in the 1999 Master Plan. However, in April 2024, the District removed the proposed Harris Grade reservoir project from the current CIP in face of inflation-driven construction cost projections that would have required additional water rate increases.

The Developer has requested that the District authorize signing the Final Tract Map No. 15230 so that it can be considered for approval by the County. In a letter dated December 30, 2024 (included as Exhibit 2), the Developer requested that the subject of the Tract Map be agendized for discussion. Developer’s representatives will be in attendance to present information.

FUNDING SOURCE:

Not applicable.

FISCAL IMPACT:

Not applicable.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDED ACTION:

Committee to receive status updates. No action required.

EXHIBIT(S):

1. Saddleback Meadows Sub Area Master Plan, December 2021
2. Letter to TCWD from Manatt, Phelps & Phillips, LLP dated December 30, 2024

CONTACTS (staff responsible): PALUDI/LAUSTEN

SADDLEBACK MEADOWS SUB AREA MASTER PLAN

December 2021



Prepared for:

TRABUCO CANYON WATER DISTRICT

32003 Dove Canyon Drive

Trabuco, CA 92679



Prepared by:

PSOMAS

5 Hutton Centre Drive, Suite 300

Santa Ana, CA 92707

Project No. 2TRA132500

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Appendices

- Appendix A Saddleback Meadows TTM Lot Statistics
- Appendix B Water Demand Support Data
- Appendix C Storage Analysis Support Data
- Appendix D Model Output and Node Diagram

1. Project Overview

1.1 General Description

The water and wastewater improvements detailed within this Sub-Area Master Plan (SAMP) are for the proposed residential development of Saddleback Meadows. A SAMP had previously been prepared for this project in 2006. The development area and number of homes have been reduced substantially since the previous SAMP. The current plan calls for 181 dwelling units and this SAMP is being prepared to determine what will be involved in providing water and sewer service to this proposed plan, assuming it goes through the planning approval process in fairly the same configuration.

Sewer service is relatively straight forward in that the landowner purchased capacity in the El Toro Road/Chiquita Wastewater collection and treatment system many years ago for a previous approved land use plan that contained substantially more dwelling units than is now proposed.

That previous plan had its own proposed potable water reservoir site in the northeast corner of the project at an elevation that was compatible with the District's Harris Grade hydraulic grade line and was sized to serve the much larger proposed demand based on the previous plan. Based on landslide analyses, that reservoir site, which was much higher in elevation than is now available on-site, is not feasible. Therefore, the District previously considered available storage options for the project either on-site or off-site but is now focused on the Harris Grade site. And depending on where the storage is located the water delivery system will require a solution for reliability. The recommendations in this SAMP relative to water supply and storage should therefore be considered preliminary until these issues are resolved.

Improvements include the domestic water transmission and wastewater collection/conveyance facilities, which were developed and sized to be consistent with the current version of the appropriate District's Design Criteria, and the District's 1999 Water, Wastewater, and Reclaimed Water Master Plan (1999 Master Plan).

In addition, planning level capital cost estimates were prepared for the recommended off-site facilities. This SAMP will provide the groundwork for the subsequent detailed design of these facilities.

1.2 Proposed Development

The proposed Saddleback Meadows residential development (Project) is located on 222 acres of property within the unincorporated area of southeastern Orange County, California, in the Foothill-Trabuco area. The parcel is being planned and engineered for the California Quartet, LTD by Hunsaker and Associates. The parcel is situated on the east side of El Toro Road approximately 1,000 feet south of the Live Oak Canyon Road

intersection. Aliso Creek runs north to south just outside the western property boundary. As prepared by the developer, Tentative Tract Map No. 15230 dated November 27, 2019 was used for this analysis and is shown on Figure 1-1.

Primary access to the Project site will be along the proposed roadway of Spine Street that extends east from the existing El Toro Road and ends within a cul-de-sac at the easternmost edge of the development. Additionally, a 20' wide trail easement parallels the north side of Spine Street from El Toro Road and ends at the cul-de-sac.

The Project is within the Foothill/Trabuco Specific Plan (FTSP) area, which was adopted by the County of Orange in 1991. The development contains 181 detached single-family on lots ranging in size from 4,000 to 13,810 square feet (sf), with an average lot size of 6,067 sf. A summary table prepared by Hunsaker and Associates provides the gross and net square footage of each of the 181 lots and is included in Appendix A.

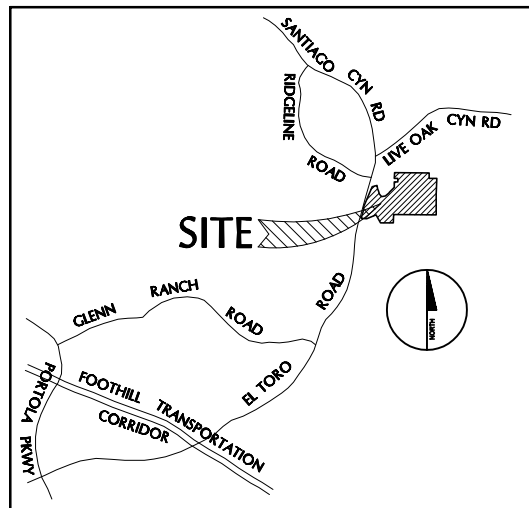
1.3 Urban Water Use Targets

The California Department of Water Resources requires urban water suppliers to prepare and adopt an Urban Water Management Plan (UWMP) every five years. UWMP's are designed to evaluate a retail water supplier's water demand and supplies in order to meet current and future growth within their respective service areas. Since 1999, there have been major legislative changes at the state level which impacts how water is allocated by water purveyors like TCWD. These water conservation-based legislative changes are included in TCWD's recently completed 2020 UWMP.

The most significant piece of water conservation-based legislation to affect retail water suppliers is SBx 7-7, enacted in 2009. SBx 7-7 requires the development of urban water use targets to achieve a twenty percent reduction in per capita daily water use by December 31, 2020. TCWD's methodology for determining its water use target to comply with SBx 7-7 is detailed in the 2020 UWMP. The 2020 water use target for TCWD is 200 gallons per capita per day (gpcd). Actual 2020 water use equaled 159 gpcd, well below the 2020 target of 200 gpcd.

Additionally, TCWD is a member of the Orange County 20 by 2020 Regional Alliance (Regional Alliance) which allows for flexibility in meeting the required per capita water use targets. If the Regional Alliance meets its water use target on a regional basis, then all member agencies are deemed compliant. If the Regional Alliance fails to meet its water use target, then each individual member will have an opportunity to meet their water use targets individually. The Orange County 20 by 2020 Regional Alliance 2020 target is 158 gpcd. The actual 2020 water use in the region was 109 gpcd, meeting the 2020 goal.

VICINITY MAP



LOT SUMMARY TABLE

LOT NUMBER	LAND USE	AREA
1 - 181	RESIDENTIAL LOTS	25.2 ACRES±
A - K	STREETS	10.5 ACRES±
L - V	OPEN SPACE	34.4 ACRES±
W - AA	OPEN SPACE/NATURAL	152.1 ACRES±



2ND REVISED VESTING
TENTATIVE TRACT MAP
NO. 15230

SHEET 1 OF 1

To meet water use targets, TCWD has implemented the following activities.

- Passive and active conservation activities
- Water conservation program permanent restrictions
- Use of additional recycled water

Water conservation activities include the demand management measures (DMMs) that TCWD implements as a signatory member of the California Water Efficiency Partnership (CWEP), formerly the California Urban Water Conservation Council (CUWCC). DMMs include the development of water conservation programs and the education of TCWD customers on the subject of wise water usage.

TCWD adopted its Water Conservation Ordinance, No. 2008-18 (Ordinance) in January 2009. The Ordinance identifies permanent mandatory water use efficiency measures which contribute to the realization of the 2015 UWMP target levels. The Ordinance and the Water Conservation Program Permanent Provisions can be accessed via the District website at www.tcwd.ca.gov.

TCWD has a long-standing practice of using recycled water, wherever possible, in order to offset the use of drinking water for irrigation purposes. TCWD will meet the reduction target levels through the continued use of recycled water in its service area, and any future developments where recycled water is available, and infrastructure can be installed. Unfortunately, the use of recycled water is not an option for the Saddleback Meadows development. Currently, there are no recycled water distribution facilities available in the area.

1.4 Model Water Efficient Landscape Ordinance

On July 15, 2015, the California Water Commission adopted a Model Water Efficient Landscape Ordinance (MWELo), which sets requirements for any new landscaping or landscaping renovation over 500 square feet. Since the Saddleback Meadows development is subject to this MWELo, the water use requirements for all landscaped areas within the project common areas have been calculated for consistency with the maximum allowable water use limits of this new ordinance. The ordinance also sets water use limits for residential landscapes, however, local agencies do not have the resources to monitor and enforce a homeowner's compliance with the ordinance and, as such, modifications and deferred maintenance by homeowners are common. Therefore, projected water use for residential landscapes has been estimated at what is believed to be more realistic values to account for properties which exceed the water use limits set by the MWELo. Specific requirements under the MWELo are as follows:

- The size threshold of landscapes subject to the ordinance is 500 square feet.

- The maximum applied water allowance (MAWA) is equal to 55% of the reference evapotranspiration (ET_o) for residential landscape projects and 45% of ET_o for non-residential projects.
- The minimum width of areas that can be overhead irrigations is 10 feet. Areas less than 10 feet in width must be irrigated with subsurface drip or other technology that produces no over spray or runoff.

2. Proposed Domestic Water System

Average-day, maximum-day, and peak-hour demands were estimated for domestic water and Homeowners Association (HOA) irrigation use inside Saddleback Meadows. The development pipelines were added to the District’s existing hydraulic model using InfoWater software to analyze various operation and demand scenarios in order to size distribution system pipelines and facilities. The recommended water system facilities for Saddleback Meadows are shown on Figure 2-1A for on-site storage (which is not currently being pursued) and Figure 2-1B for off-site storage and will be explained later in this section.

2.1 Water Use Factors

2.1.1 Average Day Demand

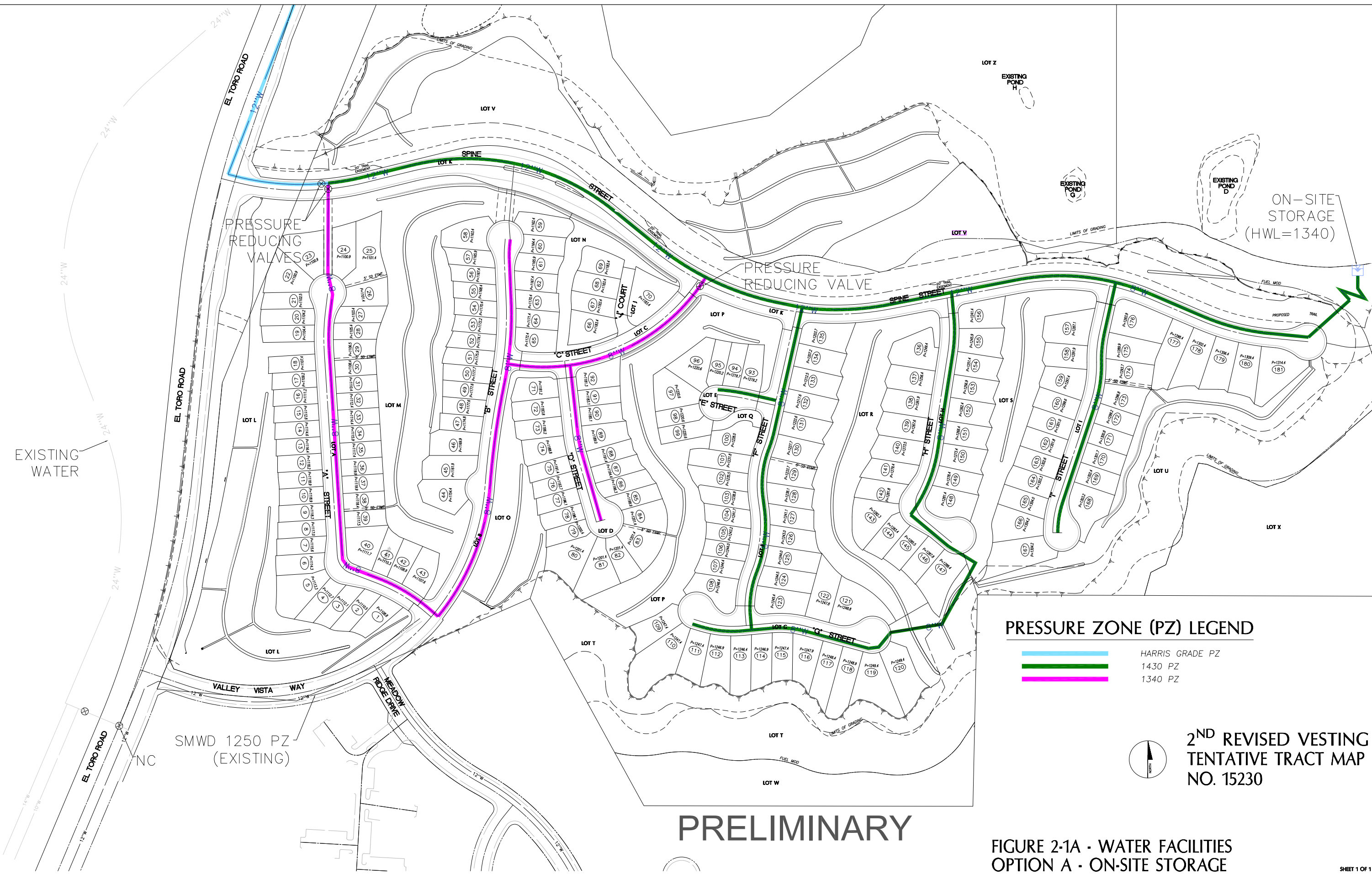
Land use information was provided by the developer’s engineer, Hunsaker and Associates, in the form of a proposed land use plan for Tentative Tract Map (TTM) 15230 along with corresponding open space and residential lot square footages. The residential lot data is included in Appendix A and results in an average lot size of 6,067 square feet (sf), with a range of 4,000 to 13,810 sf. Open space areas that are to be irrigated were tabulated by Hunsaker and Associates and are also included in Appendix A. The total irrigated open space area for the project based on this data is equal to 1,414,300 square feet or 32.5 acres. Water demand calculations for the irrigated open space areas are straightforward to estimate as they are required to meet or be lower than the maximum applied water allowance (MAWA) per the State MWELo, which is 45% of the local reference evapotranspiration rate (ET_o). The MAWA will be used to be conservative and that calculation is shown in Table 2-1.

**Table 2-1
Irrigation Demand Projections**

MAWA Calculation	
Irrigated Area (sf)	1,414,296
ET _o for Irvine CIMIS Station (in)	49.6
MAWA % of Eto for Non-residential	45%
MAWA (gal/yr) ⁽¹⁾	19,571,600
MAWA (gpd)	53,621

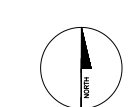
(1) MAWA = (0.62) (ET_o) (0.45) (Area, sf)

To develop estimates of the residential project water use for the proposed development, two methodologies were utilized. These methods were applied to a slightly earlier version



PRESSURE ZONE (PZ) LEGEND

- HARRIS GRADE PZ
- 1430 PZ
- 1340 PZ



**2ND REVISED VESTING
TENTATIVE TRACT MAP
NO. 15230**

PRELIMINARY

**FIGURE 2-1A · WATER FACILITIES
OPTION A · ON-SITE STORAGE**

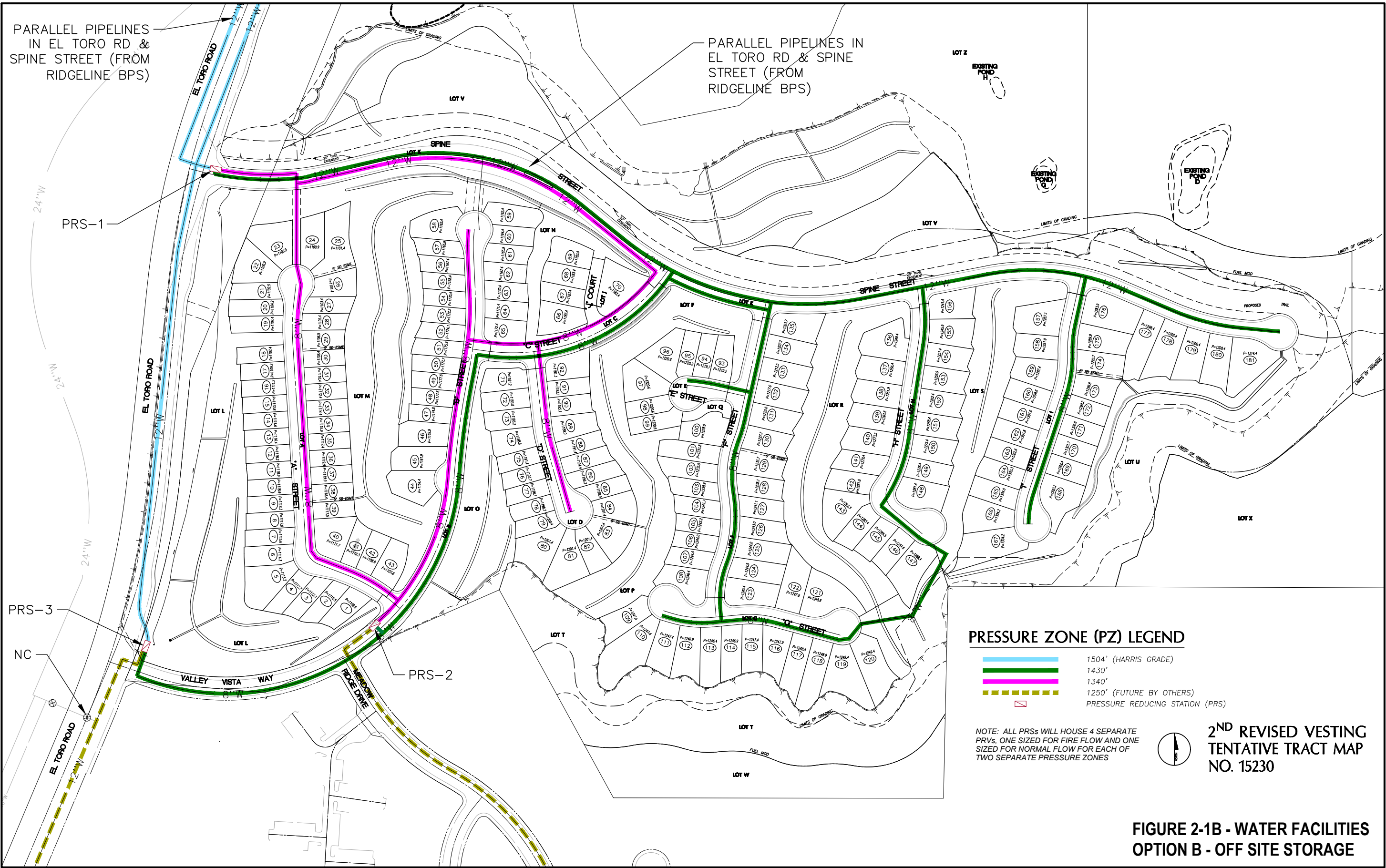


FIGURE 2-1B - WATER FACILITIES OPTION B - OFF SITE STORAGE

of the TTM, however, the conclusions can still be applied to the latest version. First, an attempt to come up with similar sized lots in other areas of the District was undertaken. Assessor Parcel information on lot size was generated for various lots in Trabuco Highlands, Robinson Ranch and Dove Canyon. Addresses and square footages for lots in these areas were collected until a good sample size (195 residences) was generated with an average lot size similar to the average for the Saddleback Meadows lots. The addresses and square footages for these lots are shown in Appendix B with an average lot size of 6,467 sf, about 6% larger than the Project lots. Maps of these lots are also included in Appendix B. Water meter usage data for calendar years 2017 and 2018 was obtained from the District for the 195 similar lots with an average use of 347 and 358 gpd, respectively in 2017 and 2018, for a two-year average of 352 gpd.

