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FRESNO STATE

California Water Institute

SAN JOAQUIN VALLEY WATER SYSTEM INVESTMENT PROGRAM



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Water

Life as we know it cannot survive without water. As we explore space, scientists conduct exhaustive searches for the presence of water on other planets, because water is essential to creating and sustaining life. If there is water, there may be life.

Despite its value, water resource management in California is so dysfunctional, that every attempt to implement improvement ends up in court. We have grown accustomed to managing water through litigation, a model that places stress on all economic, social, and environmental dimensions in the State, with stakeholders suffering as a result. One might think that after over 100 years of litigation, we would find a better, more lasting approach to managing water for California – the world's fifth largest economy, and for the San Joaquin Valley, the country's most productive agricultural region.

What have we gained from our litigation approach? In California, over a million residents lack access to clean, safe water for drinking and household use. Endangered species populations continue to decline. Our aquifers are becoming deeply and irreparably depleted, and some of our richest and most productive agricultural lands are at-risk of being removed from production for lack of water.



The problem is particularly acute in the eight counties of the San Joaquin Valley, a region that produces 10% of the country's agricultural output and contains some of the most productive cropland in the world. A perfect storm now threatens this diverse, vibrant region – a storm created by increasingly powerful forces like climate change, newly enacted State legislation regulating the use of groundwater, crumbling and out-of-date water infrastructure, a continuously growing population, and a penchant for litigation versus cooperation.



If these forces remain on their current trajectories, estimates project that up to one million acres of the Valley's productive cropland will be fallowed or abandoned over the next 20 to 30 years, causing agricultural revenues to decrease by more than \$7 billion annually. The resulting unemployment of a large number of the region's agricultural workers will stress Valley citizens and ultimately damage the Valley's ag-dominant economies. Nowhere else in California is there a greater urgency to replace "management by litigation" with a new approach than the San Joaquin Valley.

Yet changing our approach requires courage and leadership to bring competing interests together to create a shared vision. Creating this vision for the San Joaquin Valley and California will require

agricultural groups, disadvantaged communities, and environmental and urban interests to work together effectively. Though these groups have not historically worked well together on water management, there have recently been one-on-one discussions with representatives from each stakeholder group. These have been difficult conversations as the wounds are deep, the scars are plentiful, and the levels of mistrust are significant – but there is recognition that a new spirit of collaboration is imperative.

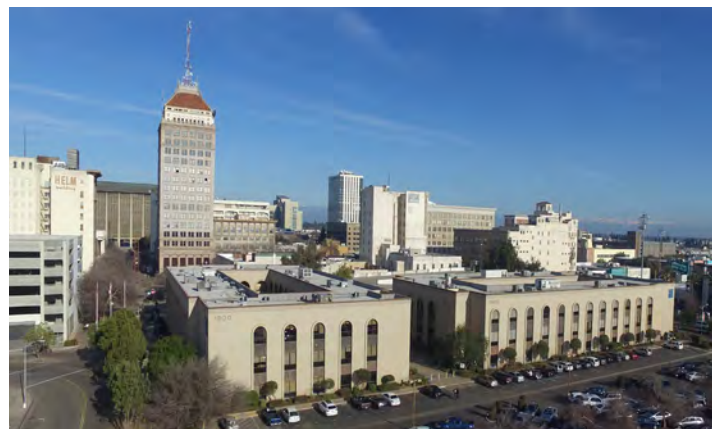
“We must shift our current paradigm and collaborate to create a shared vision that delivers on the objectives of providing safe drinking water ...”

There have been similar one-on-one discussions with State leaders about creating this shared vision, and while some see and embrace a new spirit of collaboration, too many remain blind to the need. They would rather let the courts decide the fate of water so they can continue to defer responsibility and ownership, offering no vision, no courage, no leadership – and no change.

to the future of water management. We must shift our current paradigm and collaborate to create a shared vision that delivers on the objectives of providing safe drinking water for low-income communities; responding effectively to climate change; protecting and restoring endangered species; preserving food security; building new and refurbishing existing water system infrastructure; and creating a financing strategy that equitably funds a better water future for California and the San Joaquin Valley.



It will not be easy...but what could be more important than working together on the most important resource needed to sustain life on this planet and every other planet we are exploring?



We must do this together. We absolutely need each other to manage our water resources successfully. We must find a way to build the trust that is essential

CURRENT CONDITIONS

The San Joaquin Valley economy is heavily dependent on agriculture for employment, tax revenues, growth and innovation. As it stands, water supply availability is the single most important resource to the Valley's economic survival. Unfortunately, water supply availability is at risk because of aging and deteriorating infrastructure, changing climate conditions, endangered species protection, groundwater overdraft conditions, and other factors. Water supply shortage conditions in the San Joaquin Valley will result in significant farm receipt losses, which in turn will result in reduced regional economic activity, and a reduced standard of living and quality of life for residents in all sectors of the economy throughout the San Joaquin Valley.



Population Growth and Economic Development

The initial planning for the water supply storage, conveyance, and distribution facilities serving California and the San Joaquin Valley started over 100 years ago, when the population of the State was 3.4 million. Today, most, if not all, of that infrastructure remains in place while, according to the U.S. Census Bureau (2020), the State's population has increased ten-fold to 39.5 million. Additionally, the U.S. Department of Commerce reports that in 2019, California's economy grew to \$3.2 trillion, cementing California as the fifth largest economy in the world behind the United States, China, Japan and Germany. In 2018, California was responsible for nearly 15% of total U.S. Gross Domestic Product. Population growth and economic activity have created unprecedented social, environmental, and economic competition for water. Although much has changed in California over the past 100 years, water infrastructure has not.

Aging and Deteriorating Infrastructure

Despite the best intentions of owners, operators, engineers and contractors, water system infrastructure ages, wears, and deteriorates over time. In some cases, the degree of deterioration can result in a catastrophic system failure. The majority of the water system facilities serving California are approaching 70 years in age. At this advanced age, the State's water system is exhibiting signs of fatigue as illustrated with the failure of the Oroville Dam Spillway in 2017, and the continuing subsidence failures of the Friant-Kern Canal, the Delta-Mendota Canal, and the California Aqueduct. Investments are required to restore and maintain the structural integrity and hydraulic capacity of existing water system infrastructure. The longer this investment is delayed, the worse it will become.



Climate Change

The State has invested heavily in climate change research to prepare for significant impacts ranging from sea level rise on the coast to snowpack decline in the mountains. Currently, the San Joaquin Valley relies on the accumulation of snowfall in the Sierra Nevada snowpack as a natural form of water supply storage during the winter and spring months (November to March). As the snowpack melts gradually from March to August, the slow release of water fills local streams, creeks, rivers, and storage reservoirs for diversion to beneficial uses throughout the San Joaquin Valley. This gradual release of water from the accumulated snowpack is the basis of design for the State's existing water system infrastructure.

The State's current climate-change forecast by the California Energy Commission indicates the San Joaquin Valley will continue to receive approximately the same amount of total annual precipitation (1.8 million acre-feet per year for the San Joaquin River).



However, more of the precipitation will fall as rain and less as snow, and the rainfall will come earlier in the year over a shorter duration, similar to tropical storm conditions in the Southeastern U.S. California's current water system infrastructure is insufficient to accommodate tropical storm conditions. As a result, given the capacity limitations of existing water system infrastructure, it will not be possible to capture millions of acre-feet of available water for beneficial uses in the San Joaquin Valley.

Safe and Affordable Drinking Water

In September 2012, Governor Jerry Brown signed Assembly Bill 685, legislatively recognizing the human right to water. "Every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes."

In the San Joaquin Valley, residents rely on groundwater from wells for some portion of their total annual water use. In the San Joaquin Valley, historic land and water management policies have failed to prioritize safe drinking water and groundwater sustainability for low-income communities. These communities are often served by small, public water systems or individual, onsite domestic wells, that are plagued with a proliferation of safe drinking water violations, which create public health and safety risks for residents of the Valley.



Within the San Joaquin Valley, the Water Board's Drinking Water Division reports that there are 1,976 public drinking water systems, with 1,768 systems (89%) serving less than 1,000 persons and 1,022 systems (52%) serving less than 100 persons. Of the 1,976 public drinking water systems in the San Joaquin Valley, 188 systems have active enforcement actions pending due to violation of safe drinking water standards. The most prevalent drinking water violations are for the following contaminants: 1,2,3 – trichloropropane (84 systems), arsenic (60 systems), and nitrate (46 systems). Many systems have been cited for multiple drinking water standard violations. These public systems do not serve the many residents in the San Joaquin Valley that rely on onsite, individual domestic wells for potable water service. There are thousands of private wells in the Valley that the Water Board does not currently regulate and on which no water quality testing is conducted. Many residents experience well failures and reduced water production and quality as aquifer levels continue to drop.

Today, eight years after Governor Jerry Brown signed AB 685, Governor Gavin Newsom has stated that over a million California residents continue to lack access to clean, safe and reliable drinking water. The State has documentation and data identifying small water systems in the San Joaquin Valley that are at risk of system failure due to drought, contamination, and facility malfunctions. These conditions create public health and safety risks for the residents they serve, and corrective action is required. The Water Foundation released a report in June 2020 stating that the current infrastructure will result in roughly 4,000 to 12,000 partially or completely dry drinking water wells with roughly 46,000 to 127,000 people losing some or all of their primary water supply by 2040.

