Appendix J:
Water Supply Assessment

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Water Supply Technical Memorandum

Shirk and Riggin Industrial Park

September 2022

Prepared For:

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Acronyms

AF	Acre-Feet
AFY	Acre-Feet per Year
Cal Water	California Water Service Company
CEQA	California Environmental Quality Act
CPUC	California Public Utilities Commission
COD	Critically Over Drafted
CWC	California Water Code
DMM	Demand Management Measures
DWR	Department of Water Resources
EIA	U.S. Energy Information Administration
EPA	U.S. Environmental Protection Agency
FAR	Floor Area Ratio
GMP	Groundwater Management Plan
GPD	Gallons Per Day
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
IE	Irrigation Efficiency
JPA	Joint Powers Agreement
IRWMP	Integrated Regional Water Management Plan
KDWCD	Kaweah Delta Water Conservation District
MAWA	Maximum Applied Water Allowance
MKGSA	Mid-Kaweah Groundwater Sustainability Agency
MOU	Memorandum of Understanding Regarding Urban Water Conservation in California
MWELO	Model Water Efficient Landscape Ordinance
PWS	Public Water System
SGMA	Sustainable Groundwater Management Act
SOI	Sphere of Influence
sqft	Square Feet
TID	Tulare Irrigation District
UGB	Urban Growth Boundary
UWMP	Urban Water Management Plan
WSA	Water Supply Assessment
WSCP	Water Shortage Contingency Plan

1.0 Introduction and Background

This Water Supply Assessment (WSA) has been prepared pursuant to the requirements of Senate Bill 610 ("SB 610"), requiring public water agencies, parties, or purveyors that may supply water to certain proposed development projects to prepare a WSA for use in environmental documentation for such projects, pursuant to the California Environmental Quality Act (CEQA). The City of Visalia is conducting an environmental review under the requirements of CEQA for the proposed Shirk and Riggin Industrial Park in the City of Visalia, California.

The WSA will evaluate if the water supply determined to be available during normal, single dry, and multiple dry years will meet the Project water demand, in addition to existing and planned future uses in the City of Visalia.

This WSA contains information from the California Water Service 2020 Urban Water Management Plan (UWMP) for the Visalia District and the Integrated Regional Water Management Plan (IRWMP) prepared by the Kaweah River Basin Regional Water Management Group.

Approvals must be conditioned on the requirement that a sufficient water supply shall be available to serve the project, where proof of the availability of that supply must be based on a written verification prepared by the agency providing water service to the project. "Sufficient water supply" under SB 610 means that the total water supply available during normal, single-dry, and multiple-dry years within a 20-year projection will meet the projected demand associated with the proposed Project, in addition to existing and planned uses. According to SB 601, projects that require a WSA differ depending on if the public water system has over 5,000 connections. The Visalia District has over 5,000 connections. Therefore, projects that require a WSA are:

1. A proposed residential development of more than 500 dwelling units.
2. A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
3. A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
4. A proposed hotel or motel, or both, that has more than 500 rooms.
5. A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, which occupies more than 40 acres of land, or has more than 650,000 square feet of floor area.
6. A mixed-use project that includes one or more of the projects specified in this subdivision.
7. A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project.

The proposed Shirk and Riggin Industrial Park would occupy approximately 280 acres, therefore a WSA is required because of item 5, listed above.

1.1 Water Agencies and Providers

The California Water Service Company (Cal Water), Visalia District, provides water supplies for the City. The project involves the annexation of the Project Site into the City of Visalia. Upon annexation, the site will be added to the Cal Water, Visalia District service area. Cal Water, Visalia District is part of a regional group of agencies and providers as follows:

- Mid-Kaweah Groundwater Sustainability Agency (MKGSA)
- Kaweah Delta Water Conservation District (KDWCD)
- Kaweah River Basin Regional Water Management Group

In the region in which the Visalia District is located, Cal Water participates with the Kaweah Delta Water Conservation District (KDWCD). In this District, The City of Visalia and others established the Groundwater Management Plan (GMP) under the provisions of Assembly Bill 3030. KDWCD is the lead agency in this effort. KDWCD has historically focused on the conservation of flows of the Kaweah River for groundwater recharge. Cal Water is also a stakeholder group participant in the Kaweah River Basin Integrated Regional Water Management Plan, adopted in December 2018.

Cal Water is an urban water supplier that provides the main source of water supply for the City of Visalia and surrounding communities. The Visalia District is an urban retail water supplier, as defined by CWC §10608.12. The Visalia District does not provide water wholesale. The sole source of water supply for the customers of the Visalia District is groundwater. The Visalia District of Cal Water pumps from the Kaweah basin, which has been designated by DWR as Critically Over Drafted (COD).

1.2 Water System and Supply

The Kaweah Basin provides the main source of water supply for the City of Visalia and surrounding communities. The KDWCD manages the Basin. KDWCD and other irrigation districts and companies have historically managed groundwater through the conjunctive use of surface water. KDWCD regularly provides programs that benefit local agricultural customers by making available additional surface water supplies for irrigation. These programs effectively reduce the withdrawals of groundwater resulting in less recharge to the aquifer. Groundwater is normally used by agriculture as an alternate source when surface supplies are not available and is the sole source in areas within KDWCD jurisdiction that do not have access to surface water.

KDWCD also operates about 40 dedicated water management basins with a total area of approximately 2,100 acres for the multiple purposes of flood control and groundwater replenishment. The basins have the capacity to recharge approximately 983 acre-feet per day under optimal conditions.

Visalia District operates the Public Water Systems (PWS) listed in Table 1-1. Public Water Systems are the systems that provide drinking water for human consumption and these systems are regulated by the State Water Resources Control Board (Board), Division of Drinking Water.

Table 1-1: Public Water Systems

Public Water System Number	Public Water System Name	Number of Municipal Connections, 2020	Volume of Water Supplied, 2020 (AF)
5410016	Visalia	45,325	30,152
5400935	Mullen	42	21
5410041	Tulco	183	97

2.0 Project Description

2.1 Project Location and Setting

The proposed Project is located on approximately 280 acres in the northern portion of the City of Visalia and is generally bound by North Shirk Street to the east, North Kelsey Street to the west, West Riggin Avenue to the south, and the Modoc Ditch to the north. Road 89, a private road, intersects the project site. The site is comprised of three parcels: APN 077-840-001, APN 077-840-002, and APN 007-840-003. APN 077-840-001 is approximately 78.73 acres, 002 is approximately 77.28 acres, and 003 is approximately 128.42 acres. All three parcels are currently used for almond orchards. In addition to the orchard, there are non-native planted ornamental trees, including a double row of 35 olive trees and a cluster of two tall elm trees, and one cedar along Road 89. A man-made irrigation pond and related structures exist on the site. The entire site is within the Visalia Planning Area, the Tier One Urban Growth Boundary (UGB, and the Sphere of Influence (SOI of the City of Visalia. Although the site has historically been used for agricultural uses, the Visalia General Plan has designated approximately 250 acres of the site for Industrial uses, and the remaining land for Light Industrial uses.

The proposed Project site is in a developing area of the City of Visalia. Recently, in 2021, an Amazon distribution warehouse was opened directly west of the Project Site. To the south, additional distribution warehouses have been constructed in the past several years. In addition, a dairy farm, rural residential homes, and agricultural land exist to the south. Agricultural uses exist to the north and east. The General Plan designates residential uses to the east and industrial uses to the north. Land uses of adjacent parcels surrounding the Project site are shown in Table 2-1:

Table 2-1: Surrounding Land Uses

Location	Existing Land Use	General Plan Designated Land Use
North	Agriculture	Industrial, Light Industrial
South	Industrial: Distribution Warehouse, Dairy, Rural Residential, Agriculture	Industrial, Light Industrial
West	Industrial: Distribution Warehouse	Industrial
East	Agriculture	Low, Medium, and High-Density Residential

Figure 2-1: Project Site Vicinity Map

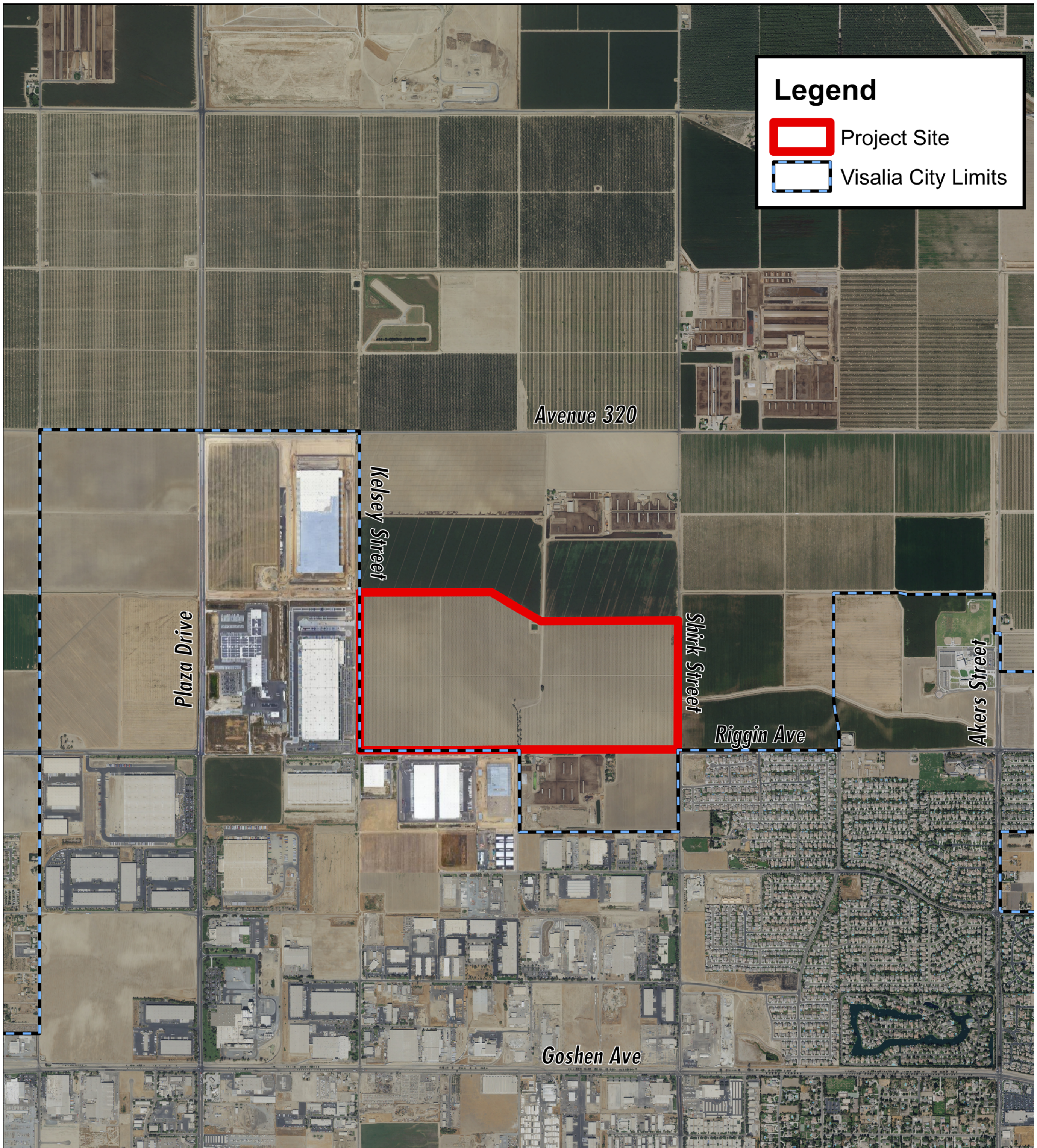

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Figure 2-1: Project Site Vicinity

Shirk and Riggin Industrial Park

Date: 9/20/2022

N

1 inch = 2,000 feet

2.2 Description of Proposed Project

The Project Applicant is proposing to develop approximately 280 acres of land into an Industrial Park. The development will include eight industrial warehouses, light industrial uses, and various commercial uses.

Industrial

The project's main component is the eight industrial warehouses. These buildings are intended to be used as distribution centers, similar to surrounding uses. Approximately 199.6 acres of the Project Site will be for these buildings and their parking and roads. These buildings range from 109,890 sqft to 1,078,440 sqft. In total, the square footage of these eight buildings is 3,474,650 sqft. The Industrial portion of the Project includes parking for passenger vehicles, trailer/heavy truck parking spaces, drive isles, and loading bays for trucks. This Industrial section has a net coverage of 33%.

Light Industrial

In addition, approximately 14.3 acres of the Site are planned to be used for Light Industrial uses. This includes six buildings to be used for "Flex Industrial" uses. These are smaller than the large Industrial buildings. In total, the Flex Industrial buildings total 84,480 square feet of building space, 298 parking spaces, and drive isles for trucks and passenger vehicles. The remainder of the of Light Industrial portion is planned for a self-storage center. This is planned to have a building footprint of 144,800 sqft, along with trailer/R.V. parking spaces and passenger vehicle parking spaces. The Light Industrial portion has a net coverage of 24%.

Commercial

The Project proposes 3.7 acres of Commercial uses in the southeast corner of the Site. Anticipated uses at this site are a convenience store, a car wash, and two drive-thru restaurants. In total, there is 16,278 sqft of gross leasable commercial space along with passenger vehicle parking spaces in the Commercial portion of the project. The Commercial portion has a net coverage of 6%. The Commercial facilities are located to provide efficient access to employees of the Project and the residents of the surrounding areas.

Other Project Components

The project also contains approximately 31.3 acres of Water Quality Management Basins to retain stormwater on-site. The detention basins would be planted with species including the Berkeley sedge, Canyon Prince wild rye, Hummingbird sage, and California goldenrod. Various infrastructure improvements will be included in the project, including the extension of Clancy Street through the site where Road 89 currently exists, improvements to surrounding streets, and new utilities to connect the site.

Outside of the building footprints, roads, parking lots, and stormwater basins, approximately 30.7 acres remain for landscaping within the project limits. Trees to be used for parking area landscaping would include species with very low to medium water needs, including but not limited to coast live oak, autumn gold ginkgo, London plane tree, zelkova, Arizona cypress, and southern magnolia. Shrubs and groundcovers would feature species with low water needs, such as buffalo grass, Bermuda grass, feather reed grass, blue fescue, pink muhly grasses, and heavenly bamboo.

Phasing / Construction Schedule

The project is proposed to be built in three phases, shown in Table 2-2 and Figure 2-2 below. With construction expected to begin in March 2024, the Project is expected to be completed by March 2028, and fully operational by April 2028. Phase One includes the two largest industrial buildings in the northwest portion of the site. The estimated construction is one year, from March 2024 to March 2025. Phase Two includes the construction of three industrial buildings and the commercial portion of the site. The estimated construction is one year, from September 2025 to September 2026. Phase Three is the construction of the remaining three warehouses, the flex industrial buildings and the self-storage center. The estimated construction is one year, from March 2027 to March 2028.

Table 2-2: Summary of Proposed Land Uses

Phase 1	Gross Acreage	Building Square Footage	Stormwater Basins Acreage	Roads and Parking Acreage	Landscaping Acreage
Industrial, Buildings 1, 2	121.8	1,864,680	17.4	54.6	7.0
Phase 2	**Gross Acreage**	**Building Square Footage**	**Stormwater Basins Acreage**	**Roads and Parking Acreage**	**Landscaping Acreage**
Industrial, Buildings 3,4, 7	67.8	830,700	7.1	33.2	8.3
Commercial	6.7	16,278	0.9	3.3	2.2
Phase 2 Total	**74.5**	**846,978**	**8.0**	**36.5**	**10.5**
Phase 3	**Gross Acreage**	**Building Square Footage**	**Stormwater Basins Acreage**	**Roads and Parking Acreage**	**Landscaping Acreage**
Industrial, Buildings 5,6,8	62.8	779,270	3.9	32.0	9.0
Light Industrial	20.4	229,280	1.9	9.0	4.2
Phase 3 Total	**83.2**	**1,008,550**	**5.8**	**41.0**	**13.2**

Site Circulation and Access

The overall layout of the Project Site is designed to effectively allow large trucks to enter and exit the site. Regional access to the project site is available from State Route 99 via the Betty Drive interchange. Clancy Street will be extended through the center of the site. Three new roads will cross the site in a lateral direction, connecting Kelsey, Clancy, and Shirk Streets. These streets will allow access to the loading docks and trailer parking spaces. Separate smaller streets will provide passenger vehicle access to parking lots for employees and commercial buildings. A series of pedestrian sidewalks would be provided throughout the site. In total, there are fifteen access points to the site. The new Clancy Street will allow access from Riggin Street to the south and from a new planned street to the north. Four additional access points from Riggin Street will be included. From the west, Kelsey Street will provide five access points. To the east, Shirk Street will provide four access points.

The Project will be responsible for the construction of the internal roadways as well as improvements to surrounding roadways. Kelsey and Shirk Street will be widened to allow access from large trucks and additional passenger vehicle traffic. Kelsey and Shirk will also be improved with landscaping, a center median, sidewalks, lighting, and necessary utility improvements.