As a check, a second water use methodology was utilized. This method involved generating a typical house footprint in terms of square footage based on home sizes along with typical assumptions for garages, driveways, and hardscapes. This generates a landscape area for each lot and then typical assumptions can be made for plant palettes that will, in turn, generate outside water demand. Adding a reasonable inside water demand per capita and a people per dwelling unit factor was used to generate a total water demand per residence, which was compared to the first method utilized. The previous TTM used for this analysis encompassed the same development area but included less homes, 166 total (versus 181 for the current TTM), on slightly larger lots averaging 6,487 sf. This analysis is detailed in Appendix B with the average outside irrigated area equal to 32% of the average lot area. This same assumption was used for the lots in the revised TTM, on a per lot basis. The resulting average landscape area for all 181 homes is calculated to equal 1,960 sf based on the average lot size of 6,067 sf.

To determine the average water use for irrigation it is assumed that half of each lot's landscape area is turf with a plant factor (PF) of 0.85 and an irrigation efficiency (IE) of 0.7 and the other half is various ground cover and/or shrubs with a PF of 0.4 and an IE of 0.8. The resulting estimated outside irrigation use is equal to 142 gpd/du. Subtracting this value from the average total water use from the meter reads on the similar lot sizes of 352 gpd results in 210 gpd for inside water use. Assuming an average occupancy of 3.3 people per dwelling unit generates an inside water use of 64 gallons per capita per day (gpcd). The State Department of Water Resources has set a goal of 55 gpcd for new home construction so the 352 gpd/du seems to be a reasonable and conservative value for estimating the total residential water demand for the development plan proposed for Saddleback Meadows (at 3.8 people per dwelling unit the use would be exactly 55 gpcd).

Based on the above, the estimated average day demand (ADD) for Saddleback Meadows is summarized in Table 2-2.

**Table 2-2
Water Demand Projections**

Land Use	ADD (gpd)	ADD (AFY)
Residential	63,712	71.4
Common Area Irrigation (HOA)	53,621	60.1
Total	117,333	131.4

Residential Use = 352 gpd/du x 181 du

2.1.2 Peak Water Demands

Maximum-day demand is defined as the largest demand day of the year. A Maximum-day demand (MDD) factor is the ratio of maximum-day demand to average-day demand. Based on an analysis of historical District daily water production and water storage, a MDD factor of 1.95 was calculated for domestic water demand and a factor of 2.2 was estimated for HOA irrigation demand in the 1999 Master Plan.

Peak hour demand is the largest hourly demand of the year. A peak-hour demand (PHD) factor is the ratio of peak-hour demand to maximum-day demand. Based on an evaluation of hourly water use in the Dove Canyon pressure zone, a peak-hour demand (PHD) factor of 2.47 was calculated for domestic water demand for the overall District water system in the 1999 Master Plan. Based on a review of irrigation practices in the District, it was estimated in the 1999 Master Plan that HOA irrigation demand typically occurs nightly between the hours of 7 p.m. and 7 a.m., which is a 12-hour irrigation period. Accordingly, a PHD factor of 2.0 was developed for HOA irrigation in the 1999 Master Plan. These MDD factors will be used in this Sub Area Master Plan. The average-day, maximum-day and peak-hour domestic water and HOA irrigation demands for Saddleback Meadows are shown in Table 2-3.

**Table 2-3
Average Day, Maximum Day, and Peak Hour Demands**

Land Use	Water Demand (GPD)		
	ADD	MDD ⁽¹⁾	PHD ⁽²⁾
Residential	63,712	124,238	306,869
HOA Irrigation	53,621	117,966	235,932
Total	117,333	242,204	542,800

(1) Residential MDD = 1.95 x ADD and HOA MDD = 2.2 x ADD

(2) Residential PHD = 2.47 x MDD and HOA PHD = 2.0 x MDD

2.1.3 Fire Flow Demand

Based on information provided from David Oatis, the developer's consultant who obtained the information from the Orange County Fire Authority (OCFA), the anticipated fire flow will be 1,125 gpm for a one-hour duration at a minimum residual pressure of 20 psi. This value is based on preliminary home sizes, construction types, sprinkler requirements and "Attachment 23, Table B105.1(2): Minimum Required Fire Flow and Flow Duration for Buildings in OCFA Jurisdiction" from OCFA's Fire Master Plans for Commercial & Residential Development: B-09 dated January 1, 2020. Final fire hydrant locations will be developed by the project civil engineer but are assumed to be at approximate 300-foot spacing. Following finalization of the storage and water delivery option, final fire flow analysis will be conducted using the existing and proposed facilities and final pipe sizing within the tract and off-site will be confirmed.

2.2 Source of Supply

The District's Dimension Water Treatment Plant (DWTP) provides water into the Cooks Reservoir pressure zone for further transmission to the rest of the distribution system. Three high service booster pumps at the DWTP have a combined capacity of 6 cfs and lift water from the clearwell directly into the Cooks Reservoir zone at a hydraulic grade line (HGL) of approximately 1,165 feet, equal to the maximum water level in Cooks Reservoir. Water is boosted from the Cooks Reservoir zone to the Harris Grade pressure zone (1,504' HGL) by the Ridgeline Booster Station. This zone is also connected to three other water systems and two water districts, IRWD (Lake Forest), IRWD (Santiago), and SMWD, through interties. The Ridgeline Booster Station, which was recently re-designed and improvements constructed, now has 3 pumps with a combined capacity of 6 cfs, matching the capacity of the DWTP booster pumps. The Saddleback Meadows project site will connect to the Harris Grade pressure zone served by the Ridgeline Booster Station. The project will therefore be responsible for its pro-rata share of the upgrades to the Ridgeline Booster Station that were recently constructed.

2.3 Water Storage Requirements

The total storage requirements for the project are determined based on the criteria from the 1999 Water Master Plan, which calls for 10 hours of maximum day demand for operational storage, five average days for emergency storage, and fire flow storage. The five average days for emergency storage would be equivalent to 7 days at a 29 percent reduction, which is what Metropolitan Water District considers reasonable (25 to 35 percent) based on water conservation during recent drought periods. Using these criteria and the demand analysis provided, the total storage requirement is as shown in Table 2-4.

**Table 2-4
Storage Requirement**

Storage Type	Volume (gal)
Operational ⁽¹⁾	100,918
Fire Flow ⁽²⁾	67,500
Emergency ⁽³⁾	586,664
Total	755,082

(1) 10 hours of Maximum Day Demand

(2) 1,125 gpm fire flow for 1 hour

(3) 5 days of Average Day Demand

The preliminary grading plan provided by the developer’s engineer and dated July 11, 2019, showed a reservoir located on-site with a pad elevation of 1,420’. Based on discussions with the developer’s representative and engineer, this is as high an elevation as can be reasonably provided based on geotechnical concerns due to potential landslides that would require extensive grading and remediation of the site and be extremely expensive. However, this SAMP analyzed two options. Option A, which is not under consideration, would be to construct on-site storage at an elevation that could supply the upper zone by gravity and Option B would be to contribute to the construction of off-site storage along with a parallel pipeline from the Ridgeline Booster Pump Station to Spine Street and up Spine Street to “F” Street. Without on-site storage, the on- and off-site parallel pipelines are required to provide a second source of supply to the project for reliability/redundancy.

The most feasible alternative available to the District for providing off-site storage, which the developer could contribute to is the existing Harris Grade Reservoir site. The District has also reviewed the District’s Porter Ranch property but that is not under consideration. The District has conducted feasibility studies on these alternative sites. After discussions and negotiations, the developer and District have agreed to pursue the off-site storage option at the Harris Grade site through a joint participation agreement.

Hydraulic modeling was performed to determine off-site pipe sizes and verify sufficient water can be delivered to the site under each option.

The “existing” scenario that was preliminarily modeled assumed the following:

1. A 12-inch diameter line is constructed from the Ridgeline Booster Pump Station (RBPS) to the Saddleback Meadows entrance road to serve the development with the buildout demand placed on that location.

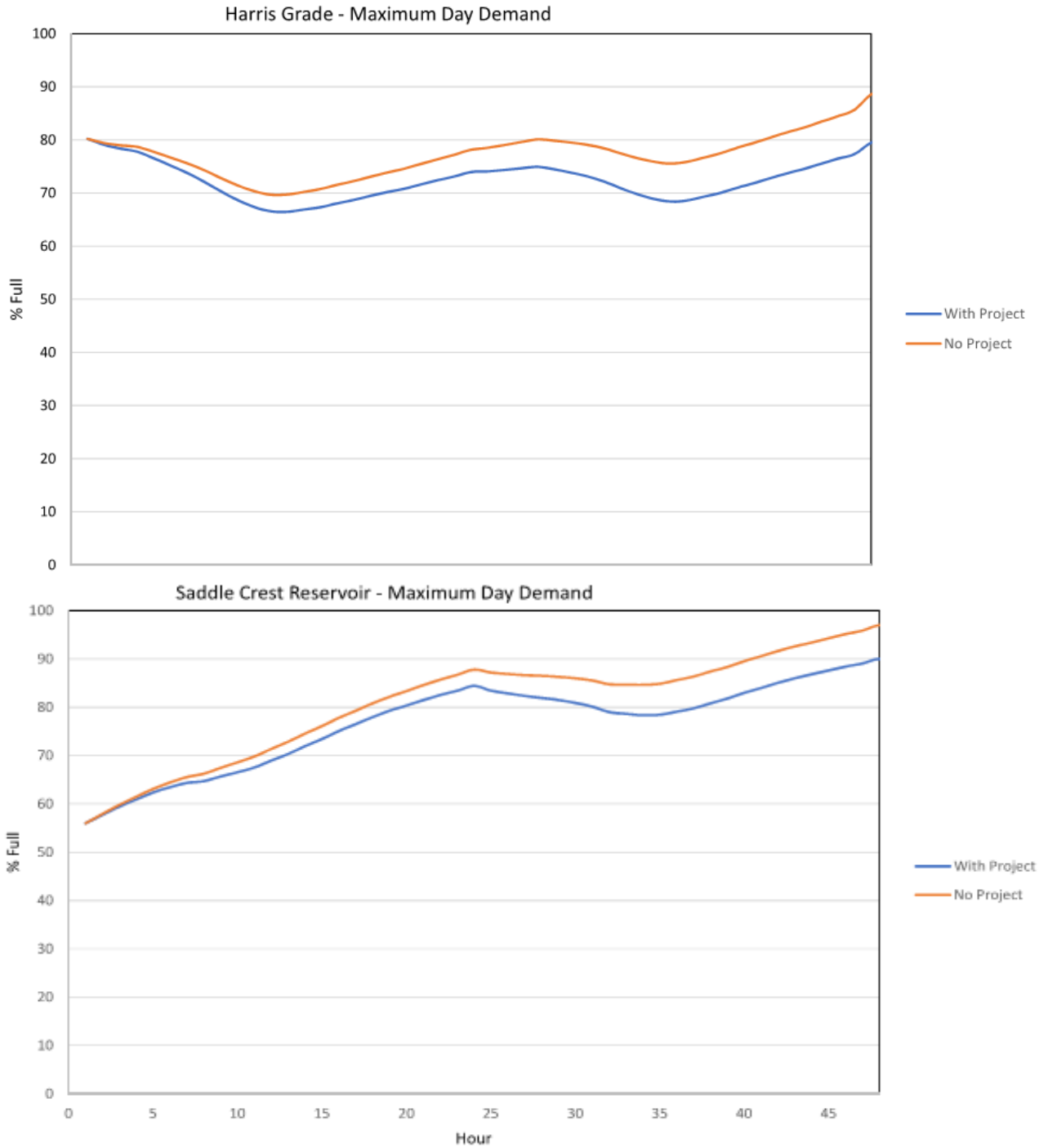
2. Parallel 12-inch pipelines are needed to the entrance to provide redundancy (two sources of supply) and the 12-inch line is continued southerly in El Toro Road to Valley Vista Way to provide this redundancy to the entire project as shown in Figure 2-1B. The parallel system was not included in the model as it is needed for reliability in case one line is down for whatever reason.
3. An 18-inch pipeline is constructed from Cook's Corner along Live Oak Canyon Road to the location where the line branches off to the Harris Grade Reservoirs. This line is needed to reduce head loss from the Ridgeline Booster Pump Station and from Saddle Crest Reservoir to Harris Grade Reservoir.
4. The Saddle Crest Reservoir is on-line along with the buildout demands for the Saddle Crest development.
5. The total District-wide average day demand (ADD) is 1,640 gpm or about 2.36 MGD (10 percent higher than average over past 7 years).
6. The District-wide maximum day demand (MDD) is 2,650 gpm or about 3.81 MGD.
7. All demands are served from the Dimension Water Treatment Plant or from the west (no wells or supply from interconnections), in order to be conservative (worst case).

The average day demand and maximum day demand loading in the hydraulic model were updated to reflect 2018 production data provided by the District and included in Appendix C. The ADD for 2018 equaled 2.36 MGD based on monthly production data. The MDD was estimated using daily production data for Dimension Water Treatment Plant (DWTP) and monthly data for supply from the District's capacity in the South County Pump Station/Santa Margarita Water District (SMWD) System at Plano Trabuco Road (Plano). For the purpose of determining demand, it was assumed that the Plano supply was taken at a constant rate during each month. The maximum day in 2018 occurred in August with the estimated daily production equal to 3.81 MGD, close to the flow capacity from DWTP of 3.9 MGD. This MDD flow rate is assumed to be conservative as it is likely that more water was taken from SMWD during periods of no production from DWTP and less taken during high production from DWTP, rather than distributed equally each day as was assumed.

An extended period simulation was run using the District's hydraulic model and the above assumptions. Figure 2-2 shows percent full for both Harris Grade and Saddle Crest Reservoirs for a 48-hour period during assumed MDD conditions. It shows that the Harris Grade Reservoir levels remain virtually the same with the Saddleback Meadows development demands and gradually increase without the development. The Saddle Crest Reservoir levels increase both with and without the Saddleback Meadows demand added. The RBPS is set to come on and off based on the Harris Grade Reservoir levels and Saddle Crest Reservoir is allowed to fluctuate independently.

The modeled MDD can be sustained with supply from the DWTP both with and without the Saddleback Meadows demand. Additionally, the District could take water from SMWD if higher demand conditions were to occur, which would probably be called for even in the case without the proposed development and its demands.

**Figure 2-2
Storage Analysis**



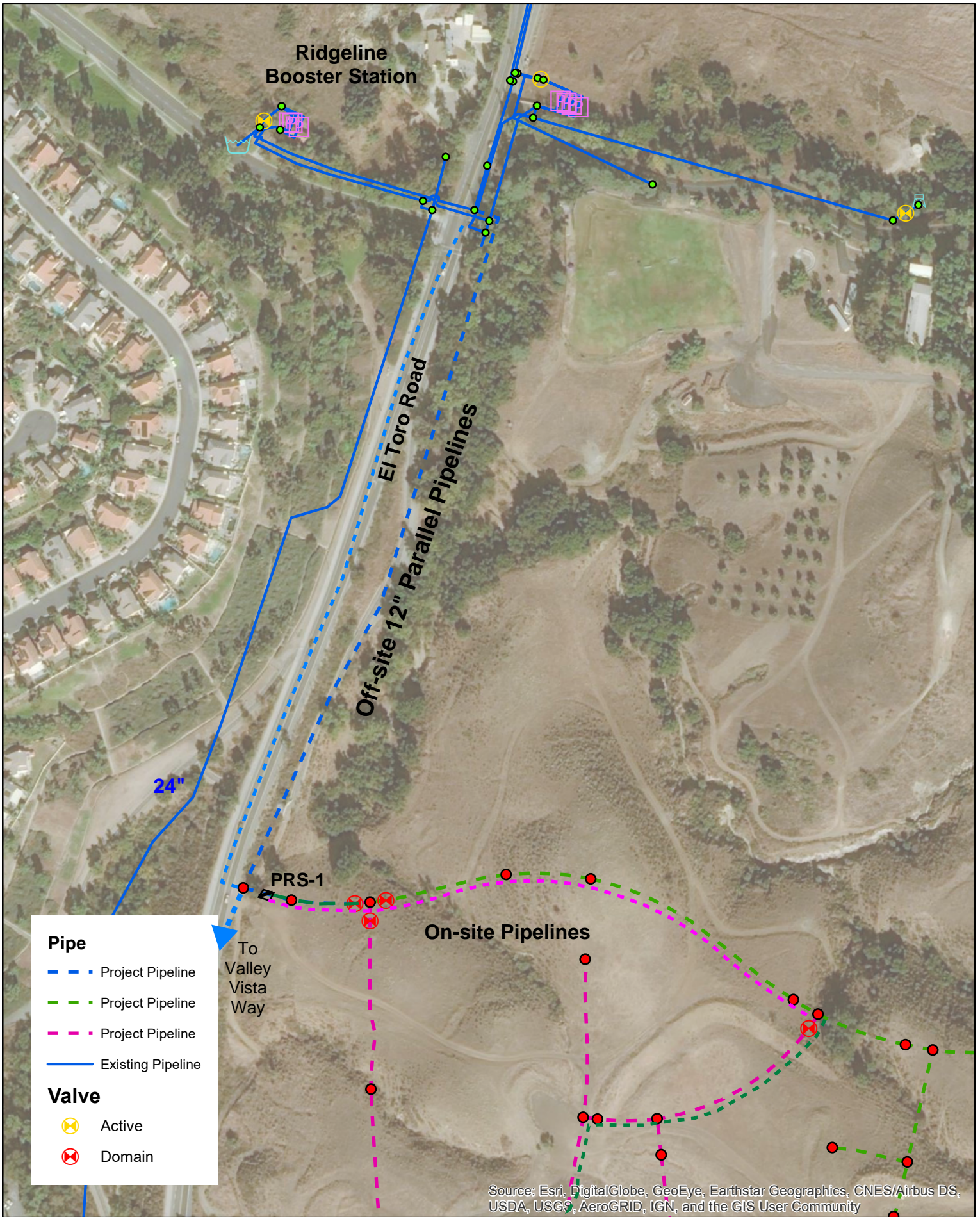
2.4 Computer Modeling and System Layout

Water service to the Saddleback Meadows project can be extended from the existing water lines at the intersection of El Toro Road and Ridgeline Road that are boosted from the Ridgeline Booster Station to the Harris Grade pressure zone. The Harris Grade Reservoirs have a high-water elevation of 1,504 feet. Option B, which is the preferred alternative, requires parallel 12” pipelines to be constructed in El Toro Road from Ridgeline Road to the Project entrance road, then a single 12” pipeline would continue down El Toro Road to Valley Vista Way. These pipelines are illustrated on Figure 2-3. As stated previously, improvements to the Ridgeline Booster Station were recently completed and were on-line prior to the Saddleback Meadows development coming online and are included in model simulations for the Project. Also, a new 18-inch transmission pipeline parallel to the existing 10- and 14-inch lines is proposed to be constructed from Cook’s Corner along Live Oak Canyon Road to the location where the line branches off to the Harris Grade Reservoirs. This pipeline is assumed to be in place for Project simulations and would replace the existing 10-inch pipeline along that alignment.

The proposed onsite water facilities were added to the District’s existing water system model, which uses InfoWater hydraulic modeling software. The proposed water system facilities are illustrated on Figure 2-1A (on-site storage, which is currently not being pursued) and Figure 2-1B (off-site storage). The proposed system meets the District’s looping criteria which states that two water main connections are required for each street unless it is a dead-end street serving 25 or less normal-size residential lots. A pipeline easement will be required between the eastern end of “G” Street and the southern end of “H” Street to connect these two cul-de-sacs, in order to satisfy District looping criteria.

2.4.1 Pressure Zones

Pad elevations within the Saddleback Meadows development range from 1,100 to 1,314 feet above sea level. A proposed pipeline from the Ridgeline Booster Station to the project site along El Toro Road will serve the project from the Harris Grade Reservoir Pressure Zone with a HGL of 1504 feet (full reservoir). In order to provide adequate pressure to customers, a planning guideline of providing a minimum static pressure of 50 psi at the highest service elevation is typically used in the initial layout of the proposed system. This way, a minimum dynamic pressure of 40 psi can be maintained with the reservoir at a lower than full level and during peak hour demand conditions. Adequate flows and pressures must also be achieved under fire flow conditions. Additionally, the District wants to keep distribution pipeline pressures below 150 psi.



Pressure zone boundaries were set to achieve adequate pressures throughout the proposed development based on model simulations. Two pressure zones are recommended for the site based on the range of lot elevations. The higher pressure zone will serve the higher elevation lots on the easterly portion of the site starting at “F” Street to the cul-de-sac at the eastern end of Spine Street. The lower pressure zone will serve the remaining lots from El Toro Road and east to “C” Street. Both zones will be reduced off of the Harris Grade Pressure Zone using pressure reducing stations to limit excessive pressures, particularly when the Ridgeline Booster Station is operating. The upper zone is set to a HGL of 1430 feet and the lower zone is set to a HGL of 1340 feet. The recommended locations of the PRV stations and pressure zones are illustrated on Figure 2-1A and B.

