

WATER MASTER PLAN UPDATE EXECUTIVE SUMMARY

Introduction and Overview

Yorba Linda Water District (District) is an independent special district providing water and sewer services to residents and businesses. It was established in 1909 as the Yorba Linda Water Company. In 1959, it became the Yorba Linda County Water District through a resident vote. The service area initially covered 4,710 acres and served 1,412 connections. Over time, the District expanded due to annexations and transitioned into a suburban community. In November 1985, the Board of Directors, seeking a more accurate identification as an independent special district, dropped the "County" designation, thus officially changing the District's name to Yorba Linda Water District.

The District has conducted various planning efforts, including a Water Facilities Master Plan in 1978, Water Master Plan in 2005, and an Asset Management Plan in 2018. These plans provided valuable input into the expansion, operation, maintenance, and financial planning of the District water system..

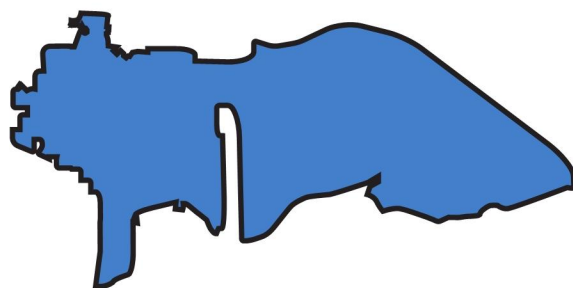
In 2022, the District retained Michael K. Nunley (MKN) to prepare a comprehensive update to the Water Master Plan (Master Plan). The Master Plan includes the following major focus areas:

- ◆ Introduction and Overview
- ◆ Land Use, Population and Future Growth
- ◆ Existing and Projected Water Demands
- ◆ Water Supply Optimization
- ◆ Distribution System Overview
- ◆ Water System Evaluation
- ◆ Operational Analysis
- ◆ Capital Improvement Plan

OBJECTIVES

- ◆ Evaluate Infrastructure Needs over 25 Year Planning Period
- ◆ Economic Evaluation of Current Water Supply
- ◆ Consider Impacts from Future Demands
- ◆ Ensure System Redundancy
- ◆ Operational Optimization
- ◆ Deliver Capital Improvement Plan

District Overview



14,000-acre service area

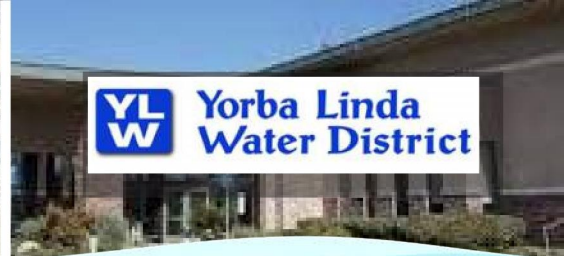


25,000+ meter connections



Serving City of Yorba Linda and portions of Placentia, Brea, Anaheim and unincorporated Orange County





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Existing and Future Water Demands

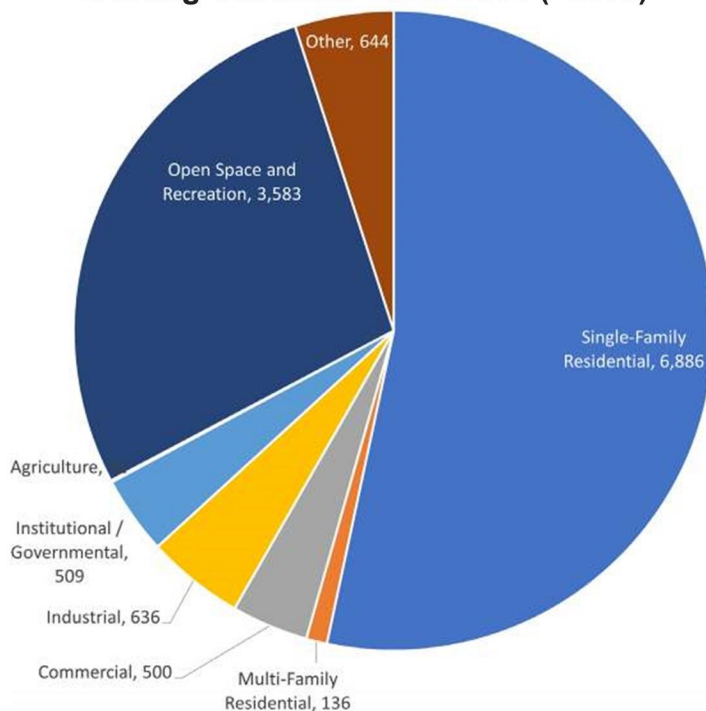
Based on the District's production and consumption reports, as well as SCADA information, existing water demand conditions were established as follows: yearly average day demand of 19,867 AFY or 17.7 MGD, maximum day demand of 24.1 MGD, and a peak hour demand of 45.2 MGD.