Infrastructure

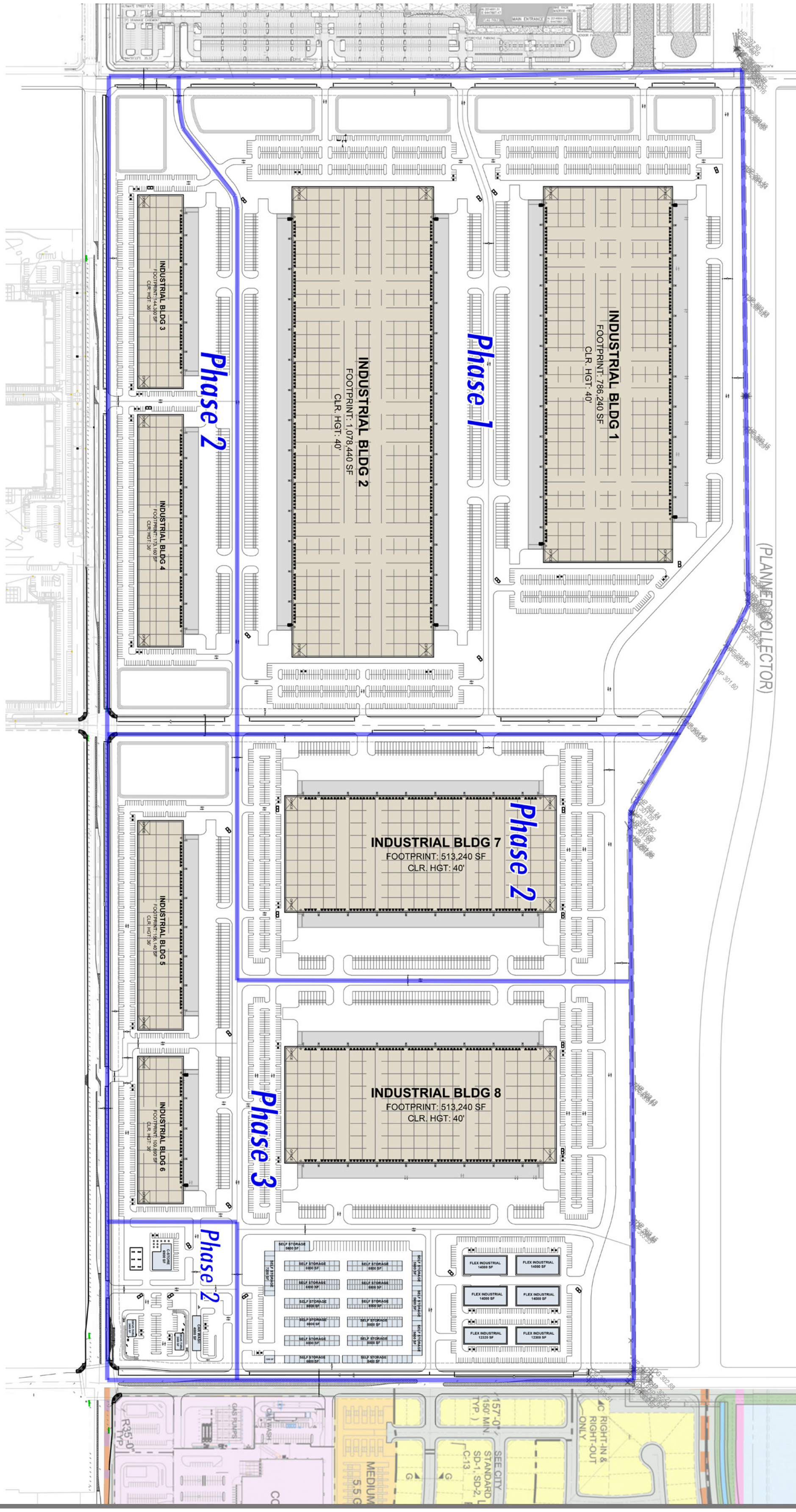
The Project will require connection to various City-operated utility and infrastructure systems. These include City-provided services such as sewer/wastewater, water, and stormwater facilities. Non-City provided infrastructure includes natural gas (to be provided by Southern California Gas Company) and electrical services (to be provided by Southern California Edison). The Project will be responsible for the construction of connection points to the City's existing infrastructure.

Other Public Agencies Approval and Consultation

The Project will require various permits and/or entitlements from regulatory agencies. Consultation may be required, and the City of Visalia will integrate CEQA review with these related environmental reviews requirements. These may include, but not be limited to the following:

- Tulare County LAFCO (annexation)
- Conditional Use Permit for reduced parcel size
- Conditional Use Permit to allow commercial uses on Industrial zoning
- Conditional Use Permit for lots without public street frontage
- San Joaquin Valley Air Pollution Control District – approval of construction and/or operational air quality permits
- Storm Water Pollution Prevention Plan
- Regional Water Quality Control Board
- Certification of the EIR
- Approval of the Site Plan
- Approval of the Tentative Parcel Map

Figure 2-2: Project Site Plan and Phasing



3.0 Project Water Demands

3.1 Assumptions

Project water demand is estimated using information from the U.S. Energy Information Administration (EIA and the U.S. Environmental Protection Agency (EPA. Project water demand is calculated on the following assumptions:

- Industrial: The Project is proposing 3,474,650 sqft of Industrial warehouses.
- Industrial Demand: According to a study by the EIA, large warehouses and storage use approximately 3.3 gallons of water per sqft per year.
- Light Industrial: The Project is proposing 84,480 sqft of Flex Industrial uses, and 144,800 sqft of a Self-Storage Center.
- Light Industrial Demand: The Flex Industrial uses can have a wide range of uses, therefore these buildings will use the average water usage of all buildings from the previously mentioned study by the EIA. This is 20.4 gallons per sqft per year. The Self-Storage center would have a similar usage to the warehouses, at 3.3 gallons of water per sqft per year.
- Commercial: The Project is proposing two 2,398-sqft drive-thru restaurants, a 6,922 sqft convenience store, and a 4,560 sqft car wash.
- Commercial Demand: According to a study by the EPA, car washes use 2,302 GPD. The convenience store and drive-thru restaurants are found by Gallons Per Employee Per Day (GPE). The convenience store is estimated to have 8 employees, and the drive thru restaurants will have a total of 5 employees. Food service has an estimate of 265 GPE, and the convenience store has use of 152 GPE.
- Landscaping: The Project includes approximately 30.68 acres of landscaping. A conservative estimate would assume that the entire landscaping acreage will be irrigated lawn and will require approximately five acre-feet of water per acre per year. This figure is based on information on water requirements for large, irrigated lawns such as golf courses in the region. However, due to restrictions from the MWELO (Section 3.3) the project will be required to use low-water landscaping. It can be assumed that the landscaping for the project will demand approximately half the amount of water irrigated lawn would use. The landscaping usage will be assumed at 2.5 acre-feet of water per acre per year.
- Construction: During project construction, water use is estimated to be approximately 0.12 acre-feet/acre/month. This water will be used primarily for dust control.

3.2 Project Water Demands

Based on the above assumptions, Project water demand is calculated as follows:

Industrial:

Building Square Footage X *3.3 Gallons Per Year* = Total Water Usage Per Year

It is anticipated that the project will have an Industrial water demand of 11,466,345 gallons per year, or 35.2 AFY, upon full buildout.

Light Industrial:

(*Flex Industrial Building Square Footage* X *20.4 Gallons Per Year*) + (*Self-Storage Building Square Footage* X *3.3 Gallons Per Year*) = Total Water Usage

It is anticipated that the project will have a Light Industrial water demand of 2,201,232 gallons per year, or 6.8 AFY, upon full buildout.

Commercial:

((5 Employees X *265 GPE*) + *(8 Employees X 152 GPE)* + (*Car Wash Usage*)) X 365 = Total Water Usage

The project will have a Commercial water demand of 1,767,695 GPY, or 5.4 AFY, upon full buildout.

Landscaping:

30.68 Landscaping Acres X *2.5 AFY Per Acre* = 76.7 AFY

In total, it is anticipated that the Project would require approximately 124.1 AFY of water following project completion.

Construction:

280 Total Acres X 36 Construction Months X 0.12 AF/Acre/Month = 1,209.6 AF Total (33.6 AF/Month)

Table 3-1: Operational Water Demands

Land Use	Square Footage	Water Usage Factor	Water Usage In Phase (Gal/Year)	Water Usage In Phase (AFY)	Total Water Usage (AFY)
Phase One					
Industrial	1,864,680	3.3 Gallons/sqft/year	6,153,444	18.9	18.9
Flex Industrial	-	-	-	-	-
Self-Storage	-	-	-	-	-
Drive Thru Restaurant	-	-	-	-	-
Convenience Store	-	-	-	-	-
Car Wash	-	-	-	-	-
Landscaping	7.0 Acres	2.5 AFY/Acre	5,696,413	17.5	17.5
2025 Usage:			**11,849,857**	**36.4**	**36.4**
Phase Two					
Industrial	830,700	3.3 Gallons/sqft/year	2,741,310	8.4	27.3
Flex Industrial	-	-	-	-	-
Self-Storage	-	-	-	-	-
Drive Thru Restaurant	4,796	-	483,625	1.5	1.5
Convenience Store	6,922	-	443,840	1.3	1.3
Car Wash	4,560	-	840,230	2.6	2.6
Landscaping	10.5 Acres	2.5 AFY/Acre	8,571,170	26.3	43.8
2026 Usage:			**13,080,175**	**40.1**	**76.5**
Phase Three					
Industrial	779,270	3.3 Gallons/sqft/year	2,571,591	7.9	35.2
Flex Industrial	84,480	20.4 Gallons/sqft/year	1,723,392	5.3	5.3
Self-Storage	144,800	3.3 Gallons/sqft/year	477,840	1.5	1.5
Drive Thru Restaurant	-	-	-	-	1.5
Convenience Store	-	-	-	-	1.3
Car Wash	-	-	-	-	2.6
Landscaping	13.2 Acres	2.5 AFY/Acre	10,724,706	33.0	76.8
2028 Usage:			**15,527,523**	**47.6**	**124.1**

Table 3-2: Construction Water Demands

Phase	Construction Dates	Construction Months	Water Usage (AF)
Phase 1	March 2024 - March 2025	12	403.2
Phase 2	September 2025 - September 2026	12	403.2
Phase 3	March 2027 - March 2028	12	403.2
Total:		**36**	**1209.6**

Table 3-3: Total Project Water Demands By Year

Year	Construction Demand (AFY)	Operational Demand (AFY)	Total Demand (AFY)
2024	302.4	0	302.4
2025	235.2	36.4	271.6
2026	268.8	76.5	345.3
2027	302.4	76.5	378.9
2028	100.8	124.1	224.9
2029		124.1	124.1
2030		124.1	124.1
2031		124.1	124.1
2032		124.1	124.1
2033		124.1	124.1
2034		124.1	124.1
2035		124.1	124.1
2036		124.1	124.1
2037		124.1	124.1
2038		124.1	124.1
2039		124.1	124.1
2040		124.1	124.1
2041		124.1	124.1
2042		124.1	124.1
2043		124.1	124.1
2044		124.1	124.1
2045		124.1	124.1

3.3 Visalia Service Area Water Conservation Measures

As identified previously, the Project would use approximately 123.9 acre-feet/year of water once completed. Cal Water also has its conservation program that has and will continue to reduce per capita usage and therefore demands on critical water sources. Cal Water is committed to helping its customers use water efficiently and has developed a range of water conservation programs to support this goal. To ensure that it is providing the right mix of programs in the most cost-effective manner possible, Cal Water routinely conducts comprehensive conservation program analysis and planning. This is done on a five-year cycle in tandem with the UWMP. Cal Water's current Conservation Master Plan (April 2021) provides the basis for the information on the implementation of and expected water savings from Demand Management Measures (DMMs).

- **Potable Water:** The estimated 30.68 acres of landscaping will be irrigated. However, since outdoor landscaping is considered non-critical, the water available for outdoor public spaces will be limited during severe drought conditions.
- **Recycled Water:** The City of Visalia recently upgraded its wastewater treatment facilities to treat all the effluent to a tertiary level. Most of the water is traded with the Tulare Irrigation District (TID), which provides water upstream that is recharged into the city's aquifer. The remaining water is currently being used at the Valley Oaks golf course and is under design to be used at Plaza Park. By 2040 the volume of water reused under these programs could reach over 27,000 AFY.
- **Economic Incentives:** As an investor-owned utility, Cal Water rates and charges are reviewed and authorized by the California Public Utilities Commission (CPUC) every three years. Starting in 2008 Cal Water adopted tiered rate designs for single-family residential services. Uniform volumetric rate designs are employed by Cal Water for other water service classes. The Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) conservation pricing provides economic incentives to customers to use water efficiently via a volumetric water rate. The MOU considers uniform, seasonal, tiered (block), and allocation-based rate designs as each being potentially consistent with conservation pricing, provided that either (1) 70% or more of total annual revenue is derived from the volumetric component of the rate design or (2) the proportion of total revenue from the volumetric component of the rate design equals or exceeds the long run incremental cost of providing water service, or (3) the utility's metering technology, rate structure, and customer communication programs satisfy various requirements specified by the MOU. The Visalia District's rate structure, metering, and customer communication programs comply with Option 3 of the Urban MOU's definition of conservation pricing.
- **Demand Management Measures:** Cal Water filed Schedule 14.1 with the CPUC in the spring of 2015 which went into effect on June 1, 2015. Cal Water's Schedule 14.1 filing, which applies to both residential and non-residential customers, was responsive to Governor Brown's emergency drought declaration and an executive order requiring a statewide 25% reduction in urban potable water use. The following measures were put into place to reduce wasteful water use at all times for all customers:

    - ◊ Applying water to outdoor landscapes that can cause runoff onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures is prohibited.
    - ◊ Using a hose to wash motor vehicles unless the hose is fitted with a shut-off nozzle or device that causes it to cease dispensing water immediately when not in use is prohibited.
    - ◊ Applying water to driveways and sidewalks is prohibited.
    - ◊ Using water in a fountain or other decorative water feature, except where the water is part of a recirculating system is prohibited.

- ◊ Applying water to outdoor landscapes during and within 48 hours after measurable rainfall is prohibited.
- ◊ Using potable water to irrigate outside of new construction without drip or micro-spray systems is prohibited.
- ◊ The serving or drinking water other than upon request in eating and drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased is prohibited.
- ◊ Hotel/motel operators must provide an option to not have towels or linens laundered daily during a guest's stay and must provide clear notice of this option in easy-to-understand language.
- ◊ Customers must fix leaks within their control within five business days of notification.
- ◊ Irrigating ornamental landscapes with potable water is prohibited during the hours between 8:00 a.m. and 6:00 p.m.

- **Additional Measures:** In addition to the DMM programs described above, Cal Water operates rebate, give-away, and direct installation programs aimed at plumbing fixture replacement, irrigation equipment, and landscape efficiency improvements. The following measures are listed below:

  - ◊ *High-Efficiency Toilet Replacement* – This program replaces old toilets with MaP-certified high-efficiency toilets via financial rebates, direct installation, or direct distribution. Current rebate amounts are up to $50/toilet for a residential toilet replacement and up to $100/toilet for commercial toilet replacement.
  - ◊ *High-Efficiency Urinal Replacement* – This program replaces old urinals with high-efficiency urinals meeting the state's 0.125 gallons per flush water use standard via financial rebates and direct installation. While available to all non-residential customers, the program targets sites with higher-than-average bathroom utilization, such as restaurants and office buildings. The current rebate amount is up to $150/urinal.
  - ◊ *Clothes Washer Replacement* – This program provides a financial rebate to replace an old inefficient clothes washer with a new high-efficiency washer. The program is available to all residential and multi-family customers. The current rebate amount is up to $150/washer.
  - ◊ *Residential Conservation Kit Distribution* – This program offers residential customers conservation kits featuring a range of water-saving plumbing retrofit devices. The kits are available at no charge and include two high-efficiency showerheads (1.5 gpm), two bathroom faucet aerators (1.0 gpm), one kitchen faucet aerator (1.5 gpd), toilet leak tablets, and an outside multi-function, full-stop hose nozzle.
  - ◊ *Smart Irrigation Controller Installation* – This program provides a financial rebate for the installation of a smart irrigation controller that automatically adjusts the watering schedule in response to changing weather conditions. The current rebate amount is $125/controller for residential customers and $25/station for commercial customers.
  - ◊ *High-Efficiency Sprinkler Nozzle Rebate* – This program provides a financial rebate for the installation of high-efficiency sprinkler nozzles. This program is available to all Cal Water customers. The current rebate amount is $5/nozzle.
  - ◊ *Large Rotary Nozzle Rebate* – This program provides a financial rebate for the installation of high-efficiency large rotary nozzles. This program is available to all Cal Water customers. The current rebate amount is up to $30/nozzle toward the nozzle purchase cost and up to $8/spray body toward installation cost, if installed by a C-27 licensed landscape contractor.
  - ◊ *Spray Body with Integrated Pressure Regulation and Check Valve Rebate* – This program provides a financial rebate for the installation of high-efficiency spray bodies with integrated pressure regulation. This program is available to all Cal Water customers. The current rebate

amount is up to $10/body toward the spray body purchase cost and up to $8/spray body toward installation cost, if installed by a C-27 licensed landscape contractor.

- *Turf Replacement Rebate –* This program provides a financial rebate for the replacement of turf with approved drought-tolerant landscaping. Cal Water operated this program in 2015/16 as a drought response measure. The program will be restarted as part of Cal Water's irrigation equipment/landscape upgrade program offerings.

- **MWELO:** The California Water Commission approved the State's updated Model Water Efficient Landscape Ordinance (MWELO) on July 15, 2015. The updated MWELO supersedes the State's MWELO developed under AB 1881. The size of landscapes subject to MWELO has been lowered from 2500 sq. ft. to 500 sq. ft. The size threshold applies to residential, commercial, industrial, and institutional projects that require a permit, plan check, or design review. Additionally, the maximum applied water allowance (MAWA) has been lowered from 70% of the reference evapotranspiration (ETo) to 55% for residential landscape projects, and 45% of ETo for non-residential projects. This water allowance reduces the landscape area that can be planted with high water use plants such as cool season turf. For typical residential projects, the reduction in the MAWA reduces the percentage of landscape area that can be planted to high water use plants from 33% to 25%. In typical non-residential landscapes, the reduction in MAWA limits the planting of high-water use plants to special landscape areas (such as play fields or parks) or landscaping irrigated with recycled water. The revised MWELO allows irrigation efficiency to be entered for each area of the landscape. The site-wide irrigation efficiency of the previous ordinance (2010) was 0.71; to estimate total water use, the revised MWELO defines the irrigation efficiency (IE) of drip irrigation as 0.81 and overhead irrigation and other technologies must meet a minimum IE of 0.75. The impact on the Project would be the 30.68 acres of landscaping would require recycled water, or utilize low water demand landscaping.

3.4 City-Wide Future Estimated Water Use

Table 3-2 shows the projected supply volumes through 2045. Cal Water is assuming that current and planned basin recharge activities and land use conversions will result in sufficient groundwater supplies to meet demand through 2045. Therefore, the groundwater supply amounts shown in Table 3-2 equal the projected demand each year. As the SGMA process unfolds and as Cal Water and its partners gain a better understanding of the basin and what is required to sustain it, this assumption will be continually reassessed. Future decisions on basin recharge activities and the potential development of other supply sources will be based on the accumulated knowledge gained about the groundwater basin.

Table 3-4: Retail Water Supplies

Water Supply	Projected Water Supply					
	2020	*2025*	*2030*	*2035*	*2040*	*2045*
	Actual Supply Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
	30,152 AF	**32,520 AF**	**35,276 AF**	**38,310 AF**	**41,258 AF**	**44,529 AF**

3.5 Acquisition of Water

Cal Water does not currently purchase imported water to serve demand in its Visalia District. KDWCD does have a contract with the Bureau of Reclamation to receive Central Valley Project (CVP) water from the Friant-Kern Canal. KDWCD could transfer a portion of this water to urban use or could act as an intermediary in a water transfer between another CVP contractor and Cal Water.

4.0 Inclusion in Adopted Comprehensive Infrastructure Master Plan

UWMP guidelines and the California Water Code require UWMPs to integrate local land use plans in assessing future water conditions and projections for future water use. The Guidelines state: *A UWMP that meets statutory reporting requirements will also reflect short-term and long-term land use planning assumptions and goals, account for specific plan and infill development projects over the course of the UWMP planning period, and it will allow the Supplier to handle the dynamic nature of water supplies and demands through sound water-shortage contingency planning.*

The proposed project site is not shown within the service area boundaries in the current service area map. However, the Visalia UWMP includes growth outside of the current service area in its assessment of future water conditions and projections of future water use.