2.4.2 Model Simulations and Results

Various operation and demand scenarios were analyzed with the model to size system pipelines and facilities such that performance meets all District criteria as outlined in the TCWD Design Criteria and Standard Drawings for Water and Sewer Facilities, June 2002. The proposed facilities were modeled using ADD, PHD, and MDD plus fire flow assuming the off-site storage option. Fire flows were modeled at 1,125 gpm during maximum day demand conditions as confirmed by OCFA. Sufficient service and fire pressures were modeled using each scenario. The model output and corresponding node diagram are included in Appendix D, including fire flows at each node in the development.

Fire flow demand occurring on the MDD typically controls distribution main sizing. Fire simulations for the highest locations in each pressure zone were evaluated, at the eastern end of Spine Street in the 1430 zone and the southern end of “D” Street in the 1340 zone. Based on model results, a 12-inch distribution pipeline is recommended along Spine Street from El Toro Road to “I” Street with 8-inch distribution pipelines elsewhere within the tract.

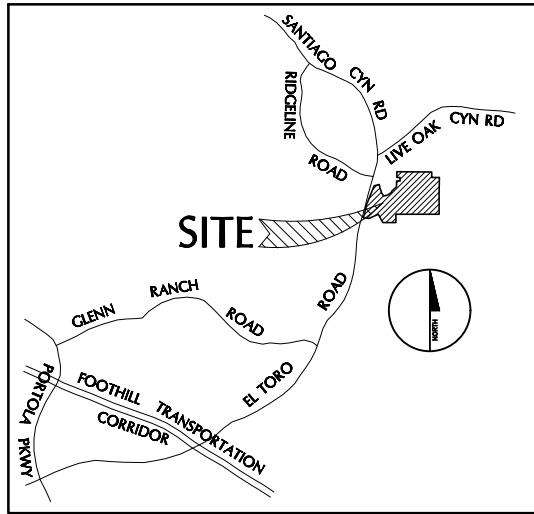
Peak-hour demand for domestic water and HOA irrigation are simulated in the model using a diurnal curve with peak domestic demand occurring in the morning between the hours of 7:00 a.m. and 8:00 a.m. and HOA demand between the hours of 11:00 p.m. and 7:00 a.m., which is an 8-hour irrigation period. Therefore, the combined peak-hour demand for domestic water and HOA irrigation occurs at approximately 7:00 a.m. Model simulation results show sufficient pressure during peak hour demand, above 40 psi, and pipeline velocities less than 8 feet per second.

Per District and uniform plumbing code (UPC) criteria, pressure regulators are required on the customer’s side of the meter where static pressures exceed 80 psi at the meter. Based on PRV settings, static pressures above 80 psi occur at the lots along “A” Street in

the lower zone and along “E” and “F” Streets in the upper zone and a single lot on “H” Street. These lots (requiring individual pressure regulators) are highlighted on Figure 2-4.

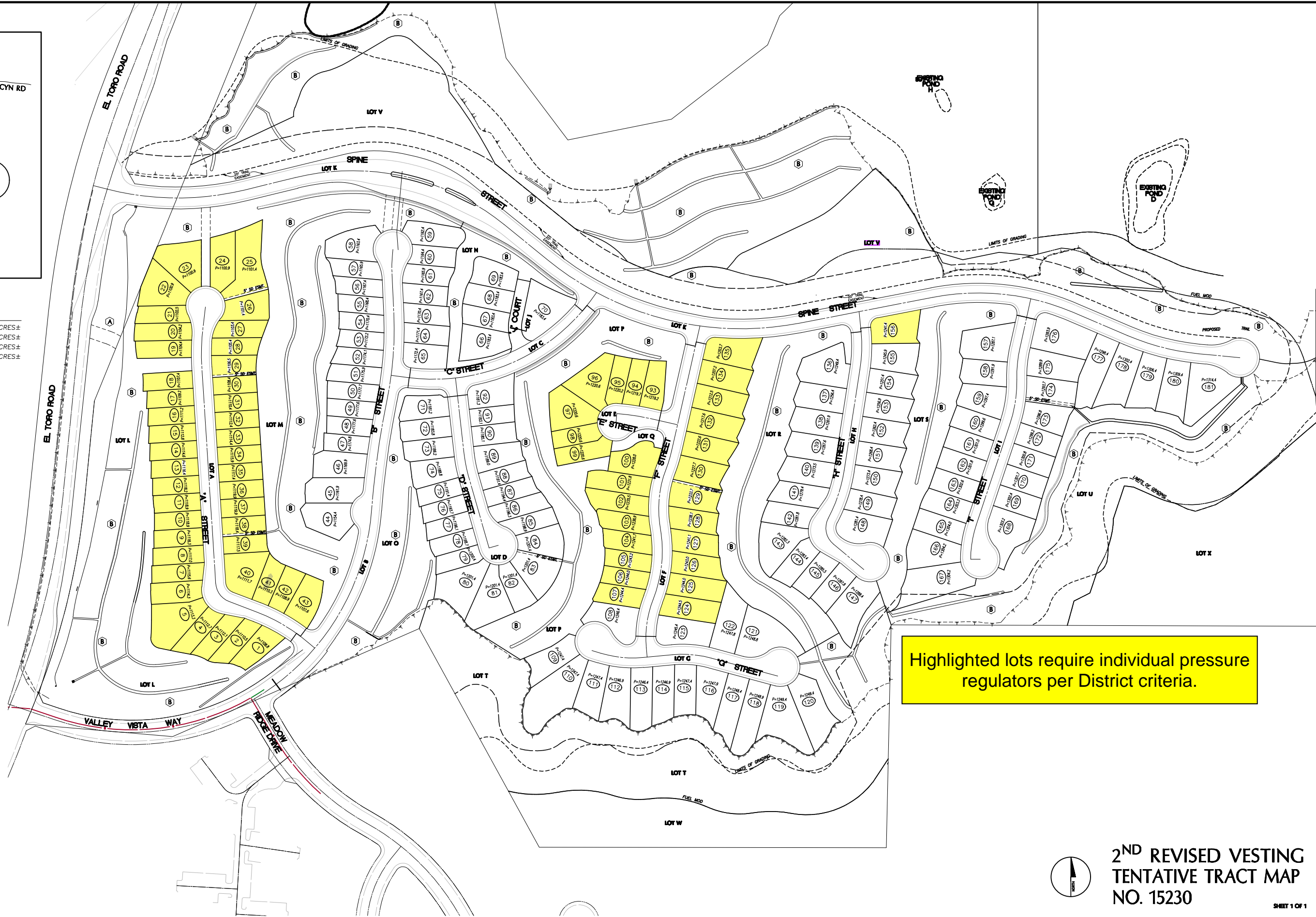
Upstream of the pressure reducing stations, at the entrance to the project, there are pressures equal to approximately 190 psi, in excess of the maximum desired pressure of 150 psi. These would occur along the 12-inch transmission pipeline serving the project from Ridgeline Booster Station. It is recommended to use higher pressure class for this reach of transmission pipeline. It should be pointed out here again, that the water system layout is preliminary and as with on-site storage, the pressure zone HGLs could be somewhat different.

VICINITY MAP



LOT SUMMARY TABLE

LOT NUMBER	LAND USE	AREA
1 - 181	RESIDENTIAL LOTS	25.2 ACRES±
A - K	STREETS	10.5 ACRES±
L - V	OPEN SPACE	34.4 ACRES±
W - AA	OPEN SPACE/NATURAL	152.1 ACRES±



2ND REVISED VESTING TENTATIVE TRACT MAP NO. 15230

SHEET 1 OF 1

3. Wastewater System

3.1 Regional Collection, Treatment and Disposal Facilities

Wastewater generated from Saddleback Meadows will be conveyed into the District's existing El Toro Road Collection Zone. This collection zone receives wastewater from the District and SMWD, Wastewater collected in this zone is conveyed through the El Toro Road Collection System, which consists of a 15-inch trunk sewer in El Toro Road, the El Toro Road Sewage Lift Station, and dual force mains in Santa Margarita Parkway, to the SMWD wastewater system.

The District owns 1.78 mgd capacity in the El Toro Road System and 0.428 mgd in the SMWD Chiquita sewage system, which includes collection, treatment at the Chiquita Water Reclamation Plant, and ultimate disposal of treated effluent via the Chiquita Land Outfall and the Serra Ocean Outfall. The total capacity of the El Toro Road system is 1.96 mgd. However, capacity in the SMWD system is currently limited to 1.15 mgd.

3.2 Wastewater Flow Factors

Since all the land uses within the proposed projects are similar residential uses, the only flow factor to be concerned with is the inside water use within the homes that is discharged to the sewer system. Average dry weather wastewater flow (ADWF) in the District was determined to be 270 gpd/du in the 1999 Master Plan, based on calibration of the sewer model. The housing density for Saddleback Meadows is approximately 5 dwelling units per acre after subtracting out the open space within the development boundaries. Based on indoor water use factors from IRWD for this housing density, a wastewater generation of 200 to 225 gpd/du is appropriate. The demand analysis presented in Section 2.1 estimated an indoor use for the Project equal to 210 gpd/du, within this expected range. Also discussed in Section 2.1, the State Department of Water Resources has set a goal of 55 gpcd for indoor water use for new home construction. With an estimated 3.3 persons per du, the indoor use would equal 64 gpcd, making 210 gpd/du conservative when compared to State standards. Applying the more conservative Master Plan factor 270 gpd/du to the 181 dwelling units, results in an average flow of 48,870 gpd or 0.05 mgd. The District owns sewer rights of up to 200,000 gpd of average flow for the benefit of the project.

Peak dry-weather wastewater flows (PDWF) were derived from the formula $PDWF = 1.84 \times (ADWF)^{0.92}$, where flow is in cubic feet per second (cfs). The formula, which was originally developed by Los Angeles County Sanitation District, was assessed to be valid in the 1999 Master Plan by comparing the measured peak factors at three District lift stations with the calculated peak flows using this formula. The resulting peak flow for the Project equals 110,550 gpd or 0.11 mgd. The resulting average flow to peak flow factor equals 2.26.

3.3 System Layout

The minimum pipe size for gravity sewers per the District's standards is 8-inches in diameter and the Saddleback Meadows development is not large enough to warrant anything bigger than this. Using the District minimum slope criteria of 0.4 percent, the maximum depth to diameter ratio (d/D) equals 0.32 for the Project peak flow of 0.11 mgd. The District standard for maximum d/D ratio for 8-inch pipeline is equal to 0.50. Therefore, all gravity sewer pipelines constructed for the project site will be 8-inch, except for private lateral sewers.

The proposed sewer system layout is shown in Figure 3-1. The system will collect to Spine Street and cross El Toro Road to connect with the existing 15-inch TCWD trunk sewer just to the west of El Toro Road. The sewer should be designed to meet District criteria; 7 feet minimum depth of cover from finished grade to the top of sewer and manhole spacing not to exceed the maximum of 400 linear feet for 8-inch sewer. The sewers will be constructed of PVC pipe per District criteria, with special requirements for the El Toro Road sewer crossing and any deep sewers.



2ND REVISED VESTING
TENTATIVE TRACT MAP
NO. 15230

FIGURE 3-1 - WASTEWATER
COLLECTION SYSTEM

4. Project Costs

The engineer for the developer will be responsible for preparing a cost estimate for all onsite water and wastewater facilities that are to be constructed to serve the project. The developer will be responsible for a pro-rata share of the cost to upgrade the Ridgeline Booster Station and pipeline upgrades between Ridgeline and Harris Grade Reservoirs. The costs will be determined by the District prior to issuance of a will serve letter.

The developer will also be responsible for a contribution toward off-site storage (Option B) for their project's water demands and the ancillary water facilities that accompany that option, as shown on Figure 2-1B (on-site) and Figure 2-3 (off-site). The developer's contribution toward off-site storage is under discussion and will be based on actual construction costs, which have been estimated in recent studies conducted by the District for different sized storage reservoirs including the Harris Grade site. The preferred storage solution, as agreed upon, is the off-site option at the Harris Grade site and the cost sharing is subject to a pending agreement between the developer and District.

The total project water use from Table 2-2 is equal to 117,333 gpd. Dividing by the 181 dwelling units results in an average total development water use of 648 gpd/du. The total water demand of 117,333 gpd divided by the District average equivalent dwelling unit (edu) demand of 459 gpd/edu yields approximately 256 edus for the entire development or 2.54 edu/du.

Water capital improvement charges for up to 715 edus were previously purchased for Tract 15239 (formerly Tract 10692) by a prior owner through an agreement with the District dated September 21, 1988 and have been reserved by the District for this development. This agreement was for Tract 10692, which included 705 dwelling units and 1.7 acres of commercial land. This tract was also included in the original 6 cubic feet per second of water supply capacity from 1988 Water Allocation Report. Therefore, no water capital improvement charges or supplemental water capacity fees are due for this project.

For sewer service, the landowner purchased capacity in the El Toro Road/Santa Margarita Water District Chiquita Wastewater collection and treatment system many years ago for a previous approved land use plan that contained substantially more dwelling units than is now proposed. Therefore, no sewer capacity charges are due for this project.

The planning-level estimated costs for the recommended off-site water and sewer facilities are shown in Table 4-1 and 4-2, respectively. The estimated construction cost includes a 20% contingency. The capital project cost was developed by applying 25% to the construction cost to account for technical, legal, and administrative costs and including permitting costs.

**Table 4-1
Off-site Water Facilities Cost^(d)**

Description	Units	Unit Cost	Cost
Storage ^(a)	755,082 gal	TBD	TBD
Ridgeline Pump Station ^(b)	LS	-	\$166,500
12" Transmission Pipelines in El Toro Road	4,200 LF	\$150/LF	\$630,000
12" Butterfly Valve	6	\$3,300 EA	\$19,800
18" Transmission Pipeline ^(c)	4,500 LF	6% of \$300/LF	\$81,000
18" Butterfly Valve ^(c)	5	\$6,000	\$30,000
Subtotal	-	-	TBD
20% Contingency	-	-	TBD
Construction Cost	-	-	TBD
25% Technical, Legal & Administration	-	-	TBD
Capital Project Cost	-	-	TBD

(a) Storage solution, as agreed upon, is the off-site option at the Harris Grade site and the cost sharing is subject to a pending agreement between the developer and District.

(b) Pro-rata participation in District costs for 6 cfs Ridgeline Booster Station based on Project MDD = 0.37 cfs. District paying 100% of 2 cfs capacity (\$0.27 million) and sharing the cost with another developer for the remaining 4 cfs capacity (\$1.26 million District portion). Saddleback Meadows cost = $0.37/2 \times \$0.27 \text{ million} + 0.37/4 \times \1.26 million .

(c) Pro-rata participation in water transmission line from Cook's Corner to Harris Grade Reservoir. Project MDD = 0.37 cfs, Capacity = 6.0 cfs; Therefore, pro rata share = 6.0%

d) Except for Ridgeline Pump Station, all pro-rata participation, unit costs, and therefore total costs are estimates and, as such, should be considered preliminary and subject to change as they will be based on actual costs. For the 12" transmission lines in El Toro Road and 12" butterfly valves, developer is responsible for 100% of cost of design and construction per District standards, review and inspection, and unit costs are provided for estimating purposes only.

**Table 4-2
Off-site Sewer Facilities Cost**

Description	Units	Unit Cost	Cost
Mobilization	LS		\$60,000
8" Sewer ^(a)	130 LF	\$325/LF	\$42,250
8" Sewer ^(b)	150 LF	\$150/LF	\$22,500
Standard Manholes	2	\$5,500/EA	\$11,000
Connect to Existing Sewer	LS		\$30,000
Subtotal	-		\$165,750
20% Contingency	-		\$33,150
Construction Cost	-		\$198,900
25% Technical, Legal & Administration	-		\$49,725
Capital Project Cost	-		\$248,625

(a) Jack and bore 8" pipe in steel casing across El Toro Road.

(a) Down slope to connect to existing trunk sewer in trail.

(b) All cost estimates should be considered preliminary and subject to change. While these are titled off-site sewer facilities they are assumed to be constructed as part of subdivision improvements by developer.

APPENDIX A

Saddleback Meadows TTM Lot Statistics

LOT SUMMARY TABLE

Lot No.	Gross SQ.FT.	Net SQ.FT.	Lot No.	Gross SQ.FT.	Net SQ.FT.	Lot No.	Gross SQ.FT.	Net SQ.FT.	Lot No.	Gross SQ.FT.	Net SQ.FT.
1	5,708	5,308	47	4,120	4,120	93	5,119	4,884	139	6,597	5,713
2	4,978	4,721	48	4,113	3,913	94	4,268	4,268	140	6,851	5,925
3	4,941	4,941	49	4,378	4,378	95	4,394	4,394	141	6,007	5,769
4	4,990	4,990	50	4,654	4,654	96	8,241	8,241	142	5,524	5,523
5	9,731	9,731	51	4,816	4,570	97	8,110	8,110	143	8,673	8,410
6	5,523	5,286	52	4,457	4,219	98	4,366	4,366	144	5,676	5,461
7	4,745	4,504	53	4,156	3,939	99	5,262	4,699	145	5,269	5,052
8	4,660	4,430	54	4,125	3,916	100	7,175	6,095	146	5,362	5,362
9	4,462	4,462	55	4,167	3,958	101	6,436	5,640	147	9,545	9,545
10	4,314	4,355	56	4,346	4,346	102	6,196	5,610	148	7,661	6,692
11	4,278	4,278	57	4,606	4,379	103	5,074	4,779	149	5,442	5,211
12	4,274	4,274	58	7,624	7,387	104	4,942	4,500	150	6,054	5,511
13	4,308	4,077	59	6,624	6,411	105	4,311	4,311	151	5,822	5,275
14	4,319	4,100	60	4,623	4,405	106	4,266	4,266	152	6,024	5,261
15	4,313	4,094	61	4,899	4,688	107	4,851	4,308	153	5,950	5,291
16	4,284	4,066	62	4,621	4,421	108	7,502	7,502	154	5,977	5,317
17	4,287	4,069	63	4,720	4,720	109	6,966	6,966	155	6,870	6,207
18	4,531	4,302	64	4,658	4,658	110	13,810	13,810	156	7,167	5,563
19	5,064	5,064	65	5,577	4,810	111	6,950	6,950	157	8,669	6,768
20	5,247	5,118	66	7,332	7,332	112	7,622	7,622	158	5,962	4,860
21	4,692	4,437	67	4,883	4,883	113	7,142	7,142	159	6,799	6,372
22	8,103	7,521	68	5,528	5,528	114	6,465	6,465	160	5,332	5,117
23	8,772	8,772	69	5,984	5,984	115	5,804	5,804	161	5,253	5,253
24	6,977	6,977	70	10,043	7,734	116	7,122	7,122	162	5,275	5,275
25	10,874	10,355	71	5,682	4,837	117	7,412	7,412	163	5,301	5,301
26	5,985	5,760	72	5,453	4,668	118	8,415	8,415	164	5,530	5,530
27	4,601	4,372	73	5,328	4,551	119	11,213	11,213	165	5,720	5,720
28	4,357	4,357	74	5,820	5,024	120	10,069	10,069	166	8,230	8,230
29	4,846	4,346	75	4,140	3,930	121	10,750	10,750	167	11,049	11,049
30	4,000	3,600	76	4,110	3,899	122	8,136	8,136	168	8,771	8,771
31	4,000	3,800	77	4,189	3,974	123	7,597	7,232	169	5,088	4,882
32	4,000	3,800	78	4,186	3,983	124	6,514	6,082	170	5,000	4,800
33	4,000	3,800	79	4,195	4,195	125	6,437	5,954	171	5,000	4,800
34	4,000	3,800	80	9,386	9,386	126	5,796	5,762	172	5,000	4,800
35	4,000	3,800	81	9,052	9,052	127	5,429	5,209	173	6,175	5,972
36	4,000	4,000	82	5,263	5,263	128	5,577	5,352	174	6,765	5,249
37	4,200	4,200	83	7,810	7,279	129	6,549	5,991	175	7,299	5,281
38	4,300	3,600	84	6,199	6,199	130	6,307	5,403	176	10,672	6,445
39	4,021	4,021	85	4,556	4,556	131	6,451	5,753	177	8,864	7,532
40	8,015	7,319	86	5,212	4,835	132	6,749	6,017	178	9,070	7,871
41	4,436	4,209	87	4,764	4,417	133	6,710	5,945	179	7,909	7,055
42	4,573	4,370	88	4,492	4,176	134	6,598	5,802	180	7,749	6,966
43	6,410	6,201	89	5,856	5,095	135	7,404	5,844	181	10,981	10,981
44	7,727	6,146	90	4,641	4,026	136	8,752	7,378			
45	7,267	4,719	91	4,077	3,875	137	6,523	5,679			
46	7,013	5,699	92	6,261	5,587	138	6,504	5,679			

Total Gross	1,098,072 S.F.
Average Gross	6,067 S.F.
Total Net	1,029,210 S.F.
Average Net	5,686 S.F.