MKN reviewed data from the 2020 Census, 2020 Urban Water Master Plan (UWMP), and 2021-2029 City of Yorba Linda Housing Element Cycle. Based on an evaluation of the service area population, major planned developments, limited infill development, and Accessory Dwelling Units (ADUs) a future population of 78,419 was estimated within the District service area for the year 2045. This is an increase of 3.7% in service area population.

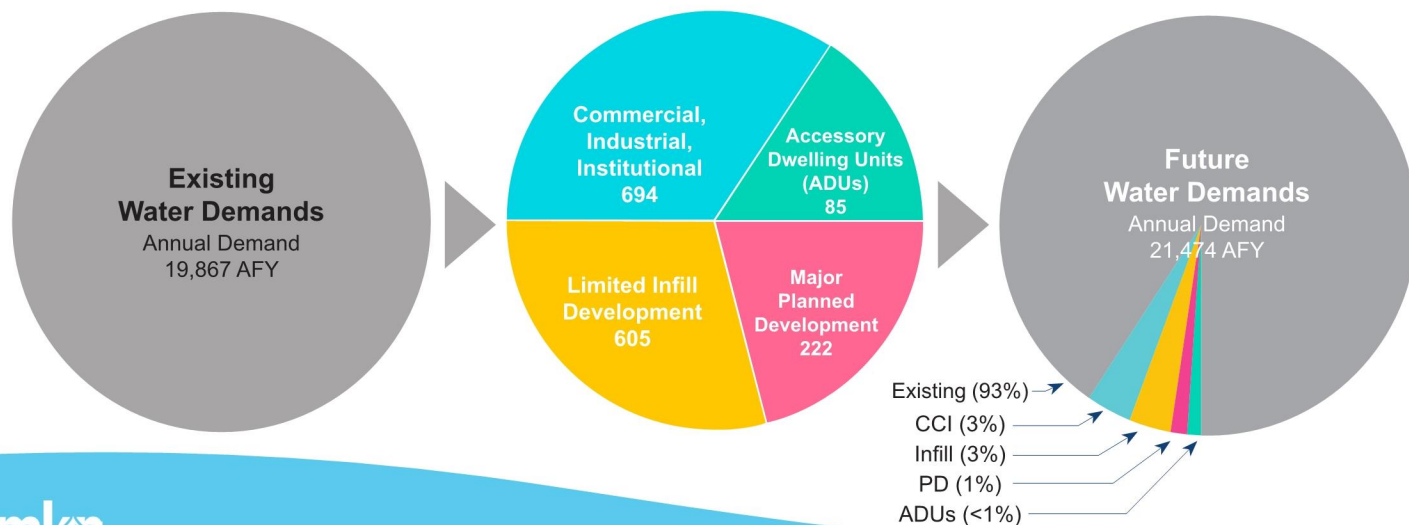
MKN developed future per capita water demand factors based on predicted water use efficiency improvements from the District's 2020 UWMP. These factors were applied to future population projections based on future development types. This established future water demand conditions.

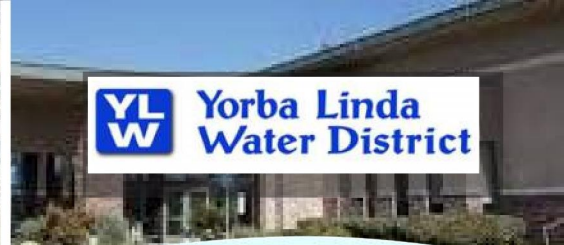
Overall, an approximately 8.1% increase in annual water demand is predicted within the District service area through 2045.