Environmental and Ecosystem Resources

The San Joaquin Valley covers an area of approximately 17 million acres and is home to high concentrations of rare, threatened, and endangered species including the kit fox, giant kangaroo rat, blunt-nosed leopard lizard, and woolly-threads (an annual herb). Research conducted by environmental conservation organizations and universities demonstrates the multiple benefits that species restoration projects could provide for the region. One such study from the National Oceanic and Atmospheric Administration showed multiple economic benefits. For example, research from the British Ecological Society found strong evidence that ecological restoration actually advances wild bee conservation. Other benefits include reducing particulate matter to improve air quality, carbon sequestration, reducing nitrate loadings to soils and aquifers, and providing public spaces for recreation. Historically, species recovery efforts in the San Joaquin Valley have focused on habitat protection efforts; however, to expedite the recovery of threatened and endangered species, it will be necessary to develop market-based strategies to accelerate the creation of new species habitats using public, private, and philanthropic investment. Such strategies have already been shown to work in the Valley. Private farms have turned some of their acres into wetlands for wildlife restoration. These areas are

also being used as education centers to teach the importance of water.



Groundwater Overdraft and the Sustainable Groundwater Management Act

Groundwater overdraft has been occurring in the San Joaquin Valley for decades. Groundwater overdraft occurs when groundwater extractions exceed an aquifer's natural ability to replace the water extracted from it and, as a result, groundwater levels decline. Monitoring of groundwater levels by the United States Geological Survey (2020) reveals the water table, or depth at which water becomes available underground, has decreased by about one foot per year for the past 60 years. The undesirable results associated with groundwater overdraft include (a) chronic lowering of groundwater levels, (b) significant and unreasonable reduction of groundwater storage, (c) significant and unreasonable land subsidence, (d) depletion of surface water and groundwater interconnections, (e) significant and unreasonable degradation of water quality, and (f) significant and unreasonable saltwater intrusion.

On September 14, 2014, Governor Brown signed into law three bills collectively referred to as the Sustainable Groundwater Management Act (SGMA). The purpose of SGMA is to address undesirable results caused by excessive groundwater extractions. All eight counties in the San Joaquin Valley have groundwater basins that the State has designated "critically overdrafted" due to the presence of "undesirable results."



In February 2019, the Public Policy Institute of California (PPIC) reviewed 30 years of water supply data for the San Joaquin Valley. Based on data from 2003 to 2017, PPIC estimates that the annual average groundwater overdraft in the San Joaquin Valley is approximately 2.4 million acre-feet. One way to eliminate this annual overdraft is to fallow farmland, effectively eliminating the need for water to farm it. Unfortunately, eliminating 2.4 million acre-feet will require following a highly productive 750,000 to one million acres permanently, out of the estimated five million harvested acres in the Valley.

Fragmentation of Water Supply Management and Governance

To identify and implement mitigation strategies to prevent undesirable results associated with groundwater overdraft, SGMA authorized the creation of new public agencies, designated as Groundwater Sustainability Agencies (GSAs). In the San Joaquin Valley, there are eight counties covering 21 groundwater basins, and SGMA has resulted in the creation of 108 GSAs. GSA boundaries were determined by water supply availability, or lack thereof, and not economic, social, or environment factors. Failing to consider these latter factors in creating boundaries is likely to lead to sub-optimal results as water availability affects economies and impacts social programs and local environments. The ideal boundary would have taken urban communities, agricultural interests, environmental conditions as well as disadvantaged communities, into consideration in forming more comprehensive GSAs.

Since 2016, GSAs have been working with their stakeholder groups to develop groundwater sustainability plans (GSPs). The GSPs define (a) how each GSA proposes to monitor and report groundwater quality and quantity conditions for their service areas; (b) the types of projects, programs, and levels of investment required to mitigate for undesirable result conditions; and (c) the policy, procedures, fee structures, and enforcement actions that will be implemented to mitigate for undesirable results. The SGMA legislation gave broad authorities to GSAs, including the assessment of rates, fees, and charges to implement the program, purchase land, purchase water, build infrastructure, and more. Unfortunately, the scale of these GSAs is simply too small to generate sufficient revenue to fund meaningful and effective programs, projects, and services. Accordingly, there is a need to develop a regional strategy that will allow GSAs to pool financial, technical and managerial resources for meaningful and effective groundwater overdraft mitigation across the eight counties and 21 water basins.

Critically overdrafted basins submitted their groundwater sustainability plans in January 2020. Once these plans were made available for public comments, lawsuits began. These lawsuits include failing to take an area into consideration and proposing projects without providing resources to complete them. Other suits cited a lack of accurate data regarding the quantity of groundwater available.

CURRENT SOCIOECONOMIC CONDITIONS

While the State of California is the fifth largest economy in the world, the San Joaquin Valley lacks economic diversity and is heavily dependent on agricultural revenue for employment, prosperity, and economic stability. In 2010, The Economist published an article titled, “California’s Central Valley - The Appalachia of the West,” citing the Valley’s relatively high rates of unemployment and poverty, low rates of educational attainment and limited access to health care. Regrettably, not much has changed in the last decade to alter these socioeconomic conditions, and as a result, the region continues to lag economically compared to the State and nation.

higher than the State’s, and rates of educational attainment are significantly lower. A dive into data for the past decade would reveal that 2017 is not an anomaly. The Valley has consistently lagged behind the State – and indeed the nation – in these socioeconomic characteristics for many years.

Despite the economic strength seen in other regions of the State, the San Joaquin Valley’s unemployment rate in 2017 remained considerably higher, with the lowest rate in Madera County at 8.25% and the highest rate observed in Merced County at 14.63%. In contrast, the statewide unemployment rate was 7.65%.

It is worth noting that for all of the below statistics, the numbers in San Joaquin Valley counties are worse. This means that the State average is negatively affected by these counties. Without the Valley, the State’s employment and education averages would be even higher. Thus, the gap between the Valley counties and the rest of the State is even larger than identified in Table 1 below.

Reliance on Agricultural Sector Employment

From 1970 to 2017, the San Joaquin Valley has consistently relied more heavily on agriculture for employment than on any other industry apart from service-sector jobs. Fresno State sociologist, Dr. Amber Crowell found that over this five-decade period, the statewide employment rate for agriculture



Table 1 provides an overview of the key demographic characteristics of Valley residents in 2017. The region’s unemployment and poverty rates are significantly

2017	Population	Unemployment	Poverty Rate	High School Diploma or Higher	Bachelor's Degree or Higher
California	39,358,497	7.65	11.13	82.49	32.58
Fresno	971,616	10.36	20.76	74.66	20.12
Kern	878,744	10.9	18.65	73.81	15.79
Kings	150,183	9.66	16.3	72.92	13.05
Madera	154,440	8.25	18.04	71.61	13.84
Merced	267,390	14.63	19.92	68.89	13.76
San Joaquin	724,153	10.1	13.64	78.44	18.08
Stanislaus	535,684	11.76	13.65	77.75	16.72
Tulare	458,809	10.04	22.97	68.64	13.84

Table 1. Key Characteristics of the Eight Counties with Comparison to California. Crowell (2019)

averaged 3% of the total labor force, while over the same period, the agriculture employment rate for the San Joaquin Valley ranged from 8% in Stanislaus County to 19% in Tulare County.

Poverty in the San Joaquin Valley

Historically, poverty rates in the San Joaquin Valley are consistently higher than the State. As shown in Figure 1, the highest rates of poverty in the San Joaquin Valley in 2017 were in Tulare County (23%), Fresno County (21%), and Merced County (20%), with the lowest poverty rates in San Joaquin County and Stanislaus County (each at 14%). In contrast, the State had an overall poverty rate of 11% in 2017. As shown in Figure 1, the statewide poverty rate from 1970 to 2017 averaged 10%, while the combined average poverty rate in the eight-county San Joaquin Valley averaged 15% and ranged from a low of 11.53% to a high of 17.99%.

Inverse Economic Relationship

Recent research by Dr. Crowell identified an inverse correlation between poverty rates and farm production revenue in the San Joaquin Valley. Through a simple correlation analysis, Dr. Crowell found that poverty rates and farm production revenues move in opposite directions, with poverty rates decreasing as agriculture production revenues increase, and poverty rates increasing as agriculture production revenues decrease. Certainly, there are a number of additional factors affecting poverty rates in the San Joaquin Valley, but it would be difficult to deny that the region's economy is reliant on agriculture production revenue.

Agriculture is one of the primary industries in the Valley and is directly affected by the availability of groundwater and surface water. A decrease in available water and a resulting decline in farm production causes both direct job losses for agricultural workers and indirect job losses for those employed in supporting positions such as agronomists, crop advisors, and those employed by manufacturers of irrigation equipment.