OPEN SPACE AREAS

Lot No.	Use	Area SQ.FT.	Landscaped/Irrigated Area SQ.FT.	Trail SQ.FT.
A	Road	46,029	0	0
B	Road	79,028	0	0
C	Road	21,711	0	0
D	Road	21,376	0	0
E	Road	9,005	0	0
F	Road	32,571	0	0
G	Road	31,497	0	0
H	Road	34,247	0	0
I	Road	31,312	0	0
J	Road	4,965	0	0
K	Road	145,055	0	0
L	Landscape/Trail	178,396	169,931	8,465
M	Landscape	173,316	173,316	0
N	Landscape	22,200	22,200	0
O	Landscape	61,359	57,917	0
P	Landscape	102,572	102,572	0
Q	Landscape	3,365	3,365	0
R	Landscape	85,367	85,367	0
S	Landscape	60,167	60,167	0
T	Landscape/Open Space	228,490	30,853	0
U	Landscape/Open Space	196,983	86,638	0
V	Landscape/Open Space/Water Quality/20' Equestrian Trail	385,967	276,482	50,709
W	Open Space	87,942	0	0
X	Open Space	1,754,047	0	0
Y	Open Space	3,522,717	146,801	0
Z	Open Space	1,185,159	198,687	0
AA	Open Space	76,919	0	0

APPENDIX B

Water Demand Support Data

Lot Sizes, Hardscape/Landscape Area and Water Use Calculation

(all areas in square feet (sf), lots sorted smallest to largest)

Lot No.	Lot sf	House	Building Footprint	Garage	Drive-way	Footprint + Garage + D'way	Remainder	Hardscape	Landscape	% Irrigated Area
30	4,500	3,555	1,955	400	440	2,795	1,705	682	1,023	23%
31	4,500	3,555	1,955	400	440	2,795	1,705	682	1,023	23%
32	4,500	3,555	1,955	400	440	2,795	1,705	682	1,023	23%
33	4,500	3,555	1,955	400	440	2,795	1,705	682	1,023	23%
11	4,620	3,555	1,955	400	440	2,795	1,825	730	1,095	24%
55	4,621	3,555	1,955	400	440	2,795	1,826	730	1,095	24%
53	4,623	3,555	1,955	400	440	2,795	1,828	731	1,097	24%
47	4,630	3,555	1,955	400	440	2,795	1,835	734	1,101	24%
57	4,658	3,555	1,955	400	440	2,795	1,863	745	1,118	24%
10	4,668	3,555	1,955	400	440	2,795	1,873	749	1,124	24%
69	4,673	3,555	1,955	400	440	2,795	1,878	751	1,127	24%
84	4,674	3,555	1,955	400	440	2,795	1,879	752	1,127	24%
9	4,701	3,555	1,955	400	440	2,795	1,906	762	1,143	24%
56	4,720	3,555	1,955	400	440	2,795	1,925	770	1,155	24%
41	4,725	3,555	1,955	400	440	2,795	1,930	772	1,158	25%
48	4,728	3,555	1,955	400	440	2,795	1,933	773	1,160	25%
42	4,735	3,555	1,955	400	440	2,795	1,940	776	1,164	25%
95	4,792	3,555	1,955	400	440	2,795	1,997	799	1,198	25%
70	4,794	3,555	1,955	400	440	2,795	1,999	800	1,199	25%
94	4,798	3,555	1,955	400	440	2,795	2,003	801	1,202	25%
46	4,843	3,555	1,955	400	440	2,795	2,048	819	1,229	25%
8	4,849	3,555	1,955	400	440	2,795	2,054	822	1,232	25%
49	4,874	3,555	1,955	400	440	2,795	2,079	832	1,247	26%
60	4,883	3,555	1,955	400	440	2,795	2,088	835	1,253	26%
93	4,889	3,555	1,955	400	440	2,795	2,094	838	1,256	26%
54	4,899	3,555	1,955	400	440	2,795	2,104	842	1,262	26%
43	4,963	3,555	1,955	400	440	2,795	2,168	867	1,301	26%
117	4,970	3,555	1,955	400	440	2,795	2,175	870	1,305	26%
27	5,000	3,555	1,955	400	440	2,795	2,205	882	1,323	26%
92	5,000	3,555	1,955	400	440	2,795	2,205	882	1,323	26%
115	5,060	3,555	1,955	400	440	2,795	2,265	906	1,359	27%
118	5,065	3,555	1,955	400	440	2,795	2,270	908	1,362	27%
6	5,091	3,555	1,955	400	440	2,795	2,296	918	1,377	27%
28	5,100	3,555	1,955	400	440	2,795	2,305	922	1,383	27%
29	5,100	3,555	1,955	400	440	2,795	2,305	922	1,383	27%
88	5,128	3,555	1,955	400	440	2,795	2,333	933	1,400	27%
114	5,148	3,555	1,955	400	440	2,795	2,353	941	1,412	27%
50	5,168	3,555	1,955	400	440	2,795	2,373	949	1,424	28%
12	5,199	3,555	1,955	400	440	2,795	2,404	962	1,442	28%
119	5,199	3,555	1,955	400	440	2,795	2,404	962	1,442	28%
26	5,224	3,555	1,955	400	440	2,795	2,429	972	1,457	28%

Lot Sizes, Hardscape/Landscape Area and Water Use Calculation

(all areas in square feet (sf), lots sorted smallest to largest)

Lot No.	Lot sf	House	Building Footprint	Garage	Drive-way	Footprint + Garage + D'way	Remainder	Hardscape	Landscape	% Irrigated Area
13	5,233	3,555	1,955	400	440	2,795	2,438	975	1,463	28%
14	5,233	3,555	1,955	400	440	2,795	2,438	975	1,463	28%
91	5,257	3,555	1,955	400	440	2,795	2,462	985	1,477	28%
78	5,263	3,555	1,955	400	440	2,795	2,468	987	1,481	28%
81	5,293	3,555	1,955	400	440	2,795	2,498	999	1,499	28%
15	5,300	3,555	1,955	400	440	2,795	2,505	1,002	1,503	28%
68	5,323	3,555	1,955	400	440	2,795	2,528	1,011	1,517	28%
76	5,344	3,555	1,955	400	440	2,795	2,549	1,020	1,529	29%
3	5,345	3,555	1,955	400	440	2,795	2,550	1,020	1,530	29%
45	5,362	3,555	1,955	400	440	2,795	2,567	1,027	1,540	29%
44	5,381	3,555	1,955	400	440	2,795	2,586	1,034	1,551	29%
34	5,383	3,555	1,955	400	440	2,795	2,588	1,035	1,553	29%
2	5,465	3,555	1,955	400	440	2,795	2,670	1,068	1,602	29%
155	5,500	3,555	1,955	400	440	2,795	2,705	1,082	1,623	30%
156	5,500	3,555	1,955	400	440	2,795	2,705	1,082	1,623	30%
157	5,500	3,555	1,955	400	440	2,795	2,705	1,082	1,623	30%
116	5,501	3,555	1,955	400	440	2,795	2,706	1,082	1,623	30%
148	5,503	3,555	1,955	400	440	2,795	2,708	1,083	1,625	30%
149	5,508	3,555	1,955	400	440	2,795	2,713	1,085	1,628	30%
150	5,513	3,555	1,955	400	440	2,795	2,718	1,087	1,631	30%
83	5,515	3,555	1,955	400	440	2,795	2,720	1,088	1,632	30%
80	5,516	3,555	1,955	400	440	2,795	2,721	1,088	1,632	30%
111	5,526	3,555	1,955	400	440	2,795	2,731	1,092	1,638	30%
61	5,528	3,555	1,955	400	440	2,795	2,733	1,093	1,640	30%
58	5,577	3,555	1,955	400	440	2,795	2,782	1,113	1,669	30%
7	5,598	3,555	1,955	400	440	2,795	2,803	1,121	1,682	30%
18	5,603	3,555	1,955	400	440	2,795	2,808	1,123	1,685	30%
87	5,643	3,555	1,955	400	440	2,795	2,848	1,139	1,709	30%
151	5,657	3,555	1,955	400	440	2,795	2,862	1,145	1,717	30%
24	5,704	3,555	1,955	400	440	2,795	2,909	1,164	1,745	31%
103	5,713	3,555	1,955	400	440	2,795	2,918	1,167	1,751	31%
105	5,746	3,555	1,955	400	440	2,795	2,951	1,180	1,770	31%
67	5,760	3,555	1,955	400	440	2,795	2,965	1,186	1,779	31%
21	5,767	3,555	1,955	400	440	2,795	2,972	1,189	1,783	31%
77	5,782	3,555	1,955	400	440	2,795	2,987	1,195	1,792	31%
1	5,785	3,555	1,955	400	440	2,795	2,990	1,196	1,794	31%
121	5,798	3,555	1,955	400	440	2,795	3,003	1,201	1,802	31%
36	5,807	3,555	1,955	400	440	2,795	3,012	1,205	1,807	31%
104	5,839	3,555	1,955	400	440	2,795	3,044	1,218	1,826	31%
17	5,877	3,555	1,955	400	440	2,795	3,082	1,233	1,849	31%
25	5,909	3,555	1,955	400	440	2,795	3,114	1,246	1,868	32%

Lot Sizes, Hardscape/Landscape Area and Water Use Calculation

(all areas in square feet (sf), lots sorted smallest to largest)

Lot No.	Lot sf	House	Building Footprint	Garage	Drive-way	Footprint + Garage + D'way	Remainder	Hardscape	Landscape	% Irrigated Area
125	5,948	3,555	1,955	400	440	2,795	3,153	1,261	1,892	32%
99	5,951	3,555	1,955	400	440	2,795	3,156	1,262	1,893	32%
152	5,965	3,555	1,955	400	440	2,795	3,170	1,268	1,902	32%
62	5,984	3,555	1,955	400	440	2,795	3,189	1,276	1,913	32%
65	6,002	3,555	1,955	400	440	2,795	3,207	1,283	1,924	32%
79	6,032	3,555	1,955	400	440	2,795	3,237	1,295	1,942	32%
120	6,052	3,555	1,955	400	440	2,795	3,257	1,303	1,954	32%
158	6,080	3,555	1,955	400	440	2,795	3,285	1,314	1,971	32%
66	6,115	3,555	1,955	400	440	2,795	3,320	1,328	1,992	33%
97	6,153	3,555	1,955	400	440	2,795	3,358	1,343	2,015	33%
52	6,190	3,555	1,955	400	440	2,795	3,395	1,358	2,037	33%
82	6,261	3,555	1,955	400	440	2,795	3,466	1,386	2,079	33%
101	6,298	3,555	1,955	400	440	2,795	3,503	1,401	2,102	33%
124	6,310	3,555	1,955	400	440	2,795	3,515	1,406	2,109	33%
16	6,327	3,555	1,955	400	440	2,795	3,532	1,413	2,119	33%
135	6,331	3,555	1,955	400	440	2,795	3,536	1,414	2,121	34%
138	6,353	3,555	1,955	400	440	2,795	3,558	1,423	2,135	34%
122	6,395	3,555	1,955	400	440	2,795	3,600	1,440	2,160	34%
112	6,473	3,555	1,955	400	440	2,795	3,678	1,471	2,207	34%
140	6,509	3,555	1,955	400	440	2,795	3,714	1,486	2,228	34%
64	6,518	3,555	1,955	400	440	2,795	3,723	1,489	2,234	34%
139	6,593	3,555	1,955	400	440	2,795	3,798	1,519	2,279	35%
102	6,653	3,555	1,955	400	440	2,795	3,858	1,543	2,315	35%
100	6,697	3,555	1,955	400	440	2,795	3,902	1,561	2,341	35%
113	6,709	3,555	1,955	400	440	2,795	3,914	1,566	2,348	35%
40	6,724	3,555	1,955	400	440	2,795	3,929	1,572	2,357	35%
142	6,774	3,555	1,955	400	440	2,795	3,979	1,592	2,387	35%
129	6,778	3,555	1,955	400	440	2,795	3,983	1,593	2,390	35%
141	6,781	3,555	1,955	400	440	2,795	3,986	1,594	2,391	35%
128	6,823	3,555	1,955	400	440	2,795	4,028	1,611	2,417	35%
123	6,918	3,555	1,955	400	440	2,795	4,123	1,649	2,474	36%
107	6,931	3,555	1,955	400	440	2,795	4,136	1,654	2,481	36%
38	6,932	3,555	1,955	400	440	2,795	4,137	1,655	2,482	36%
143	7,170	3,555	1,955	400	440	2,795	4,375	1,750	2,625	37%
106	7,176	3,555	1,955	400	440	2,795	4,381	1,752	2,628	37%
146	7,177	3,555	1,955	400	440	2,795	4,382	1,753	2,629	37%
85	7,183	3,555	1,955	400	440	2,795	4,388	1,755	2,633	37%
51	7,236	3,555	1,955	400	440	2,795	4,441	1,776	2,664	37%
37	7,271	3,555	1,955	400	440	2,795	4,476	1,790	2,685	37%
90	7,272	3,555	1,955	400	440	2,795	4,477	1,791	2,686	37%
59	7,332	3,555	1,955	400	440	2,795	4,537	1,815	2,722	37%

Lot Sizes, Hardscape/Landscape Area and Water Use Calculation

(all areas in square feet (sf), lots sorted smallest to largest)

Lot No.	Lot sf	House	Building Footprint	Garage	Drive-way	Footprint + Garage + D'way	Remainder	Hardscape	Landscape	% Irrigated Area
75	7,390	3,555	1,955	400	440	2,795	4,595	1,838	2,757	37%
86	7,414	3,555	1,955	400	440	2,795	4,619	1,848	2,771	37%
130	7,424	3,555	1,955	400	440	2,795	4,629	1,852	2,777	37%
96	7,502	4,331	2,382	600	640	3,622	3,880	1,552	2,328	31%
39	7,545	4,331	2,382	600	640	3,622	3,923	1,569	2,354	31%
147	7,551	4,331	2,382	600	640	3,622	3,929	1,572	2,357	31%
126	7,665	4,331	2,382	600	640	3,622	4,043	1,617	2,426	32%
23	7,758	4,331	2,382	600	640	3,622	4,136	1,654	2,482	32%
132	7,770	4,331	2,382	600	640	3,622	4,148	1,659	2,489	32%
5	7,824	4,331	2,382	600	640	3,622	4,202	1,681	2,521	32%
160	7,982	4,331	2,382	600	640	3,622	4,360	1,744	2,616	33%
20	8,016	4,331	2,382	600	640	3,622	4,394	1,758	2,636	33%
71	8,115	4,331	2,382	600	640	3,622	4,493	1,797	2,696	33%
4	8,125	4,331	2,382	600	640	3,622	4,503	1,801	2,702	33%
35	8,125	4,331	2,382	600	640	3,622	4,503	1,801	2,702	33%
127	8,281	4,331	2,382	600	640	3,622	4,659	1,864	2,795	34%
134	8,331	4,331	2,382	600	640	3,622	4,709	1,884	2,825	34%
137	8,333	4,331	2,382	600	640	3,622	4,711	1,884	2,827	34%
144	8,334	4,331	2,382	600	640	3,622	4,712	1,885	2,827	34%
74	8,372	4,331	2,382	600	640	3,622	4,750	1,900	2,850	34%
165	8,378	4,331	2,382	600	640	3,622	4,756	1,902	2,854	34%
131	8,385	4,331	2,382	600	640	3,622	4,763	1,905	2,858	34%
73	8,451	4,331	2,382	600	640	3,622	4,829	1,932	2,897	34%
136	8,465	4,331	2,382	600	640	3,622	4,843	1,937	2,906	34%
164	8,526	4,331	2,382	600	640	3,622	4,904	1,962	2,942	35%
19	8,684	4,331	2,382	600	640	3,622	5,062	2,025	3,037	35%
145	8,702	4,331	2,382	600	640	3,622	5,080	2,032	3,048	35%
159	8,995	4,331	2,382	600	640	3,622	5,373	2,149	3,224	36%
109	9,062	4,331	2,382	600	640	3,622	5,440	2,176	3,264	36%
133	9,191	4,331	2,382	600	640	3,622	5,569	2,228	3,341	36%
110	9,288	4,331	2,382	600	640	3,622	5,666	2,266	3,400	37%
163	9,342	4,331	2,382	600	640	3,622	5,720	2,288	3,432	37%
162	9,363	4,331	2,382	600	640	3,622	5,741	2,296	3,445	37%
154	9,632	4,331	2,382	600	640	3,622	6,010	2,404	3,606	37%
22	9,656	4,331	2,382	600	640	3,622	6,034	2,414	3,620	37%
153	9,949	4,331	2,382	600	640	3,622	6,327	2,531	3,796	38%
63	10,043	4,331	2,382	600	640	3,622	6,421	2,568	3,853	38%
108	10,323	4,331	2,382	600	640	3,622	6,701	2,680	4,021	39%
89	10,651	4,331	2,382	600	640	3,622	7,029	2,812	4,217	40%
161	10,655	4,331	2,382	600	640	3,622	7,033	2,813	4,220	40%
72	10,795	4,331	2,382	600	640	3,622	7,173	2,869	4,304	40%

Lot Sizes, Hardscape/Landscape Area and Water Use Calculation

(all areas in square feet (sf), lots sorted smallest to largest)

Lot No.	Lot sf	House	Building Footprint	Garage	Drive-way	Footprint + Garage + D'way	Remainder	Hardscape	Landscape	% Irrigated Area
166	12,544	4,331	2,382	600	640	3,622	8,922	3,569	5,353	43%
98	14,324	4,331	2,382	600	640	3,622	10,702	4,281	6,421	45%