Existing Customer Land Uses (Acres)



Anticipated Growth by Type (AFY)





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Hydraulic Analysis

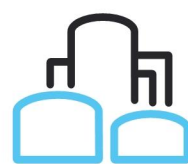
The District's existing hydraulic model was converted into Bentley WaterCAD, current infrastructure updated, operational settings updated, and the model validated for accuracy. Within the hydraulic model, scenarios were developed and evaluated with a focus on the following performance areas:

- ◆ Storage
- ◆ Booster Pump Station (BPS) and Pressure Regulating Station (PRS) Capacity
- ◆ Fire Flow
- ◆ Water Age
- ◆ System Optimization

Based on the existing and future demand scenarios, the majority of the existing pressure zones are sufficient to meet the minimum pressure, maximum pressure, and velocity requirements as defined in the Master Plan. A total of 44 projects were identified to improve fire flow performance, and the following projects recommended to optimize the system:

- ◆ Zone 2 PRS Consolidation (abandon 3 PRS)
- ◆ Zone 2 to 3 BPS Increase (Yorba Linda / Lakeview)
- ◆ Eliminate Use of Seasonal Valves
- ◆ Zone 3B / 4D Redundancy
- ◆ Fairmont BPS Piping Improvements
- ◆ Savi Ranch PRS

MKN also modeled system-wide water age for existing demand conditions and verified facility operation using SCADA information. The District operates the water system in two modes of operation: low demand conditions (winter) delivering groundwater supplies only and high demand conditions (summer) delivering groundwater and imported water supplies. The water age analysis evaluated the system under these two conditions and found that during low demand conditions that various deadend water mains and the easterly pressure zones experience the highest water age. During high demand conditions with introduction of imported water supplies. Water age reduces significantly and the highest water age is limited to various deadend water mains.



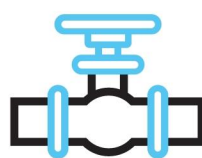
25 MGD WTP



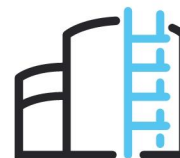
10 Groundwater Wells



4 Imported Water Connections



20 Pressure Zones



14 Reservoirs



12 Booster Pump Stations

FINDINGS

- ◆ Existing groundwater and imported water supplies are sufficient to serve existing and future demands, but improvements required for redundancy
- ◆ Additional storage required for zones served by Lakeview and Chino Hills Reservoirs
- ◆ Increased flow capacity recommended at Box Canyon BPS

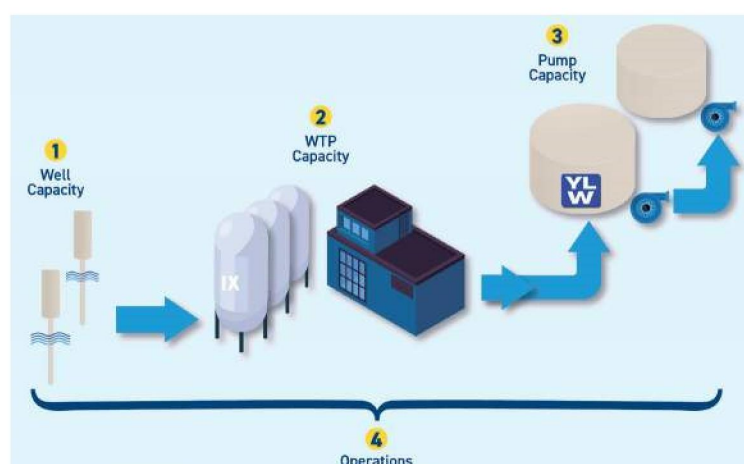


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Water Supply Optimization

As part of the Master Plan, MKN conducted an analysis for optimizing the District's primary water sources and to assess the feasibility of increasing groundwater production from the Orange County Groundwater Basin (OC Basin) in order to meet the Orange County Water District's (OCWD) basin production percentage (BPP) target of 85%. The objective was to determine the potential for achieving higher groundwater utilization percentages, namely 85%, 90%, and 100%. This comprehensive analysis considered historical and future supply availability, demand, physical and regulatory constraints, operational strategies, required capital improvements, and associated costs for each utilization scenario. The total cost of improvements to reliably achieve 85% groundwater utilization is estimated at \$14.7M and would achieve a payback of 13 years.