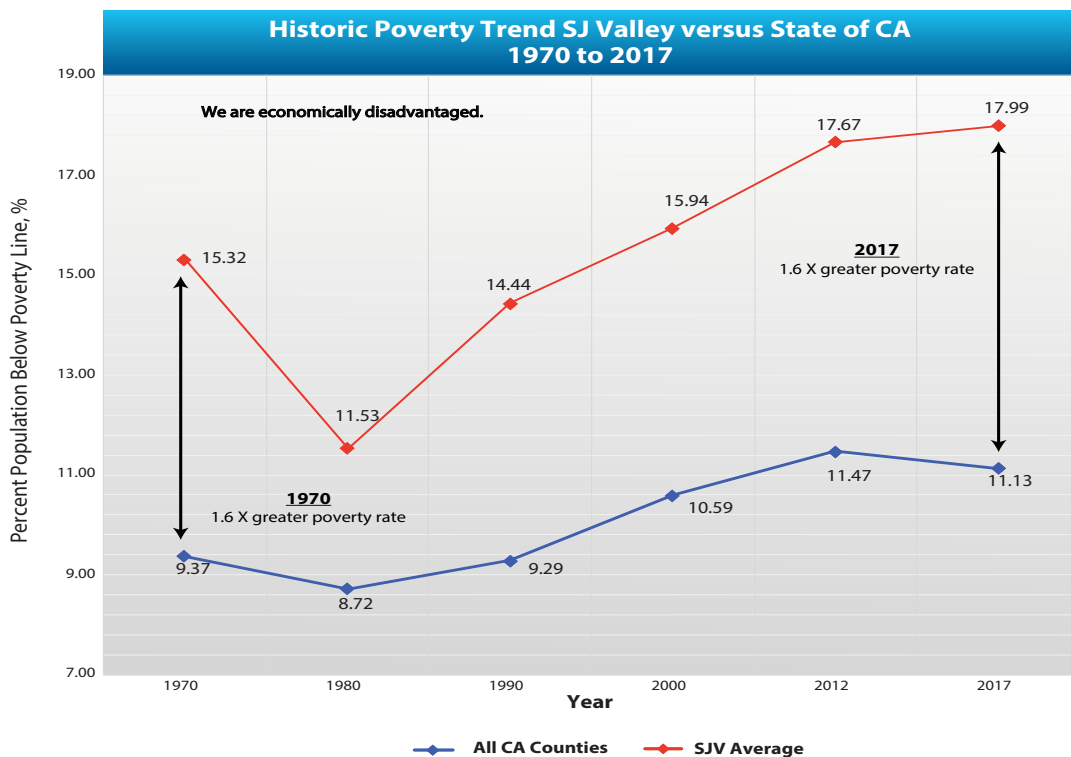


Figure 1. Poverty Rates in the San Joaquin Valley and State of California 1970-2017. Crowell (2019)

ECONOMIC IMPACTS OF WATER SUPPLY REDUCTIONS

For most of us, the “economy” is a nebulous system of public and private institutions, norms, and practices that allow for the creation of private wealth and the investment of public funds (generated from private wealth) to build and maintain public infrastructure and provide public programs and services to support a community. When the economy is performing well, the standard of living and quality of life for a community improves.

Using the California Department of Food and Agriculture crop reports for the most recent reported farm year of 2017-2018, the California Water Institute found the total agricultural production for the eight-county San Joaquin Valley was \$34.9 billion. The San Joaquin Valley’s ag industry creates revenue and employment not just from crop production, but from the many food processing operations located near their source as well. The Valley is home to numerous companies that preserve fruits and vegetables, process nuts, manufacture food and beverages, and perform a host of other food processing activities. The logistical availability of “raw materials” such as tomatoes, almonds, and tree fruit, make the Valley an ideal location for manufacturing and processing operations.

Economic Impact Analysis of Water Shortage Conditions

In February 2020, Dr. David Sunding, a professor of agricultural and resource economics at UC Berkeley, published an economic impact analysis that forecasted water supply shortage conditions for both groundwater and surface water in the eight-county San Joaquin Valley. Dr. Sunding concluded that it may be necessary to fallow up to one million acres of productive agricultural land over a period of two to three decades. This degree of fallowing represents approximately 20% of all acres currently used for agricultural production in the San Joaquin Valley. The impact of losing these productive acres is estimated on an annual basis to include a total lost crop value of \$7.2 billion and an associated loss of \$1.9 billion in net income to farmers, job losses of 65,272 and an associated loss in workers’ income of \$1.7 billion.

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Economic Impacts on Low-Income Communities

Dr. Sunding’s analysis shows that households in disadvantaged communities (DACs) are generally more likely to be employed in the agricultural sector than non-DAC households (4.3% vs. 1.8%); however, this discrepancy is particularly stark in the San Joaquin Valley where more than 15% of DAC households are employed in the agricultural sector compared to less than 7% of non-DAC households. DAC households also skew more heavily towards unskilled labor, such as manufacturing (11.4% vs 9.3%), retail (12.0% vs 10.8%) and transportation (6.3% vs 4.2%) - all sectors likely to be directly or indirectly impacted by reductions in farm output.



It is apparent that the largest loss of full-time equivalent jobs resulting from water shortage conditions will occur in communities near farming regions in the southern part of the San Joaquin Valley,

which are the areas with the largest water supply deficits. In Dr. Sunding's analysis, a total of 57 DAC and 19 non-DAC Census tracts in the San Joaquin Valley are anticipated to lose more than 5% of their existing jobs. When compared to non-DACs, DACs are twice as likely to have higher rates of job losses and are 16 times as likely to see job losses greater than 10% as a result of following.

State and Local Tax Impacts

Reductions in farm production and employment will translate into reduced economic activity in the State and will result in reduced state and local tax revenue. Based on the forecasted water supply reductions and the corresponding reductions in farm acreage and employment, Dr. Sunding estimates that lost state and local tax revenues will be \$535 million per year. Of this amount, \$293 million is lost state tax revenue, while \$242 million is tax revenue lost by county and city governments. It is noted that significant unemployment will result from the forecasted water supply reductions, which will place additional financial burdens on local governments throughout the San Joaquin Valley. The increase in public expenditures for social service programs to accommodate increased unemployment is undetermined, but likely to be significant.

Similar Economic Declines in Other Sectors and Regions

The regional economy of the San Joaquin Valley is essentially one-dimensional and heavily dependent on agriculture. On the current trajectory, the Valley's future prospects are diminished. A glimpse of what this future might look like may be found in the history of other regions. There are several that suffered a similar fate and have not yet recovered.

By 2007, at the start of the financial crisis, Detroit, Michigan was already in trouble. Detroit, similar to the San Joaquin Valley, did not have a diversified economy. According to the Center on Global Energy Policy at Columbia University's School of International and Public Affairs (2019), Detroit employed over 50,000 workers in the automotive industry in 2000.

Ten years later, that number had fallen over 50% to less than 20,000. Detroit declared bankruptcy in 2013, and while it emerged from bankruptcy relatively quickly, economic problems still plagued the city, with a 36% poverty rate and a 17% unemployment rate in 2018.

The Center on Global Energy Policy (2019) also states that in 1984, Aliquippa, Pennsylvania saw the fall of its steel industry after the steel crisis of the late 70s and early 80s. As steel production plants shut down, approximately 40% of Aliquippa's population became unemployed. Just two years later in 1986, wage tax revenue had fallen by 50% and payroll tax revenue fell by over 70%. Residents had to leave Aliquippa to find better circumstances, and the population dropped over 60% during the next 20 years. Eventually, it became necessary for the State of Pennsylvania to bail out Aliquippa, which to this day has not shed its "distressed community" status and had a 34% poverty rate in 2018.

How will the Valley survive a 10% or greater loss to the agricultural sector, which employs on average 12% of the population? Without water reform, a similar fate lies ahead for the Valley.



WATER INVESTMENTS TO REDUCE ECONOMIC LOSSES

The estimated economic losses associated with water supply shortage conditions in the San Joaquin Valley are alarming, and there are legitimate concerns about the region's economic future considering its already poor socioeconomic conditions relative to employment, poverty, and income. The estimated level of economic losses in farm receipts will result in reduced farm-related economic activity, which in turn, will result in reduced general economic activity, and a reduced standard of living and quality of life for all residents and all employment sectors of the San Joaquin Valley. The results of a low-income region absorbing additional income losses could be devastating; however, these results occur only if nothing is done to mitigate the current trajectory. Fortunately, there are opportunities to invest in strategic water projects to reduce or eliminate projected annual economic losses under an alternative action by implementing an effective, fiscally responsible solution to the problem at hand.

Regionally Coordinated Planning & Execution

A report published by the Public Policy Institute of California (2018), indicates that over 85% of the funding required for water projects in California is generated by locally approved rates, fees, and charges, with the balance provided by state and federal agencies through grants, principal-forgiveness loans, low-interest loans, and similar means. Unfortunately, there is currently no regionally coordinated, locally funded mechanism available in the San Joaquin Valley to finance water systems projects across the eight-county region. Thus, a key element of any proposed program must include the ability to leverage funds across regions to create larger solutions that can benefit a larger number of water users and achieve the economies of scale that come with such projects. Such a program also needs to include multiple water interest areas and a variety of projects that take a system-wide approach. Figure 2 provides an illustrative view of those projects.

Water Management for the Future

In 2010, California's Little Hoover Commission determined that without a radical redesign of funding mechanisms at the local level, the State had no hope of solving its water problems. Since then, the California Water Institute has been collaborating with stakeholders in the San Joaquin Valley to develop a \$7 billion water investment plan to safeguard the Valley's water future. The Water System Investment Program will improve water supply reliability and resiliency across the San Joaquin Valley. Projects associated with the Water System Investment Program will include, but not be limited to: groundwater recharge, banking, and recovery facilities; ecosystem enhancement and restoration projects; new conveyance facilities and refurbishment of existing conveyance facilities; new



surface storage facilities; new and upgraded drinking water facilities; and new and upgraded wastewater recycling facilities.