Total 1,076,807

347,834

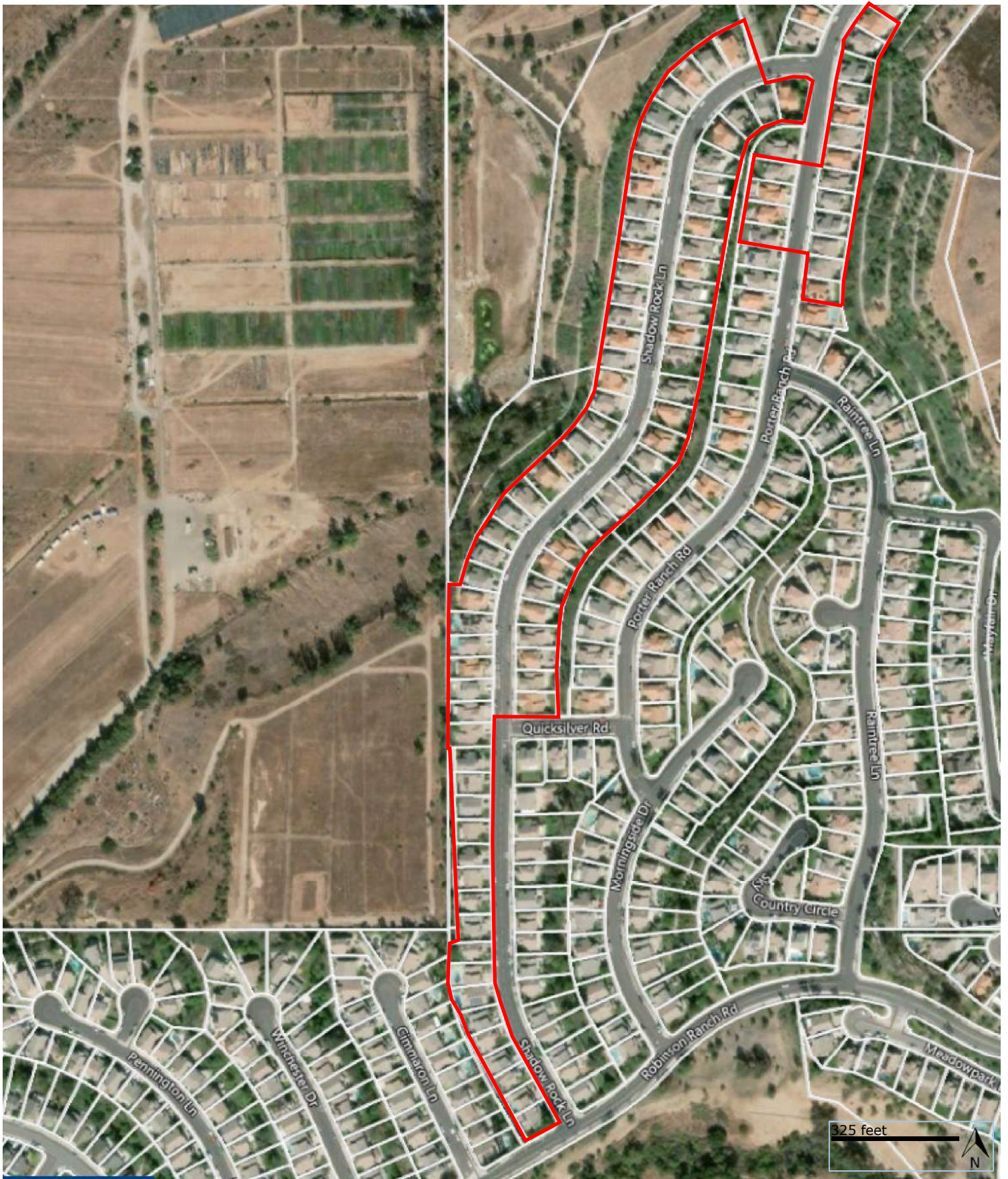
Average 6,487

2,095

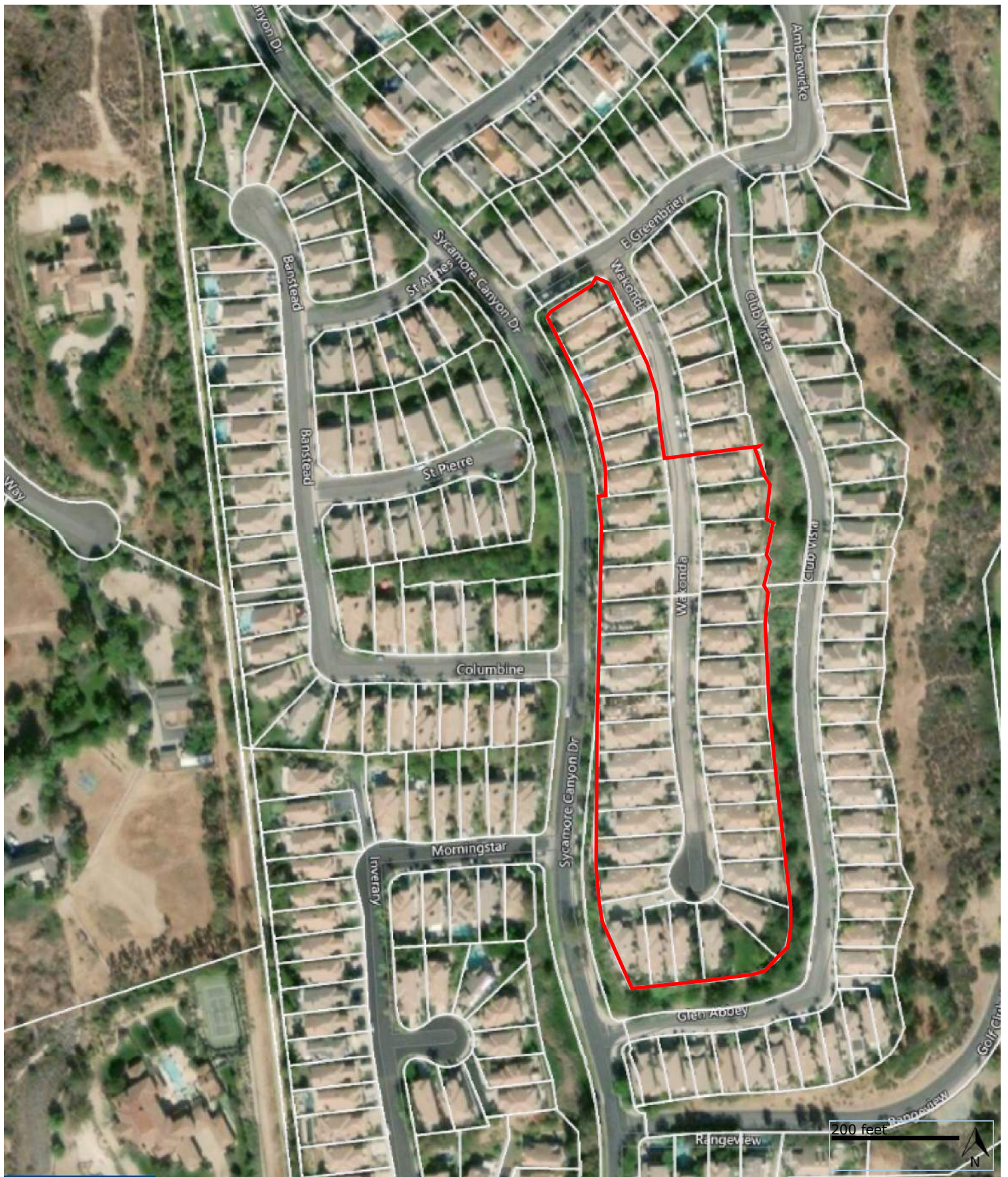
32%



Trabuco Highlands Lots



Robinson Ranch Lots



Dove Canyon Lots

Similar Lots in Trabuco Highlands, Robinson Ranch and Dove Canyon

Address	Lot Size (sf)	Address	Lot Size (sf)	Address	Lot Size (sf)	Address	Lot Size (sf)	Address	Lot Size (sf)
21381 Birdhollow Dr	7,800	32592 Coppercrest Dr	12,000	20881 Shadow Rock Ln	6,435	20802 Shadow Rock Ln	5,610	1 Wakonda	4,400
21391 Birdhollow Dr	6,864	32602 Coppercrest Dr	7,875	20871 Shadow Rock Ln	6,490	20792 Shadow Rock Ln	5,900	3 Wakonda	4,905
21401 Birdhollow Dr	9,179	32622 Coppercrest Dr	7,519	20861 Shadow Rock Ln	7,200	20782 Shadow Rock Ln	5,650	5 Wakonda	4,815
21411 Birdhollow Dr	6,760	32632 Coppercrest Dr	7,446	20851 Shadow Rock Ln	6,000	20776 Shadow Rock Ln	6,695	9 Wakonda	5,100
21415 Birdhollow Dr	6,552	32642 Coppercrest Dr	7,800	20841 Shadow Rock Ln	6,000	20772 Shadow Rock Ln	6,600	11 Wakonda	5,300
21421 Birdhollow Dr	6,386	32662 Coppercrest Dr	8,000	20831 Shadow Rock Ln	6,000	20762 Shadow Rock Ln	7,280	13 Wakonda	4,704
21423 Birdhollow Dr	6,120	32682 Coppercrest Dr	7,500	20825 Shadow Rock Ln	6,000	20752 Shadow Rock Ln	7,700	15 Wakonda	4,900
21425 Birdhollow Dr	6,300	32692 Coppercrest Dr	6,283	20821 Shadow Rock Ln	6,060	20742 Shadow Rock Ln	7,490	17 Wakonda	5,824
21431 Birdhollow Dr	9,750	32702 Coppercrest Dr	6,313	20811 Shadow Rock Ln	6,060	20732 Shadow Rock Ln	8,800	19 Wakonda	6,384
21433 Birdhollow Dr	9,100	32712 Coppercrest Dr	6,490	20801 Shadow Rock Ln	8,000	20722 Shadow Rock Ln	6,215	21 Wakonda	6,325
21435 Birdhollow Dr	8,400	32722 Coppercrest Dr	6,380	20791 Shadow Rock Ln	5,656	20712 Shadow Rock Ln	6,325	25 Wakonda	5,928
21392 Silvertree Ln	9,800	32732 Coppercrest Dr	6,490	20781 Shadow Rock Ln	6,060	20702 Shadow Rock Ln	6,490	27 Wakonda	5,650
21402 Silvertree Ln	7,952	32742 Coppercrest Dr	5,940	20771 Shadow Rock Ln	6,060	20692 Shadow Rock Ln	6,435	29 Wakonda	4,972
21412 Silvertree Ln	8,008	32752 Coppercrest Dr	5,992	20761 Shadow Rock Ln	6,565	20672 Shadow Rock Ln	6,545	31 Wakonda	5,085
21422 Silvertree Ln	8,176	32756 Coppercrest Dr	6,160	20751 Shadow Rock Ln	6,060	20662 Shadow Rock Ln	6,720	33 Wakonda	5,175
21432 Silvertree Ln	8,880	32762 Coppercrest Dr	6,900	20741 Shadow Rock Ln	5,555	20652 Shadow Rock Ln	6,710	35 Wakonda	5,490
21452 Silvertree Ln	7,952	32766 Coppercrest Dr	7,150	20731 Shadow Rock Ln	5,606	20642 Shadow Rock Ln	6,820	37 Wakonda	5,850
21456 Silvertree Ln	7,840	32772 Coppercrest Dr	10,500	20721 Shadow Rock Ln	5,606	20632 Shadow Rock Ln	7,930	39 Wakonda	6,210
21462 Silvertree Ln	8,151	32780 Coppercrest Dr	8,050	20711 Shadow Rock Ln	5,555	20622 Shadow Rock Ln	7,700	41 Wakonda	5,850
21472 Silvertree Ln	8,140	21091 Shadow Rock Ln	5,225	20701 Shadow Rock Ln	5,555	20612 Shadow Rock Ln	7,280	43 Wakonda	6,100
21476 Silvertree Ln	9,750	21085 Shadow Rock Ln	5,225	20681 Shadow Rock Ln	5,555	20606 Shadow Rock Ln	7,140	45 Wakonda	6,250
21401 Silvertree Ln	11,000	21081 Shadow Rock Ln	5,225	20671 Shadow Rock Ln	5,555	20602 Shadow Rock Ln	8,000	47 Wakonda	4,880
21411 Silvertree Ln	6,890	21071 Shadow Rock Ln	5,225	20661 Shadow Rock Ln	5,555	20702 Porter Ranch Rd	6,300	49 Wakonda	5,490
21421 Silvertree Ln	5,871	21061 Shadow Rock Ln	5,225	20651 Shadow Rock Ln	5,555	20692 Porter Ranch Rd	5,610	46 Wakonda	10,400
21431 Silvertree Ln	6,300	21051 Shadow Rock Ln	5,225	20641 Shadow Rock Ln	5,555	20682 Porter Ranch Rd	5,582	44 Wakonda	7,800
21441 Silvertree Ln	5,936	21041 Shadow Rock Ln	5,775	20635 Shadow Rock Ln	6,565	20662 Porter Ranch Rd	6,181	42 Wakonda	6,300
21451 Silvertree Ln	6,180	21031 Shadow Rock Ln	6,270	20631 Shadow Rock Ln	6,630	20656 Porter Ranch Rd	5,582	40Wakonda	4,725
21455 Silvertree Ln	5,555	21021 Shadow Rock Ln	5,712	20625 Shadow Rock Ln	6,630	20652 Porter Ranch Rd	5,582	38 Wakonda	4,950
21461 Silvertree Ln	5,880	21001 Shadow Rock Ln	6,650	20621 Shadow Rock Ln	6,695	20642 Porter Ranch Rd	5,577	36 Wakonda	5,040
21471 Silvertree Ln	6,600	20991 Shadow Rock Ln	5,795	20615 Shadow Rock Ln	6,760	20632 Porter Ranch Rd	5,577	34 Wakonda	5,085
21475 Silvertree Ln	6,600	20981 Shadow Rock Ln	5,890	20611 Shadow Rock Ln	7,000	20622 Porter Ranch Rd	5,577	32 Wakonda	4,995
21481 Silvertree Ln	7,150	20971 Shadow Rock Ln	5,700	20892 Shadow Rock Ln	6,825	20612 Porter Ranch Rd	5,582	30 Wakonda	4,950
21483 Silvertree Ln	6,825	20961 Shadow Rock Ln	5,700	20882 Shadow Rock Ln	5,995	20592 Porter Ranch Rd	7,000	28 Wakonda	5,500
21485 Silvertree Ln	6,050	20951 Shadow Rock Ln	5,700	20872 Shadow Rock Ln	5,995	20572 Porter Ranch Rd	6,630	26 Wakonda	5,250
21491 Silvertree Ln	6,325	20941 Shadow Rock Ln	5,700	20862 Shadow Rock Ln	6,105	20562 Porter Ranch Rd	5,665	24 Wakonda	5,200
21493 Silvertree Ln	5,940	20931 Shadow Rock Ln	5,700	20842 Shadow Rock Ln	7,150	20651 Porter Ranch Rd	6,600	22 Wakonda	5,565
21495 Silvertree Ln	6,325	20911 Shadow Rock Ln	6,840	20832 Shadow Rock Ln	7,280	20661 Porter Ranch Rd	6,600	20 Wakonda	5,940
21501 Silvertree Ln	6,600	20901 Shadow Rock Ln	6,325	20822 Shadow Rock Ln	7,215	20671 Porter Ranch Rd	6,545	18 Wakonda	5,886
21505 Silvertree Ln	8,000	20891 Shadow Rock Ln	6,380	20812 Shadow Rock Ln	6,825	20681 Porter Ranch Rd	6,545	16 Wakonda	5,040
Averages	7,382		6,571		6,256		6,533		5,595

Average Size (195 Lots) 6,467 sf

APPENDIX C

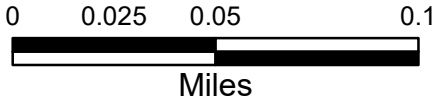
Storage Analysis Support Data

Production Aug 2018 (gallons)			
Day	Dimension	SMWD (avg)	Total
1	2,623,000	571,845	3,194,845
2	2,967,000	571,845	3,538,845
3	3,069,000	571,845	3,640,845
4	3,081,000	571,845	3,652,845
5	2,107,000	571,845	2,678,845
6	2,221,000	571,845	2,792,845
7	3,077,000	571,845	3,648,845
8	2,721,000	571,845	3,292,845
9	2,522,000	571,845	3,093,845
10	2,628,000	571,845	3,199,845
11	2,673,000	571,845	3,244,845
12	3,241,000	571,845	3,812,845
13	2,720,000	571,845	3,291,845
14	663,000	571,845	1,234,845
15	-	571,845	571,845
16	-	571,845	571,845
17	-	571,845	571,845
18	1,939,000	571,845	2,510,845
19	2,840,000	571,845	3,411,845
20	2,943,000	571,845	3,514,845
21	718,000	571,845	1,289,845
22	-	571,845	571,845
23	-	571,845	571,845
24	-	571,845	571,845
25	-	571,845	571,845
26	-	571,845	571,845
27	-	571,845	571,845
28	2,564,000	571,845	3,135,845
29	2,901,000	571,845	3,472,845
30	3,018,000	571,845	3,589,845
31	2,965,000	571,845	3,536,845
Average	1,812,935	571,845	2,384,781

APPENDIX D

Model Output and Node Diagram

Off-site storage option only presented here



**SADDLEBACK MEADOW
WATER MODEL**

TRACT NO 15230
MODEL JUNCTION MAP

AUGUST 2021

FIGURE 1

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

JUNCTION REPORT AT PEAK HOUR (HOUR=6)

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
1250	0.0	1,065.0	1,504.0	190.2
J100	24.8	1,105.2	1,339.8	101.7
J102	0.0	1,177.4	1,339.8	70.4
J104	3.1	1,174.4	1,429.5	110.5
J106	18.3	1,198.5	1,429.5	100.1
J108	29.1	1,086.5	1,339.8	109.8
J112	13.6	1,201.0	1,339.8	60.2
J114	4.9	1,218.7	1,429.5	91.3
J116	6.2	1,215.8	1,429.5	92.6
J118	5.0	1,244.2	1,429.4	80.3
J120	26.0	1,245.4	1,429.4	79.7
J122	5.6	1,247.6	1,429.4	78.8
J124	14.0	1,286.4	1,429.4	62.0
J126	0.0	1,280.7	1,429.5	64.5
J128	39.7	1,238.5	1,429.5	82.7
J130	6.8	1,276.4	1,429.5	66.3
J132	20.4	1,302.7	1,429.4	54.9
J134	28.3	1,314.4	1,429.4	49.9
J180	0.0	1,141.5	1,339.8	85.9
J182	0.0	1,105.0	1,429.6	140.6
J190	0.0	1,181.4	1,339.8	68.7
J192	0.0	1,174.3	1,339.8	71.7
J196	0.0	1,146.7	1,339.8	83.7
J200	0.0	1,193.7	1,339.8	63.3
J202	17.4	1,105.2	1,339.8	101.7
J204	0.0	1,105.2	1,339.8	101.7
J206	0.0	1,097.8	1,339.8	104.9
J208	0.0	1,105.2	1,339.9	101.7
J210	0.0	1,238.4	1,429.5	82.8
J212	0.0	1,246.1	1,429.4	79.4
J214	0.0	1,221.6	1,429.5	90.1
J216	0.0	1,193.0	1,429.5	102.5
J218	0.0	1,168.7	1,429.5	113.0
J220	0.0	1,231.2	1,429.5	85.9
J222	0.0	1,261.6	1,429.5	72.7
J224	0.0	1,312.7	1,429.4	50.6
J94	34.1	1,078.6	1,503.9	184.3
J96	49.3	1,121.2	1,429.6	133.6
J98	4.3	1,173.5	1,339.8	72.1

PIPE REPORT AT PEAK HOUR (HOUR=6)

ID	From Node	To Node	Length (ft)	Diameter (in)	Flow (gpm)	Velocity (ft/s)
70	1460	1250	1,510.7	12	350.8	1.0
P121	1250	J94	262.6	12	350.8	1.0
P123	J182	J96	173.0	12	267.5	0.8
P125	J100	J204	167.7	8	-31.9	0.2
P127	J100	J196	389.7	8	-22.0	0.1
P129	J102	J192	121.5	8	26.3	0.2
P131	J98	J180	321.5	8	0.0	0.0
P133	J96	J218	484.7	12	218.2	0.6
P135	J104	V8018	15.8	8	40.0	0.3
P137	J106	J216	56.4	12	-175.2	0.5
P139	J108	J206	94.2	8	-29.1	0.2
P143	J112	J200	81.1	8	-13.6	0.1
P145	J106	J116	232.8	8	41.0	0.3
P147	J116	J114	155.4	8	4.9	0.0
P149	J116	J214	114.4	8	29.9	0.2
P151	J118	J120	145.2	8	26.0	0.2
P153	J118	J212	177.0	8	-1.0	0.0
P155	J128	J126	554.7	8	20.6	0.1
P157	J126	J124	120.0	8	20.6	0.1
P159	J132	J130	623.2	8	-20.4	0.1
P161	J106	J220	298.2	12	115.9	0.3
P163	J128	J222	244.2	12	55.5	0.2
P165	J130	J224	465.0	8	28.3	0.2
P171	V8018	J102	387.2	8	40.0	0.3
P179	J94	V8020	21.4	12	267.5	0.8
P181	J190	J102	74.0	8	-13.6	0.1
P183	J192	J98	29.4	8	26.3	0.2
P185	J196	J98	252.3	8	-22.0	0.1
P187	J200	J190	228.7	8	-13.6	0.1
P189	J202	J208	311.3	8	-49.3	0.3
P191	J204	J202	323.5	8	-31.9	0.2
P193	J206	J100	61.6	8	-29.1	0.2
P195	J94	V8016	19.1	8	49.3	0.3
P197	J210	J118	115.3	8	29.9	0.2
P199	J212	J122	136.5	8	-1.0	0.0
P201	J214	J210	332.7	8	29.9	0.2
P203	J216	J104	189.1	12	-175.2	0.5
P205	J218	J104	57.9	12	218.2	0.6
P207	J220	J128	66.2	12	115.9	0.3
P209	J222	J130	156.7	12	55.5	0.2
P211	J224	J134	22.4	8	28.3	0.2
P215	J122	J124	295.7	8	-6.6	0.0
P227	V8016	J208	362.4	8	49.3	0.3
P229	V8020	J182	261.5	12	267.5	0.8

