2022 WATER MASTER PLAN

EXECUTIVE SUMMARY

DECEMBER 2022

Adopted by the South San Joaquin Irrigation District Board of Directors on December 13, 2022

SSJID SOUTH SAN JOAQUIN IRRIGATION DISTRICT

Jacobs

About South San Joaquin Irrigation District

South San Joaquin Irrigation District (SSJID or District) has been delivering water to the agricultural region in southern San Joaquin County since its establishment in 1909. While the District's mission to deliver reliable, high-quality water from the Stanislaus River to its customers at affordable rates has remained unchanged, the compounding effects of evolving customer needs, increased regulatory requirements, highly variable hydrologic conditions, an aging water delivery system, and changing economic climate, necessitated a long-term planning process that was initiated in 2018.

SSJID is located in southeastern San Joaquin County in California's San Joaquin Valley. The District boundary encompasses urban and agricultural areas in and surrounding the Cities of Manteca, Ripon, and Escalon, with its southern boundary paralleling the Stanislaus River.

The District's water rights are shared with neighboring Oakdale Irrigation District (OID). Water is diverted downstream of the New Melones Reservoir (NMR) at Goodwin Dam and is conveyed through a system of canals, ditches, and pipelines to serve customers.

In addition to sharing their water rights, SSJID and OID partnered to develop the Tri-Dam Project, a system of dams, reservoirs, and hydropower facilities that provides water storage in the basin and generates hydropower. The revenue from hydropower generation provides SSJID with a strong financial foundation, which allows the District to provide reliable, low-cost services to the communities it serves.

Through the completion of its *South San Joaquin Irrigation District Strategic Plan 2017–2022* (SSJID 2017), SSJID updated its mission statement and identified specific goals for the District's water supply, operation, distribution, customer service, and finance activities. These goals motivated the initiation of a Water Master Plan (WMP) in 2018. The SSJID District Board of Directors adopted the WMP with a unanimous vote at the December 13, 2022 Board meeting.

SSJID Water Facts

- *Number of parcels irrigated: 1,943 as of 2022*
- *Total acreage: Approximately 72,000 acres*
- *Irrigated acreage: Approximately 50,000 acres in 2022*
- *Principal water supply: Stanislaus River*
- *Primary storage on the Stanislaus River: New Melones Reservoir, 2.4 million acre-feet*
- *Tri-Dam Project Storage: 200 thousand acre-feet (TAF)*
- *Woodward Reservoir Storage: 33 TAF*
- *Point of Diversion: Goodwin Dam on the Stanislaus River, just upstream from Knights Ferry*
- *Joint Main Supply Canal: 3.5 miles*
- *Main Distribution Canal and laterals: 362 miles*
- *Pipelines: 315 miles*
- *District owned groundwater wells: 32*

Mission Statement

SSJID provides the utmost value for its agricultural, urban, and business community by protecting and delivering vital resources with exceptional service.

Why a Water Master Plan?

The WMP is a 30-year plan for the District's agricultural irrigation service and related distribution facilities, designed to meet the evolving needs of customers, and to address numerous resource management challenges facing the District. The WMP planning process enabled the SSJID Board of Directors (Board) to evaluate recommendations and make informed decisions for the future, while considering policies and actions that will help assure the long-term financial viability of the District. Development of the WMP was approached in a way that provided alignment among Board members, staff members, and customers regarding the District's future.

Phased Approach for WMP

The WMP was developed using a phased approach to ensure efficient technical studies were undertaken that aligned with stakeholder needs, forming a foundation on which the District can make critical long-term decisions. Table 1 outlines this phased approach.