In the Visalia UWMP, projections for future population growth and future residential water use are based on data from the California Department of Transportation's (Caltrans) long-term socio-economic forecast model, which utilizes historic growth to forecast future population growth. The Caltrans long-term socioeconomic forecast model provides a county-wide forecast, so growth occurring outside of the existing Visalia city limits was incorporated into the Visalia UWMP's assessment of future water conditions and projections for future water use. As such, the adequacy of the water supply for the Project will be analyzed based on the analysis of the Visalia District's water supply in the Urban Water Management Plan.

However, the total water supplies given in the UWMP are determined by the demand, not necessarily the actual maximum supply. The UWMP states "It should be noted that the Kaweah and Tule Subbasins are not adjudicated, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes." The Project will add additional Industrial and Commercial water demand. This should not impact other uses in the District, as Cal Water will be able to increase the amount of water pumped. The UWMP states "Cal Water expects that, under all hydrologic conditions, its groundwater supply for the Visalia District will fully meet future demands."

Cal Water can expect to meet the increased demand because Municipal and Industrial (M&I) pumping accounted for 9% of the total pumping in the Kaweah Subbasin, and 3% of the total pumping in the Tule Subbasin. From this, the UWMP can conclude that "It is therefore likely that management of agricultural groundwater use, rather than M&I use, will be a much larger determining factor in maintaining groundwater sustainability in both the Kaweah and Tule Subbasins in the future." The increase in Industrial and Commercial demand would most likely impact water used for agricultural uses.

The UWMP adds "Further, under California law, municipal water rights and uses have a higher priority and are entitled to more protection than other uses of water, including in connection with the Sustainable Groundwater Management Act (SGMA). The use of water for domestic purposes is recognized as the "highest use" of water in the State of California pursuant to California Water Code (CWC) §106, and the rights of urban water purveyors should be protected to the fullest extent necessary for existing and future uses, pursuant to CWC §106.5."

The Project will convert agricultural land into other uses. This will most likely reduce net water use. The UWMP states "Irrigated agriculture typically uses more water on a per-acre basis than urban uses, thus, some future growth within the District will likely result in a net decrease in water use within the subbasins."

5.0 Dry Year Water Supply Adequacy (Water Code Section 10910(C)(4))

The following dry year water supply adequacy is excerpted from the adopted 2020 UWMP for the City of Visalia.

Supplies are assumed to be sufficient to serve projected demands. The supply totals in Tables 5-2, 5-3, and 5-4 are therefore equal to the projected demands for each forecast year. Average year demands in Table 5-2 (and therefore available supply) come from the demand model and are not associated with a particular base year. Demands for single and multiple dry years are adjusted to reflect the effects of monthly temperature and rainfall departures from average, based on the recorded monthly temperature and rainfall amounts for those years.

The reliability of the City's groundwater supplies for the various water year types is summarized in Table 5-1. The available supplies in Table 5-1 are assumed to be equal to the maximum demands across all forecast years in Tables 5-2, 5-3, and 5-4. Cal Water expects that the assumption of the sufficiency of groundwater supplies, as augmented by expected enhanced recharge activities, to meet future demands through 2045 will be carefully evaluated and may be revised as part of the Groundwater Sustainability Plan is required by SGMA.

Water supply and demand patterns change during normal, single dry, and multi dry years. Cal Water has relied on the demand modeling described in Chapter 4 of the 2020 Urban Water Management Plan to forecast demands for normal, single dry, and multiple dry years. It is assumed that Cal Water's groundwater supply for the District will be able to serve those demands. (This excludes usage reductions that are not directly a function of Cal Water supplies but are externally imposed by other entities, such as the 2015 state-mandated cutbacks).

Table 5-1: Retail Water Supplies: Basis of Water Year Data

Type of Year	Base Year	Available Supplies if Year Type Repeats	
		Volume Produced From Wells (AF)	% of Average Supply
Average Year	1991	44,529	100%
Single-Dry Year	2013	45,400	102%
Consecutive Dry Years, 1st Year	2011	45,939	103%
Consecutive Dry Years, 2nd Year	2012	45,939	103%
Consecutive Dry Years, 3rd Year	2013	45,939	103%
Consecutive Dry Years, 4th Year	2014	45,939	103%
Consecutive Dry Years, 5th Year	2015	45,939	103%

Table 5-2 shows the projected supply and demand totals for a normal year. The supply totals match those in Table 3-2.

Table 5-2: Retail Water Supplies: Normal Year Supply and Demand Comparison (AF)

	2025	2030	2035	2040	2045
Supply Totals	32,520	35,276	38,310	41,258	44,529
Demand Totals	32,520	35,276	38,310	41,258	44,529
Difference	0	0	0	0	0

Table 5-3 shows the projected supply and demand totals for a single dry year.

Table 5-3: Retail Water Supplies: Single Dry Year Supply and Demand Comparison (AF)

	2025	2030	2035	2040	2045
Supply Totals	33,152	35,962	39,057	42,063	45,400
Demand Totals	33,152	35,962	39,057	42,063	45,400
Difference	0	0	0	0	0

Table 5-4 shows the projected supply and demand totals for the multiple dry years.

Table 5-4: Retail Water Supplies: Multiple Dry Years Supply and Demand Comparison (AF)

		2025	2030	2035	2040	2045
First Year	*Supply Totals*	33,543	36,387	39,520	42,562	45,939
	Demand Totals	33,543	36,387	39,520	42,562	45,939
	Difference	0	0	0	0	0
Second Year	*Supply Totals*	33,543	36,387	39,520	42,562	45,939
	Demand Totals	33,543	36,387	39,520	42,562	45,939
	Difference	0	0	0	0	0
Third Year	*Supply Totals*	33,543	36,387	39,520	42,562	45,939
	Demand Totals	33,543	36,387	39,520	42,562	45,939
	Difference	0	0	0	0	0
Fourth Year	*Supply Totals*	33,543	36,387	39,520	42,562	45,939
	Demand Totals	33,543	36,387	39,520	42,562	45,939
	Difference	0	0	0	0	0
Fifth Year	*Supply Totals*	33,543	36,387	39,520	42,562	45,939
	Demand Totals	33,543	36,387	39,520	42,562	45,939
	Difference	0	0	0	0	0

6.0 Comparison of Project Demand to Water Supply Sources

Table 6-2 provides an analysis of projected water demands needed to serve the City of Visalia for the next 25 years, comparing projected baseline community growth against the reasonably expected usage resulting from the Shirk and Riggin Industrial Park Project. The table is labeled with lettering corresponding to each column of information.

Columns B through I represent the projected demands for the Visalia District from the UWMP. Column J represents the reasonably expected baseline condition for the Visalia District if the Project site was not developed at all and was vacant. Columns K through O represent the demand added by the Project alone. Columns P through S represent the Visalia District water demand with the addition of the Project.

Column A represents the calendar year projection used in the analysis. Column B displays the expected daily water use per person from the UWMP, which decreases over time due to measures taken by the District to increase water efficiency. This includes residential use only. Column C displays the forecast for the Visalia District population, which was excerpted from the Visalia District UWMP and is derived from the California Department of Transportation's (Caltrans) long-term socio-economic forecast model, which utilizes historic growth to forecast future population growth. The annual growth rate calculated from this forecast is shown in Column D.

Column E represents the expected total residential water demand from the Visalia District UWMP. Columns F and G show the forecasted industrial and commercial water demand. Column H shows the forecasted demand from all other uses. This includes government uses, system losses, and all other uses. These projected demands are forecasted by the Visalia District UWMP and do not include the expected usage by the Shirk and Riggin Industrial Park. Column I shows the total demand forecasted by the UWMP.

Column J depicts the service area water demand with no Project Site development. This shows the expected demand if the Site was vacant, not including the existing agricultural uses. Because the Site is designated for Industrial and Light Industrial development by the General Plan, it was important to calculate the service area demand with no development of the site to identify an appropriate baseline to which Project-related water use should be added. The existing General Plan Land Use designations on the site were Industrial (250 Acres) and Light Industrial (34 Acres). According to the General Plan, the Floor Area Ratio (FAR) for Industrial uses is assumed at 0.15, and for Light Industrial, the FAR is assumed at 0.2. This is used to determine the expected square footage of the buildings if the Site was developed following the General Plan. For the baseline Industrial water demand, the same demand as the Project's Industrial demand was used (3.3 gallons/sqft/year). Although Industrial demands can vary significantly depending on the industry, it can be assumed that warehouses would be developed due to similar uses surrounding the Site. For the baseline Light Industrial water demand, the same demand as the Project's "Flex Industrial" demand was used (20.4 gallons/sqft/year). Because uses in the Light Industrial designation vary significantly, the average demand for all types of uses was used. The landscaping would be expected to be similar to the Project's landscaping, therefore the same demand was used.

Using the baseline values, it was determined that the Site is expected to have 1,929,716 sqft of buildings, with an expected annual demand of 111.8 AF (See Table 6-1 below). The values in Column J were calculated by subtracting 111.8 AF annually from the demand that is expected from 2025-2045. These dates were selected because they coincide with the proposed build-out of the Project.

Table 6-1: Comparison of Planned Land Uses to Proposed Project

	Baseline Usage (City of Visalia General Plan)				Proposed (Shirk and Riggin Industrial Project)				
	Acres	Land Use Density (FAR)	Square Footage	Water Demand (AFY)	Acres	Land Use Density (FAR)	Square Footage	Water Demand (AFY)	Change in Water Demand (AFY)
Industrial	250	0.15	1,633,507	16.5	243	0.33	3,474,650	35.2	18.7
Light Industrial	34	0.2	296,209	18.5	20	0.26	229,280	6.8	- 11.8
Commercial	-	-	-	-	6.7	0.06	16,278	5.4	5.4
Landscaping	-	-	-	76.7	-	-	-	76.7	0
Totals	**-**	**-**	**1,929,716**	**111.8**	**-**	**-**	**3,720,208**	**124.1**	**12.3**

The purpose of the remainder of the table (Columns K through T) is to demonstrate the expected reasonable impact on water demand from the Project and to quantify any necessary new water supply needed from the Project to mitigate the reasonably foreseeable impacts. Columns K through N show the expected additional demand for each land use. Column O identifies the total water demand from the Project for each year.

As shown above, in Table 6-1, the Project will increase the Industrial demand by 6.9 AFY and increase the Commercial demand by 5.4 AF. The UWMP accounts for increasing Commercial demand, however, the Industrial demand remains steady at 308 AFY. This will increase the yearly Industrial demand to 314.86 AFY, rather than 308 AFY. This should not impact other uses, as Cal Water will be able to increase the amount of water pumped. The UWMP states "Cal Water expects that, under all hydrologic conditions, its groundwater supply for the Visalia District will fully meet future demands."

Cal Water can expect to meet the increased demand because Municipal and Industrial (M&I) pumping accounted for 9% of the total pumping in the Kaweah Subbasin, and 3% of the total pumping in the Tule Subbasin. From this, the UWMP can conclude that "It is therefore likely that management of agricultural groundwater use, rather than M&I use, will be a much larger determining factor in maintaining groundwater sustainability in both the Kaweah and Tule Subbasins in the future." The increase in Industrial demand would most likely impact water used for agricultural uses.

Columns P through S represent the expected water demand for the Visalia District with the Project included by land use. Column S was calculated by adding the total demand of the Project (Column O) to the total Service Area demand with no development (Column J). Column T provides the change in water demand attributed to the Shirk and Riggin Industrial Project. Column T is calculated by finding the difference between the service area water demand assumed by the UWMP (Column I) and the water demand of the service area with the Project (Column S).

According to the Visalia General Plan Update EIR, Cal Water estimated that the maximum groundwater pumping capacity is 100,829 AFY. At the time, Cal Water determined that capacity was adequate to meet a projected 2030 demand of 57,364 AFY. Updated estimates from the UWMP project a demand of 44,529 AFY in 2045, mainly due to slowed growth and improved conservation methods. The demand in the service area with the Project was calculated to be 44,541.3 AFY in 2045. The service area water demand forecasted by the UWMP is 12.3 lower than the estimated water demand with the Project. The Project is expected to add an additional 12.3 AFY to the Visalia District water demand, beginning in 2028. The Visalia district currently demands 30,152 AFY. With an available capacity of at least 12,835, there will be enough water supply for the proposed project.

During Project construction, water demand will increase more than the operating demand. The highest increase in demand is in 2024. The UWMP expects a demand of 31,951 AF in 2024. With the Project construction, the District is expected to have a total demand of 32,253.6 AF, an increase of 302.4 AF. The UWMP states that the driest year since 1991 was 2013, and during 2013 there was an available water supply of 45,400 AF. Therefore, even if 2024 is a dry year, there will be at least 13,449 AF available. This will be able to supply the one-time increase in 302.4 AF.

Table 6-2: Anticipated City Water Demands and Available Supply: Years 2021 – 2045

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Year	Per Capita Water Use	Service Area Projected Population[1]	Service Area Growth Rate Assumed by Visalia UWMP	Service Area Residential Water Demand (AFY)	Service Area Industrial Water Demand (AFY)[1]	Service Area Commercial Water Demand (AFY)[1]	Service Area All Other Uses Water Demand (AFY)[1]	Service Area Total Water Demand (AFY)	Service Area Demand with no development of Project Site[2,3]	Added Demand from Project (AFY)				Total Project Demand	Service Area Industrial Demand with Project (AFY)[3,4]	Service Area Commercial Water Demand with Project (AFY)[3,4]	Service Area Other Uses Water Demand with Project (AFY)[3,4]	Service Area Total Water Demand with Project (AFY)[3,4]	Change in Service Area Water Demand attributable to the Project Development
	Gallon/ Person/ Day									Industrial	Commercial	Landscaping	Construction						
2020	131	147,032	0.00%	20,884	305	5,239	3,723	30,151	30,151	0	0	0	0	0	305	5,239	3,723	30,151.0	-
2021	128	149,830	1.90%	20,879	308	5,313	3,823	30,323	30,323	0	0	0	0	0	308	5,313	3,823	30,322.8	-
2022	128	152,577	1.83%	21,237	308	5,396	3,906	30,847	30,847	0	0	0	0	0	308	5,396	3,906	30,846.6	-
2023	128	155,368	1.83%	21,611	308	5,482	3,991	31,392	31,392	0	0	0	0	0	308	5,482	3,991	31,392.4	-
2024	128	158,201	1.82%	22,006	308	5,559	4,078	31,951	31,951	0	0	0	302.4	302.4	308	5,559	4,078	32,253.6	302.4
2025	128	161,087	1.82%	22,398	308	5,634	4,179	32,519	32,407	18.9	0	17.5	235.2	271.6	291.80	5,634	4,196	32,678.8	159.8
2026	128	164,002	1.81%	22,778	308	5,702	4,281	33,069	32,958	27.3	5.3	43.8	268.8	345.3	300.21	5,707.3	4,325	33,302.9	233.5
2027	127	166,698	1.64%	23,132	308	5,774	4,376	33,590	33,478	27.3	5.3	43.8	302.4	378.9	300.21	5,779.3	4,420	33,856.9	267.1
2028	127	170,002	1.98%	23,495	308	5,849	4,473	34,125	34,013	41.9	5.3	76.7	100.8	224.9	314.86	5,854.3	4,550	34,238.3	113.1
2029	127	173,106	1.83%	24,622	308	5,929	4,577	34,699	34,587	41.9	5.3	76.7	0	124.1	314.86	5,934.3	4,653	34,710.9	12.3
2030	126	176,265	1.82%	24,279	308	6,009	4,679	35,275	35,163	41.9	5.3	76.7	0	124.1	314.86	6,014.3	4,756	35,287.3	12.3
2031	126	179,462	1.81%	24,698	308	6,097	4,773	35,876	35,764	41.9	5.3	76.7	0	124.1	314.86	6,102.3	4,850	35,888.3	12.3
2032	126	182,686	1.80%	25,087	308	6,185	4,863	36,443	36,331	41.9	5.3	76.7	0	124.1	314.86	6,190.3	4,940	36,455.3	12.3
2033	126	185,935	1.78%	25,540	308	6,273	4,953	37,074	36,962	41.9	5.3	76.7	0	124.1	314.86	6,278.3	5,030	37,086.3	12.3
2034	126	189,210	1.76%	25,979	308	6,361	5,044	37,692	37,580	41.9	5.3	76.7	0	124.1	314.86	6,366.3	5,121	37,704.3	12.3
2035	126	192,510	1.74%	26,419	308	6,448	5,135	38,310	38,198	41.9	5.3	76.7	0	124.1	314.86	6,453.3	5,212	38,322.3	12.3
2036	125	195,839	1.73%	26,812	308	6,536	5,228	38,884	38,772	41.9	5.3	76.7	0	124.1	314.86	6,541.3	5,305	38,896.3	12.3
2037	125	199,198	1.72%	27,204	308	6,623	5,320	39,455	39,343	41.9	5.3	76.7	0	124.1	314.86	6,628.3	5,397	39,467.3	12.3
2038	125	202,583	1.70%	27,632	308	6,712	5,413	40,065	39,953	41.9	5.3	76.7	0	124.1	314.86	6,717.3	5,490	40,077.3	12.3
2039	124	205,994	1.68%	28,039	308	6,801	5,507	40,655	40,543	41.9	5.3	76.7	0	124.1	314.86	6,806.3	5,584	40,667.3	12.3
2040	124	209,431	1.67%	28,458	308	6,891	5,601	41,258	41,146	41.9	5.3	76.7	0	124.1	314.86	6,896.3	5,678	41,270.3	12.3
2041	124	212,889	1.65%	28,900	308	6,982	5,697	41,887	41,775	41.9	5.3	76.7	0	124.1	314.86	6,987.3	5,774	41,899.5	12.3
2042	124	216,366	1.63%	29,355	308	7,075	5,792	42,530	42,419	41.9	5.3	76.7	0	124.1	314.86	7,080.3	5,869	42,542.7	12.3
2043	124	219,852	1.61%	29,820	308	7,170	5,890	43,188	43,076	41.9	5.3	76.7	0	124.1	314.86	7,175.3	5,966	43,199.9	12.3
2044	124	223,347	1.59%	30,312	308	7,266	5,986	43,872	43,760	41.9	5.3	76.7	0	124.1	314.86	7,271.3	6,063	43,884.1	12.3
2045	124	226,850	1.57%	30,775	308	7,364	6,082	44,529	44,417	41.9	5.3	76.7	0	124.1	314.86	7,369.3	6,159	44,541.3	12.3

1. Provided by Visalia Urban Water Management Plan
2. Calculated based on a 111.8 demand reduction from 2025 to 2045 than was assumed by the Visalia UWMP. Reduction in demand based on site's GPLU designation (Table 6-1).
3. Assumes normal demand rate would resume after 2028, when construction of the Project would be complete.
4. Calculated as: Anticipated Deman in Service Area with No Development + Demand Added from Proposed Development

Table 6-3 shows the comparison of the project's total water demand to the site with no development, the General Plan land use, and the current use. Column B shows the baseline demand, which would be the water usage in the Visalia District if the Site were vacant and did not demand any water. This value is from Column J in Table 6-2. Column C shows the water usage in the Visalia District with the expected Project demand added. This value is from Column S in Table 6-2. Column D shows the percent increase with the Project demand, compared to the baseline. Column E shows the water usage in the Visalia District with the added demand from the General Plan land use, found in Table 6-1. Column F shows the percent increase with the General Plan usage demand. Column G shows the estimated current water usage with the current agricultural uses. Although Cal Water would not supply the water for agricultural uses, the water would come from the same subbasin. Currently, the Site is almond farms. An analysis from the Pacific Institute of California Department of Water Resources found that almond farms require 4.49 AFY per acre. Over 280 acres, the site with the current almond farm is estimated to use 1,275 AFY. Column G shows the baseline demand with the agricultural demand (1,275 AFY) added. Column H shows the percent increase the farming would use in relation to the baseline demand.