While details of the program follow, a key consideration in program design is the payback period. It is estimated that a one-time investment of \$7 billion can reduce annual economic losses from the abandonment of productive land by \$2 billion annually - a payback period of 3.6 years. Avoiding an annual loss of \$2 billion in revenue has a cascading effect of avoiding lost tax revenue, lost wages and increased unemployment. While the payback calculation ignores net profit aspects, it does provide a simple illustration of the benefits of raising and spending \$7 billion for water infrastructure.

Table 2 presents the estimated total costs to implement the program and the types of water projects recommended with the Water System Investment Program. Financing for the \$7 billion Water System Investment Program will be a combination of grants, debt, user assessments, and state and federal matching funds. The debt issuance will be for \$4.3 billion, with a 30-year term and 4.5% interest rate, which will require an annual debt service payment of approximately \$260 million. Over 70% of proposed expenditures are for the improvement and creation of key elements of water infrastructure.

Paying for Water Investments

The economic health and stability of the San Joaquin Valley is reliant on agricultural production, which is heavily reliant on water. Recognizing the relationship between the regional economy and water supply, there is a logical rationale that all stakeholders – residents, businesses, institutions and industries – should participate in the governing and financing of water investments in the Valley to reduce economic losses and preserve the health of the regional economy. To this end, the California Water Institute recommends utilizing a “beneficiary-pays” model. Using this approach, capital and operating expenses for a water management program will be allocated equitably and proportionately to individuals or entities based on the burden they place on the water management system and/or the benefits they derive from it.

Water Investment Costs	Estimated Costs
Program Management and Coordination Services	\$ 68,000,000
Program Financial, Legal, and Administrative Services	\$ 44,000,000
Water User Coordination (State, Urban, Ag, DAC, Environment)	\$ 22,000,000
Facility Planning (supply, demands, facility location/alignment options)	\$ 6,000,000
Preliminary Engineering Services	\$ 80,000,000
Land Acquisition	\$ 245,000,000
Design Services (prepare bid documents, bid projects, award)	\$ 700,000,000
CEQA (Biological Assessments, Permitting, Mitigation)	\$ 135,000,000
Construction Services (construction, startup, commission)	\$ 700,000,000
Construction (Conveyance, Storage, Treatment, Environment, etc.)	\$ 5,000,000,000
Total Water Investment Program Cost	\$ 7,000,000,000
Water Infrastructure Construction	
New Conveyance Canals	\$ 650,000,000
Existing Conveyance Canal Repair/Rehabilitation	\$ 800,000,000
New Canal Lifts Stations/Turnouts	\$ 220,000,000
New Groundwater Storage/Banking Facilities	\$ 25,000,000
New Groundwater Recovery Facilities	\$ 180,000,000
New Surface Water Storage Facilities	\$ 2,000,000,000
New Drinking Water Facilities	\$ 375,000,000
New Wastewater Recycling Facilities	\$ 500,000,000
New Watershed Mgmt/Habitat Restoration	\$ 250,000,000
Total Water Infrastructure Cost	\$ 5,000,000,000

Table 2. San Joaquin Valley Water Infrastructure Investment Plan

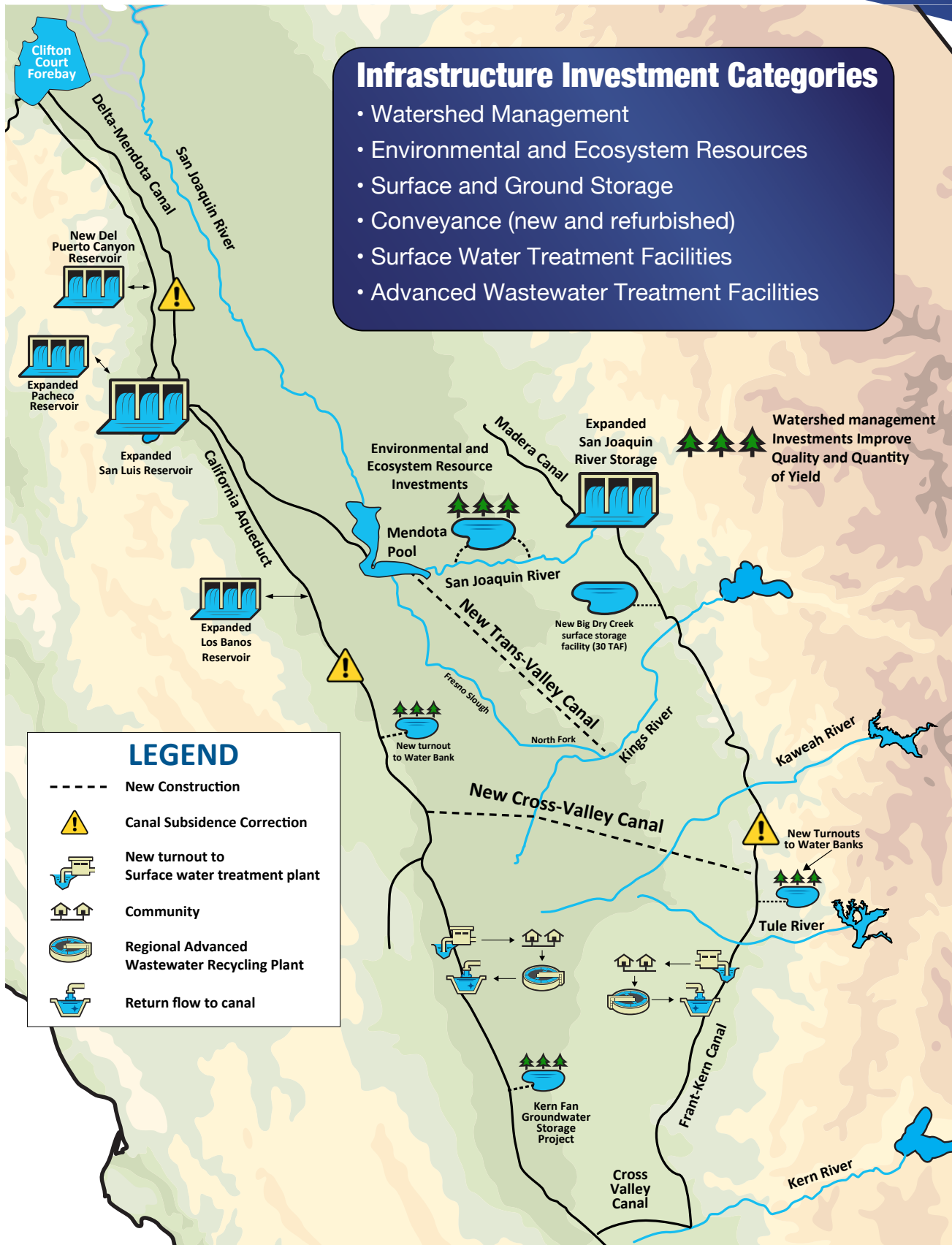


Figure 2. San Joaquin Valley Water Investment Needs - Concept

WATER SYSTEM IMPROVEMENT FINANCING PLAN

Implementation of the proposed Water System Investment Program will take place over the course of 10 years and utilize a variety of funding mechanisms. Details regarding the regionally coordinated financing plan proposed by the California Water Institute are represented in the following table and figure. Table 3 presents the proposed uses of funds and Figure 3 presents the proposed sources of funds. As Figure 3 indicates, several sources of funds will be used over the ten-year period.

State and Federal Match-Fund Grants

The grant revenue portion of the financing plan will be a cost-share match provided by both state and the federal governments. The financial plan requests \$1 billion from each. While a number of agencies might provide matching funds, the State Water Resource Control Board, the California Department of Water Resources, and the U.S. Bureau of Reclamation are a few of the more likely ones.

Greenhouse Gas Reduction Funds

The financing plan recommends the investment of \$331 million over nine years from the Greenhouse Gas Reduction Fund (GGRF). The GGRF receives revenues from California’s Cap-and-Trade program and provides funding for programs designed to reduce carbon emissions. The investment of GGRF revenue for the water investment program will reduce groundwater overdraft conditions in the San Joaquin Valley, and that will reduce energy consumption associated with groundwater extraction. There is a direct relationship between the GGRF investment and savings in energy and greenhouse gas emission, and the Water System Investment Plan is an excellent use of these targeted funds.

Sources of Funds from the Public

To generate \$260 million for annual debt service, voters in the eight-county region could approve a special sales tax on all taxable sales, a per-acre parcel tax of \$30 for all harvested acres, and/or a water surcharge per acre-foot for all water consumed. These potential sources of funds might be implemented as follows:

- a. All residents, businesses and industries in the San Joaquin Valley would be subject to a special sales tax of 0.50% (half a cent). Using a conservative estimate of \$48 billion in taxable sales (an average of the past 22 years), revenues generated would be about \$240 million per year.
- b. All agricultural properties would be subject to a parcel tax. The rate has been calculated using an average of harvested acres from 2000 to 2018 of 8.8 million acres. At a rate of \$30 per acre, revenues generated would be about \$264 million per year.
- c. All water users (urban and agriculture) would be subject to a water surcharge. The rate has been calculated using 10 million acre-feet of water consumption per year for all uses across the eight-county region. At a rate of \$26 per acre-foot, revenues generated would be about \$260 million per year.

The use of a parcel tax on agricultural properties has been ruled out, as that approach assigns the cost burden to a single class of properties in the San Joaquin Valley. The benefits of improved water supply availability and reliability accrue to all properties in the San Joaquin Valley. The remaining sources – the special sales tax and water use surcharge – are proposed to be implemented together.