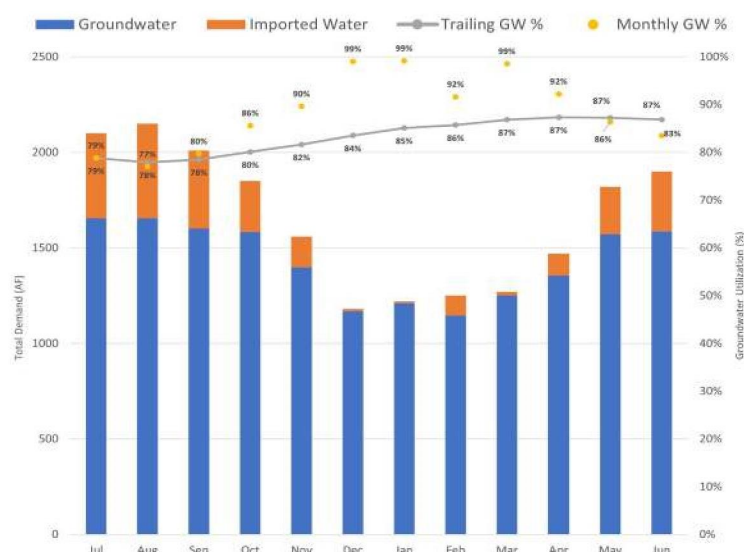
MKN's evaluation focused on four key areas for meeting increased groundwater production

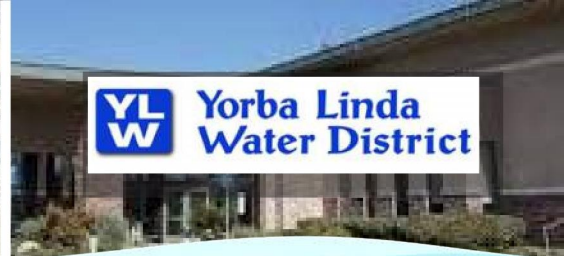


A recommendation for achieving 85% utilization is provided which includes the following modifications:

- ✦ Modify System Operations
- ✦ Construct Well 23 and One Additional Well
- ✦ Yorba Linda BPS Upgrade
- ✦ BPS Chlorine Injection Systems and MOV Upgrades
- ✦ Well Hydraulic Improvements

Modifying supply delivery to maximize groundwater production in winter months will assist in meeting 85% groundwater production





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Capital Improvement Plan

Based on the evaluations and findings of the Master Plan effort and the District's existing Asset Management Plan, the CIP was prepared. The cost estimating approach assumed fully inclusive capitalization with costs derived from similar water utility projects adjusting for inflation, size, complexity, and location. Project prioritization was based on the following:

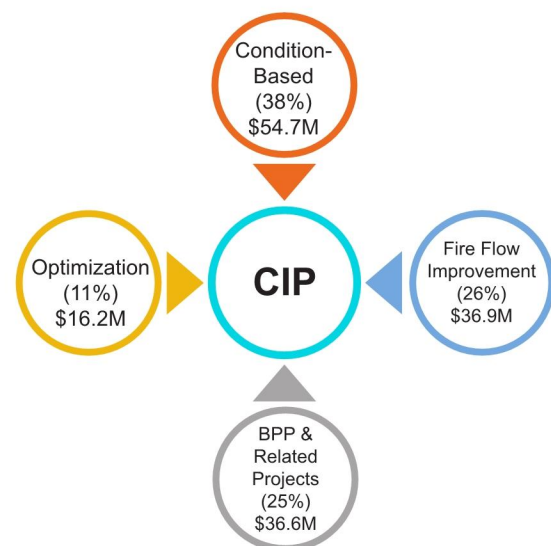
- ◆ Improves Groundwater Optimization (BPP)
- ◆ Enhances Fire Flow Reliability
- ◆ Improves System Redundancy
- ◆ Implements Asset Management Plan Recommendations
- ◆ Improves System Pressures
- ◆ Project Located Within Fire Hazard Zone
- ◆ Number of Water Services Impacted

Based on coordination with District engineering and operations staff, the recommended projects were identified. The proposed CIP allocates funds in proportions of 11% for Optimization Projects, 25% for BPP Improvement Projects, 26% for Fire Flow Improvement Projects, and 38% for Condition-Based Projects over the next 10-year budgeting period. An annual breakdown and specific project sheets were created for each project.

Implementing the CIP projects as suggested in the Master Plan plan enables the District to achieve 85% groundwater utilization reliably at the completion of FY 2026/27.

CIP SUMMARY

- ◆ 71 Projects Identified
- ◆ 4 Categories of Projects
- ◆ 10 Year Delivery Schedule
- ◆ \$144.5 million Total CIP Cost
- ◆ \$14-\$15 million Average Annual CIP Total



CIP Project Cost Summary