Table 6-3: Comparison of Water Demands with Potential Uses on Project Site: Years 2021 – 2045

A	B	C	D	E	F	G	H
Year	Baseline Demand (AFY)	Baseline Plus Project Demand (AFY)	Project Demand % Increase	Baseline Plus General Plan Demand (AFY)	General Plan Uses Demand % Increase	Baseline Plus Agricultural Demand (AFY)	Agricultural Demand % Increase
2020	30,151	30,151.0	0.00%	30,151	0.00%	31,426	4.23%
2021	30,323	30,322.8	0.00%	30,323	0.00%	31,598	4.21%
2022	30,847	30,846.6	0.00%	30,847	0.00%	32,122	4.13%
2023	31,392	31,392.4	0.00%	31,392	0.00%	32,668	4.06%
2024	31,951	32,253.6	0.95%	31,951	0.00%	33,226	3.99%
2025	32,407	32,678.8	0.84%	32,519	0.34%	33,682	3.93%
2026	32,958	33,302.9	1.05%	33,069	0.34%	34,233	3.87%
2027	33,478	33,856.9	1.13%	33,590	0.33%	34,753	3.81%
2028	34,013	34,238.3	0.66%	34,125	0.33%	35,289	3.75%
2029	34,587	34,710.9	0.36%	34,699	0.32%	35,862	3.69%
2030	35,163	35,287.3	0.35%	35,275	0.32%	36,438	3.63%
2031	35,764	35,888.3	0.35%	35,876	0.31%	37,039	3.57%
2032	36,331	36,455.3	0.34%	36,443	0.31%	37,606	3.51%
2033	36,962	37,086.3	0.34%	37,074	0.30%	38,237	3.45%
2034	37,580	37,704.3	0.33%	37,692	0.30%	38,855	3.39%
2035	38,198	38,322.3	0.32%	38,310	0.29%	39,473	3.34%
2036	38,772	38,896.3	0.32%	38,884	0.29%	40,047	3.29%
2037	39,343	39,467.3	0.32%	39,455	0.28%	40,618	3.24%
2038	39,953	40,077.3	0.31%	40,065	0.28%	41,228	3.19%
2039	40,543	40,667.3	0.31%	40,655	0.28%	41,818	3.15%
2040	41,146	41,270.3	0.30%	41,258	0.27%	42,421	3.10%
2041	41,775	41,899.5	0.30%	41,887	0.27%	43,051	3.05%
2042	42,419	42,542.7	0.29%	42,530	0.26%	43,694	3.01%
2043	43,076	43,199.9	0.29%	43,188	0.26%	44,351	2.96%
2044	43,760	43,884.1	0.28%	43,872	0.26%	45,035	2.91%
2045	44,417	44,541.3	0.28%	44,529	0.25%	45,692	2.87%

7.0 Water Supply Rights and Entitlements; Historic Water Usage (Water Code Section 10910(A)(1) and 10910(D)(2))

Groundwater is the sole source of water for the Visalia District, and there are no new sources of supply currently planned. The Visalia District pumps groundwater from the Kaweah Subbasin (DWR Basin No. 5-022.11) and the Tule Subbasin (DWR Basin No. 5-022.13) of the San Joaquin Valley Basin.

There are three Public Water Systems (PWSs) that comprise the Visalia District which overlies the Kaweah Subbasin (California Department of Water Resources [DWR] Basin No. 5- 022.11) and the Tule Subbasin (DWR Basin No. 5-022.13) of the San Joaquin Valley Basin. The Visalia PWS and the Tulco PWS overlay the Kaweah Subbasin while the very small Mullen PWS overlies the Tule Subbasin. It should be noted that pumping by the Mullen PWS in the Tule Subbasin has historically comprised approximately 0.1% of the total District pumping. Given this, projected District demands included in this Urban Water Management Plan are not apportioned by groundwater subbasin but presented on a District-wide basis. However, because the District overlies both basins, for purposes of the following analysis, both the Kaweah and Tule Subbasins are considered. The Kaweah and Tule Subbasins are not adjudicated; however, in its recent evaluation of California's groundwater basins, DWR determined that both subbasins are in a condition of critical overdraft.

The groundwater management plan acknowledges a continuing decline in groundwater levels of the aquifer system below the Visalia District. To assist in mitigating this groundwater decline, The City of Visalia has established fees that are expected to fund groundwater recharge and other water resource projects within the City.

7.1 Kaweah Subbasin

The Kaweah Subbasin covers an area of approximately 446,000 acres (696 square miles) in the San Joaquin Valley and lies between the Kings Subbasin on the north, the Tule Subbasin on the south, crystalline bedrock of the Sierra Nevada foothills on the east, and the Tulare Lake subbasin on the west.

The Kaweah Subbasin is designated as a high-priority basin under DWR's 2019 Phase 2 Basin Prioritization. Under this prioritization process, basins are ranked on eight components, and if a basin is assigned more than 21 total points, it is defined as "high priority." The main factors driving the designation in the Kaweah Subbasin include irrigated acreage per square mile (5 out of 5 possible points), population growth (5 out of 5 possible points), and groundwater reliance (5 out of 5 possible points). Additional factors include documented impacts including declining groundwater levels and subsidence (4 out of 5 possible points), and total well density (4 out of 5 possible points). However, because the subbasin is critically over-drafted, it is assigned 40 priority points, which is the maximum total points under DWR's ranking system.

Three GSAs were formed to collectively assume responsibility for sustainable groundwater management of the Kaweah Subbasin. The three GSAs within the Basin include the Mid-Kaweah GSA, East Kaweah GSA, and Greater Kaweah GSA. Each GSA prepared an individual GSP, but certain technical efforts (e.g., the development of a coordinated water budget) were cooperatively developed through a Coordination Agreement.

The majority of the Visalia PWS falls within the jurisdiction of the Mid-Kaweah GSA, which covers an area of approximately 104,320 acres on the central to the southwestern side of the Kaweah Subbasin. The Mid-Kaweah GSA was formed on September 14, 2015, through the execution of a Joint Powers Agreement (JPA) between the City of Tulare, City of Visalia, and TID to establish the Mid-Kaweah Groundwater Subbasin JPA. The Mid-Kaweah GSA GSP was submitted to DWR on January 31, 2020.

Small portions of the Visalia PWS and the entirety of the Tulco PWS fall within the jurisdiction of the Greater Kaweah GSA, which covers an area of approximately 217,600 acres across the Kaweah Subbasin. The Greater Kaweah GSA was formed on August 23, 2016, through the execution of a JPA between the KDWCD, the County of Tulare, Kings County Water District, Lakeside Irrigation District, and St. Johns Water District. The Greater Kaweah GSA GSP was submitted to DWR on January 31, 2020.

As defined under SGMA, sustainable yield means "the maximum quantity of water, calculated over a base period representative of long-term conditions in a basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing undesirable results." The three GSAs within the Kaweah Subbasin determined a subbasin-wide sustainable yield of 660,000 AFY, which was further apportioned among the GSAs in the Kaweah Subbasin Coordination Agreement.

7.2 Tule Subbasin

The Tule Subbasin covers an area of approximately 475,895 acres (744 square miles) and is located almost entirely within Tulare County. The Tule Subbasin is delineated by various water districts, the largest of which is the Lower Tule River Irrigation District. The eastern boundary of the subbasin is the Sierra Nevada Mountain Range. The southern and western boundaries generally follow the Tulare County line.

The Tule Subbasin is designated as a high-priority basin under DWR's 2019 Phase 2 Basin Prioritization. The main factors driving the designation in the Tule Subbasin include irrigated acreage per square mile (5 out of 5 possible points) and groundwater reliance (5 out of 5 possible points). Additional factors include documented impacts including declining groundwater levels and subsidence (4 out of 5 possible points) and population growth (4 out of 5 possible points). However, because the subbasin is critically over-drafted, it is assigned 40 priority points, which is the maximum total points under DWR's ranking system.

Seven GSAs were formed to collectively assume responsibility for sustainable groundwater management of the Tule Subbasin. The seven GSAs within the Basin include the Eastern Tule GSA, Tri-County Water Authority GSA, Pixley Irrigation District GSA, Lower Tule River Irrigation District GSA, Delano-Earlimart Irrigation District GSA, Alpaugh GSA, and Tulare County GSA. Each GSA prepared an individual GSP, but certain technical efforts (e.g., the development of a coordinated water budget and sustainability goal) were cooperatively developed through a Coordination Agreement.

The Mullen PWS portion of the Visalia District falls within the jurisdiction of the Eastern Tule GSA (ETGSA), which covers an area of approximately 160,867 acres in the southeastern portion of Tulare County. The ETGSA was formed on December 6, 2016, through the execution of a JPA between the City of Porterville, Porterville Irrigation District, Saucelito Irrigation District, Teapot Dome Water District, Vandalia Water District, Terra Bella Irrigation District, Kern-Tulare Water District, and Tulare County. The ETGSA GSP was submitted to DWR on January 31, 2020. The seven GSAs within the Tule Subbasin determined a basin-wide sustainable yield of 130,000 AFY, which has not been further allocated at present.

Pages 25-90 of the City of Visalia 2020 UWMP are provided in Appendix A in satisfaction with Water Code Sections 10910(A)(1) and 10910(D)(2)).

8.0 Contingency Analysis Applicability (Government Code Section 66473.7 (2)(b))

The Visalia District's 2020 Water Shortage Contingency Plan (WSCP) identifies six shortage levels that increase with the severity of the water supply shortage. A level 1 water shortage necessitates a demand reduction of up to 10%, while a level 6 shortage necessitates a demand reduction of 50% or greater.

The Visalia District's 2020 WSCP provides a full spectrum of Water Shortage Contingency Plan measures to reduce the City's water consumption (pages 91 through 98). The urban water supplier may use any combination of consumption reduction measures to achieve the necessary water demand reductions depending on the water shortage level. The City's contingency planning is designed to ensure that necessary water supply will be available under each water shortage scenario. These water supply contingency measures, applicable to the entire Visalia District water service area, are fully applicable to the Project and protective of the adequacy of the Project's water supply.

Pages 91-98 of the City of Visalia 2020 UWMP are provided in Appendix A in satisfaction of Government Code Section 66473.7 (2)(b).

9.0 Assessment Findings

It is concluded that the City of Visalia water system has sufficient capacity to supply the Shirk and Riggin Industrial Park and other projected demands within the City's service area through the year 2045. The Visalia District of California Water Service Company (Cal Water) will provide the main source of water for this project. Cal Water will serve the project once construction begins. The Project will connect to existing water lines on Kelsey Street and Riggin Avenue.

Therefore, it is recommended that the City of Visalia approve this assessment for inclusion in the CEQA documentation for the proposed Shirk and Riggin Industrial Park.

10.0 Environmental Checklist and Discussion

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	X	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future develoment during normal, dry, and multiple dry years?	☐	☐	X	☐

Discussion

B) Would the project substantially decrease groundwater supplies or interfere with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less than Significant Impact: The Mid-Kaweah River Basin Groundwater Management Plan acknowledges a continuing decline in groundwater levels of the aquifer system below the Visalia area. To assist in mitigating this groundwater decline, The City of Visalia has established fees that will fund groundwater recharge and other water resource projects within the City. The Project will be required to pay $382,480 ($1,366/Acre) in a Groundwater Overdraft Mitigation Fee. Current Special Revenue Funds to support Visalia's water services are:

- **Groundwater Recharge Fund - Fund 223:** Established to account for the costs of recharging the City's underground water system. The funding is provided by monthly rates and development fees.

- **Kaweah Lake and Local Stormwater Maintenance Fund - Fund 224:** Established to account for the costs of adding to the water holding capacity of Lake Kaweah (a source of the City's water) and was expanded to include the maintenance of local storm channels. The funding is provided by monthly rates and development fees.

Projects from Visalia's 2018/19-2023/24 Capital Improvement Program, regarding water services, are:

- **Construct East Side Regional Park Basins:** 100 acres of recharge basins in accordance with the overall Master Plan.
  - Cost: $2,100,000 from 2018-2024.

- **Construct Groundwater Recharge Facilities:** Includes modification of existing basins to allow for groundwater recharge.
  - Cost: $600,000 from 2018-2024.

- **Purchase Water Rights:** Purchase surface water rights and water supply for ground water recharge to help reduce groundwater overdraft. Surface water is purchased in wet years, but not in drought years.
    - Cost: $600,000 from 2018-2024.

- **Water Resource Management:** Includes consultations and engineering services as needed for guidance on water management issues, specifically those regarding surface and irrigation-water allocations, grant application, and certain SGMA issues.
    - Cost: $270,000 from 2018-2024.

- **Acquire Land for Basins:** Acquire properties to develop into groundwater recharge facilities. The focus will be on vacant or agricultural properties that can receive waters from a nearby waterway. The overarching goal of this program is maximizing groundwater recharge within the City and pursuing groundwater sustainability under SGMA.
    - Cost: $800,000 from 2019-2024.

- **Cameron Creek Park and K Road Park/Basin:** Locate and acquire site for an 8-10 acre neighborhood park and storm/recharge basin along the southerly extension of McAuliff adjacent to Cameron Creek.
    - Cost: $1,000,000.

Cal Water, Visalia District, will provide water services upon development. The City of Visalia's water supply comes from groundwater extraction. The City has 59 active wells that produce about 27 million gallons (83 AF) of groundwater per day. This totals approximately 30,243 AF per year. However, Cal Water states that the system can meet demands until at least 2045. In 2045, the district is expected to demand 44,529 AFY. Cal Water states the system could produce the 44,529 AFY needed to meet the demand. However, according to the Visalia General Plan Update EIR, Cal Water estimated that the maximum groundwater pumping capacity is 100,829 AFY. At the time, Cal Water determined that capacity was adequate to meet a projected 2030 demand of 57,364 AFY. In 2020, the recorded yearly water usage in the District was 30,152 AF of water.

The project is expected to demand a total of 124.1 AFY during operation. This was found by using information from the U.S. Energy Information Administration (EIA) and the U.S. Environmental Protection Agency (EPA), the Industrial, Light Industrial, and Commercial buildings in the project are expected to demand 47.4 AFY. This is based on the 3,474,650 sqft of industrial warehouses and the 144,800 sqft self-storage center using 3.3 gallons/sqft/year. The 84,480 sqft of Flex Industrial uses are assumed to use 20.4 gallons/sqft/year due to a large variance in potential uses. The drive-thru restaurants are expected to use 634 GPD each, the convenience store store is expected to use 1,144 GPD, and the car wash is expected to use 2,302 GPD.

The Project also includes approximately 30.68 acres of landscaping. A conservative estimate would assume that the entire landscaping acreage will be irrigated lawn and will require approximately five acre-feet of water per acre per year. This figure is based on information on water requirements for large, irrigated lawns such as golf courses in the region. However, due to restrictions from the MWELO, the project will be required to use low-water landscaping. It can be assumed that the landscaping for the project will demand approximately half the amount of water that an irrigated lawn would use. The landscaping usage will be assumed at 2.5 AF/Acre/Year. This totals 76.7 AFY for landscaping. The total project will require approximately 124.1 AF per year. The Visalia District currently demands 30,152 AFY. According to the Visalia General Plan Update EIR, Cal Water estimated that the maximum groundwater pumping capacity is 100,829 AFY. At the time, Cal Water determined that capacity was adequate to meet a projected 2030 demand of 57,364 AFY. Updated estimates from the UWMP projected a demand of 44,529 AFY in 2045, mainly due to slowed growth and improved conservation methods. This projection is based on General Plan land uses. The General Plan has the Project Site designated as Industrial and Light Industrial uses. As shown in Table 6-1 in the WSA, the project site is expected to demand 111.8 AFY if built according to the General Plan.

The proposed Project is planned for Industrial, Light Industrial, and a small portion of Commercial uses. The Project is expected to demand 124.1 AFY. This is an increase of 12.3 AFY from the UWMP projected demand. With the proposed project, the Visalia District will demand 44,541.3 AFY. Although this is higher than the projected demand from the UWMP, the UWMP states "It should be noted that the Kaweah and Tule Subbasins are not adjudicated, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water’s water rights or maximum pumping volumes." Cal Water will be able to supply the District with the project added, due to it's projected demand and supply in 2030 (57,364 AFY) and the maximum groundwater pumping capacity (100,829 AFY).

Cal Water can expect to meet the increased demand because Municipal and Industrial (M&I) pumping accounted for 9% of the total pumping in the Kaweah Subbasin, and 3% of the total pumping in the Tule Subbasin. From this, the UWMP is able to conclude that "It is therefore likely that management of agricultural groundwater use, rather than M&I use, will be a much larger determining factor in maintaining groundwater sustainability in both the Kaweah and Tule Subbasins in the future."

The UWMP adds “Further, under California law, municipal water rights and uses have a higher priority and are entitled to more protection than other uses of water, including in connection with the Sustainable Groundwater Management Act (SGMA). The use of water for domestic purposes is recognized as the “highest use” of water in the State of California pursuant to California Water Code (CWC) §106, and the rights of urban water purveyors should be protected to the fullest extent necessary for existing and future uses, pursuant to CWC §106.5.”

The Project will convert agricultural land into other uses. This will most likely reduce net water use. The UWMP states “Irrigated agriculture typically uses more water on a per-acre basis than urban uses, thus, some future growth within the District will likely result in a net decrease in water use within the subbasins.”As shown in Table 6-3 of the WSA, the project site would demand approximately 45,692 AF in 2045 if it remained agricultural. This is 1150.7 AF more than the Project's demand. The Project can potentially reduce the amount of water needed and pumped from the Subbasins.

During Project construction, water demand will increase more than the operating demand. The highest increase in demand is in 2024. The UWMP expects a demand of 31,951 AF in 2024. With the Project construction, the District is expected to have a total demand of 32,253.6 AF, an increase of 302.4 AF. The UWMP states that the driest year since 1991 was 2013, and during 2013 there was an available water supply of 45,400 AF. Therefore, even if 2024 is a dry year, there will be at least 13,449 AF available. This will be able to supply the one-time increase in 302.4 AF.