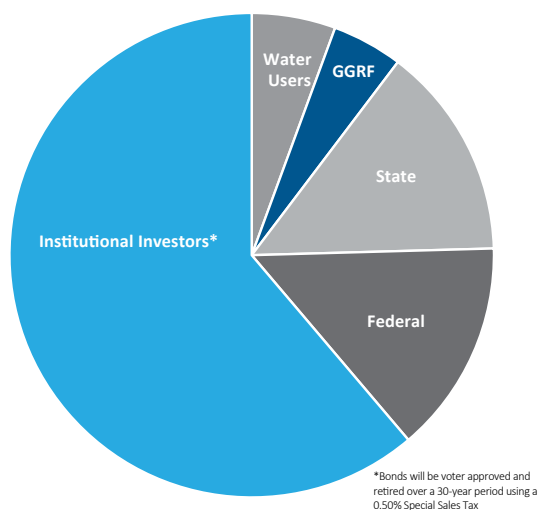
Water Use Surcharge

The financing plan requires a debt service payment of \$260 million per year, for approximately 30 years. With \$240 million realized from the special sales tax, the California Water Institute proposes the water use surcharge be collected at \$4 per acre-foot. Through a voter approved water use surcharge, all water use – urban and agriculture, groundwater and surface water – in the eight-county San Joaquin Valley region will be subject to the charge. Total annual water use reported for the 21 basins in the Valley is approximately 10 million acre-feet. The \$4 charge will realize \$40 million in funding annually and establishes a direct relationship between the surcharge and the benefits

resulting from the water system improvements, true to the “beneficiary-pays” model.

In accordance with the Sustainable Groundwater Management Act, Groundwater Sustainability Agencies will be required to report total water use of groundwater and surface water for each of the 21 groundwater basins in the San Joaquin Valley and it is proposed they will collect this charge.

The Census Bureau reports that for 2018, Fresno County’s median household income was \$51,261 per year, and the county’s per capita income was \$23,284. Median gross rent cost \$11,604 per year. The Census Bureau also reports the poverty threshold for a family of four is \$25,701 per year. Therefore, the estimated fiscal impact of a voter-approved special sales tax of 0.50% for a family of four living at the poverty threshold will be approximately \$130 per year, or \$11 per month. This estimate assumes that all of the family’s earnings (\$25,701) are subject to the special sales tax, with no deductions for income taxes, housing costs or other non-taxable expenses. This estimate serves as a baseline for understanding the potential impact on low-income families.



Water Users	GGRF	State	Federal	Institutional Investors*
\$393,000,000	\$331,000,000	\$1,000,000,000	\$1,000,000,000	\$4,296,000,000

Figure 3. Proposed Sources of Revenue to Fund 10-Year Expenditure Plan

Special Sales Tax

The financing plan recommends implementing a voter-approved special sales tax of 0.50% applied to all taxable sales transactions in the San Joaquin Valley.

The implementation of such a tax will be regressive in nature, creating an additional financial burden for low-income residents on the purchase of basic food, personal care and household items. This is an unfortunate condition for low-income residents in the San Joaquin Valley. However, the expectation is that the economic benefits resulting from the special sales tax will be greater than the burden the special tax will create for low-income residents. To evaluate its impact, the California Water Institute performed a preliminary assessment using Fresno County as a proxy for the region.

Risk Management Considerations

The financing plan has been prepared to manage risk for each of the funding sources. The first risk to address is voter approval of the water surcharge and special sales tax. The financial responsibility and risk associated with this cost will be with each of the eight counties in the San Joaquin Valley. The total estimated cost to initiate and complete the ballot measure processes for all counties and conduct the required education and outreach to inform voters about the ballot measure is \$20 million (about \$2.5 million per county).

Upon voter approval of the water surcharges and special sales tax, the eight counties will submit a request to the State to receive \$331 million from the Greenhouse Gas Reduction Fund over a nine-year period. Additionally, the eight counties will submit requests to the State and federal government for \$2 billion in matching-fund grants for the water investment program.

The eight counties will rely on funding from the local water surcharge, the State GGRF, and the state and federal matching grants to conduct facility planning, preliminary engineering, land acquisition, environmental permitting and facility design. Use of revenues from the special sales tax and water surcharge will service the \$4.3 billion in institutional

debt that will be taken on to fund the construction of water system projects.

During each of the pre-construction phases, the focus will be on identifying and mitigating construction issues to minimize adverse impacts on the program schedule, costs and project quality. Potential issues of concern will include, but not be limited to, land acquisition, environmental impacts, environmental mitigation, and infrastructure conflicts. The appropriate level of investment in the pre-construction activities to reduce construction risk will allow the Water System Investment Program to proceed and advance on schedule, within budget, and without compromising quality.

Program Cost Activities	Program Management and Coordination Services	Program Financial, Legal, and Administrative Services	Water User Coordination (State, Urban, Ag, DAC, Environment)	Facility Planning (supply, demands, facility location /alignment options)	Preliminary Engineering Services	Land Acquisition	Design Services (prepare bid documents, bid projects, award)	CEQA (Biological Assessments, Permitting, Mitigation)	Construction Services (construction, startup, commission)	Construction (Conveyance, Storage, Treatment, Environment, etc.)	Program Annual Expenditure
Year 1	\$6,000,000	\$4,000,000	\$3,000,000								\$13,000,000
Year 2	\$6,000,000	\$4,000,000	\$3,000,000	\$3,000,000	\$10,000,000	\$25,000,000					\$51,000,000
Year 3	\$6,000,000	\$4,000,000	\$2,000,000	\$3,000,000	\$30,000,000	\$75,000,000		\$10,000,000			\$130,000,000
Year 4	\$6,000,000	\$4,000,000	\$2,000,000		\$30,000,000	\$75,000,000	\$100,000,000	\$20,000,000			\$237,000,000
Year 5	\$6,000,000	\$4,000,000	\$2,000,000		\$10,000,000	\$35,000,000	\$200,000,000	\$20,000,000			\$277,000,000
Year 6	\$6,000,000	\$4,000,000	\$2,000,000			\$35,000,000	\$200,000,000	\$10,000,000	\$100,000,000		\$357,000,000
Year 7	\$8,000,000	\$5,000,000	\$2,000,000				\$100,000,000	\$25,000,000	\$100,000,000	\$1,000,000,000	\$1,240,000,000
Year 8	\$8,000,000	\$5,000,000	\$2,000,000				\$100,000,000	\$25,000,000	\$200,000,000	\$1,500,000,000	\$1,840,000,000
Year 9	\$8,000,000	\$5,000,000	\$2,000,000					\$25,000,000	\$200,000,000	\$1,500,000,000	\$1,740,000,000
Year 10	\$8,000,000	\$5,000,000	\$2,000,000						\$100,000,000	\$1,000,000,000	\$1,115,000,000
Total	\$68,000,000	\$44,000,000	\$22,000,000	\$6,000,000	\$80,000,000	\$245,000,000	\$700,000,000	\$135,000,000	\$700,000,000	\$5,000,000,000	\$7,000,000,000
Budget Distribution	0.97%	0.63%	0.31%	0.09%	1.14%	3.50%	10.00%	1.93%	10.00%	71.43%	100%

Table 3. 10-Year Annual Expenditure Plan

Debt Issuance	\$4,296,000,000
State-Grant Match	\$1,000,000,000
Federal-Grant Match	\$1,000,000,000
Greenhouse Gas Reduction Fund	\$331,000,000
Water Use Surcharge	\$373,000,000
Program Revenue Sources	\$7,000,000,000

IMPLEMENTATION OF THE SPECIAL SALES TAX

The California Water Institute proposes the adoption of a voter-approved special sales tax in each of the eight counties in the San Joaquin Valley. The revenue generated by the special sales tax will be used to service the debt incurred to finance water system projects across the eight-county San Joaquin Valley.

Existing Sales Tax Rates in San Joaquin Valley

Governments at all levels may charge sales tax for goods and services. The California Constitution, though, distinguishes between a general sales tax and a special sales tax. Local governments may enact a general sales tax increase within their jurisdiction with approval from a simple majority of the voters. Local governments use the revenue generated from a general sales tax increase for general government purposes. Local governments may also enact special tax increment increases with approval from two-thirds of the voters. The use of the special tax revenue is limited to the specific purpose approved by the voters. For example, a local government may enact a special sales tax for a specific purpose such as public safety, transportation, parks and recreation, or water infrastructure.

County	County Tax Rate	Highest Municipal Sales Tax Return	
		Municipality	Rate
San Joaquin	7.750%	Stockton	9.000%
Stanislaus	7.875%	Oakdale	8.375%
Merced	7.750%	Los Banos	8.750%
Madera	7.750%	Chowchilla	8.750%
Fresno	7.975%	Kerman	8.975%
Kings	7.250%	Corcoran	8.250%
Tulare	7.750%	Porterville	9.250%
Kern	7.250%	Bakersfield	8.250%

Table 4. Municipal and County Tax Rates, San Joaquin Valley, June 2020. California Department of Tax and Fee Administration (2020)

The state sales tax rate in California is currently 6.00%. However, the State charges an additional sales tax of 1.25% to generate revenue for counties and cities in the State making the minimum sales tax rate in California 7.25%. In addition to the minimum sales tax, the State allows local governments to add sales tax increments with voter approval, and many cities and counties in the San Joaquin Valley have done so. Consequently, sales tax rates in the Valley vary from county to county, and city to city, as shown in Table 4.