Table 1. Water Master Plan Phased Approach

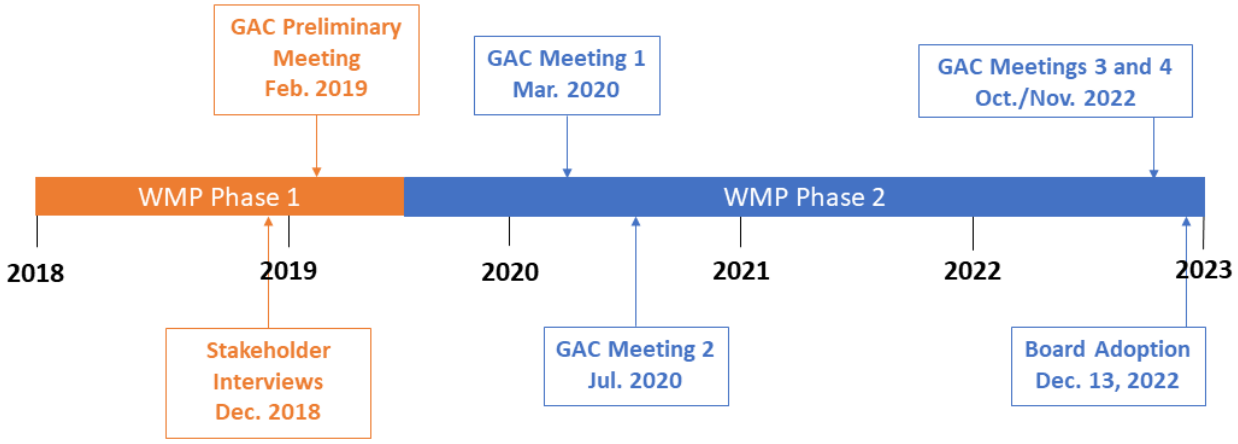
Phase	Timing	Activities
Phase I Initial Assessment	2018 through 2019	▪ Gather information ▪ Engage stakeholders (customers, industry, community leaders) ▪ Refine WMP scope ▪ Set goals
Phase II Plan Development	2019 through 2022	▪ Provide continued stakeholder engagement ▪ Develop analytical tools (water resources modeling, financial modeling) ▪ Conduct technical studies (land use, on-farm systems, infrastructure, water resources, financial) ▪ Develop and evaluate infrastructure and financial scenarios ▪ Agree on the recommended plan ▪ Provide WMP documentation ▪ Adoption of the WMP by the Board
Phase III Implementation	2023 through the future	▪ Ensure compliance with California Environmental Quality Act (CEQA) ▪ Monitor the District's financial wellbeing while maintaining cash reserves ▪ Fund and construct projects in the capital improvement plan (CIP) ▪ Review adaptive management: revisit CIP spending on 5-year cycles as conditions change (for example, funding projections, infrastructure priorities)

Involving the Public

SSJID conducted an open, transparent, multi-year public outreach campaign to inform constituents of the need for a comprehensive plan and explain how it would benefit the District. Engaged stakeholders provided input throughout development of the WMP.

During public outreach efforts, the WMP team strived to provide consistent messaging, offered multiple opportunities to identify potential issues that may impact public response, and actively solicited ongoing stakeholder opinion and actions. Figure 1 is a timeline showing the WMP phases and the formal outreach forums.

Figure 1. Water Master Plan Phases and Outreach



Water Master Plan Goals

Establishing WMP goals at the onset of the planning process with full Board, SSJID staff, and customer alignment was a critical step to ensure proper scoping and WMP completion.

Water Master Plan Goals

- *Protect and preserve SSJID's water rights.*
- *Ensure long-term viability of SSJID's water delivery system and enhance flexibility, reliability, and operational efficiency.*
- *Promote the use of available surface water and protect the sustainable use of groundwater within the District.*
- *Promote efficient and effective on-farm water use.*
- *Provide an affordable water supply to SSJID customers.*
- *Ensure SSJID remains financially sound.*
- *Promote SSJID's stewardship of the water resource and its contributions to the economy and the environment.*

What We Studied

Water Resources

The District's water rights are exercised, in part, through an operations agreement (the 1988 Agreement) with the United States Department of the Interior's Bureau of Reclamation (Reclamation), which was developed to resolve water right concerns among OID, the District, and Reclamation during development and construction of the NMR. The District also conjunctively uses groundwater through District well pumping, and District customers also use groundwater through privately owned wells. Several factors affect whether the Stanislaus River water supply and local groundwater supplies can meet existing baseline use demands, including water rights for storage and diversion, NMR operational agreements, and state and federal environmental regulations. SSJID's active and ongoing compliance and engagement with regulatory processes like the Sustainable Groundwater Management Act, the Water Conservation Act, and State Water Resources Control Board administrative actions will continue in the future to protect and make best use of water resources.