VALVE REPORT AT PEAK HOUR (HOUR=6)

ID	Elevation (ft)	Upstream Pressure (psi)	Downstream Pressure (psi)	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
V8016	1078.6	184.3	113.2	49.3	0.3	164.0
V8018	1174.0	110.7	71.9	40.0	0.3	89.7
V8020	1078.6	184.3	152.1	267.5	1.7	74.2

FIRE FLOW REPORT (HOUR=6)

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Hydrant Flow at 20 psi (gpm)
J100	24.8	101.7	1,340	1,125	98.1	6,041
J102	0.0	70.4	1,340	1,125	68.2	5,709
J104	3.1	110.5	1,430	1,125	108.7	6,517
J106	18.3	100.1	1,429	1,125	97.8	5,975
J108	29.1	109.8	1,340	1,125	104.6	5,482
J112	13.6	60.2	1,340	1,125	54.1	3,191
J114	4.9	91.3	1,429	1,125	86.1	4,427
J116	6.2	92.6	1,429	1,125	88.9	5,020
J118	5.0	80.3	1,429	1,125	75.0	4,184
J120	26.0	79.7	1,429	1,125	73.0	3,822
J122	5.6	78.8	1,429	1,125	73.4	4,107
J124	14.0	62.0	1,429	1,125	56.9	3,722
J126	0.0	64.5	1,429	1,125	59.6	3,834
J128	39.7	82.7	1,429	1,125	80.0	5,233
J130	6.8	66.3	1,429	1,125	63.0	4,415
J132	20.4	54.9	1,429	1,125	45.3	2,332
J134	28.3	49.9	1,429	1,125	41.5	2,338
J180	0.0	85.9	1,340	1,125	80.1	4,234
J182	0.0	140.6	1,430	1,125	140.1	8,414
J190	0.0	68.7	1,340	1,125	65.7	5,221
J192	0.0	71.7	1,340	1,125	69.2	5,560
J196	0.0	83.7	1,340	1,125	80.5	5,649
J200	0.0	63.3	1,340	1,125	58.1	3,589
J202	17.4	101.7	1,340	1,125	98.7	6,332
J204	0.0	101.7	1,340	1,125	98.2	6,066
J206	0.0	104.9	1,340	1,125	100.7	5,800
J208	0.0	101.7	1,340	1,125	99.6	6,863
J210	0.0	82.8	1,429	1,125	77.7	4,291
J212	0.0	79.4	1,429	1,125	74.1	4,121
J214	0.0	90.1	1,429	1,125	85.9	4,761
J216	0.0	102.5	1,429	1,125	100.3	6,081
J218	0.0	113.0	1,430	1,125	111.3	6,651
J220	0.0	85.9	1,429	1,125	83.2	5,325
J222	0.0	72.7	1,429	1,125	69.6	4,706
J224	0.0	50.6	1,429	1,125	42.5	2,381
J94	34.1	184.3	1,504	1,125	178.3	9,366
J96	49.3	133.6	1,430	1,125	132.8	7,960
J98	4.3	72.1	1,340	1,125	69.4	5,536

December 30, 2024

Client-Matter: 63008-030

VIA EMAIL

Fernando Paludi
General Manager
Trabuco Canyon Water District
32003 Dove Canyon Drive
Trabuco Canyon, CA 92679

Re: Saddleback Meadows Final Map

Dear Mr. Paludi:

On behalf of my client, California Quartet ("CQ"), we would like to request that the Saddleback Meadows project, and specifically, authorization to sign the Saddleback Meadow's Final Tract Map No. 15230 currently being processed by the County of Orange, be agendaized for discussion at the January 8, 2025, Engineering/Operational Committee meeting. Given the scope of responsibilities of this Committee, we believe this is an appropriate first step to District approval to sign the Final Map which we requested several months ago. We also note that the Sub-Area Master Plan for the Saddleback Meadows project has been presented to this Committee and so there should be some degree of familiarity with the project.

CQ representatives intend to attend the Committee meeting to discuss the status of the Final Map and our request that has been pending before the District since early fall, 2024, to sign the Final Map to quitclaim easements that were originally granted 40 years ago to support a 705 unit mobile home park and an offsite water tank parcel that has now been declared surplus by the District. If not on the agenda, CQ intends to address the Committee during the Public Comments portion of the meeting to brief the Committee on its request that the District sign the Final Map to quitclaim these 40-year old easements which have never been used and will no longer be used to support District needs.

As we have discussed with you and your counsel over the last few months, CQ has submitted its Final Map to the County for processing. The Final Map -- which you first received for review in January, 2023 -- will create 181 residential lots which is a greatly reduced project in size, scope and footprint than the current 705-lot subdivision map that is recorded on the site. As a result of the substantial reduction in units, and based upon further studies conducted by the District, it was determined that construction of a water tank to serve only the 181-unit Saddleback Meadows project (either on the project site or on the District's parcel adjacent to the project site) was no longer required. The District recently declared its parcel surplus after

December 30, 2024

Page 2

complying with the procedural requirements of the Surplus Lands Act. In light of these developments, CQ requested the District sign the Final Map to quitclaim the easements that were determined by the District to no longer be necessary to provide water service to the Saddleback Meadows project.

So that the County of Orange can proceed to a Board hearing on the Map, we would like to brief the Engineering/Operational Committee about the Final Map and request that they recommend to the Board that they authorize you to sign the Final Map.

We would greatly appreciate your consideration of our request to place the Saddleback Meadows project on the Committee's January 8th agenda. Please call me if you have any questions.

Sincerely,



Susan K. Hori

Cc: Laura Ratcliffe
Ken Coulter
John Schatz

403613759.1

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 8, 2025**

ENGINEERING MATTERS

ITEM 3: AGREEMENT AMENDMENT NO. 1 WITH WM LYLES FOR SCADA UPGRADE PROJECT – PHASE 2

W.M. Lyles Co. (WML) is a California-based utility contractor since 1945 specializing in water and wastewater projects. WML launched their System Integration Division in 2023. In July 2024, Trabuco Canyon Water District (District) awarded WML a professional services agreement to complete the District-wide Supervisory Control and Data Acquisition (SCADA) Modernization Project. The July 18, 2024 Regular Board Meeting staff report associated with WML contract award is included as Exhibit 1 for additional background.

The WML agreement was presented to the Board as the first phase of what would be two phases to complete the unfinished work by the original contractor TESCO Controls. As indicated in the July 18 staff report, under the first phase WML would need to complete any remaining hardware fabrication and installation as well as troubleshoot existing problems associated with TESCO’s previous work prior to offering a reliable proposal and fee for final deployment and testing of Ignition software at 19 District facilities. WML is nearing completion of the first phase within the initial agreement budget of \$217,870 and has provided a proposal and fee for the second phase (Amendment No. 1) not-to-exceed \$59,695 (total proposed fee for both phases \$277,565). For reference, the District budgeted \$400,000 in Fiscal Year 2023-24 for TESCO to complete the SCADA Project and retained approximately \$270,000 of the \$400,000 as part of the termination of TESCO’s contract. WML’s scope of work for phase two is included as Exhibit 2. No further work is anticipated for the completion of the SCADA Project.

FUNDING SOURCE:

Capital Improvement Program

FISCAL IMPACT:

Amendment No. 1 Fee	\$59,695
10% Contingency	\$5,970
Amendment No. 1 Total	\$65,665
Original Agreement Fee	\$217,870
Agreement Total NTE	\$283,535

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDED ACTION:

Committee to recommend the Board of Directors approve and authorize the General Manager to execute Amendment No. 1 to the SCADA Integration Services Agreement with W.M. Lyles Co. for a not-to-exceed amount of \$59,695 plus a 10% contingency of \$5,970 for a total not-to-exceed amount of \$65,665. [total Agreement not-to-exceed \$283,535] (Action Calendar)

EXHIBIT(S):

1. July 18, 2024 Staff Report for Approval of Agreement with W.M. Lyles Co.
2. Amendment No. 1 Scope of Work

CONTACTS (staff responsible): PALUDI/SERPAS

**TRABUCO CANYON WATER DISTRICT
REGULAR BOARD MEETING | JULY 18, 2024**

ACTION CALENDAR

ENGINEERING MATTERS

ITEM 10: APPROVAL OF PROFESSIONAL SERVICES AGREEMENT WITH W.M. LYLES CO. TO PERFORM SCADA INTEGRATION SERVICES FOR A TOTAL NOT-TO-EXCEED AMOUNT OF \$239,657

Trabuco Canyon Water District contracted with TESCO Controls to perform a District-wide upgrade of the Supervisory Control and Data Acquisition (SCADA) system. The project was phased over several agreements and fiscal years, totaling approximately \$3,450,000. The project was scheduled to be completed in Fiscal Year 2023-24 (FY 24) and \$400,000 was budgeted in the FY 24 CIP budget (to complete portions of two outstanding TESCO agreements). However, due to significant delays, faulty equipment and other serious contract performance issues, the District terminated the outstanding agreements with TESCO on April 1, 2024. Although staff is still negotiating a close out invoice with TESCO, it is estimated that roughly half of the \$400,000 budget for FY 24 will have been spent.

At the time of the termination of the TESCO agreements, the District issued a temporary contract to W.M. Lyles (Lyles) on an emergency basis to address critical communications failures and other urgent work that needed to be completed at the Trabuco Creek Wells Facility and other stations. Lyles was selected primarily because they hired several programmers and integrators from TESCO that had worked on the District SCADA project and thus have a sound working knowledge of District systems and facilities.

Because Lyles has performed well for the District over the past several months, a scope has been developed to specifically address the remaining elements of the SCADA upgrade project, namely hardware and software installation at Robinson Ranch pump station and the cut-over of 19 sites to Ignition software plus testing and training for District staff. Because of the urgent need for a complete, functioning SCADA system, staff is proposing to enter into a professional services agreement with Lyles on a sole-source basis for a fee \$217,870, not including a second phase that will include on-site deployment of Ignition. Because of widespread problems currently being encountered with the work already completed, Lyles cannot offer a reliable proposal and fee for final deployment until the first phase has been completed.

After the SCADA upgrade project is complete, it is staff's intention to issue a Request for Proposals for SCADA integration support services to assist in maintaining the system.

FUNDING SOURCE:

Capital Improvement Program

FISCAL IMPACT (PROJECT BUDGET):

Not-to-exceed fee of \$239,657.

While the District is still negotiating with TESCO on the close-out accounting for the terminated agreements, staff anticipates that approximately \$300,000 will be retained out of the \$400,000 that was budgeted in FYE 2024 for TESCO to complete the project.

ENVIRONMENTAL COMPLIANCE:

Not applicable

COMMITTEE STATUS:

This matter was reviewed with the Engineering/Operations Committee.

**TRABUCO CANYON WATER DISTRICT
REGULAR BOARD MEETING | JULY 18, 2024**

RECOMMENDED ACTION(S):

Authorize the General Manager to execute a professional services agreement with W. M. Lyles Company to perform SCADA Integration Services in the amount of \$217,870 plus a 10% contingency of \$21,787, for a total not-to-exceed amount of \$239,657.

EXHIBITS:

1. Exhibit 1: Draft Professional Services Agreement with W.M. Lyles Co.

CONTACTS (Staff Responsible): PALUDI/PEREA/SERPAS

**TRABUCO CANYON WATER DISTRICT
PROFESSIONAL SERVICES CONTRACT
AMENDED SCOPE OF WORK**

AMENDMENT No. 1

Date: December 20, 2024
Project Title: SCADA INTEGRATIONS SERVICES
Project No.: 56.1042
Consultant: WM Lyles, Co

Change in Scope of Services:

The following Scope of Work has been added to the professional services contract dated July 19, 2024 is proposed:

Consultant shall provide continued consulting services for the Ignition Redevelopment. Scope of work shall be coordinated with TCWD and be performed per Change Order Number 1 detailed in the attached letter dated 11/8/2024.

Attachment(s):

Ignition Redevelopment Change Order Number 1 dated 12/20/2024.

Payment Terms:

In accordance with the professional services contract dated 07/19/2024

Schedule Impact: None

Summary

Contract Amendment Amount	= \$59,695.00
Total of Previous Change Orders	= None
<u>Original Contract Amount</u>	<u>= \$217,870.00</u>
New Contract Amount	= \$277,565.00

CHANGE ORDER REQUESTED BY:

- Trabuco Canyon Water District
 Contractor
 Other: _____

Approved By: _____ Approved By: _____

Title: SCADA Administrator Title: General Manager

Bid Date: 11/8/2024
Project Number: 56.1042

Change Order Number: 01
Change Order Name: Ignition Redevelopment – Trabuco Canyon Water District

Re: SCADA Integration Services – Trabuco Canyon Water District

We are pleased to provide the following lump sum proposal for work on the above referenced project.

To approach SCADA integration of the district's sites into their new Ignition system, W. M. Lyles System Integration took a two-phase approach to first assess and validate the PLC Programs and SCADA application development provided so that we could understand the level of effort needed to cutover sites. The findings from our Phase 1 assessment were provided in a report and this lump sum proposal captures the effort needed for Phase 2 to complete cutover and integration of sites into the Ignition system. For level of effort we included PLC modifications as required to ensure accurate display at SCADA and some Ignition Application redevelopment. For deployment time estimates we assumed 1 Day provisioned for small-and medium sites, 1.5 days for medium-large sites, and 4 days for large sites (Dimension WFP / Groundwater Treatment Facility).

Associated Professional Services	
Lot	<ul style="list-style-type: none"> • Project Management • PLC Programming (Modicon) <ul style="list-style-type: none"> ○ Point to Point Testing from PLC to Ignition ○ Minor PLC Modifications as Required to Ensure Accurate Display at SCADA • SCADA Programming (Ignition) <ul style="list-style-type: none"> ○ Ignition Application Redevelopment & Deployment
Project Total (Includes NO Associated Tax & Freight) = \$59,695.00	

Terms and Conditions

1. This Proposal is Valid for 30 days from the Date of this Quotation
2. This Proposal Excludes Payment and Performance Bonds
 - A. If Required: Add **0.5%** to the Price Above
3. This Proposal is Based on Mutually Agreeable Contract Terms and Conditions to be Negotiated and Executed Prior to any Work Being Performed
4. This Proposal is Based on a Standard 8-Hour Workday and 40-Hour Workweek – No On-Site Overtime, Weekend, or Holiday Work has Been Included or Allowed
 - A. Additional Mobilizations Requested Will be Invoiced on a Time & Material Basis
5. **Addenda Acknowledged: 0**
6. **Submittal Duration: Approximately XX-XX Weeks After Receipt of a Purchase Order**
7. **Delivery of Services: Approximately 12-16 Weeks After Receipt of Purchase Order**
 - A. Written Submittal Approval is Required for a Notice to Proceed with the Purchase of Products
 - B. Due to Current Manufacturer Lead Time Constraints Affecting the Industry, Anticipated Delivery Durations are Subject to Change and Updates Will be Provided to the Customer as Timeframe Constraints Occur
8. W. M. Lyles System Integration Division Proposal Includes FOB Job Site Full Freight
9. W. M. Lyles System Integration Division includes a 12-month Warranty from the Date of the Equipment Installation or 18-Months from the Date of Shipment (Unless an Extended Warranty is Specified and Defined in the Above Proposal)
 - A. Includes Coverage for Defects or Failures of Materials Provided
10. Schedule of Work is Subject to an Approved Agreeable Timeline Between the Owner, General Contractor, Electrical Contractor, and W. M. Lyles System Integration Division
11. Interest will be Applied on All Past Due Invoices
12. Final Retention to be Paid Within 10 Days After Project Completion
13. Terms are Net 30 Days on Approved Credit Accounts

Clarifications and Exclusions

1. This Proposal is Based on the Following Clarifications and Exclusions:

A. Equipment & Services by Others (Excluded)

1. N/A

B. Specific Design Clarifications

1. N/A

C. Typical Equipment & Services Exclusions (Unless Specifically Defined on the Above Scope)

1. Local Control Stations
2. Junction and Pull Boxes
3. Disconnect Switches
4. Security Equipment (Cameras, DVRs, Card Readers, Etc.)
5. Conduit, Field Wire and Tubing
6. Basic Trade Materials (Screws, Bolts, Brackets, Stanchions, Sunshields, Anchor Bolts, Etc.)
7. Fiber Optic Patch Panels, Fiber Optic Cable, Fiber Optic Cable Testing and Terminations
8. **3rd Party Testing, Harmonic Testing / Analysis, Protective Device Coordination Studies, Short Circuit Studies, and Arc-Flash Hazard Analysis / Training**
9. Electrical Interconnection Wiring Diagrams, ISA Loop Diagrams and Signal Loop Diagrams for Equipment Not Provided by W. M. Lyles System Integration Division or When Specifications Do Not Define the Require for these Specific Professional Services
10. Liquidated Damages when Manufacturer or Vendor Timeframe Constraints Occur Outside of the W. M. Lyles System Integration Division's Control
11. Video Taping of Professional Services (3rd Party Video Taping is Acceptable)
12. Approved Submittals are Considered to Meet the Needs of the Project Specifics Based on the Engineer of Records Review, Comments and Approval
 1. Requests for Modifications to the Equipment or Professional Services After Submittal Approval Will Require a Change Order Before Any Modifications Occur Regardless of Schedule Constraints
13. Equipment & Services Not Specifically Defined in the Above Scope of Work
14. Noise Mitigation Equipment and/or Noise Barriers
15. Ventilation Equipment and Team Watch Resources for Work Required in Confined Spaces
16. Removal, Replacement and/or Relocation of Existing Utilities

Thank you for the opportunity to submit this proposal and please reach out if any questions arise.

W. M. Lyles, Co.
System Integration Division



Tim Fassio
SI Estimating Manager
Tim.Fassio@WMLylesCo.com
Cell Phone: 530-499-0405

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 8, 2025**

ENGINEERING MATTERS

ITEM 4: QUARTERLY CAPITAL IMPROVEMENT PROGRAM UPDATE

This report summarizes the status of Trabuco Canyon Water District’s (District’s) twenty-three Capital Improvement Program (CIP) Update as summarized below. Project specific information will be presented to the Committee at the time of the meeting.

Status of the CIP Projects	
No.	Status
4	Completed
7	Design/Planning
3	Bids Received
5	Ongoing
4	In Construction

FUNDING SOURCE:

Capital Improvement Program

FISCAL IMPACT (PROJECT BUDGET):

\$5,981,444

ENVIRONMENTAL COMPLIANCE:

Not Applicable

RECOMMENDED ACTION:

Committee to receive system status updates. No action required.