Currently, the highest county sales tax rate is in Fresno County at 7.975%, and the lowest county tax rate is in Kings and Kern counties at 7.25%. Local municipalities can also have their respective voters approve special sales taxes. Currently, the highest total sales tax for a municipality is Porterville in Tulare County at 9.25%.

The proposed special sales tax will be additive to other general and special taxes previously approved by voters in the San Joaquin Valley. For example, if the voters in Tulare County approve the special sales tax at 0.50% (one-half of one percent), then the total sales tax rate in Tulare County’s jurisdiction will be 8.25%, and the total sales tax rate in Porterville’s jurisdiction will be 9.75%.

Special Sales Tax Revenue Forecast

The implementation of this proposed financing plan will first require approval from two-thirds of the voters in each of the eight counties in the San Joaquin Valley. As a voter-approved special tax, it will be applicable to all taxable sales transactions in the San Joaquin Valley.

The California Department of Tax and Fee Administration (CDTFA) maintains data of taxable sales transactions for each county of the State, and for this analysis, data from 1997 to 2019 was reviewed for each of the eight counties (Figure 4). The average for the 22-year period was just under \$48 billion. Table 5 presents the revenue potential for a special sales tax at .25%, .50%, and .75% using this conservative \$48 billion as a base.

County	Average Taxable Sales Transactions, 1997 - 2019		Revenue Potential, Alternative Special Tax Increments, \$		
	\$	% Distribution	0.25%	0.50%	0.75%
San Joaquin	\$8,859,760,981	18.49%	\$22,149,402	\$44,298,805	\$66,448,207
Stanislaus	\$6,832,634,299	14.26%	\$17,081,586	\$34,163,171	\$51,244,757
Merced	\$2,344,082,258	4.89%	\$5,860,206	\$11,720,411	\$17,580,617
Madera	\$1,245,113,586	2.60%	\$3,112,784	\$6,225,568	\$9,338,352
Fresno	\$11,334,879,143	23.65%	\$28,337,198	\$56,674,396	\$85,011,594
Kings	\$1,270,004,674	2.65%	\$3,175,012	\$6,350,023	\$9,525,035
Tulare	\$4,857,389,841	10.14%	\$12,143,475	\$24,286,949	\$36,430,424
Kern	\$11,178,518,718	23.33%	\$27,946,297	\$55,892,594	\$83,838,890
Total	\$47,922,383,500	100%	\$119,805,959	\$239,611,918	\$359,417,876

Table 5. Special Tax Revenue Potential, San Joaquin Valley. California Department of Tax and Fee Administration

To evaluate the robustness of a sales tax as the primary element in debt retirement, Figure 4 presents the historical taxable sales transactions for the eight counties in the San Joaquin Valley from 1997 to 2019.

Figure 4 also presents the forecasted taxable sales transactions from 2022 to 2051, which correspond to the 30-year term of the proposed debt issuance of \$4.3 billion. As indicated, the \$48 billion forecast of taxable sales transactions is conservative relative to the historic performance of the regional economy. This conservative revenue forecasting is appropriate for debt financing. If, as expected, the regional economy outperforms the debt-financing plan, then the debt will be retired early, and the special sales tax rescinded before completion of the 30-year term. Attempts to issue debt using a lower sales tax increment or shorter term based on optimistic revenue forecasts may create financial risks when the next economic crisis arises and adversely affects the regional economy. This model is robust enough to account for recessionary periods resulting from economic downturns, such as the COVID-19 pandemic.

Table 6 presents the debt-service payment schedule for the water system investment program for a debt issuance of \$4.3 billion assuming a term of 30-years at 4.5 % interest rate, which can vary depending on market conditions. With these terms, the annual debt service will be about \$260 million. It is estimated that revenue from the special sales tax of about \$240 million coupled with \$40 million per year from Water Use Surcharges will be sufficient to fund this level of debt service.

Table 6 also identifies an allocation to a regional governance entity for operating costs starting at \$10 million dollars per year, with an annual escalator of 3%; as well as an allocation to a reserve fund for rate stabilization (losses in sales tax due to economic crisis), early retirement of the debt, construction of new water system projects, or rehabilitation and repair of existing infrastructure. The cost allocations presented in Table 6 are for illustrative purposes only, as the governance entity for the Water System Investment Program may select an alternative cost-allocation methodology.

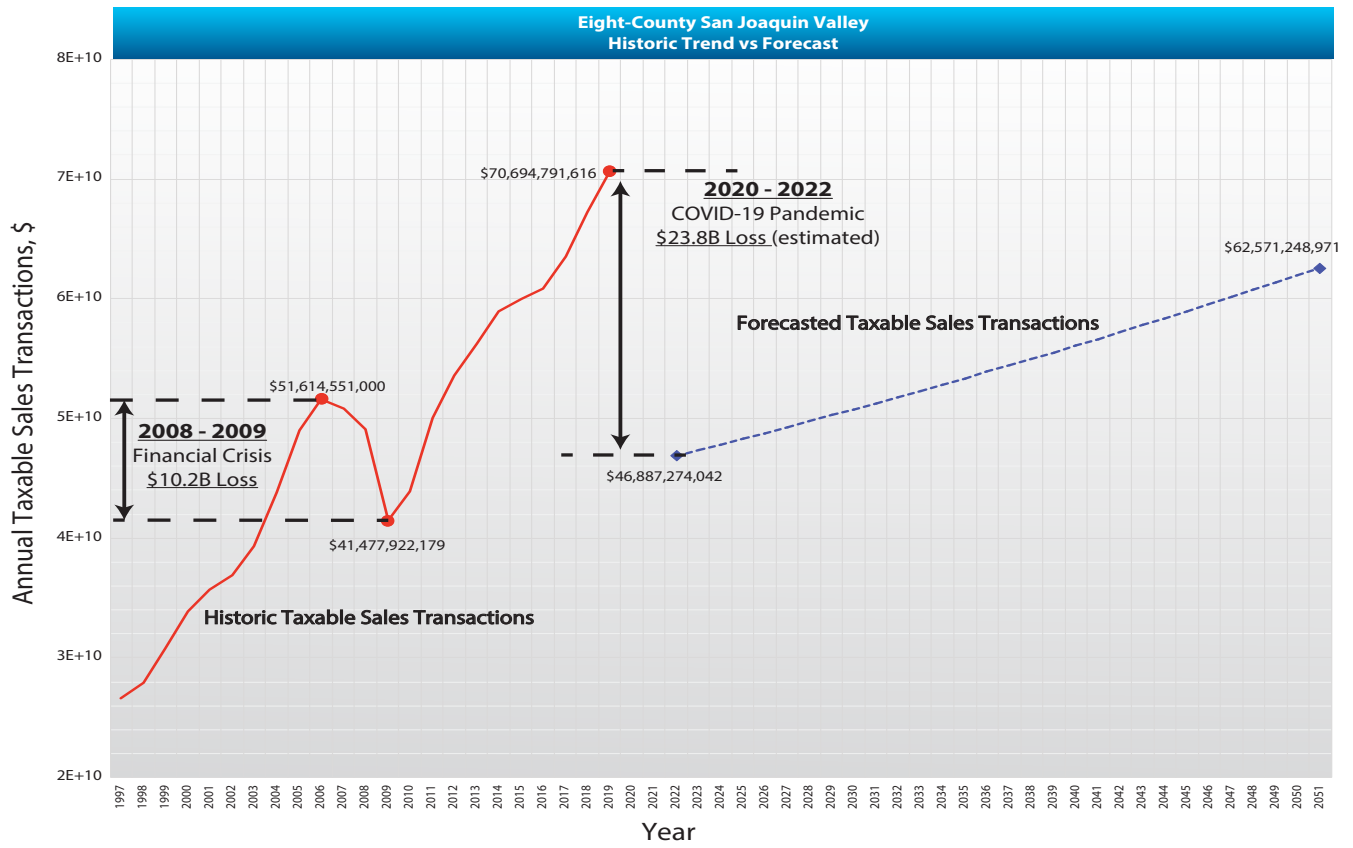


Figure 4. Annual Taxable Sales Transactions, Eight-County San Joaquin Valley Historic Trend vs Forecast. California Department of Tax and Fee Administration (2020)