Water transfers have been a part of SSJID's past water management decisions. The ability to effectuate water transfers in the future is currently uncertain and is not a reliable metric for financial planning. However, to make full beneficial use of SSJID's water rights, to bolster groundwater sustainability within the local groundwater subbasin, and supplement fishery pulse flows for the benefit of environment and water users, SSJID will continue seeking water transfer opportunities in the future.

Evaluating On-farm Systems

The purpose of evaluating on-farm water systems was to understand and document current water management practices at the field level throughout the District, including evaluating current irrigation practices, trends in on-farm water management, and customer preferences for water sources and water delivery schedules. This information helped to formulate certain topics of the WMP like development of infrastructure alternatives, water balance projections of future water savings, levels of surface water subscription, and policy considerations.

SSJID's water delivery system was originally developed for flood irrigation service, but 57 percent of District irrigated lands are now irrigated with a primary pressurized on-farm irrigation system. Given the high percentage of orchard crops (72 percent), the fraction of irrigated lands using pressurized on-farm systems is likely to grow in the future. At the same time, flood irrigation will continue to be the primary irrigation method for some crops and will continue to be used as a secondary method of water delivery to orchard crops using primary pressurized on-farm systems. The District is committed to serving both flood and pressurized/sprinkler on-farm systems into the future.

Land Use Trends

Agricultural and urban land use forecasts were used to inform the development of infrastructure plans and long-term water resource management alternatives to serve future projected in-District water demands.

In 2018, SSJID was serving 53,222 irrigated acres and 56,619 gross acres. By 2040, SSJID is projected to serve 47,635 irrigated acres and 50,676 gross acres. This translates to an estimated reduction of 5,587 irrigated acres and 5,944 gross acres due the conversion of agricultural land to urban land from 2018 to 2040. Future shifts in land use within the SSJID water service area are forecasted to reduce irrigation water demands and increase municipal water demands.

Infrastructure Assessment

The core of District operations is the conveyance of water and distribution of that water to its customers. The WMP's infrastructure assessment garnered the most attention during planning and outreach. The District's conveyance systems are aging, and replacing system infrastructure with new components is expensive. The District owns and maintains hundreds of miles of tunnels, canals, pipelines, and similar facilities for water conveyance and irrigation deliveries. The infrastructure assessment evaluated the current state of aging infrastructure and assessed the challenges of evolving irrigation demands.