EXHIBIT(S):

1. CIP FY24-25 Budget Update

CONTACTS (staff responsible): PALUDI/LAUSTEN

**TRABUCO CANYON WATER DISTRICT
CAPITAL IMPROVEMENT PLAN BUDGET
FY 2024/2025 UPDATE**

Item	Name	Status	Project Basis	FY24/25 Budget
WATER PROJECTS				
1	Live Oak Canyon Pipeline Replacement - Ridgeline to Harris Grade	Design/Planning	Reliability	\$375,000
2	Manual Transfer Switch Upgrade-Water	In Construction	Reliability	\$60,000
3	Pump Replacement	Ongoing	End of Service Life	\$99,675
4	PRV Maintenance	Ongoing	General Maintenance	\$26,580
5	Valve Replacement	Ongoing	General Maintenance	\$39,870
6	Saddlecrest Reservoir Outlet Pipe (NEW)	Design/Planning	Reliability	\$300,000
Sub-Total				\$901,125
SEWER PROJECTS				
7	Golf Club SLS Improvement	Complete	End of Service Life	\$1,412,000
8	WWTP Blower Bldg Rehab-Blowers and MCC	Design/Planning	Reliability	\$1,010,040
9	Chiquita Capital Reim. (SMWD)	Ongoing	Contract Agreement	\$236,562
10	Heritage SLS Pump Replacement	Complete	End of Service Life	\$265,800
11	Manual Transfer Switch Upgrade-Sewer	In Construction	Reliability	\$60,000
12	WWTP SCADA/Fiber Optic Upgrade	In Construction	End of Service Life	\$330,000
13	Heritage SLS Rehabilitation (Site, Electrical & Mechanical)	Design/Planning	End of Service Life	\$132,900
14	WWTP Reservoir Outlet Gate Improvements	Complete	End of Service Life	\$199,500
15	WWTP Handrail Replacement - Segment B&C (NEW) (1)	Design/Planning	Safety	\$107,827
16	Pump Replacement (NEW)	Ongoing	End of Service Life	\$66,450
17	WWTP Headworks Rehabilitation	Bids Received	End of Service Life	\$130,000
Sub-Total				\$3,951,079
NON-DOMESTIC WATER PROJECTS				
18	Dove/Robinson Ranch Recycled BPS Improvements	Bids Received	End of Service Life	\$132,900
19	Dove Lake Dam Improvements (MOVED UP)	Design/Planning	End of Service Life	\$265,800
20	Recycled PRV Improvements (2)	Complete	End of Service Life	\$265,800
21	Dove & Tick Creek Pump Station Improvements (3)	Design/Planning	Reliability	\$79,740
Sub-Total				\$744,240
Shared Projects				
22	SCADA System Upgrades	In Construction	Reliability/End of Service Life	\$270,000
23	New Server Upgrades	Bids Received	End of Service Life	\$115,000
Sub-Total				\$385,000
Total				\$5,981,444

(1) Staff will complete project in house

(2) Dove & Tick Creek PS Improvements have been awarded an IRWM grant for \$389,500 and a USBR grant for \$577,584=\$967,084. The budget does not reflect these funds.

(3) Dove Golf Course Vault Rehab. is completed; Dove HOA Vault Rehab. is in planning.

RED indicates projects completed since Sept 2024 Update

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 8, 2025**

ENGINEERING MATTERS

ITEM 5: OTHER ENGINEERING AND OPERATIONS PROJECT UPDATES

1. Golf Club SLS Improvement Project
2. Heritage SLS Improvement Project
3. Trabuco Bridge Replacement Project
4. Other Projects

RECOMMENDED ACTION:

Committee to receive project status updates at the time of the Committee Meeting.

EXHIBIT(S):

1. Golf Club SLS Improvement Project Construction Report
2. Heritage SLS Improvement Project Construction Report

CONTACTS (staff responsible): PALUDI/PEREA/LAUSTEN

**Golf Club Sewer Lift Station
Improvement Project
TCWD Project No. 2122-010**

Construction Report
December 2024



I. GENERAL PROJECT INFORMATION

Contract Golf Club Sewer Lift Station Improvement Project

Contractor Pacific Hydrotech Corporation (PHC)

Contract Time

Original Calendar Days: 200 Calendar Days
from Notice to Proceed

Notice to Proceed: January 29, 2024

Original Contract Completion Date: August 16, 2024

*Revised Completion Date due to Long
Lead Material Deliveries* December 13, 2024

Weather-Related Delay Days: 5 Days

Contract Price

Original Contract Amount: \$1,889,300.00

Approved Allowance Amount: \$36,188.42

Revised Contract Amount: \$1,889,300.00

II. CONSTRUCTION MANAGER SUMMARY

This report provides a summary of activities from November 25th through December 13th, 2024, for the Golf Club Sewer Lift Station Project.

The Golf Club Lift Station continues to be operated by TCWD Operations, and Techno Coatings completed painting the mechanical piping within the Lift Station and Flow Meter Vault. Pacific Hydrotech Corporation (PHC) continued with civil improvements around the Lift Station particularly placing wood forms and reinforcement bars for the concrete slab area for the Bypass Wet Well, and wood forms for curb-and-gutter and ribbon gutter sections that were removed and demolished during improvements. These efforts were eventually poured and finished with concrete. Improvements to the Flow Meter Vault were being performed and completed, and the Fence Enclosure and Rolling Gate features were delivered and installed. Base Pave for pavement areas disturbed and removed during the excavation and installation of the Bypass Wet Well, Diversion Manhole, and Flow Meter Vault was placed.

PHC completed the concrete improvements – Bypass Wet Well area, curb-and-gutter, and ribbon gutter – within the project site. Also, any discrepancies to concrete surfaces within the project area were filled in and finished (i.e. “sacked-and-patched”).

PHC completed the improvements to the Flow Meter Vault, particularly the Flow Meter Vault Wall Repair by forming and filling in concrete at the pipe penetrations (or “knock-outs” for the pre-cast vault) for 8-inch force main. Installation of the vent pipes for the Vault were extended and brought up at a nearby planter area. Backfill of the Flow Meter Vault was achieved predominantly with a 2-sack slurry material. This is because significant sloughing of loose soils were observed during excavation and removal of shoring devices, and the 2-sack slurry provided a suitable and stable material for backfill.

Hemet Fence Company delivered and completed the installation of the Fence Enclosure and Rolling Gate. Although, a Man Gate along a portion of the Fence Enclosure will be fabricated and installed and will be ready by mid-January 2025. This Man Gate was at the request of TCWD Operations for use and additional access.

PHC continued with clean-up towards demobilization of the project site. Eventually, Base Paving was performed and completed for areas of pavement that was disturbed and removed during the excavation of the Bypass Wet Well, Diversion Manhole, and Flow Meter Vault & Vent Piping. Base Paving was placed less than two inches for full asphalt section under an agreement with Dove Canyon Golf Club. Dove Canyon Club will be continuing with asphalt surface restoration of the parking lot areas, and will improve and install the 2-inch, final cap of asphalt, at a later date.

Under a separate Contract for the commissioning of the Flow Meter by TCWD’s Integrator, WM Lyles, it was observed that recorded flow was not consistent and determined that one of the sensors was faulty. The sensor will require removal and replacement, the new replacement will be delivered to TCWD in mid-January, and replacement will occur upon receipt of the new sensor. These sensor replacement efforts are being performed under a Warranty issue with the manufacturer, Rosemount.

Completion and demobilization from the project site occurred on December 13, 2024.

III. CONSTRUCTION ACTIVITIES FOR THIS REPORTING PERIOD

The following work activities were performed during this reporting period:

- Techno Coatings completed painting the new mechanical piping in the Dry Pit and Flow Meter Vault.
- PHC continued and completed the civil improvements – concrete paving, curb-and gutter, and ribbon gutter.
- PHC completed the Flow Meter Vault installation – vent piping and backfill.
- Hemet Fence Company delivered and completed installation of Fence Enclosure and Rolling Gate; however, a Man Gate is being fabricated for installation and will be available in mid-January 2025.
- Under separate Contract, Flow Meter commissioning performed by WM Lyles; however, discrepancy was found in the Flow Meter Sensor and is due for replacement in mid-January 2025 under Warranty conditions.
- Regan Paving completed the asphalt Base Paving for disturbed and removed areas of asphalt pavement within the project site.
- PHC demobilized from the project site on December 13, 2024.

IV. ANTICIPATED CONSTRUCTION ACTIVITIES – NEXT REPORTING PERIOD

The work activities anticipated in the next reporting period:

- Hemet Fence Company to deliver and install Man Gate.
- Hydrotech Electric and W.M Lyles to replace and install Flow Meter Sensor.
- Collect Close-Out Documents – As-Built/Record Drawings; O&M Manuals; and Warranty Certificates.

V. CONTRACTOR SUBMITTALS

Through the end of the reporting period, the following submittals have been received:

	Lift Station
Prior Submittals	75
Submittals Received This Period	1
TOTAL SUBMITTALS	76

VI. CONTRACTOR REQUEST FOR INFORMATION (RFIs)

Through the end of the reporting period, the following RFIs have been received:

	Lift Station
Prior RFIs	11
RFIs Received This Period	0
TOTAL RFIs	11

VII. CHANGE ORDERS

Though no Change Order Requests were submitted by PHC, there were Owner-initiated changes made, and costs were used against the \$75,000.00 Allowance Item. These Owner-initiated changes totaled to \$36,188.42 and consisted of the following:

- Additional Concrete Areas – extend concrete improvements in driveway, apron area up to the new Roller Gate; and area around the new Bypass Wet Well, at a cost of \$12,391.14.
- Remove and Replace Pump Motors – Owner-furnished pump motors to be removed and replaced in the existing Dry Well. Pump No. 2 pedestal required leveling and adjustment, perform concrete finish on both pedestals, and remove and restore electrical power, by electrical subcontractor, Hydrotech Electric, to both pump motors, at a cost of \$5,039.63.
- Flow Meter Mechanical Piping Re-Design – revised mechanical piping to include a Victaulic coupling, an additional spool, and joint restraints. This re-design will allow for ease of maintenance – removal and replacement – of the Flow Meter, at a cost of \$5,604.96.
- Flow Meter Vault, Slurry Backfill – due to excavation of the area and depth for the Vault it was observed that significant sloughing of the excavation walls, particularly on the west side and around the existing sewer manhole. The Slurry Backfill consisted of 1-sack slurry to stabilize and avoid any collapsing of soils supporting the Vault and existing sewer manhole, at a cost of \$7,432.60.
- Fence Enclosure, Man Gate – for another means of access through the Fence Enclosure and Rolling Gate, TCWD Operations requested a Man Gate to be fabricated and installed, and Hemet Fence Company will provide this, at cost of \$5,720.36.

VIII. SCHEDULE

The Notice to Proceed (NTP) is based on January 29, 2024, with an immediate need to start and install the Surge Tank directed by TCWD. The Contract Duration is 200 Calendar Days, and this results in a Contract Completion on August 16, 2024.

It was discussed at the Pre-Construction Meeting that because of the immediate need to start the Surge Tank, the sum of the materials being procured and delivered for the Temporary Bypass System and stainless steel, Air Release Valves, will arrive at a later date, and it is anticipated that the Contract Completion will be extended.

As such, an updated Progress Schedule prepared by PHC reflects a Contract Completion of December 13, 2024. This will result in an anticipated non-compensable, time extension under a separate Change Order to be issued to Pacific Hydrotech Corporation.

IX. PHOTOS

Construction photos documenting PHC's activities and progress during this reporting period are provided in Appendix A.

APPENDIX A

Construction Photos



Form Curb & Gutter



Hemet Fence Company Delivered and Set Posts for Fence Enclosure & Rolling Gate



Flow Meter Vault – Wall Repair at Pipe Penetration (“knock-outs”)



Form Curb & Gutter



Concrete Pour for Curb & Gutters



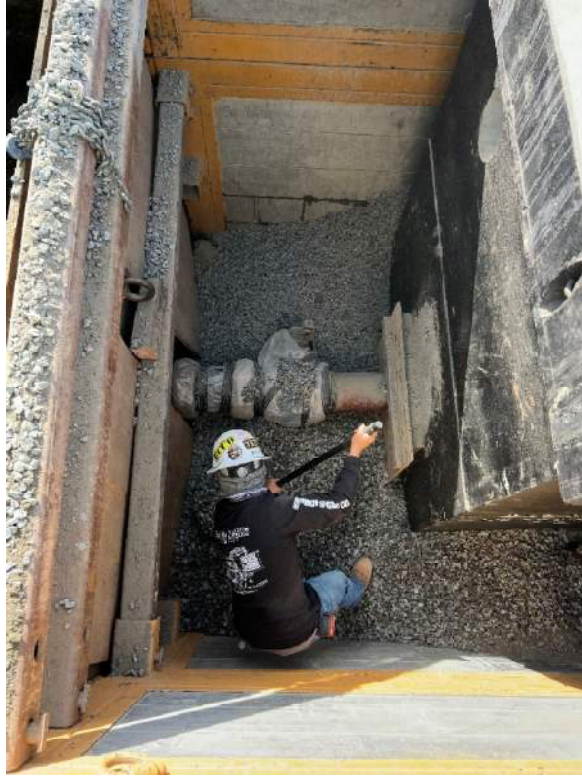
Bypass Wet Well – Concrete Pour for Slab Area



Bypass Wet Well – Concrete Pour for Slab Area



Flow Meter Vault – Backfill & Compact, Place Gravel Layer



Flow Meter Vault – Backfill & Compact, Place Gravel Layer



Flow Meter Vault – Shoring Box Removal



Formed & Concrete Pour Ribbon Gutters



Bypass Wet Well – Concrete Pour for Balance of Slab Area



Flow Meter Vault – Slurry Backfill due to Loose Soils



Flow Meter Vault - Slurry Backfill due to Loose Soils



Flow Meter Vault – Slurry Backfill due to Loose Soils



Flow Meter Vault – Slurry Backfill due to Loose Soils; Raise Vent Piping and Valve Can



Flow Meter Vault – Excavating to Extend Vent Piping



Flow Meter Vault – Install Vent Piping



Flow Meter Vault – Install Vent Piping



Flow Meter Vault – Complete Install of Vent Piping



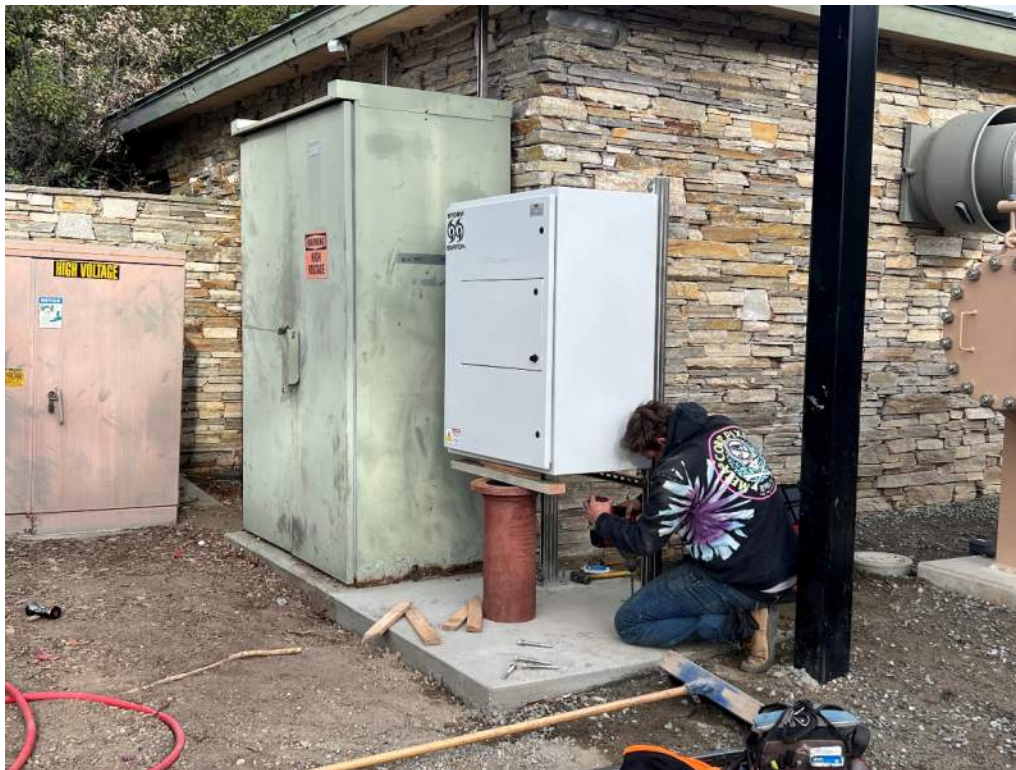
Flow Meter Vault – Finish Vent Piping



Flow Meter Vault – Complete Vent Piping



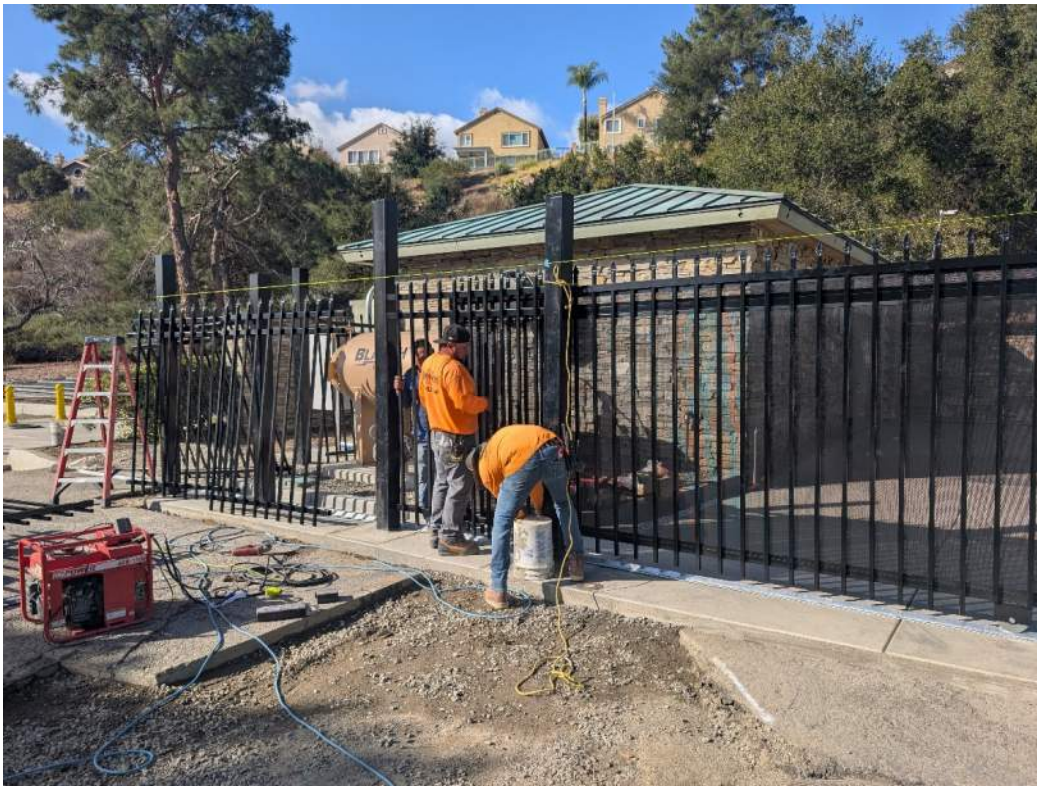
Flow Meter – Testing & Commissioning, by others



Manual Transfer Switch – Install, by others



Lift Station – Fence Enclosure & Rolling Gate Installation



Lift Station – Fence Enclosure & Rolling Gate Installation



Base Paving Efforts



Base Paving Efforts



Base Paving Field Compaction Testing



Base Paving Completed; Final Cap, by others (Dove Canyon Golf Club)



Base Paving Completed; Final Cap, by others (Dove Canyon Golf Club)



Base Paving Completed; Final Cap, by others (Dove Canyon Golf Club)

Heritage Sewer Lift Station Dry Pit Improvements Project TCWD Project No. 2224-104

Construction Report
December 2024



I. GENERAL PROJECT INFORMATION

<i>Contract</i>	Heritage Sewer Lift Station Dry Pit Improvements Project
<i>Contractor</i>	Ferreira Construction (FERREIRA)
<i>Contract Time</i>	
Original Calendar Days:	45 Calendar Days from Notice to Proceed
Notice to Proceed:	October 16, 2024
Original Contract Completion Date:	November 30, 2024
Weather-Related Delay Days:	0
<i>Contract Price</i>	
Original Contract Amount:	\$173,201.00
Approved Change Order Amount:	\$0.00
Revised Contract Amount:	\$173,201.00

II. CONSTRUCTION MANAGER SUMMARY

This report provides a summary of activities from November 25th through December 18th, 2024, for the Heritage Sewer Lift Station Dry Pit Improvements Project.

Upon re-issuance of a formal Shop Drawing from Cornell Pump due to orientation of the Suction Discharge of Pump No. 1, Ferreira Construction (FERREIRA) returned to the project site to install the Anchor Bolts to secure Pump No. 1 to the new pedestal.

After Pump No. 1 was secured to the new pedestal, TCWD Operations delivered and installed the Pump Motor. Concurrently, FERREIRA's electricians terminated the connections from the Motor Control Center (MCC) Panel. While performing a "bump test" to check rotation of Pump Motor, it was determined that there was a faulty circuit breaker within the MCC Panel.

FERREIRA installed the new Pipe Stand to support the Reducing Bend of Pump No. 1. FERREIRA set-up scaffolding and painting materials to prepare the mechanical, Discharge Manifold, piping to be painted. The set-up included protecting surfaces not to be painted and to start the prime coat onto the piping.

The replacement circuit breaker was replaced by TCWD Operations' electrical subcontractor, Hydrotech Electric, and TCWD Operations proceeded to perform the "bump test." Soon after the Pump No. 1 was initiated and operated by TCWD Operations.