Loan Year	Forecasted Annual Taxable Sales Transactions (SJV)	Forecasted Annual Special Sales Tax Revenue	Annual Water User Fee Revenue	Annual Debt Service Payment	Net Revenue After Debt Service Payment	Net Revenue Allocation to Governance Entity	Net Revenue Allocation to Reserve Funds	Cumulative Reserve Fund Balance
1	\$ 46,887,274,042	\$ 234,436,370	\$ 40,000,000	\$ 263,738,068	\$ 10,698,302	\$ 10,000,000	\$ 698,302	\$ 698,302
2	\$ 47,356,146,782	\$ 236,780,734	\$ 40,000,000	\$ 263,738,068	\$ 13,042,666	\$ 10,300,000	\$ 2,742,666	\$ 3,440,967
3	\$ 47,829,708,250	\$ 239,148,541	\$ 40,000,000	\$ 263,738,068	\$ 15,410,473	\$ 10,609,000	\$ 4,801,473	\$ 8,242,440
4	\$ 48,308,005,333	\$ 241,540,027	\$ 40,000,000	\$ 263,738,068	\$ 17,801,958	\$ 10,927,270	\$ 6,874,688	\$ 15,117,129
5	\$ 48,791,085,386	\$ 243,955,427	\$ 40,000,000	\$ 263,738,068	\$ 20,217,359	\$ 11,255,088	\$ 8,962,270	\$ 24,079,399
6	\$ 49,278,996,240	\$ 246,394,981	\$ 40,000,000	\$ 263,738,068	\$ 22,656,913	\$ 11,592,741	\$ 11,064,172	\$ 35,143,571
7	\$ 49,771,786,202	\$ 248,858,931	\$ 40,000,000	\$ 263,738,068	\$ 25,120,863	\$ 11,940,523	\$ 13,180,340	\$ 48,323,911
8	\$ 50,269,504,064	\$ 251,347,520	\$ 40,000,000	\$ 263,738,068	\$ 27,609,452	\$ 12,298,739	\$ 15,310,713	\$ 63,634,624
9	\$ 50,772,199,105	\$ 253,860,996	\$ 40,000,000	\$ 263,738,068	\$ 30,122,927	\$ 12,667,701	\$ 17,455,226	\$ 81,089,851
10	\$ 51,279,921,096	\$ 256,399,605	\$ 40,000,000	\$ 263,738,068	\$ 32,661,537	\$ 13,047,732	\$ 19,613,805	\$ 100,703,656
11	\$ 51,792,720,307	\$ 258,963,602	\$ 40,000,000	\$ 263,738,068	\$ 35,225,533	\$ 13,439,164	\$ 21,786,369	\$ 122,490,025
12	\$ 52,310,647,510	\$ 261,553,238	\$ 40,000,000	\$ 263,738,068	\$ 37,815,169	\$ 13,842,339	\$ 23,972,831	\$ 146,462,856
13	\$ 52,833,753,985	\$ 264,168,770	\$ 40,000,000	\$ 263,738,068	\$ 40,430,702	\$ 14,257,609	\$ 26,173,093	\$ 172,635,949
14	\$ 53,362,091,525	\$ 266,810,458	\$ 40,000,000	\$ 263,738,068	\$ 43,072,389	\$ 14,685,337	\$ 28,387,052	\$ 201,023,001
15	\$ 53,895,712,440	\$ 269,478,562	\$ 40,000,000	\$ 263,738,068	\$ 45,740,494	\$ 15,125,897	\$ 30,614,597	\$ 231,637,597
16	\$ 54,434,669,565	\$ 272,173,348	\$ 40,000,000	\$ 263,738,068	\$ 48,435,279	\$ 15,579,674	\$ 32,855,605	\$ 264,493,203
17	\$ 54,979,016,260	\$ 274,895,081	\$ 40,000,000	\$ 263,738,068	\$ 51,157,013	\$ 16,047,064	\$ 35,109,949	\$ 299,603,151
18	\$ 55,528,806,423	\$ 277,644,032	\$ 40,000,000	\$ 263,738,068	\$ 53,905,964	\$ 16,528,476	\$ 37,377,487	\$ 336,980,639
19	\$ 56,084,094,487	\$ 280,420,472	\$ 40,000,000	\$ 263,738,068	\$ 56,682,404	\$ 17,024,331	\$ 39,658,073	\$ 376,638,712
20	\$ 56,644,935,432	\$ 283,224,677	\$ 40,000,000	\$ 263,738,068	\$ 59,486,609	\$ 17,535,061	\$ 41,951,548	\$ 418,590,261
21	\$ 57,211,384,786	\$ 286,056,924	\$ -	\$ 263,738,068	\$ 22,318,856	\$ 18,061,112	\$ 4,257,743	\$ 422,848,004
22	\$ 57,783,498,634	\$ 288,917,493	\$ -	\$ 263,738,068	\$ 25,179,425	\$ 18,602,946	\$ 6,576,479	\$ 429,424,483
23	\$ 58,361,333,620	\$ 291,806,668	\$ -	\$ 263,738,068	\$ 28,068,600	\$ 19,161,034	\$ 8,907,566	\$ 438,332,049
24	\$ 58,944,946,957	\$ 294,724,735	\$ -	\$ 263,738,068	\$ 30,986,666	\$ 19,735,865	\$ 11,250,801	\$ 449,582,850
25	\$ 59,534,396,426	\$ 297,671,982	\$ -	\$ 263,738,068	\$ 33,933,914	\$ 20,327,941	\$ 13,605,973	\$ 463,188,823
26	\$ 60,129,740,390	\$ 300,648,702	\$ -	\$ 263,738,068	\$ 36,910,634	\$ 20,937,779	\$ 15,972,854	\$ 479,161,677
27	\$ 60,731,037,794	\$ 303,655,189	\$ -	\$ 263,738,068	\$ 39,917,121	\$ 21,565,913	\$ 18,351,208	\$ 497,512,885
28	\$ 61,338,348,172	\$ 306,691,741	\$ -	\$ 263,738,068	\$ 42,953,673	\$ 22,212,890	\$ 20,740,782	\$ 518,253,667
29	\$ 61,951,731,654	\$ 309,758,658	\$ -	\$ 263,738,068	\$ 46,020,590	\$ 22,879,277	\$ 23,141,313	\$ 541,394,981
30	\$ 62,571,248,971	\$ 312,856,245	\$ -	\$ 263,738,068	\$ 49,118,177	\$ 23,565,655	\$ 25,552,521	\$ 566,947,502
Total		\$ 8,154,843,709	\$ 800,000,000	\$ 7,912,142,050	\$ 1,042,701,659	\$ 475,754,157	\$ 566,947,502	

Table 6. Debt Finance Plan

WATER SYSTEM INVESTMENT PROGRAM GOVERNANCE MODEL

Recent research by Fresno State political scientist Dr. Thomas Holyoke provides some models for how the financing, planning, permitting, design and construction of the Water System Investment Program might be managed and administered by a regional governance entity. While there are a variety available, there is no perfect governance model for implementation. This analysis considered two legal structures for management and administration: Joint Powers Authorities (JPAs) and Enhanced Infrastructure Financing Districts (EIFDs), whichever is preferred by the elected leaders of the cities, counties, and/or special districts involved. The design and selection of the optimum regional governance entity will need to consider equity, accountability, transparency, efficiency and effectiveness.

Joint Powers Authorities (JPAs). Public agencies have traditionally utilized JPAs to finance public infrastructure because they provide a legal structure for not only pooling resources to achieve economies of scale (more and higher quality services for a lower cost), but they also require different local governments with a common goal to negotiate, cooperate, and collaborate. Forming a JPA simply requires the negotiation and execution of a Joint Powers Agreement by member public agencies and local governments. The authority for these agencies to form a JPA is contained in California Government Code Section 6500 – the Joint Exercise of Powers Act, which authorizes two types of agreements.

The first type allows two or more public agencies to enter into an agreement to exercise common powers jointly. The second allows two or more public agencies to also form a separate, entirely new legal entity, such as an Enhanced Infrastructure Financing District, with independent legal rights. While under the second type of agreement, the new government entity is separate from the JPA itself, members of the JPA's governing board also become (or appoint) members of the new entity's board and exercise control over it. In either case, the JPA agreement must state the purpose and intent, the powers and authorities, and the means and methods to execute the power and authorities.

For the Water System Investment Program, the JPA would be responsible for management and administration of the financing and planning, of the water system investment program, including the debt issuance and applications to the State for GGRF revenue and state and federal grants. The revenue from the special sales tax and water user surcharges would be the source of funding for debt service payments.

Enhanced Infrastructure Financing Districts (EIFDs).

If a JPA needs to form a second public entity to enhance its infrastructure funding, a good choice of organizational form would be an EIFD. It was created in 2014 by the legislature to replace local redevelopment districts. EIFDs are easier to create than most kinds of special districts because voter approval is not required. A city or a county initiates the process to form one (so only JPAs with city and/or county members can do this), after which almost any other kind of public agency, including irrigation and water districts, may join. The number of EIFD members will be a function of the geographic area within the jurisdiction of the EIFD. The larger the geographic area of the jurisdiction, the larger the membership count.

The advantages of an EIFDs is that they may issue revenue bonds with only 55% of voter approval rather than the normal two-thirds. Furthermore, for repayment of bonds, EIFDs may use tax-increment financing, which means using the incremental tax revenue resulting from the infrastructure investment. In other words, if the infrastructure investment is successful, there should be corresponding increases in sales, income, and property taxes and the EIFD can use those incremental tax revenues for bond repayment. Furthermore, the EIFD can issue revenue bonds with an extended repayment period of 45 years, which can reduce the annual debt-service payments to reasonable amounts.

The EIFD may also benefit from other financing methods that its board-member public agencies have, such as sales and income tax revenue, and even developer fees. Whatever funding method

used, the Public Financing Authority managing and administering the EIFD must clearly lay out its financial policies, practices and procedures in a financing plan submitted for public comments and board-member approval at the time of its creation by the JPA.

For the Water System Investment Program, an EIFD might be responsible for management and administration of the financing, planning, permitting, design, and construction of the water system investment program, including the debt issuance and applications to the state for GGRF revenue and state and federal grants. The revenue from the special sales tax and water user surcharges would be the source of funding for debt service payments.

Recommended Governance Model

For the purposes of this analysis, the California Water Institute recommends the management and administration of the Water System Investment Program, including the financing, planning, permitting, design, and construction of water system projects, will be through an eight-county Joint Powers Authority. While it is not recommended at this time, the JPA should explore whether creating an EIFD might prove to be more financially beneficial for the Water System Investment Program.