To assist in mitigating the additional 12.3 AFY added to the District, the project will contain storm drainage retention basins. The project is expected to produce 111.5 AFY of stormwater runoff. The proposed basins on the site will be capable of retaining 123.4 AFY, an additional 11.9 AFY of capacity than what is needed for the project. The project will also pay its fair share in fees for new and expanded groundwater recharge projects. As such, the Project would not substantially affect groundwater supplies beyond what has already been analyzed and approved in the Visalia General Plan and by Cal Water. There is a *less than significant impact.*

B) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Less than Significant Impact: Cal Water, Visalia District will provide water services upon development. Visalia's water supply comes from groundwater extraction. The city has 59 active wells that produce about 27 million gallons (83 AF) of groundwater per day. This totals approximately 30,243 AF per year. However, Cal Water states that the system can meet demands until at least 2045. In 2045, the district is expected to demand 44,529 AFY. Cal Water states the system could produce 44,529 AFY to meet the demand. According to the Visalia General Plan Update EIR, Cal Water estimated that the maximum groundwater pumping capacity is 100,829 AFY. At the time, Cal Water determined that capacity was adequate to meet a projected 2030 demand of 57,364 AFY. Updated estimates from the UWMP project a demand of 44,529 AFY, mainly due to slowed growth and improved conservation methods. In 2020, the recorded yearly water usage was 30,152 AF of water.

The Visalia District UWMP states that 1991 is a year that had an average amount of rain, the driest year was 2013, and a drought occurred from 2011-2015. According to the UWMP, the Visalia District had an available water volume of 44,529 AF in an average year. During 2013 there was an available water supply of 45,400 AF. Over the dry years of 2011-2015, the UWMP states that the Visalia District had an available water volume of 45,939 AF each year.

Accounting for the planned expanded 2045 population, the UWMP states that the District would require 44,529 AF in an normal year, 45,400 AF in a single dry year, and 45,939 AF each year for multiple dry years. This includes the expected demand from the planned Industrial and Light Industrial use of the site in the General Plan.

Factoring in the proposed project's estimated demand of 124.1 AFY, the total district demand would increase by 12.3 AFY. This would require the district to supply 45,541.3 AF in an average year, 45,412.3 AF in a single dry year, and 45,951.3 AF every year over multiple dry years. These demands are higher than the supply given by the UWMP by 12.3 AF, however the UWMP states "It should be noted that the Kaweah and Tule Subbasins are not adjudicated, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes."

Since Cal Water has stated that the maximum pumping capacity is 100,829 AFY and the capacity is adequate to meet a projected 2030 demand of 57,364 AFY, it can be reasonably be expected that there will be sufficient water supplies available during normal, dry, and multiple dry years. The UWMP states "Cal Water expects that, under all hydrologic conditions, its groundwater supply for the Visalia District will fully meet future demands."

Cal Water can expect to meet the increased demand because Municipal and Industrial (M&I) pumping accounted for 9% of the total pumping in the Kaweah Subbasin, and 3% of the total pumping in the Tule Subbasin. From this, the UWMP is able to conclude that "It is therefore likely that management of agricultural groundwater use, rather than M&I use, will be a much larger determining factor in maintaining groundwater sustainability in both the Kaweah and Tule Subbasins in the future."

During Project construction, water demand will increase more than the operating demand. The highest increase in demand is in 2024. The UWMP expects a demand of 31,951 AF in 2024. With the Project construction, the District is expected to have a total demand of 32,253.6 AF, an increase of 302.4 AF. The UWMP states that the driest year since 1991 was 2013, and during 2013 there was an available water supply of 45,400 AF. Therefore, even if 2024 is a dry year, there will be at least 13,449 AF available. This will be able to supply the one-time increase in 302.4 AF.

The Project will convert agricultural land into other uses. This will most likely reduce net water use. The UWMP states "Irrigated agriculture typically uses more water on a per-acre basis than urban uses, thus, some future growth within the District will likely result in a net decrease in water use within the subbasins."

The UWMP adds "Further, under California law, municipal water rights and uses have a higher priority and are entitled to more protection than other uses of water, including in connection with the Sustainable Groundwater Management Act (SGMA). The use of water for domestic purposes is recognized as the "highest use" of water in the State of California pursuant to California Water Code (CWC) §106, and the rights of urban water purveyors should be protected to the fullest extent necessary for existing and future uses, pursuant to CWC §106.5."

As shown in Table 6-3 of the WSA, the project site would demand approximately 1,275 AFY if it remained agricultural. This would require the district to supply 45,692 AF in an average year, 46,563 AF in a single dry year, and 47,102 AF every year over multiple dry years. The Project can potentially reduce the amount of water needed and pumped from the Subbasins during normal, dry, and consecutive dry years.

To compensate for the additional water usage and new water projects, the project will provide stormwater retention basins, pay impact fees for new water services, and implement reduced water use implementations from the policies outlined in the Visalia General Plan. Therefore, the *impact is less than significant.*

References

- California Water Service, Visalia District, 2021. 2020 Urban Water Management Plan. Available Online at Source.
- City of Visalia, 2014. Visalia General Plan Update. Available online at Source.
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- South Kings Groundwater Sustainability Plan, 2019. Groundwater Sustainability Plan. Available online at Source.
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Appendix A

Pages Excerpted from City of Visalia 2020 UWMP

Provided in satisfaction of Water Code Section 10910(A)(1), Water Code Section 10910(D)(2) and Government Code Section 66473.7 (2)(b)

Chapter 3
System Description

☑ ***CWC § 10631 (a)***

A plan shall be adopted in accordance with this chapter that shall do all of the following:

Describe the service area of the supplier, including current and projected population, climate, and other social, economic, and demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available. The description shall include the current and projected land uses within the existing or anticipated service area affecting the supplier's water management planning. Urban water suppliers shall coordinate with local or regional land use authorities to determine the most appropriate land use information, including, where appropriate, land use information obtained from local or regional land use authorities, as developed pursuant to Article 5 (commencing with Section 65300) of Chapter 3 of Division 1 of Title 7 of the Government Code.

This chapter provides a description of the Visalia District (also referred to herein as the "District") water system and service area, including climate, population, demographics, and land uses to help in understanding various elements of water supply and demand. This chapter includes the following sections:

3.1 General Description

3.2 Service Area Boundary Map

3.3 Service Area Climate

3.4 Service Area Population and Demographics

3.5 Land Uses within Service Area

3.1 General Description

The District has served the City of Visalia since 1926, when California Water Service Company (Cal Water), an investor-owned water utility regulated by the California Public Utilities Commission (CPUC), purchased the water system serving the City of Visalia from the Visalia Water Company. The District is comprised of three public water systems (PWS): the Visalia PWS, the Tulco Water System PWS, and the Mullen Water System PWS. The Visalia PWS serves the City of Visalia while the other two serve very small communities south of the City of Visalia.

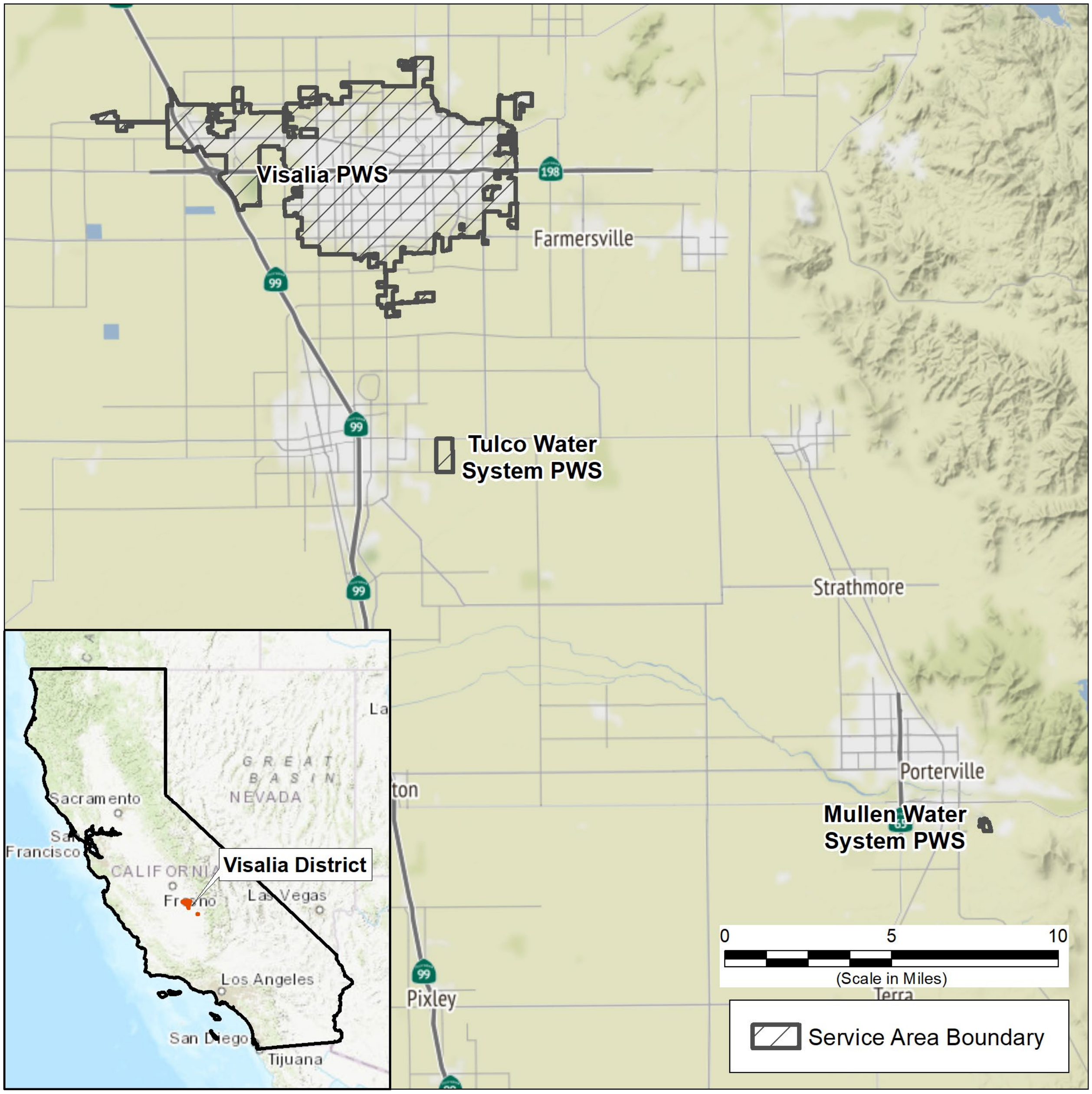
The District currently produces about 27 million gallons of local groundwater per day from 59 active wells and delivers it to customers through more than 600 miles of pipeline. Nearly all this production is associated with the Visalia PWS. The District delivers water to residential, commercial, industrial, and governmental customers. Residential customers account for most of the District's service connections and 69 percent of its water uses. Non-residential water uses account for 28 percent of total demand, while distribution system losses account for 3 percent.

3.2 Service Area Boundary Map

Figure 3-1 shows the location of the District and its current service area boundaries. The District is in Tulare County and serves the City of Visalia and segments of unincorporated Tulare County including the communities of Goshen, Mullen, and Tulco. Visalia is the largest city in Tulare County. The District lies approximately 42 miles southeast of the City of Fresno and 75 miles north of the City of Bakersfield. Major transportation links in the District include the Golden State Highway (State Route 99), State Route 63 and State Route 198. The Southern Pacific and the Atchison, Topeka and Santa Fe Railroads provide rail service to the region.

The District is situated in the Tulare Lake Hydrologic Region, within the King-Kaweah-Tule Rivers sub-area. The service area is built upon the alluvium of the Kaweah River. The Kaweah River provides drainage for the southern Sierra Nevada Mountains. This river splits east of Visalia forming the St. Johns River that flows just north of Visalia while the Kaweah River continues south. Lake Kaweah is located on the Kaweah River about twenty miles upstream from the city. This reservoir is operated by the U.S. Army Corps of Engineers and provides both flood control and irrigation water storage.

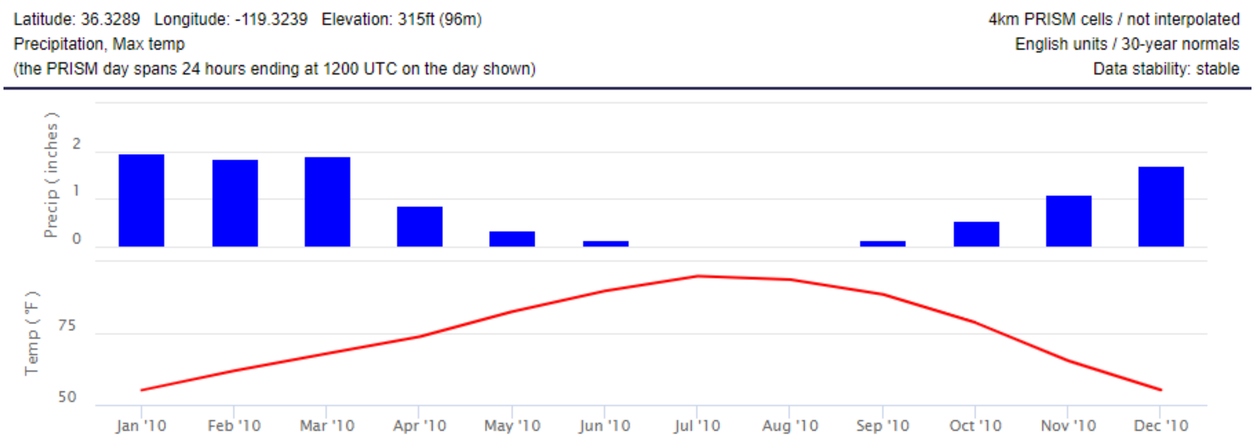
Figure 3-1. District Location and Service Boundaries



3.3 Service Area Climate

The District's climate is characterized by hot dry summers and mild winters (see Figure 3-2).[5] Most rainfall occurs between October and May. Precipitation totals in the summer months are negligible. On average, the District receives 11 inches of rainfall annually. Maximum daily air temperature averages 92 degrees Fahrenheit during the summer months. In the winter, it averages 57 degrees Fahrenheit.

Figure 3-2. 30-Year Normals, Precipitation and Maximum Daily Air Temperature



Based on a review of data downloaded from the Oregon State PRISM dataset for 1895 to 2019, rainfall varies significantly from year-to-year, as it does in most of California.[6] The standard deviation in annual rainfall is 3.4 inches, or about one-third of average annual rainfall.[7] Consecutive years of below average rainfall are fairly common. Since 1895, runs of below average rainfall lasting three or more years have occurred 13 times and runs lasting five or more years have occurred twice. The longest run lasted six years, from 2011 through 2016. While rainfall in the region is highly variable, there has been no statistically significant trend in the mean or variance of annual rainfall since 1895.

The District's climate has been warming. Since 1895, average daily temperature has increased at an average rate of 0.013 degrees Fahrenheit per year. Mean annual temperature for 2010-2019 was 2.1 degrees Fahrenheit higher than for 1900-1909.

[5] Precipitation and temperature data downloaded from: https://prism.oregonstate.edu/explorer/. These data represent a 30-year period from 1980 through 2010. The x-axis reflects the end of the 30-year time series.
[6] Downloaded from: https://prism.oregonstate.edu/explorer/. The x-axis reflects the end of the 30-year time series.
[7] Standard deviation measures the typical or average year-to-year variation in annual rainfall amount. Thus, it is typical for annual rainfall to fluctuate significantly in the District.

3.4 Service Area Population and Demographics

It is estimated that the District's service area population was 147,032 in 2020.

The District estimates its service area population using Census Block population counts from decadal Census data. The decadal Census estimates are converted to average population per single- and multi-family service, which are applied to service counts for years between the decadal Censuses. This method is similar to the approach used by the California Department of Water Resources (DWR) Population Tool and population estimates generated by the two methods have been shown to differ by less than a percent in most cases.[8]

Current and projected service area population are shown in Table 3-1. Projected population is based on population and employment forecasts for Tulare County generated by the California Department of Transportation's (Caltrans) long-term socio-economic forecast model.[9] Between 2020 and 2045, service area population is projected to increase at an average rate of 1.7 percent per year.

Table 3-1. Population – Current and Projected (DWR Table 3-1)

Population Served	2020	2025	2030	2035	2040	2045
	147,032	161,087	176,265	192,510	209,431	226,850
NOTES:						

Demographics for the City of Visalia are summarized in Table 3-2. These data are from the U.S. Census American Community Survey 2019 5-Year Estimates.[10] Relative to the rest of California, the City of Visalia's population is slightly younger and more racially homogenous. Educational attainment is lower than for the state as a whole, as is median household income.

The City of Visalia's stock of housing is significantly newer than for California overall. Forty-one percent of the homes in Visalia were built after 1990 compared to 25 percent for all of California. Homes built after 1990 are more likely to have plumbing fixtures and appliances that are compliant with state and federal water and energy efficiency standards.

[8] California Water Service, 2016. 2015 Urban Water Management Plan: Visalia District, dated June 2016.
[9] California Department of Transportation's long-term socio-economic forecast model: https://dot.ca.gov/programs/transportation-planning/economics-data-management/transportation-economics/long-term-socio-economic-forecasts-by-county
[10] U.S. Census Bureau, 2019. 2015-2019 American Community Survey 5-year Estimates, dated 2019. Retrieved from: https://data.census.gov/cedsci/.

Table 3-2. Demographic and Housing Characteristics

Demographics	City of Visalia	California
Median Age (years)	32.0	36.5
Racial Makeup (%)		
White	74.4	63.8
Black or African American	3.2	7.0
American Indian and Alaska Native	2.1	1.9
Asian	7.4	16.7
Native Hawaiian	0.3	0.8
Some other race	17.3	15.1
Hispanic or Latino (of any race) (%)	52.2	39.0
Educational Attainment (%)		
Bachelor’s Degree or Higher	23.1	33.9
Primary Language Spoken at Home (%)		
English Only	86.7	82.2
Limited English-Speaking Households	7.1	8.9
Median Household Income ($)	62,263	75,235
Population below Federal Poverty Level (%)	16.2	13.4
Housing	**City of Visalia**	**California**
Median Year Built	1985	1975
Year Housing Built (%)		
2010 or Later	6.2	3.5
2000 to 2009	21.1	11.2
1990 to 1999	14.0	10.9
Before 1990	58.7	74.5

3.5 Land Uses within Service Area

The existing land use pattern for City of Visalia is shown in Table 3-3. These data are taken from the Land Use Element of the City of Visalia’s General Plan and reflect the land use pattern circa

2010.[11] Agriculture is the most prominent land use within the General Plan's Planning Area, occupying 39,518 acres or 65 percent of the land. Most of the agricultural land in the Planning Area is located outside of the current city limits, but even within these limits 15 percent of the land area is used in agriculture.

Low Density Residential (ranging from two to seven units per acre) is the second most prominent land use, comprising 11 percent of Planning Area land uses and 33 percent of land uses inside the current city limits. Medium and high density residential, various commercial and public, and light and heavy industrial land uses comprise most of the balance shown in Table 3-3.