FERREIRA completed the painting of the Discharge Manifold piping and started to demobilized from the project site.

On December 18th, 2024, Pump No. 1 was being operated and the project is considered completed.

III. CONSTRUCTION ACTIVITIES FOR THIS REPORTING PERIOD

The following work activities were performed during this reporting period:

- FERREIRA installed the Anchor Bolts securing Pump No. 1 to the new pedestal.
- TCWD Operations delivered and installed the Pump Motor, and FERREIRA terminated the electrical connections.
- FERREIRA installed the new Pipe Stand.
- It was determined that a faulty circuit breaker prevented an earlier start-up of Pump No. 1, and eventually, the circuit breaker was replaced by TCWD Operations' electrical subcontractor, Hydrotech Electric.
- FERREIRA started set-up of scaffolding and surface preparation to paint the mechanical, Discharge Manifold Piping.
- On December 18th, 2024, Pump No. 1 was turned on and operated by TCWD Operations; and painting of the Discharge Manifold Piping was completed and FERREIRA demobilized from the project site.

IV. ANTICIPATED CONSTRUCTION ACTIVITIES – NEXT REPORTING PERIOD

The work activities anticipated in the next reporting period:

- FERREIRA to deliver Air-Vac Assembly to TCWD.
- Collect Close-Out Documents – O&M Manuals and Warranty Certificates
- Process FERREIRA Pay Application and file Notice of Completion.

V. CONTRACTOR SUBMITTALS

Through the end of the reporting period, the following submittals have been received:

	Lift Station
Prior Submittals	19
Submittals Received This Period	0
TOTAL SUBMITTALS	19

VI. CONTRACTOR REQUEST FOR INFORMATION (RFIs)

Through the end of the reporting period, the following RFIs have been received:

	Lift Station
Prior RFIs	3
RFIs Received This Period	0
TOTAL RFIs	3

VII. CHANGE ORDERS

No Change Order Requests were submitted by FERREIRA.

VIII. SCHEDULE

The last Look Ahead Schedule indicates a completion of November 8, 2024.

IX. PHOTOS

Construction photos documenting FERREIRA's activities and progress during this reporting period are provided in Appendix A.

APPENDIX A

Construction Photos



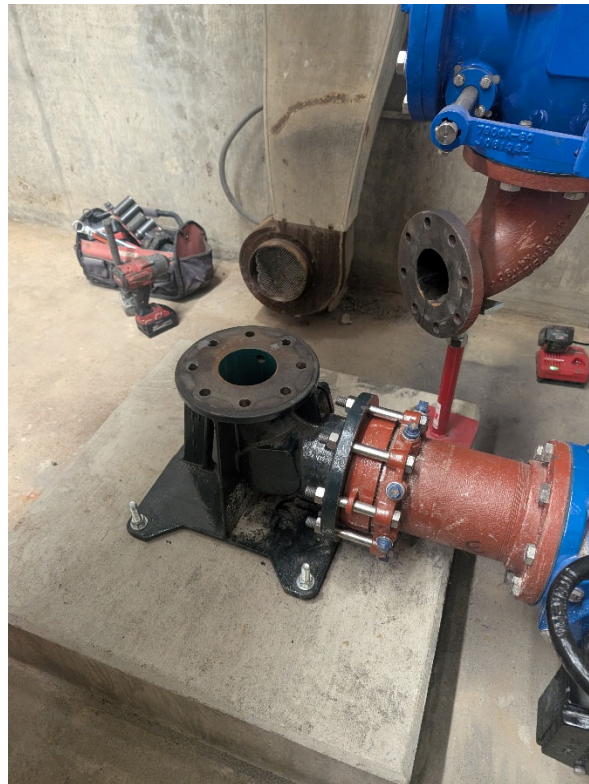
HILT Anchor Bolts



Install Anchor Bolts



Anchor Bolts Installed



Anchor Bolts Installed



TCWD Operations delivered and installed Pump Motor



TCWD Operations Performed “Bump Test,” but Circuit Breaker was observed



Pipe Stand Installed



Discharge Manifold Piping Painting Set-Up and Surface Preparation



Discharge Manifold Piping Painting Set-Up and Surface Preparation



Painting Discharge Manifold Piping



Painting Discharge Manifold Piping



Painting Discharge Manifold Piping



Painting Discharge Manifold Piping



TCWD Operations started Pump No. 1

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 8, 2025**

OPERATIONAL MATTERS

ITEM 6: WATER SYSTEM UPDATES

The following is a brief report of the water system through **December 2024**.

Projects and Repairs

Water Operations staff performed and/or completed the following tasks and projects:

1. Replaced all Influent and Effluent valves on 18 filters at the Groundwater Treatment Facility (GWTF).
2. Assisted Maintenance Department with the transfer of power supply at the El Toro Field Office during the PSPS event.
3. Worked with Orange County Public Works (OCPW) on the Trabuco Creek berm modification.
4. Assisted with the PLC upgrade at the Robinson Ranch PS.
5. Replaced all 4 air vacs at the El Toro PS.

Monthly Water System Operations Summary

The Monthly Water System Operations Summary is attached for the Committee's review. Any anomalies will be presented at the time of the Engineering/Operational Committee Meeting.

RECOMMENDED ACTION:

Committee to receive system status updates. No action required.

EXHIBITS

1. Monthly Water System Operations Summary

CONTACTS (staff responsible): PEREA/KESSLER

TRABUCO CANYON WATER DISTRICT
MONTHLY WATER SYSTEM OPERATIONS SUMMARY - 2024

SYSTEM PRODUCTION/SUPPLIES	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	TOTAL
Number of Days	31	28	31	30	31	30	31	31	30	31	30	31	365
Dimension WTP	8%	17%	25%	33%	42%	50%	58%	67%	75%	83%	92%	100%	
SAC Pipeline Meter	0.0	61.3	52.5	0.0	0.0	0.0	0.0	51.7	0.0	0.0	0.0		165.5
Backwash, AF	0.0	2.2	1.6	0.0	0.0	0.0	1.2	2.4	0.0	0.0	0.1		7.6
Flushwater, AF	0.0	3.7	1.8	0.0	0.0	0.0	1.9	1.8	0.0	0.0	0.1		9.3
DWTP Effluent (1)	0.0	65.0	49.3	0.0	0.0	0.0	26.9	52.0	0.0	0.0	0.0		193.2
Groundwater, AF													
Trabuco Creek GWTF	0.0	0.0	32.6	98.1	115.2	111.7	91.2	0.0	0.0	0.0	0.0		448.8
U.S. Well AF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Groundwater (2)	0.0	0.0	32.6	98.1	115.2	111.7	91.2	0.0	0.0	0.0	0.0		448.8
Water Purchases, AF													
SMWD Treated Interconnection	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	1.0	1.3	4.1		17.4
IRWD Treated Interconnections	96.1	17.0	9.6	0.0	34.2	71.2	92.3	159.0	207.1	178.7	125.9		991.1
IRWD Irvine Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Total Purchases (3)	96.1	17.0	9.6	0.0	34.2	71.2	92.3	170.0	208.1	180.0	130.0		1,008.5
Total Supply													
Total Supply AF (1,2,3)	96.1	82.0	91.5	98.1	149.4	182.9	210.4	222.0	208.1	180.0	130.0		1,650.5
% Year - Peak Prod. - 2,449 AF (2018)	4%	7%	11%	15%	21%	29%	37%	46%	55%	62%	67%		67%
AF/Day	3.1	2.8	3.0	3.3	4.8	6.1	6.8	7.2	6.9	5.8	4.3		5.0
CFS/Day, Avg.	1.5	1.4	1.5	1.6	2.4	3.0	3.4	3.6	3.5	2.9	2.2		2.5
Reservoir Storage													
Monthly Average, MG	9.1	9.1	9.0	9.0	9.1	9.0	9.0	9.1	9.1	9.1	9.0		9.1
Monthly Average, AF	27.9	27.9	27.0	27.0	27.9	27.0	27.0	27.9	27.9	27.9	27.0		27.5
Days of Storage	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0
SYSTEM DEMANDS													
District Operations, AF (1)													
Dimension WTP	0.00	0.00	0.12	0.00	0.00	0.00	1.90	1.91	0.00	0.01	0.01		3.95
Robinson Ranch WWTP	0.004	0.004	0.004	0.004	0.004	0.004	0.020	0.020	0.020	0.020	0.020		0.124
Supplemental Domestic to RW Res.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.00
Subtotal	0.004	0.004	0.124	0.004	0.004	0.004	1.920	1.930	0.020	0.030	0.030		4.07
System Losses, AF (2)													
Flushing	0.00	3.00	3.00	2.80	3.00	3.00	1.50	1.50	3.50	3.0	3.0		27.30
Sewer Cleaning	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02		0.22
Line Breaks	0.00	0.00	0.23	0.00	0.27	0.02	0.01	1.00	1.50	0.0	2.0		5.03
Subtotal	0.02	3.02	3.25	2.82	3.29	3.04	1.53	2.52	5.02	3.02	5.02		32.55
Zone Demands, AF (3)													
Topanga Canyon	Inop.	Inop.	Inop.	Inop.	Inop.	Inop.	Inop.	0.4	3.1	1.2	2.9		7.62
Falcon Estates	0.13	0.1	0.1	0.0	0.1	0.8	0.9	0.6	0.9	0.9	0.7		5.23
Rose PRV/The Oaks	1.5	2.5	1.4	1.04	1.9	3.4	3.0	5.0	2.1	1.5	0.9		24.25
Canyon Creek	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.3	0.2		2.70
Rose Pump Station	0.5	1.5	0.4	0.8	0.7	0.3	0.2	0.8	1.6	0.8	0.4		8.04
Robinson Ranch	21.1	12.4	6.1	19.2	39.2	41.9	56.9	60.6	55.6	51.7	38.0		402.66
Dove Canyon	45.2	37.5	36.1	43.3	63.5	77.7	84.7	91.2	86.4	76.2	60.1		701.95
Subtotal	68.6	54.1	44.3	64.6	105.6	124.4	146.0	159.4	150.1	132.7	103.2		1,152.85
Total System Demand (1,2,3)	68.6	57.1	47.7	67.4	108.9	127.4	149.5	163.8	155.1	135.7	108.3		1,189.47

TRABUCO CANYON WATER DISTRICT
MONTHLY WATER SYSTEM OPERATIONS SUMMARY - 2024

System Demands**													
AF/Day	3.1	2.8	3.0	3.3	4.8	6.1	6.8	7.2	6.9	5.8	4.3		4.9
Daily Average, CFS	1.5	1.4	1.5	1.6	2.4	3.0	3.4	3.6	3.5	2.9	2.2		2.4
Other Water Deliveries/Purchases													
Ridgeline (DWTP Delivery)	0.0	51.5	43.4	0.0	0.0	0.0	26.9	48.0	0.0	0.0	0.0		169.8
El Toro (Interconnection Purchase)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Baker WTP (CSC Delivery)	89.1	89.7	106.2	106.3	115.6	119.4	104.9	90.6	85.8	89.7	101.5		1,098.8
Portola Hills (Wholesale Purchase)	8.5	7.5	7.0	7.2	7.5	11.0	11.0	13.0	14.4	11.5	12.2		110.8
Skyridge (Wholesale Purchase)	1.7	1.5	1.5	1.5	1.6	2.0	1.9	2.3	2.6	2.1	2.4		21.1

* Usage estimated

** Excludes Operational use, losses, and supplement to Recycled Water Reservoir (RW)

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 8, 2025**

OPERATIONAL MATTERS

ITEM 7: WASTEWATER SYSTEM UPDATES

The following is a brief report of the wastewater system through **December 2024**.

Projects and Repairs

Wastewater Operations staff performed and/or completed the following tasks and projects:

1. Assisted in shutdown and install of new 10” and 6” Cla-Vals for Dove Canyon Golf Course.
2. Assisted in the installation and startup of the sewer pump at Heritage Lift Station.
3. Quarterly cleaning of gravity sewer hot spots throughout the District.
4. Repaired 6” recycled line at the WWTP.

Sewer System Management Plan (SSMP) Report

The purpose of the program is to communicate on a regular basis with the public on the development, implementation, and performance of TCWD’s SSMP. Status updates on the work and type of work performed on the sewer system will be provided, including sewer line and manhole cleaning, system repairs, lift station cleaning, and updates from satellite facilities:

Sewer System Management Plan (SSMP) Monthly Update	
Total Sewer Line, Feet*	212,045
Total Sewer Line Cleaned (Ft) – Month	12,228
Total Sewer Line Cleaned (Ft) – Cleaning Cycle	212,045
Cleaning Cycle Period (Mos.) [Start date: 1/1/24]	12
Total Sewer Line Cleaned, %	100%
The Oaks at Trabuco – Pumping Frequency for the Month	12
O’Neill Park Sewer System Status	Ok
O’Neill Park Sewer System Repairs	None
SSMP Quarterly Report – <i>Next Quarterly Report</i>	4Q 2024
SSMP Program Audit – <i>Next Audit Report**</i>	February 2025

**This amount includes the OC Parks-owned O’Neill Park sewer system the District is contracted to clean.*

***Periodic internal audits shall be conducted, at a minimum every two years, with reports kept on file. The audit shall focus on evaluating the effectiveness of the SSMP and TCWD’s compliance with the mandatory elements of TCWD’s SSMP:*

Monthly Recycled Water System Operations Summary

The Monthly Recycled Water System Operations Summary is attached for the Committee’s review. Any anomalies will be presented at the time of the Engineering/Operational Committee Meeting.

RECOMMENDED ACTION:

Committee to receive system status updates. No action required.

EXHIBITS

1. Monthly Recycled Water System Operations Summary

CONTACTS (staff responsible): PEREA/ULLOA

TRABUCO CANYON WATER DISTRICT | RECYCLED WATER SYSTEM SUMMARY - 2024

RECYCLED WATER SUPPLY															
	MAX	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	FIVE YEAR AVG
WWTP Reclaimed Water Production, AF	78.3	39.4	40.0	42.4	42.1	41.7	39.1	39.1	40.3	36.6	35.6	37.4		433.8	517.2
Reclaimed Reservoir Level, FT	1274.5	1,272.8	1,273.0	1,273.5	1,273.5	1,271.0	1,266.0	1,250.5	1,247.0	1,257.2	1,252.0	1,262.0		-	-
Reclaimed Reservoir Free Board, FT	25.5	1.7	1.5	1.0	1.0	3.5	8.5	24.0	27.5	17.3	22.5	12.5		-	-
Reclaimed Reservoir Storage, AF	145.5	134.3	135.7	137.5	137.5	126.8	96.4	37.1	28.6	58.8	41.1	77.7		-	-
Supplemental Domestic Water Added, AF	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	5.2

RECYCLED WATER SYSTEM DEMAND															
NON DOMESTIC WATER USER	ALLOC. AF	8% JAN	17% FEB	25% MAR	33% APR	42% MAY	50% JUN	58% JUL	67% AUG	75% SEP	83% OCT	92% NOV	100% DEC	TOTAL	ALLOC. %
Dahlia Court	8.2	0.00	0.1	0.1	0.2	0.2	0.2	0.4	0.5	1.0	0.4	0.2		3.21	39.1%
Dove Canyon Golf Course	106.7	0.54	1.1	0.4	8.5	29.7	38.8	49.3	60.4	97.1	30.1	12.9		328.91	308.3%
Dove Canyon Master Association	279.3	0.90	1.2	3.0	4.6	23.2	24.5	28.9	30.8	52.5	20.7	10.7		200.97	72.0%
Robinson Ranch	80.2	0.78	1.1	0.3	0.4	2.2	3.0	4.1	5.4	8.6	3.9	2.0		31.70	39.5%
Trabuco Highlands	159.7	1.97	2.0	0.2	1.7	6.8	5.9	7.7	10.2	16.9	8.6	3.8		65.84	41.2%
City of RSM	0.1	0.03	0.00	0.00	0.01	0.04	0.03	0.06	0.03	0.07	0.00	0.00		0.26	200.8%
Construction Water	N/A	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.00	N/A
Sakaida Nursery	1.1	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.00	0.0%
SMWD	N/A	-	-	-	0.0	2.4	5.1	7.7	6.1	6.1	0.0	0.0		27.32	N/A
TY Nursery	17.9	0.00	0.00	0.0	0.0	0.0	0.0	11.5	7.2	7.2	0.0	0.0		25.99	145.3%
TOTAL, AF	653.2	4.2	5.5	4.0	15.4	64.5	77.5	109.6	120.6	189.4	63.7	29.6		684.21	104.7%
PERCENTAGE OF NDW ALLOCATION/YEAR		0.6%	1.5%	2.1%	4.5%	14.3%	26.2%	43.0%	61.5%	90.5%	100.2%	104.7%			
TOTAL ANNUAL AVG. NDW AVAILABLE**	774.36														

URBAN RUNOFF CAPTURE AND REUSE															
DISTRICT FACILITY		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	FIVE YEAR AVG
Shadow Rock Detention Basin Production		0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.00		0.16	14.2
Dove Tick Creek Production*	Dry Season	4.9	0.0	0.0	0.0	0.0	0.0	0.0	4.9	4.9	6.9	4.6		26.2	43.5
	TCWD Portion	4.9	0.0	0.0	0.0	0.0	0.0	0.0	2.4	2.4	3.5	4.6		17.8	-
	SMWD Portion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	2.4	3.5	0.0		8.3	-
Dove Lake Water Pumped		0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.1	60.9	1.7	31.7		160.4	183.0
Dove Lake Free Board, Ft		0.0	0.0	0.0	0.0	0.0	0.0	0.5	3.0	7.8	9.7	11.7		-	-
Dove Lake Storage, AF		331.0	331.0	331.0	331.0	331.0	331.0	328.2	308.9	186.2	136.0	115.2		-	-
Total Rainfall, In.		4.7	11.0	4.5	1.6	0.4	0.0	0.0	0.0	0.0	0.0	0.1		22.4	14.7

* SMWD share of Dove/Tick Pump Station Dry Season Water is 50% of production.

** Based on 5-Year Average Reclaimed Water Reservoir Base Supply & Recycled Water Production

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 8, 2025**

OPERATIONAL MATTERS

ITEM 8: MAINTENANCE DEPARTMENT UPDATES

The following is a brief report of work completed by Maintenance staff through **December 2024**

Projects and Repairs

Maintenance staff performed and/or completed the following tasks and projects:

Water Operations

1. Attended meetup with Water Operations and OCPW on debris flow, berm repair and creek preparations.
2. PSPS required the mobile generator at field office.

Wastewater Operations

1. Assisted WW ops with small reclaim leak at WWTP.

District Fleet Upgrades & Other Projects

1. Completed BIT Inspections
2. SMOG'd four service trucks
3. Attended RSM Town Hall meeting on the debris flow concerns. OCSD, OCFA and OCPW presented info that TCWD is already aware of.
4. Received Greenstone delivery of sand and road base.
5. HAZMAT/CERS report was submitted and accepted by OC Environmental Health.
6. Mobile generator having issues that Maintenance Dept. is dealing with and utilizing Duthie Power Services.

RECOMMENDED ACTION:

Committee to receive system status updates. No action required.

EXHIBITS

None

CONTACTS (staff responsible): PEREA/STROUD

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 8, 2025**

REGULATORY AND OTHER MATTERS

ITEM 9: OTHER MATTERS/REPORTS

Other Matters/Reports from the General Manager and/or District staff may be provided at the time of the Engineering/Operational Committee Meeting.

RECOMMENDED ACTION:

Hear Other Matters/Reports that may have arisen after the posting of the agenda.

EXHIBITS

None

CONTACTS (staff responsible): PALUDI/PEREA

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 8, 2025**

REGULATORY AND OTHER MATTERS

ITEM 10: CLOSED SESSION: CONFERENCE WITH LEGAL COUNSEL – ANTICIPATED LITIGATION

RECOMMENDED ACTION:

Committee to receive status updates from General Legal Counsel, the General Manager, and other staff in Closed Session.

CONTACTS (staff responsible): PALUDI/COLLINS

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 8, 2025**

REGULATORY AND OTHER MATTERS

ITEM 11: REPORT OF ACTION(S) TAKEN IN CLOSED SESSION

RECOMMENDED ACTION:

Provide announcement of action(s) taken in Closed Session, if any.

CONTACTS (staff responsible): PALUDI/COLLINS