To initiate the Water System Investment Program, it is proposed that the eight counties of the San Joaquin Valley work together to prepare a Joint Powers Agreement to form a Joint Powers Authority. Upon creation of the JPA, the Board of Supervisors in each county will have the authority to appoint three representatives to the governing board of the JPA for a 24-member board of directors composed exclusively of officials elected to one or more of the governing bodies of the parties.

The JPA Board of Directors will receive funding recommendations and conduct the business required to implement the Water System Investment Program. Upon creation of the JPA's organizational structure, the JPA will implement a ballot initiative in each of the eight counties to request voter approval for a special

sales tax and water user surcharge. The ballot initiative will establish that the revenues are for the express and exclusive purpose of implementing the Water System Investment Program. If the ballot measures fail, the member agencies will dissolve the JPA. If a ballot measure fails in only some of the counties, only those counties' funding sources will be at risk, and the infrastructure improvements will not be as effective as it would be if the eight counties pooled their resources together.

Recommended Committees

The JPA will appoint three committees: Planning, Finance, and Project Delivery. The committees described are for illustrative purposes only, as the JPA Board of Directors will select a preferred organizational structure and governance model. However, the descriptions may provide some guidance regarding the types of information the JPA Board of Directors should consider.

Project Planning Committee. To achieve maximum benefit for the Water System Investment Program, the JPA Board of Directors will initially direct funding to water system projects that have already secured other funding from public or private entities. For efficiency purposes, the Project Planning Committee will target projects identified in Integrated Regional Water Management Plans (IRWMPs).

IRWM, a grant program of the California Department of Water Resources, is a collaborative effort designed to manage all aspects of water resources in a region. The grant programs match funds for planning, implementation and disadvantaged community involvement. The program promotes collaboration among regional water entities to implement "integrated, multi-benefit regional projects."

Projects contained in an IRWMP represent an investment of time and resources from various stakeholder groups that have identified, scored and ranked water-related projects that provide a public benefit. Regrettably, the demand for IRWMP grant funds is always greater than the supply of grant

funds, so there are a number of impactful investment opportunities in the San Joaquin Valley ready for the Water System Investment Program. IRWMP projects prioritized for funding are those that have already qualified to receive funding from a state, federal, or private agency, but lack the local match dollars required by the funding agency as a condition of approval. Sample projects include reclamation of water wells, expansion and development of recharge facilities, groundwater banking, stormwater projects, watershed management, new and refurbished infrastructure, surface and wastewater treatment facilities, and hundreds more.



If a project is suitable for further consideration, the Planning Committee will meet with representatives from the lead agency, regulatory agencies, and other funding partners to review and evaluate the project for potential funding from the Water System Investment Program. The evaluation will consider risk factors related to construction, schedule, costs, land acquisition, regulatory permits and approvals, environmental impact mitigation requirements, partner funding reliability, and other factors that could interfere with the successful and timely completion of a high-quality project.

Project Finance Committee. Once the Planning Committee identifies an investment-worthy project, they will submit a recommendation to the JPA Board of Directors that the Board authorize the Project Finance Committee to initiate funding discussions with the lead agency for the project. The Finance Committee will work with the lead agency to negotiate the terms and conditions for funding from the Water System Investment Program and a funding agreement will be prepared. The negotiated items will include, but not be limited to, type of funding (loan or grant), qualified expenses for funding, amount of funding, disbursement schedule for funding, disbursement process for funding, reporting requirements, change-management process, etc.

Project Delivery Committee. Upon completing the negotiations for the funding agreement, the Project Finance Committee will recommend the Board approve the project funding agreement and authorize the Project Delivery Committee to meet with the lead agency for the project. The Committee and Agency will review, discuss, and come to agreement on the schedule, cost, and quality elements of the project. The mission of the Project Delivery Committee is to ensure that projects proceed efficiently, and that there is accountability and transparency during all phases of implementation. If cost and schedule deviations arise, the Project Delivery Committee will work with the Lead Agency to prepare a recovery plan. If changes are required for a project's cost, schedule, or quality, the Project Delivery Committee will process and evaluate the request and submit a recommendation to the JPA Board of Directors for consideration.

CONCLUSION

California and the San Joaquin Valley have a water problem – more specifically a water infrastructure problem. The water infrastructure in California is over 70 years old, and the wear and tear of constant use, along with increasing demand from a growing populace, are beginning to endanger agricultural production and the safety and supply of water for personal use. Damages to dam spillways and canals in the Valley are visible, and without changes, these problems will only get worse. Thousands of wells may go dry and tens of thousands of residents may lose their primary access to water by 2040. Up to one million acres in the Valley will be fallowed, causing losses of over \$7 billion dollars in yearly crop revenues. We could sit and watch our infrastructure fail, or we could do something about it. A one-time investment of \$7 billion dollars can safeguard water infrastructure in the San Joaquin Valley and save it from becoming the next Appalachia. The California Water Institute proposes something about it be done, in the form of the Water System Investment Program, by creating a governing body and implementing a financing strategy that would include two new sources of revenue, as well as federal and state grants.

The California Water Institute has identified three next steps for the implementation of the Water System Investment Program to improve water infrastructure in the San Joaquin Valley. The critical next step is to create a shared water vision for the San Joaquin Valley that includes water projects that take into consideration all water interests. Once the San Joaquin Valley water interests agree upon a shared water vision, the next steps will include the development of a capital plan as well as the formation of a governing body.

It certainly won't be easy ... but what could be more important than working together on the most important resource needed to sustain life on this planet?!

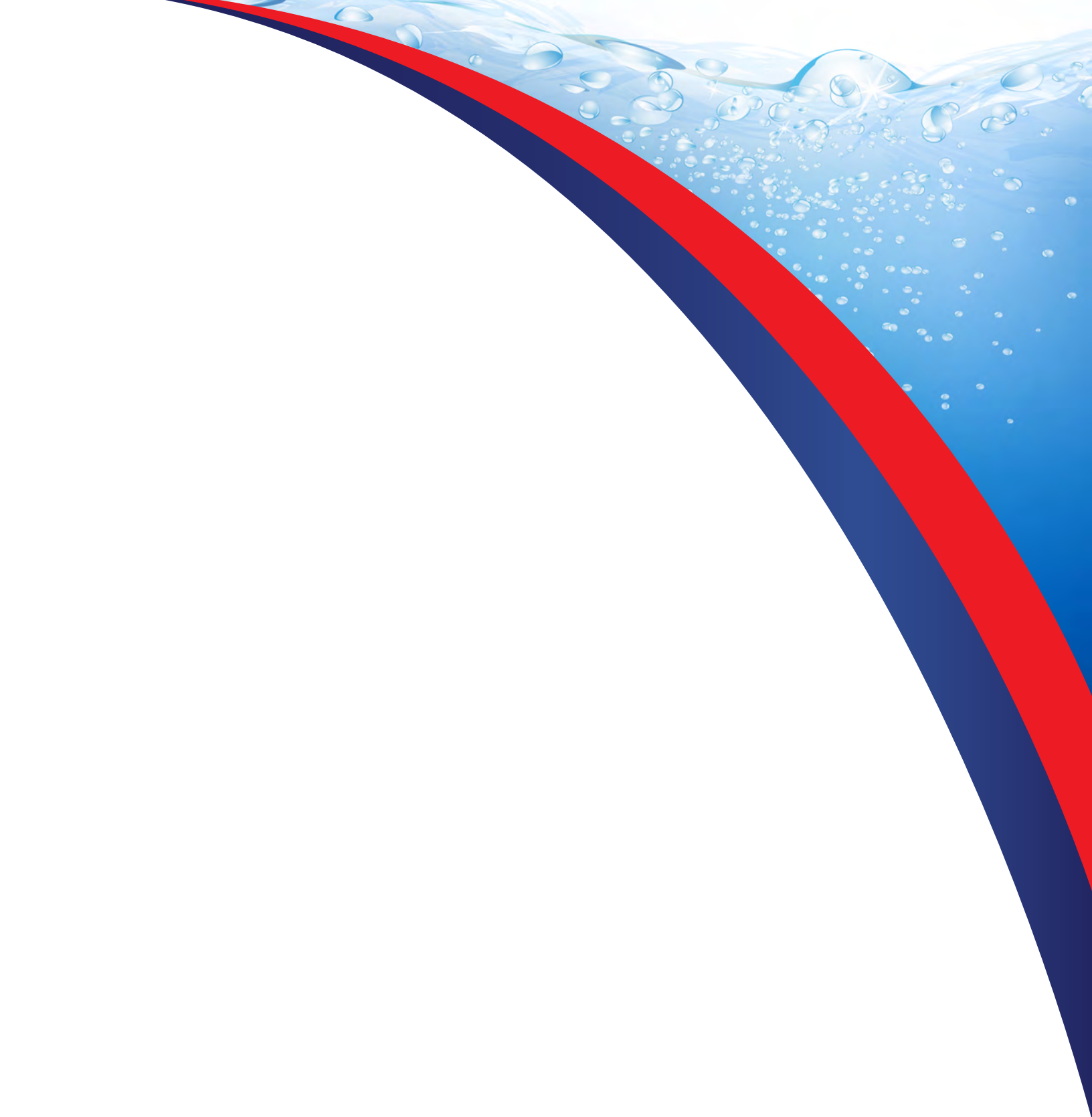
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