There is significant room for further urban development within the District. Inside current city limits, the General Plan identifies 2,262 acres or 12 percent of the land as vacant. Outside current city limits an additional 656 acres are classified as vacant and 36,739 acres are classified as agricultural. While important objectives of the General Plan are aimed at preserving the agricultural character of the region and protecting and promoting agricultural businesses, it is also anticipated that some of the land currently in agricultural production will be converted to residential and non-residential urban uses to accommodate future growth. As shown in Table 3-1, the District is projecting that service area population will increase by more than 50 percent over the next 25 years.

[11] Accessed from: https://www.visalia.city/depts/community_development/planning/gp.asp

Table 3-3. City of Visalia General Plan Land Use (Acres)

	Inside City Limits		*Outside City Limits*		*Total Planning Area*	
Land Use	*Acres*	*Percent*	*Acres*	*Percent*	*Total Acres*	*Percent of Total*
Agriculture	2,778	15%	36,739	88%	39,518	65%
Low Density Residential	6,289	33%	351	1%	6,640	11%
Rural Residential	1,430	8%	2,675	6%	4,104	7%
Vacant	2,262	12%	656	2%	2,917	5%
Public/Institutional	1,554	8%	406	1%	1,960	3%
Light Industrial	1,180	6%	291	1%	1,471	2%
Parks and Recreation	1,108	6%	53	0%	1,161	2%
General Retail/Commercial	723	4%	79	0%	801	1%
Service Commercial	343	2%	197	0%	540	1%
Office	338	2%	12	0%	351	1%
Heavy Industrial	233	1%	66	0%	299	0%
Medium Density Residential	262	1%	2	0%	264	0%
Right of Way	148	1%	106	0%	254	0%
Canal	34	0%	171	0%	205	0%
Water	163	1%	23	0%	186	0%
High Density Residential	126	1%	1	0%	127	0%
Railroad	46	0%	45	0%	91	0%
Total	**19,017[1]**	**100%**	**41,872**	**100%**	**60,889**	**100%**

[1] Land use total inside city limits excludes area of roadways, which add approximately 4,136 acres, for a total of 23,153 acres, or approximately 36 square miles within city limits.

Source: Dyett & Bhatia, 2010

Chapter 4
Water Use Characterization

☑ ***CWC § 10631 (d) (1)*** *A plan shall be adopted in accordance with this chapter that shall do all of the following:*

For an urban retail water supplier, quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(J) Distribution system water loss.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

This chapter provides a description and quantifies the Visalia District's (also referred to herein as the "District") past, current, and projected water uses through 2045. For the purposes of the Urban Water Management Plan (UWMP or Plan), the terms "water use" and "water demand" are used interchangeably. This chapter is divided into the following subsections:

4.1 Non-Potable Versus Potable Water Use

4.2 Past, Current, and Projected Water Uses by Sector

4.3 Climate Change Considerations

Appendix D provides additional information and data related to the development of the water demand projections presented in this chapter.

4.1 Non-Potable Versus Potable Water Use

This Plan maintains a clear distinction between recycled, potable, and raw water uses and supplies. Recycled water is addressed comprehensively in Chapter 6, but a summary of recycled water demand is included in Table 4-3 of this chapter. The primary focus of this chapter is the historical and projected potable water uses in the District.

4.2 Past, Current, and Projected Water Uses by Sector

☑ ***CWC § 10631 (d)***

For an urban retail water supplier, quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(J) Distribution system water loss.

4.2.1 Past and Current Water Use

Table 4-1 shows water use in 2016-2020 by use type (referred to as "sector" in CWC §10631). Water use has been decreasing in the District since the early-2000s. Several factors have contributed to this reduction. First, most of the District's residential customers were unmetered in 2000. The District is now fully metered. A study completed by San Jose State University found that after six months of metering, previously unmetered households in the District reduced their water use by an average of 17 percent.[12] Second, California Water Service Company (Cal Water) implemented conservation pricing starting in 2009, supplying stronger financial incentives to use water efficiently. Third, starting around 2012, Cal Water tripled the level of expenditure on

[12] Tanverakul, S. and J. Lee, 2015. Impacts of Metering on Residential Water Use in California, Journal AWWA 107:2, dated February 2015.

conservation programs aimed at helping customers use water more efficiently. Fourth, appliance efficiency standards and plumbing codes have contributed to significant improvement over time in the average water use efficiency of the installed base of appliances and plumbing fixtures. For example, a new toilet uses roughly one-third the amount of water as a toilet manufactured in the 1980s while a new clothes washer uses about half the amount of water as an older washer.[13] District per capita water use in 2020 was 30 percent below its 2004 peak.

Water use in 2020 was 30,152 acre-feet (AF). Residential customers account for most of the District's service connections and 69 percent of its water uses. Non-residential water uses account for 28 percent of total demand, while distribution system losses account for 3 percent.

Table 4-1. Demands for Potable and Non-Potable Water – Actual (DWR Table 4-1)

Use Type	Additional Description *(as needed)*	Level of Treatment When Delivered	Volume (a)				
			2016	2017	2018	2019	2020
Single Family		Drinking Water	15,755	16,952	18,035	18,111	19,359
Multi-Family		Drinking Water	1,429	1,477	1,499	1,497	1,525
Commercial		Drinking Water	4,492	5,011	5,420	5,341	5,239
Institutional/Gov't		Drinking Water	2,201	2,505	2,728	2,873	2,600
Industrial		Drinking Water	352	407	405	414	305
Other Potable	(b)	Drinking Water	250	304	230	-172	200
Landscape	(c)	Drinking Water	0	0	0	0	0
Losses	(d)	Drinking Water	1,364	1,226	926	855	923
		TOTAL	25,843	27,882	29,243	28,919	30,152

NOTES:
(a) Volumes are in units of AF.
(b) The Other Potable use type is used to balance discrepancies between District production records and the AWWA water audit results used to report system water losses. This may result in negative consumption values in some years.
(c) District's billing system does not track this use type separate from other use types.
(d) Real and apparent losses.

4.2.2 Projected Water Use

Projected water use through 2045 is summarized in Table 4-2. Projected water use is estimated as a function of expected service growth and a forecast of average water use per service for each

[13] Water Research Foundation, 2016. Residential End Uses of Water, Version 2, prepared by DeOreo, William B., Peter Mayer, Benedykt Dziegielewski, and Jack Kiefer, dated April 2016.

of the use types shown in the table. Projected population and services are based on population and employment forecasts for Tulare County generated by the California Department of Transportation's (Caltrans) long-term socio-economic forecast model.[14] These projections are used to estimate the growth in services for each use type. Over the 25-year planning period (2020-2045), the total number of services is projected to increase at an average rate of 1.8 percent annually. For sake of comparison, between 2000 and 2020, the total number of services increased at an average rate of 2.4 percent annually. As described later in the chapter, average water use per service is adjusted over the forecast period to account for anticipated reductions in water use due to the ongoing effects of appliance standards and plumbing codes, the District's conservation and customer assistance programs, and growth in the inflation-adjusted cost of water service and household income. These factors, in combination, are expected to attenuate the increase in water use associated with projected service and population growth.

Table 4-2. Use for Potable and Non-Potable Water – Projected (DWR Table 4-2)

Use Type	Additional Description *(as needed)*	Projected Water Use (a)				
		2025	2030	2035	2040	2045
Single Family		20,815	22,593	24,604	26,513	28,705
Multi-Family		1,583	1,686	1,815	1,945	2,070
Commercial		5,634	6,009	6,448	6,891	7,364
Institutional/Gov't		2,854	3,152	3,483	3,819	4,164
Industrial		308	308	308	308	308
Other Potable		223	223	223	223	223
Landscape	(b)	0	0	0	0	0
Losses	(c)	1,102	1,304	1,429	1,559	1,695
TOTAL		32,520	35,276	38,310	41,258	44,529

NOTES:
(a) Volumes are in units of AF.
(b) District's billing system does not track this use type separate from other use types.
(c) Real and apparent losses.

Future water demands are expected to be comprised only of potable water use, as shown in Table 4-3. As discussed in Chapter 6, the City of Visalia has entered into agreements with Tulare Irrigation District (TID) to supply recycled water from its wastewater treatment facilities for groundwater recharge uses. None of the recycled water supplied to TID is expected to be used to meet the future water demands of District customers.

[14] California Department of Transportation's long-term socio-economic forecast model: https://dot.ca.gov/programs/transportation-planning/economics-data-management/transportation-economics/long-term-socio-economic-forecasts-by-county

Table 4-3. Total Gross Water Use (Potable and Non-Potable) (DWR Table 4-3)

	2020	2025	2030	2035	2040	2045
Potable Water, Raw, Other Non-potable *From DWR Tables 4-1 and 4-2*	30,152	32,520	35,276	38,310	41,258	44,529
Recycled Water Demand *From DWR Table 6-4*	0	0	0	0	0	0
Optional Deduction of Recycled Water Put Into Long-Term Storage						
TOTAL WATER USE	30,152	32,520	35,276	38,310	41,258	44,529
NOTES: (a) Volumes are in units of AF.						

4.2.3 Distribution System Water Loss

☑ ***CWC § 10631 (3)***

(A) The distribution system water loss shall be quantified for each of the five years preceding the plan update, in accordance with rules adopted pursuant to Section 10608.34.

(B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.

(C) In the plan due July 1, 2021, and in each update thereafter, data shall be included to show whether the urban retail water supplier met the distribution loss standards enacted by the board pursuant to Section 10608.34.

Table 4-4 shows distribution system water losses for the previous five years. Water loss is the sum of apparent and real losses. Apparent loss is associated with metering inaccuracies, billing and administrative errors, authorized unmetered uses (e.g., system flushing and firefighting), and unauthorized uses. Real loss is associated with physical water lost through line breaks, leaks and seeps, and overflows of storage tanks. Since 2016, urban retail water suppliers have been required under CWC §10608.34 and California Code of Regulations (CCR) §638.1 et seq to quantify distribution system water losses using the American Water Works Association (AWWA) Free Water Audit Software (referred to as “water loss audit reports”). The water loss audit reports the District submits to DWR provide the basis for the 2016-2019 estimates shown in Table 4-4 and are available through DWR’s Water Use Efficiency Data Portal.[15] The District’s 2020 water

[15] DWR’s Water Use Efficiency Data Portal: https://wuedata.water.ca.gov/awwa_plans

loss audit report had not been completed at the time this Plan was prepared.[16] The 2020 estimate shown in Table 4-4 is therefore drawn from the District's preliminary draft water loss audit results.

Table 4-4. Last Five Years of Water Loss Audit Reporting (DWR Table 4-4)

Reporting Period Start Date	Volume of Water Loss (a)
01/2016	1,364
01/2017	1,226
01/2018	926
01/2019	855
01/2020	923
NOTES: (a) Volumes are in units of AF.	

CWC §10631 (3)(c) requires that this UWMP demonstrate whether the distribution loss standards enacted by the State Water resources Control Board (SWRCB) pursuant to §10608.34 have been met. However, the SWRCB has yet to establish these standards, and thus consistency with these standards cannot be demonstrated herein.

4.2.4 Future Water Savings in Projected Water Use

☑ ***CWC § 10631 (d) (4)***

(A) Water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.

(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:

(i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.

(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.

As affirmed in Table 4-5, both future water savings (discussed below) and lower income residential demands (discussed in Section 4.2.5) are included in the projections of future water use.

[16] The District's regulatory deadline for filing its 2020 water loss audit report to the state is October 1, 2021.

Table 4-5. Inclusion in Water Use Projections (DWR Table 4-5)

Are Future Water Savings Included in Projections?	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found.	Section 4.2.4
Are Lower Income Residential Demands Included In Projections?	Yes
NOTES:	

As noted above, the District has adjusted the forecast of average water use per service for the effects of appliance standards and plumbing codes, conservation programs, and increases in the real cost of water service and household income. These adjustments are described below.

The District uses forecasts of per capita water savings from appliance standards and plumbing codes prepared for DWR to adjust its projections of average water use per service.[17] These forecasts incorporate the effects of the following codes and regulations:

- Assembly Bill (AB) 715, enacted in 2007, requires that any toilet or urinal sold or installed in California on or after January 1, 2014 cannot have a flush rating exceeding 1.28 and 0.5 gallons per flush, respectively. AB 715 superseded the state's previous standards for toilet and urinal water use set in 1991 of 1.6 and 1.0 gallons per flush, respectively. On April 8, 2015, in response to the Governor's Emergency Drought Response Executive Order (EO B-29-15), the California Energy Commission approved new standards for urinals requiring that they not consume more than 0.125 gallons per flush, 75 percent less than the standard set by AB 715.
- Water use standards for residential and commercial clothes washers and dishwashers are established by the U.S. Department of Energy through its authority under the federal Energy Policy and Conservation Act. Water use efficiency is summarized by the water factor for the appliance which measures the gallons of water used per cycle per cubic foot of capacity. A typical top-loading residential clothes washer manufactured in the 1990s had a water factor of around 12. In 2015, the allowable water factor for top- and front-loading residential clothes was reduced to 8.4 and 4.7, respectively. In 2018, water factor standard for top-loading residential clothes washers will be reduced to 6.5. In 2010 the allowable water factor for top- and front-loading commercial clothes washers was reduced to 8.5 and 5.5, respectively. The maximum water factor for Energy Star compliant top- and front-loading washers is 3.7 and 4.3, respectively. The U.S. Environmental Protection Agency estimates that Energy Star washers made up at least 60 percent of the residential market and 30 percent of the

[17] M.Cubed, 2016. Projected Statewide and County-Level Effects of Plumbing Codes and Appliance Standards on Indoor GPCD, technical memorandum prepared for the California Department of Water Resources, dated August 2016.

commercial market in 2011.[18] An Energy Star compliant washer uses about two-thirds less water per cycle than washers manufactured in the 1990s. Federal dishwasher water use efficiency standards were last updated in 2013. The maximum water use for standard and compact sized dishwashers is 5.0 and 3.5 gallons per cycle, respectively.

- New construction and renovations in California are now subject to CalGreen Code requirements. CalGreen includes prescriptive indoor provisions for maximum water consumption of plumbing fixtures and fittings in new and renovated properties. CalGreen also allows for an optional performance path to compliance, which requires an overall aggregate 20 percent reduction in indoor water use from a calculated baseline using a set of worksheets provided with the CalGreen guidelines.
- Senate Bill (SB) 407, enacted in 2009, mandates that all buildings in California come up to current State plumbing fixture standards within this decade. This law establishes requirements that residential and commercial property built and available for use on or before January 1, 1994 replace plumbing fixtures that are not water conserving, defined as "noncompliant plumbing fixtures." This law also requires effective January 1, 2017 that a seller or transferor of single-family residential property show to the purchaser or transferee, in writing, the specified requirements for replacing plumbing fixtures and whether the real property includes noncompliant plumbing. Similar disclosure requirements went into effect for multi-family and commercial transactions January 1, 2019. SB 837, passed in 2011, reinforces the disclosure requirement by amending the statutorily required transfer disclosure statement to include disclosure about whether the property follows SB 407 requirements.

The District's 2015 Conservation Master Plan forms the basis for the forecast of water savings from conservation programs. Cal Water used the Alliance for Water Efficiency's Water Conservation Tracking Tool to estimate expected water savings from planned program implementation.[19]

Projected increases in water service costs and household income form the basis for the adjustments to average water use due to changes in the real cost of water service. The forecast uses the historical rate of increase in District water rates to project future water service costs. It uses Caltrans income projections for Tulare County to estimate changes in household income. It uses empirically derived estimates of price and income demand elasticity to adjust future water demand for changes in these variables.[20]

[18] EPA Energy Star Unit Shipment and Market Penetration Report Calendar Year 2011 Summary.
[19] Alliance for Water Efficiency Water Conservation Tracking Tool: https://www.allianceforwaterefficiency.org/resources/topic/water-conservation-tracking-tool
[20] M.Cubed, 2018. California Water Service 2020 Test Year Sales Forecast: 2018 General Rate Case, prepared for California Water Service by M.Cubed, dated January 2018.

Table 4-6 shows the total water savings from plumbing codes and appliance standards, conservation programs, and increases in the real cost of water service.

Table 4-6. Future Conservation Savings (AF)

2025	2030	2035	2040	2045
811	1,421	1,900	2,605	3,156

4.2.5 Water Use by Lower Income Households in Water Use Projections

☑ ***CWC § 10631.1***

(a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirements under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

California Senate Bill No. 1087 (SB 1087), Chapter 727, passed in 2005, amended Government Code §65589.7 and CWC §10631.1. This law requires that local governments supply a copy of their adopted housing element to water and sewer providers. Additionally, it requires that water providers grant priority for service allocations to developments that include housing units for lower income families and workers. The UWMP Act requires that water providers estimate water demands by lower income single and multi-family households.

Cal Water must serve all development that occurs within its service area, regardless of the income level of the future residents. Cal Water does not keep records of the income level of its customers and does not discriminate when supplying water to any development. It is the responsibility of the city or county with land use authority over a given area to approve or not approve developments within Cal Water's service areas. Cal Water has a Customer Assistance Program (CAP) to help with water service affordability. CAP discounts the monthly service charge of qualifying lower income households.

Table 4-7 shows projected water use by lower income households. These demands are part of the projected residential water use in Table 4-2. Cal Water used the City of Visalia's General Plan

Housing Element to estimate the number of lower income households which is the basis for the estimates in Table 4-7.[21]

Table 4-7. Residential Demands of Lower Income Households (AF)

2025	2030	2035	2040	2045
8,511	9,226	10,039	10,814	11,694

4.2.6 Characteristic Five-Year Water Use

☑ ***CWC § 10635(b)(3)***

(b) Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following…

(3) A comparison of the total water supply sources available to the water supplier with ***the total projected water use for the drought period.*** (Emphasis added).

CWC §10635(b) is a new requirement for 2020 UWMPs. A critical part of this new statutory language is the requirement to prepare a five-year Drought Risk Assessment (see Section 9.5). As a first step, DWR suggests that water suppliers estimate their unconstrained water demand for the next five years (2021-2025). Unconstrained water demand is water use in the absence of drought water use restrictions. Drought conditions cause unconstrained demands to increase. The Drought Risk Assessment presented in Section 9.5 accounts for this increase in unconstrained water demand. Cal Water's demand forecast model separately estimates water use for normal, wet, and dry weather conditions. Table 4-8 shows unconstrained demands for 2021-2025 for normal weather and multiple-dry-year scenarios.

Table 4-8. Characteristic Five-Year Water Use (AF)

Weather Scenario	2021	2022	2023	2024	2025
Multi-Year Dry	31,274	31,813	32,376	32,954	33,543
Normal	30,322	30,844	31,390	31,950	32,520
NOTES: The table shows unconstrained demand (i.e., demand in the absence of drought water use restrictions).					