Recommended CIP

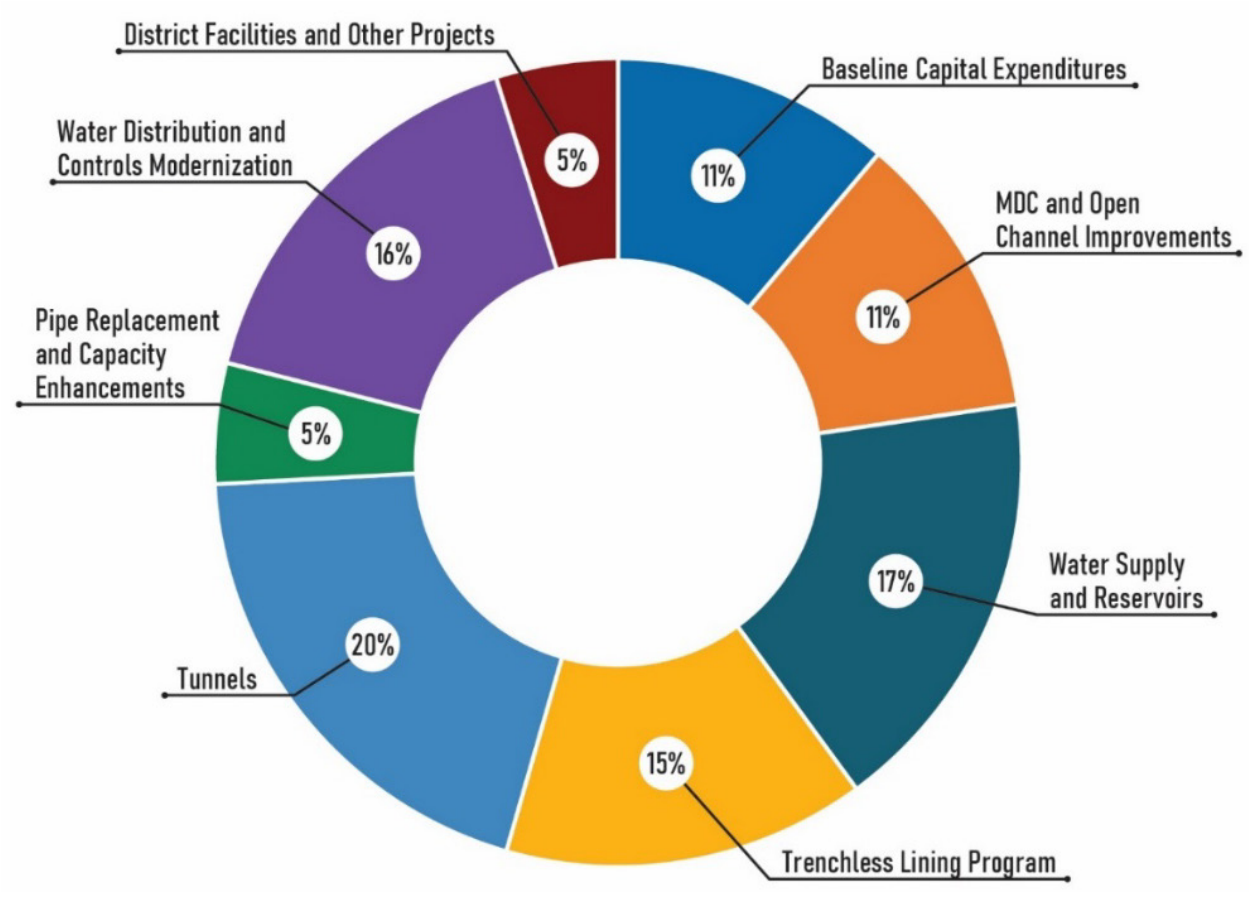
- *Baseline capital expenditures*
- *Capacity enhancement*
- *Distribution system modernization*
- *Main Distribution Canal projects*
- *Open channel lateral improvements*
- *Pipe replacement*
- *New regulating reservoirs*
- *SCADA rehabilitation and improvements*
- *Trenchless lining program for existing pipelines*
- *Tunnels in Upper Main Supply Canal*
- *Water ordering system*
- *Joint Supply Canal improvements*
- *Woodward Reservoir improvements*
- *Headquarters facility improvements*
- *Future studies, pilot projects*
- *Total = $191 million*

During the infrastructure assessment, the District performed a capacity analysis to investigate the spatial variability of customer service under existing conditions and to identify and confirm needed capacity enhancement projects.

An extensive list of prospective infrastructure projects was compiled, planning-level costs were developed, projects were prioritized, and construction duration and timing were also estimated. Next, variations of the time-phased CIP were input to a financial model and tested for financial feasibility.

Finally, a recommended CIP was developed that balanced the need for infrastructure investment and reasonable levels of funding mechanisms. Implementation of the recommended CIP will ensure reliable water delivery for decades to come. The recommended CIP extends the useful life of existing infrastructure, maintains a base 10-day flood rotation while increasing flexibility for sprinkler irrigators, and increases service equity throughout the District.

Figure 2. Capital Improvement Plan Cost Summary by Project Category



Water Balance

A detailed assessment of the District's water supply reliability was conducted for baseline current conditions using the New Melones Operations Model. Considering historical hydrology and the 1988 Agreement, the District has a full surface water supply about 85 percent of the time. SSJID is expected to experience water shortages only in the driest years (that is, during some critical water year types) under baseline conditions.