[21] City of Visalia Housing Element 2020-2023, Table 1-21. Accessed from https://www.visalia.city/civicax/filebank/blobdload.aspx?BlobID=34534

4.3 Climate Change Considerations

☑ ***CWC § 10635(b)***

(4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

Climate strongly influences the level and seasonal pattern of District water demands. Cal Water has analyzed the effect of climate and weather variability on both aspects of demand.[22] Using this information, Cal Water has estimated the effect of alternative climate warming scenarios on future water demand.[23] Table 4-9 summarizes the results of this analysis. It shows that for plausible emission scenarios and corresponding temperature increases, climate change may, on average, increase future District demands by 2 to 3 percent compared to current climate conditions. Two points are worth noting. First, this is the average effect. There is significant variation about the mean. Second, this is a ceteris paribus, or all else equal, result. It assumes existing levels and types of landscaping. However, landscaping choices are partly a function of climate and as the climate changes, so too may these choices. It is reasonable to think households and businesses will adapt their landscaping as the climate warms. This adaptation may mitigate some of the expected demand increase shown in the table.

[22] A&N Technical Services, 2014. Cal Water Long-Term Water Demand Forecast Model. Report prepared for California Water Service Company. December 2014.

[23] Table 4-9 uses climate scenarios for the southwestern United States. These in turn rely on alternative greenhouse gas emission scenarios. Emissions under scenario A2 are higher than under scenario B2. The 80th percentile scenario is the 80th percentile temperature change for the full suite of emission scenarios. For further information, see Kunkel, K.E, L.E. Stevens, S.E. Stevens, L. Sun, E. Janssen, D. Wuebbles, K.T. Redmond, and J.G. Dobson, 2013. Regional Climate Trends and Scenarios for the U.S. National Climate Assessment. Part 5. Climate of the Southwest U.S., NOAA Technical Report NESDIS 142-5, dated 2013.

Table 4-9. Climate Change Effect on Demand

Emissions Scenario	Change in Mean Temperature by 2040 (degree F)	Change from Current Mean Temperature (%)	Effect on Demand (%)
Lower Emissions Scenario (B1)	2.5	3.4%	2.0%
Higher Emissions Scenario (A2)	2.7	3.7%	2.1%
80%ile Temperature Scenario	3.6	4.9%	2.8%

NOTES:

(a) Predicted temperature increases for Southwest United States for alternative emission scenarios reported in Kunkel et al. (2013). Predicted effect on demand derived from weather response models estimated with historical monthly water use, temperature, and rainfall data.

(b) The physical climate framework for the 2013 National Climate Assessment is based on climate model simulations of the future using the high (A2) and low (B1) SRES emissions scenarios. The A1B emission scenario reflects a middle case between the A2 and B1 scenarios. The 80%ile scenario is the 80th percentile temperature change across the family of emissions scenarios. Further description of emission scenarios can be found at https://www.ipcc.ch/site/assets/uploads/2018/03/sres-en.pdf

Chapter 5
SB X7-7 Baseline and Targets

☑ ***CWC § 10608.24 (b)***

Each urban retail water supplier shall meet its urban water use target by December 31, 2020.

☑ ***CWC § 10608.28***

(a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:

(1) Through an urban wholesale water supplier.

(2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).

(3) Through a regional water management group as defined in Section 10537.

(4) By an integrated regional water management funding area.

(5) By hydrologic region.

(6) Through other appropriate geographic scales for which computation methods have been developed by the department.

(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

The Water Conservation Act of 2009, also known as Senate Bill (SB) X7-7, requires that urban retail water suppliers reduce their per capita water use by 20 percent by 2020. SB X7-7 defines an urban retail water supplier as “a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes” (CWC §10608.12). The Visalia District meets both criteria. The state will assess each urban retail water supplier’s 2020 per capita water use against the target it established in its 2015 urban water management plan (UWMP).

This chapter demonstrates the District’s compliance with its SB X7-7 per capita water use target and includes the following sections:

5.1 Wholesale Suppliers

5.2 Updates to the 2015 UWMP Calculations

5.1 Wholesale Suppliers

SB X7-7 does not directly apply to wholesale water suppliers. Wholesale suppliers may adopt programs and policies that support SB X7-7 compliance by the retail water suppliers they serve. They may also take part in a Regional Alliance (discussed below) set up to satisfy SB X7-7 requirements on a regional basis. As discussed in Chapter 2, the District is not a wholesale water supplier and does not receive water supply from any wholesale water supplier. This section therefore does not apply.

5.2 Updates to the 2015 UWMP Calculations

The District has not made any changes to the information in its 2015 UWMP pertaining to SB X7-7.

5.3 Service Area Population

Service area population estimation must satisfy the requirements in Methodology 2 – Service Area Population – of DWR's *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*. California Water Service Company (Cal Water)'s population estimation method is similar to the method used by DWR's Population Tool.[24] DWR reviewed and accepted Cal Water's population estimation method as part of the review of its 2015 UWMPs. Cal Water used this method to estimate the District's 2020 service area population. As reported in Chapter 3, the District's population was 147,032 in 2020.

[24] Cal Water estimates service area population using census block population data with the LandView 5 and MARPLOT software programs. In census years, the method estimates service area population using the population counts of census blocks with centroids falling within the District's service boundary. In off-census years, the method estimates population by adjusting the census year estimates for changes in the number of single- and multi-family service connections and dwelling units. As shown in the District's 2015 UWMP, estimates prepared using this method and DWR's Population Tool typically differ by less than a percent. Cal Water prefers using its method to be consistent with its other planning documents.

5.4 Baseline Periods, Baseline GPCD, and Confirmed SB X7-7 2020 Target

Table 5-1 shows the District's 5- and 10-year baseline periods, baseline per capita water use (GPCD), and SB X7-7 2020 target. Supporting population and water use data are in Appendix E.

Table 5-1. SB X7-7 Baselines and Targets Summary (DWR Table 5-1)

Baseline Period	Start Year	End Year	Average Baseline GPCD	Confirmed 2020 Target GPCD
10-15 year	1999	2008	247	198
5 Year	2003	2007	246	
NOTES:				

5.5 Demonstration of Compliance with SB X7-7 2020 Target

Service area population and water use in 2020 were 147,032 and 30,152 AF, respectively, resulting in per capita water use of 183 GPCD. This is less than target SB X7-7 GPCD, as shown in Table 5-2. Supporting population and water use data are in Appendix E.

Table 5-2. SB X7-7 2020 Compliance (DWR Table 5-2)

2020 GPCD			2020 Confirmed Target GPCD	Did Supplier Achieve Targeted Reduction for 2020?
Actual 2020 GPCD	2020 TOTAL Adjustments	Adjusted 2020 GPCD *(Adjusted if applicable)*		
183			198	Yes
NOTES:				

5.6 Demonstration of Compliance with Regional Alliance SB X7-7 2020 Target

An urban retail water supplier can satisfy SB X7-7 requirements either individually or as part of a Regional Alliance. The District formed a regional alliance with other Cal Water districts in the Tulare Lake Hydrologic Region. The name of this Regional Alliance is California Water Service – Tulare Lake Regional Alliance. Table 5-3 shows 2020 per capita water use for this Regional Alliance. Table 5-4 demonstrates compliance with the Regional Alliance's SB X7-7 2020 target GPCD. Supporting population and water use data are in Appendix E.

Table 5-3. SB X7-7 Regional Alliance – 2020 GPCD (DWR RA 2020 GPCD Table)

Participating Member Agency Name	2020 Actual GPCD*	2020 Population	(2020 GPCD) X (2020 Population)	Regional Alliance 2020 GPCD (Actual)
Cal Water Bakersfield District	185	286,310	53,045,181	
Cal Water Kern R. Valley District	126	5,501	693,126	
Cal Water Selma District	157	26,157	4,099,875	
Cal Water Visalia District	183	147,032	26,918,034	
Regional Alliance Totals	651	465,000	84,756,216	182

**All participating agencies must submit individual SB X7-7 Tables, as applicable, showing the individual agency's calculations. These tables are: SB X7-7 Tables 0 through 6, Table 7, any required supporting tables (as stated in SB X7-7 Table 7), and SB X7-7 Table 9, as applicable. These individual agency tables will be submitted with the individual or Regional Urban Water Management Plan.*

Table 5-4. SB X7-7 Regional Alliance – 2020 Compliance (DWR RA 2020 Compliance Table)

2020 Actual GPCD	Optional Adjustment for Economic Growth[1]	Adjusted 2020 Actual GPCD	2020 Target GPCD [2]	Did Alliance Achieve Targeted Reduction for 2020?
182			222	Yes

[1]Adjustments for economic growth can be applied to either the individual supplier's data or to the aggregate regional alliance data (but not both), depending upon availability of suitable data and methods. [2] 2020 Target GPCD will be taken from the Regional Alliance's SB X7-7 Verification Form, Weighted Target Table.

Chapter 6
Water Supply Characterization

☑ ***CWC § 10631 (b)*** *A plan shall be adopted in accordance with this chapter that shall do all of the following:*

Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).

This chapter provides a description of the Visalia District's (also referred to herein as the "District") current water supplies, including a discussion of the underlying groundwater basins and their management, and potential supply sources, such as surface water, stormwater, and recycled water, as well as assessment of the energy intensity used to operate the Visalia District treatment and distribution system. This chapter includes the following sections:

6.1 Purchased Water

6.2 Groundwater

6.3 Surface Water

6.4 Stormwater

6.5 Wastewater and Recycled Water

6.6 Desalinated Water Opportunities

6.7 Water Exchanges and Transfers

6.8 Future Water Projects

6.9 Summary of Existing and Planned Sources of Water

6.10 Special Conditions

6.11 Energy Intensity

6.1 Purchased Water

☑ ***CWC § 10631 (h)*** *A plan shall be adopted in accordance with this chapter and shall do all of the following:*

An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (f). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (f).

California Water Service Company (Cal Water) does not currently purchase any imported water to meet demands in its Visalia District.

6.2 Groundwater

☑ ***CWC § 10631***

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a), providing supporting and related information, including all of the following:

(4) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information:

(A) The current version of any groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720), any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management for basins underlying the urban water supplier's service area.

(B) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For a basin that has not been adjudicated, information as to whether the department has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to coordinate with groundwater sustainability agencies or groundwater management agencies listed in subdivision (c) of Section 10723 to maintain or achieve sustainable groundwater conditions in accordance with a groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720).

(C) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

Groundwater is the sole source of water supply for the Visalia District. This section includes information regarding the underlying basin descriptions, groundwater management, and Cal Water's coordination with the applicable Groundwater Sustainability Agencies (GSAs), followed by a discussion of historical pumping and supply sufficiency.

6.2.1 Basin Description and Status

As shown on Figure 6-1, the three Public Water Systems (PWSs) that comprise the Visalia District overlie the Kaweah Subbasin (California Department of Water Resources [DWR] Basin No. 5-022.11) and the Tule Subbasin (DWR Basin No. 5-022.13) of the San Joaquin Valley Basin. The Visalia PWS and the Tulco PWS overly the Kaweah Subbasin while the very small Mullen PWS overlies the Tule Subbasin.

It should be noted that pumping by the Mullen PWS in the Tule Subbasin has historically comprised approximately 0.1% of the total District pumping. Given this, projected District demands included in this Urban Water Management Plan (UWMP or Plan) are not apportioned by groundwater subbasin, but presented on a District-wide basis. However, because the District overlies both basins, for purposes of the following analysis, both the Kaweah and Tule Subbasins are considered. The Kaweah and Tule Subbasins are not adjudicated; however, in its recent evaluation of California's groundwater basins, DWR determined that both subbasins are in a condition of critical overdraft. [25]

Kaweah Subbasin

The Kaweah Subbasin covers an area of approximately 446,000 acres (696 square miles) in the San Joaquin Valley and lies between the Kings Subbasin on the north, the Tule Subbasin on the south, crystalline bedrock of the Sierra Nevada foothills on the east, and the Tulare Lake subbasin on the west. [26]

The Kaweah Subbasin is designated as a high priority basin under DWR's 2019 Phase 2 Basin Prioritization. [27] Under this prioritization process, basins are ranked on eight components, and if a basin is assigned more than 21 total points, it is defined as "high priority." The main factors driving the designation in the Kaweah Subbasin include irrigated acreage per square mile (5 out of 5 possible points), population growth (5 out of 5 possible points), and groundwater reliance (5 out of 5 possible points). Additional factors include documented impacts including declining groundwater levels and subsidence (4 out of 5 possible points) and total well density (4 out of 5

[25] DWR, 2019. Sustainable Groundwater Management Act 2018 Basin Prioritization, State of California, dated January 2019.

[26] DWR, 2004. Bulletin 118 Basin Boundary Description, Kaweah Subbasin, dated February 2004.

[27] DWR, 2019. Sustainable Groundwater Management Act 2018 Basin Prioritization, State of California, dated January 2019.

possible points).[28] However, because the subbasin is critically overdrafted, it is assigned 40 priority points, which is the maximum total points under DWR's ranking system.

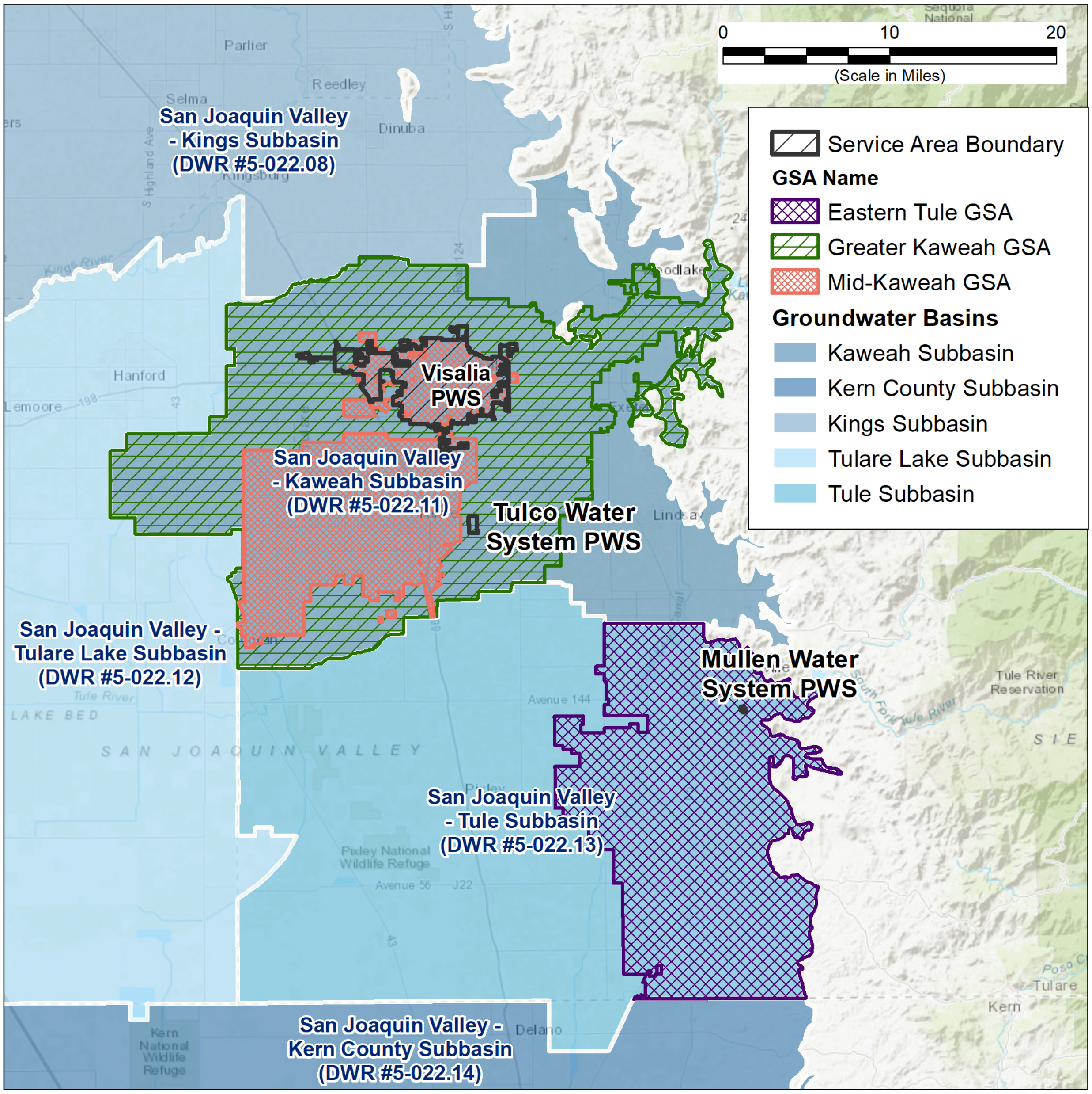
Tule Subbasin

The Tule Subbasin covers an area of approximately 475,895 acres (744 square miles) and is located almost entirely within Tulare County. The Tule Subbasin is delineated by various water districts, the largest of which is the Lower Tule River Irrigation District. The eastern boundary of the subbasin is the Sierra Nevada Mountain Range. The southern and western boundaries generally follow the Tulare County line.[29]

The Tule Subbasin is designated as a high priority basin under DWR's 2019 Phase 2 Basin Prioritization.[30] The main factors driving the designation in the Tule Subbasin include irrigated acreage per square mile (5 out of 5 possible points) and groundwater reliance (5 out of 5 possible points). Additional factors include documented impacts including declining groundwater levels and subsidence (4 out of 5 possible points) and population growth (4 out of 5 possible points).[31] However, because the subbasin is critically overdrafted, it is assigned 40 priority points, which is the maximum total points under DWR's ranking system.

[28] DWR's 2019 Phase 2 Basin Prioritization used the basin's total possible ranking points assigned to each of the eight components to determine the priority. A basin is defined as High Priority if it has more than 21 total ranking points.
[29] DWR, 2018. Bulletin 118 Basin Boundary Description, Tule Subbasin, dated March 2018.
[30] DWR, 2019. Sustainable Groundwater Management Act 2018 Basin Prioritization, State of California, dated January 2019.
[31] DWR's 2019 Phase 2 Basin Prioritization used the basin's total possible ranking points assigned to each of the eight components to determine the priority. A basin is defined as High Priority if it has more than 21 total ranking points.

Figure 6-1. Groundwater Basins Underlying the Visalia District



Additional details on the Kaweah and Tule Subbasins are given in the DWR's Groundwater Bulletin 118, as well as in the key documents described below related to groundwater management of the subbasins, which are incorporated into this Plan by reference:

- The final Groundwater Sustainability Plans (GSPs) for the Mid-Kaweah GSA, the Greater Kaweah GSA, and the Eastern Tule GSA (ETGSA), including current groundwater

conditions, hydrogeologic conceptual models, water budgets, local sustainable management criteria, and projects and management actions for reaching sustainability in the subbasins by 2040, are available on the DWR Sustainable Groundwater Management Act (SGMA) Portal website:
https://sgma.water.ca.gov/portal/gsp/all

- The Kaweah River Basin Integrated Regional Water Management Plan (IRWMP), including detailed descriptions of Kaweah Subbasin hydrogeology, history of water and wastewater management, water quality, and water resources management, is available on the Kaweah Delta Water Conservation District website:
http://www.kdwcd.com/water-resources/

- The Tule River Basin IRWMP, including detailed descriptions of the regions water supply and demand, resource management strategies, and potential projects, is available on the Tule River Basin IRWMP website:
https://www.tuleirwmp.com/documents/

6.2.2 Non-SGMA Groundwater Management

Kaweah Subbasin

Prior to the passage of SGMA, the Kaweah Subbasin was managed according to the Kaweah River Basin IRWMP. The most recent update to the Kaweah River Basin IRWMP was adopted in July 2018. The objectives identified by the Kaweah River Basin Regional Water Management Group and stated in the IRWMP fall into five categories: (1) groundwater management, (2) water supply, (3) water quality, (4) flood control, and (5) ecosystem restoration. [32] These objectives were used to inform water management strategies and potential project proposals to accomplish the goals of the region. The Kaweah Subbasin GSPs (discussed below) supersede the IRWMP as the groundwater management plan for the Kaweah Subbasin.