SSJID water supplies are sufficient to cover SSJID water demands in more than 9 out of 10 years, on average. For the baseline condition, Stanislaus River diversion demands are estimated at 244,000 acre-feet per year (AFY) for SSJID on an average year basis. During a low precipitation/high evapotranspiration (ET) year, when on-farm demands peak, SSJID's demand can be up to 34,000 AFY higher than the average diversion demand, requiring SSJID to rely on additional internal water supplies to reduce demands for Stanislaus River diversions. Internal supplies included conjunctive use groundwater pumping (District and private), District and private reuse of drainwater and tailwater, capture and reuse of operational spills, recycled water from industrial sources, and precipitation and local inflows captured in the distribution system.

For the future (2040) condition, Stanislaus River diversion demands are estimated at 241,000 AFY for SSJID on an average year basis. Over the next 20 years, and given the projected agricultural-to-urban land use conversion, the increase in municipal deliveries, new groundwater regulations, and irrigation efficiency improvements, future SSJID surface water demands are projected to remain about the same.

It is anticipated that implementation of the recommended CIP will improve service across the District's distribution system, making an incremental increase in the amount of water available to customers. Such improvements, coupled with increasing groundwater regulation, are likely to result in reduced in-District groundwater use. Furthermore, future groundwater regulations and other regulatory changes could force the District to further conjunctively manage groundwater by maximizing its surface water entitlements.

Financial Analysis

The WMP is a 30-year vision for District finances and CIP investments. The District's financial projection model was used to develop a WMP that sets the District on a path for long-term financial sustainability and ensures that the recommended CIP is financially feasible. While the District's current financial position is strong in terms of cash reserves, financial analysis highlighted a strategic, multi-stage approach for District finances in the future. First, the current business model must be adjusted to curb growing irrigation operating losses, and to be less reliant on other revenue sources such as the Tri-Dam Project and out-of-district water sales. Second, a financial plan to implement the WMP over 30 years was developed in parallel with variations of CIP investments that included acceptable irrigation rate increases coupled with a reasonable level of bond funding to accelerate the most impactful infrastructure projects. The financial analysis also set the stage for initiating the public Proposition 218 process, which will develop and hopefully result in approval of a new rate plan. SSJID intends to revisit its financial position every 5 years and revise its financial plan to reflect adjustments in priorities, pace of CIP implementation or other changes in assumptions. The financial analysis concluded that irrigation customer service rate increases are needed, regardless of the recommended CIP.

The Recommended WMP

This WMP is a 30-year vision for SSJID's infrastructure, finance, and water management to ensure the long-term sustainability of SSJID as it carries out its mission. The WMP considers the range of issues—both internal and external—that can influence SSJID's future. These issues shaped the opportunities and infrastructure alternatives considered by the District. The District performed robust financial analysis to simulate District costs and revenues over the 30-year planning horizon to test financial viability of District infrastructure investment alternatives. While the WMP provides necessary strategic direction for the next 30 years, it also allows for an adaptive approach given the many uncertainties and potential challenges in the future. Key assumptions and changing conditions should be revisited on 5-year cycles and CIP investments will be adjusted accordingly. SSJID stakeholders will be informed during the implementation phase as projects are constructed, CIP priorities are refined, and as finances are adjusted.

The Recommended WMP Program

- ✓ *Achieves WMP goals*
- ✓ *$191 million CIP implemented over 30 years to address infrastructure risks and improve service*
- ✓ *Continued engagement with regulatory processes impacting supply and potential water transfers*
- ✓ *Corrections to the current business model*
- ✓ *Reasonable rate increases for irrigation customers, combined with bond funding*
- ✓ *Commitment to seek out grant funding and water transfers, without relying on these revenue sources*
- ✓ *Adaptive approach for implementation*

The recommended WMP will balance the need for substantial infrastructure investment with considerations of reasonable irrigation rate increases and bond funding. WMP implementation will ensure reliable delivery of water and addresses level of service across the District. These benefits of WMP implementation are paramount to making beneficial use of SSJID's water rights. Achieving these intended outcomes in a financially sustainable manner will ensure SSJID's support of the agricultural economic base in the region for generations to come.

SOUTH SAN JOAQUIN IRRIGATION DISTRICT

www.ssjid.com

Jacobs