The Kaweah Delta Water Conservation District (KDWCD) and other irrigation districts and companies have historically managed groundwater through the conjunctive use of surface water. KDWCD regularly provides programs that benefit local agricultural customers by making available additional surface water supplies for irrigation. These programs effectively reduce the withdrawals of groundwater resulting in in-lieu recharge of the aquifer. Groundwater is normally

[32] Kaweah River Basin Regional Water Management Group, 2018. Kaweah River Basin Integrated Regional Water Management Plan, dated July 2018.

used by agriculture as an alternate source when surface supplies are not available, and is the sole source in areas within KDWCD jurisdiction that do not have access to surface water.

The KDWCD also operates dedicated water management basins for the multiple purposes of flood control and groundwater replenishment. The basins have the capacity to recharge the underlying groundwater basin. Normal operation of these facilities provides both the direct and indirect groundwater recharge of the basin in the form of conveyance losses and from agricultural applications of surface water that percolate into the aquifer.

In areas of the Lower Kaweah River such as Packwood and Cameron Creeks, surface water deliveries are managed by Tulare Irrigation District (TID) and other irrigation districts and companies. The City of Visalia (City) maintains a groundwater recharge program that provides localized benefit to the Visalia District; Cal Water customers fund the program through a groundwater pumping charge. Under this program the City works cooperatively with KDWCD and these irrigation districts and companies to manage groundwater resources.

Tule Subbasin

Prior to the passage of SGMA, the Tule Subbasin was managed according to the Tule River Basin IRWMP. The most recent update to the Tule River Basin IRWMP was adopted in June 2018. The goals identified by the Tule River Basin Integrated Regional Water Management Group stated in the IRWMP include: (1) maintain or improve the health of ecosystems within the region, (2) protection of life, structure, equipment, and property from flooding (3) reduction of contamination of surface and groundwater resources, (4) expand regional response to climate change through mitigation and adaption strategies, and (5) work toward achievement of sustainable balanced surface and groundwater supplies.[33] These goals were used to inform resource management strategies and potential project proposals to accomplish the goals of the region. The Eastern Tule GSP (discussed below) supersedes the IRWMP as the groundwater management plan for the portion of the Tule Subbasin where the Mullen PWS is located.

6.2.3 SGMA Groundwater Management

In 2014, the California State Legislature enacted SGMA with subsequent amendments in 2015. Among other things, SGMA requires the formation of GSAs and the development and implementation of GSPs for groundwater basins that are designated by DWR as medium or high priority. As high priority, critically overdrafted and non-adjudicated basins, the Kaweah and Tule Subbasins are subject to the requirements of SGMA.

[33] Tule River Basin Regional Water Management Group, 2018. Tule River Basin Integrated Regional Water Management Plan, dated June 2018.

Kaweah Subbasin

Three GSAs were formed to collectively assume responsibility for sustainable groundwater management of the Kaweah Subbasin. The three GSAs within the Basin include: the Mid-Kaweah GSA, East Kaweah GSA, and Greater Kaweah GSA. Each GSA prepared an individual GSP, but certain technical efforts (e.g., development of a coordinated water budget) were cooperatively developed through a Coordination Agreement.

As shown in Figure 6-1, the majority of the Visalia PWS falls within the jurisdiction of the Mid-Kaweah GSA, which covers an area of approximately 104,320 acres in the central to southwestern side of the Kaweah Subbasin. The Mid-Kaweah GSA was formed September 14, 2015, through execution of a Joint Powers Agreement (JPA) between the City of Tulare, City of Visalia, and TID to establish the Mid-Kaweah Groundwater Subbasin JPA. The Mid-Kaweah GSA GSP was submitted to DWR on January 31, 2020. [34]

Small portions of the Visalia PWS and the entirety of the Tulco PWS fall within the jurisdiction of the Greater Kaweah GSA, which covers an area of approximately 217,600 acres across the Kaweah Subbasin. The Greater Kaweah GSA was formed August 23, 2016, through execution of a JPA between the KDWCD, the County of Tulare, Kings County Water District, Lakeside Irrigation District, and St. Johns Water District. The Greater Kaweah GSA GSP was submitted to DWR on January 31, 2020. [35]

As defined under SGMA, sustainable yield means "the maximum quantity of water, calculated over a base period representative of long-term conditions in a basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing undesirable results." [36] The three GSAs within the Kaweah Subbasin determined a subbasin-wide sustainable yield of 660,000 acre-feet per year (AFY), which was further apportioned among the GSAs in the Kaweah Subbasin Coordination Agreement. [37]

Projects and management actions described in the Mid-Kaweah GSA GSP include: groundwater recharge projects and programs, surface reservoir projects, leveraged surface water exchange programs, a groundwater extraction measurement implementation program, a conceptual groundwater marketing program, and future urban and agricultural conservation. The Mid-Kaweah GSA GSP states that the GSA will work during the period from 2020 to 2025 to develop a pumping allocation program to achieve, along with neighboring GSAs, the Kaweah Subbasin's sustainable yield by 2040. The Mid-Kaweah GSA plans to prioritize the projects/programs above

[34] Mid-Kaweah GSA, 2019. Mid-Kaweah GSA GSP, dated December 2019.
[35] Greater Kaweah GSA, 2020. Greater Kaweah GSA GSP, dated January 2020.
[36] California Water Code (CWC) §10721(w)
[37] East Kaweah GSA, et al., 2019. Kaweah Subbasin Coordination Agreement, dated January 2020.

to serve as the first means to achieve sustainability, but by 2026, it is anticipated that an allocation plan would be ready for implementation if necessary to achieve sustainability.[38]

Projects and management actions described in the Greater Kaweah GSA GSP include: new recharge and storage facilities, improvements to existing recharge basins, and agricultural and urban conservation. Additionally, the Greater Kaweah GSA GSP discusses the potential use of flow meters, which would allow for management programs including fees and incentives, a groundwater market, and allocations. The Greater Kaweah GSA GSP specifically states that an allocation program will be considered in the event that other management actions fall short of the Greater Kaweah GSA's objectives.[39]

Tule Subbasin

Seven GSAs were formed to collectively assume responsibility for sustainable groundwater management of the Tule Subbasin. The seven GSAs within the Basin include: ETGSA, Tri-County Water Authority GSA, Pixley Irrigation District GSA, Lower Tule River Irrigation District GSA, Delano-Earlimart Irrigation District GSA, Alpaugh GSA, and Tulare County GSA. Each GSA prepared an individual GSP, but certain technical efforts (e.g., development of a coordinated water budget and sustainability goal) were cooperatively developed through a Coordination Agreement.

The Mullen PWS portion of the Visalia District falls within the jurisdiction of the ETGSA, which covers an area of approximately 160,867 acres in the southeastern portion of Tulare County. The ETGSA was formed December 6, 2016, through execution of a JPA between the City of Porterville, Porterville Irrigation District, Saucelito Irrigation District, Teapot Dome Water District, Vandalia Water District, Terra Bella Irrigation District, Kern-Tulare Water District, and Tulare County. The ETGSA GSP was submitted to DWR on January 31, 2020.[40]

The seven GSAs within the Tule Subbasin determined a basin-wide sustainable yield of 130,000 AFY[41] which has not been further allocated at the present time. The ETGSA GSP includes plans to develop a groundwater accounting system to track groundwater use and establish an allocation structure to be used during the SGMA implementation period. The most recent annual report published by the ETGSA states that the groundwater accounting action remains under development.[42] Other projects and management actions described in the ETGSA GSP include: fees and incentives, land subsidence management and monitoring, existing water supply optimization projects, surface water development projects, managed aquifer recharge and

[38] Mid-Kaweah GSA, 2019. Mid-Kaweah GSA GSP, dated December 2019.
[39] Greater Kaweah GSA, 2020. Greater Kaweah GSA GSP, dated January 2020.
[40] ETGSA, 2020. ETGSA GSP, dated January 2020.
[41] Ibid.
[42] ETGSA, 2020. SGMA Annual Report - ETGSA, dated April 2020.

banking projects, and agricultural land retirement (fallowing) projects. The ETGSA GSP states that, through the implementation of the projects and management actions above, the ETGSA can achieve and maintain groundwater sustainability in its jurisdictional area.[43]

6.2.4 Cal Water Coordination with Groundwater Sustainability Agencies

Cal Water's groundwater basin management philosophy continues to be to work collaboratively with all stakeholders in the basins where we operate and to do what is best for the groundwater basin including the sharing of burden(s) and benefits on an equitable basis with said stakeholders. Cal Water recognizes and deeply supports the goals, objectives, and intended outcomes of the SGMA. Moreover, the company recognizes the numerous challenges of implementing the legislation along a variety of technical, legal, political, and financial/economic dimensions, particularly when the geographical diversity of the Cal Water's service territory is considered. None-the-less, Cal Water intends to take an active role in the local and state-wide management of groundwater resources over the next five to 25+ years by fully supporting and participating in the principal edicts of SGMA. A number of specific steps that Cal Water has taken with respect to this position and role include (among others):

- Cal Water has appointed representatives to serve on the Greater Kaweah GSA Board and the Mid-Kaweah GSA Technical Advisory Committee (TAC);
- Coordination with public agencies to ensure that Cal Water's presence, rights and interests, as well as historical and current resource management concerns are honored/incorporated within the GSA and GSP formulation process(es);
- Coordination with applicable local and regulatory agencies to ensure that Cal Water is at full participation, while also meeting the requirements and expectations set forth by SGMA;
- Enhanced use of digital/electronic groundwater monitoring equipment and other new technology aimed at measuring withdrawal rates, pumping water levels, and key water quality parameters within the context of day-to-day operations;
- Participation in the development of GSP's and formulation of groundwater models being constructed in basins where Cal Water has an operating presence;
- Participation in individual and/or joint projects aimed at mitigating seawater intrusion and other "undesirable results" where appropriate;
- Inclusion of sound groundwater management principles and data in all applicable technical reports, studies, facility master plans, and UWMPs (including this 2020 update),

[43] ETGSA, 2020. ETGSA GSP, dated January 2020.

particularly as these undertakings relate or pertain to water resource adequacy and reliability; and,

- Inclusion of sound groundwater management principles and data in all general rate case (GRC) filings and grant applications to ensure that resource management objectives remain visible and central to Cal Water's long-term planning/budgeting efforts.

6.2.5 Historical Pumping and Supply Sufficiency

The groundwater used by the Visalia District is extracted from the underlying Kaweah and Tule Subbasins. The District has a total of 59 active wells located within the Visalia PWS, two wells within the Mullen PWS, and one well within the Tulco PWS service area boundaries shown in Figure 6-1.

There are four surface storage structures, enabling the groundwater wells to pump to storage during non-peak demand periods and provide peak day demand. The District has sufficient production capacity to supply all of the District's current annual average day and maximum day demand.

As noted above, groundwater is the only source of supply for the Visalia District. Table 6-1 lists the amount of groundwater pumped by Cal Water over the past five years. The available groundwater supply has been sufficient to meet all of the District's demands in the past five years and all prior years.

Section 7.1.1 presents an analysis of the availability of groundwater supply for the District based on historical groundwater use and review of available information regarding groundwater supply availability to the Visalia District, including the impacts of SGMA. Based on the available information, the available groundwater supply is expected to be sufficient to meet the projected future demands of the District in normal and multiple dry year periods through 2045. It should be noted that the Kaweah and Tule Subbasins are not adjudicated, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

Table 6-1. Groundwater Volume Pumped (DWR Table 6-1)

	Supplier does not pump groundwater. The supplier will not complete the table below.					
	All or part of the groundwater described below is desalinated.					
Groundwater Type	Location or Basin Name	2016	2017	2018	2019	2020
Alluvial Basin	Kaweah Subbasin	25,802	27,856	29,218	28,900	30,131
Alluvial Basin	Tule Subbasin	41	26	25	19	21
	TOTAL	25,843	27,882	29,243	28,919	30,152

NOTES:
(a) Volumes are in units of AF.
(b) It should be noted that the Kaweah and Tule Subbasins are not adjudicated, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

6.3 Surface Water

Cal Water does not impound or divert surface water as a means to meet demands in the Visalia District, however, the District has explored the possibilities of surface water recharge and conjunctive use programs.

6.4 Stormwater

While Cal Water has no current plans to capture stormwater for beneficial use in the Visalia District, the City of Visalia has made improvements and upgrades to its infrastructure to capture and recharge stormwater to the groundwater basin.

6.5 Wastewater and Recycled Water

☑ ***CWC § 10633***

The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.

The recycling of wastewater offers several benefits to Cal Water and its customers. Perhaps the greatest of these benefits is to help maintain a sustainable groundwater supply either through direct recharge, or by reducing potable supply needs by utilizing recycled water for appropriate uses (e.g., landscape irrigation) now being served by potable water. In 2018, through its Water Conservation Plant Upgrade Project, the City of Visalia began producing Title 22 Recycled Water for delivery to the TID in exchange for surface water used to recharge the City's groundwater. However, this supply source is not used directly by District customers and is not quantified as a District supply source in the tables included in this chapter.

6.5.1 Recycled Water Coordination

The Visalia District relies on and coordinates with the City of Visalia for wastewater treatment.

6.5.2 Wastewater Collection, Treatment, and Disposal

☑ ***CWC § 10633 (a)***

A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

☑ ***CWC § 10633 (b)***

A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

The City of Visalia operates and maintains the sewer system and provides wastewater treatment service for the Visalia District. Table 6-2 includes an estimate of the volume of wastewater collected from Visalia District customers in 2020. The estimate is calculated by annualizing 90 percent of January water use in the service area. As shown in Table 6-3, no wastewater is treated or disposed of within the District.

The City's sewer system consists of gravity sewers, pumping stations, and force mains to collect wastewater from residential, commercial, and industrial customers. The collected wastewater is discharged to trunk sewers and interceptors and conveyed to the City of Visalia Water Conservation Plant (WCP), which is not within the Visalia District boundaries. In 2017, the City of Visalia completed an upgrade project at the WCP which included replacement of the secondary and tertiary treatment processes with a membrane bioreactor (MBR) system and ultra-violet light (UV) disinfection system, among other upgrades. The WCP has a capacity to treat 22 million gallons per day (MGD).

Currently, no wastewater is recycled for direct reuse within the Visalia District service area. The cost of implementation of a recycled water system for direct potable reuse in the District is not planned at this time and will likely only be considered if conditions related to District supply change significantly in the future.

Table 6-2. Wastewater Collected Within Service Area in 2020 (DWR Table 6-2)

	There is no wastewater collection system. The supplier will not complete the table below.					
	Percentage of 2020 service area covered by wastewater collection system *(optional)*					
	Percentage of 2020 service area population covered by wastewater collection system *(optional)*					
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2020	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party? *(optional)*
City of Visalia	Estimated	14,635	City of Visalia	Visalia Water Conservation Plant	No	
Total Wastewater Collected from Service Area in 2020:		14,635				

NOTES:
(a) Volumes are in units of AF.
(b) The volume of wastewater collected from the Visalia District service area in 2020 is estimated by annualizing 90 percent of January water use in the District.

Table 6-3. Wastewater and Discharge Within Service Area in 2020 (DWR Table 6-3)

X	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.										
							2020 volumes				
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
						Total					
NOTES:											

6.5.3 Recycled Water System and Recycled Water Beneficial Uses

☑ ***CWC § 10633 (c-g)***

(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

As shown in Table 6-4 and Table 6-5, the Visalia District does not have any current or projected beneficial use of recycled water.

Table 6-4. Recycled Water Direct Beneficial Uses Within Service Area (DWR Table 6-4)

X	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.										
Name of Supplier Producing (Treating) the Recycled Water:											
Name of Supplier Operating the Recycled Water Distribution System:											
Supplemental Water Added in 2020 (volume)											
Source of 2020 Supplemental Water											
Beneficial Use Type	**Potential** Beneficial Uses of Recycled Water (Describe)	Amount of **Potential** Uses of Recycled Water (Quantity)	General Description of 2020 Uses	Level of Treatment	2020	2025	2030	2035	2040	2045	
				Total:							
				2020 Internal Reuse							
NOTES:											

Table 6-5. 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual (DWR Table 6-5)

X	Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below.	
Beneficial Use Type	2015 Projection for 2020	2020 Actual Use
Total		
NOTES:		

6.5.4 Actions to Encourage and Optimize Future Recycled Water Use

At this time, as shown in Table 6-6, Cal Water does not have plans to initiate/expand the use of recycled water within the Visalia District. Cal Water's supply portfolio in some districts already includes recycled water; elsewhere, Cal Water is participating in studies of the possibility of adding this supply source. Cal Water is eager to expand its portfolio to provide recycled water to its customers wherever feasible, and to form partnerships with other agencies and jurisdictions to accomplish this. However, any such project must be economically feasible and approval of such an investment by the California Public Utilities Commission (CPUC) is contingent on a demonstration that it is beneficial to ratepayers.

Table 6-6. Methods to Expand Future Recycled Water Use (DWR Table 6-6)

X	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
Section 6.5.4	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
		Total	
NOTES:			

6.6 Desalinated Water Opportunities

☑ ***CWC § 10631 (g)** A plan shall be adopted in accordance with this chapter and shall do all of the following:*

Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

The Visalia District is located in the eastern Central Valley, many miles from the nearest source of saline water. As such, there are no opportunities for the development of desalinated water in the District.

6.7 Water Exchanges and Transfers

☑ ***CWC § 10631 (c)** A plan shall be adopted in accordance with this chapter and shall do all of the following:*

Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

Cal Water does not hold any surface water rights in the Visalia District that could be transferred to other agencies and is not pursuing water transfers or exchanges at this time.

6.7.1 Exchanges

Cal Water is not pursuing water exchanges involving the Visalia District and other entities at this time.

6.7.2 Transfers

Cal Water is not pursuing water transfers involving the Visalia District and other entities at this time. During the recent drought, the Visalia District wheeled water through its distribution system to a neighboring agency; however, this water was not considered a transfer of District supply.

6.7.3 Emergency Interties

Cal Water does not have any interties, emergency or otherwise, with any other agencies.

6.8 Future Water Projects

☑ ***CWC § 10631*** *A plan shall be adopted in accordance with this chapter and shall do all of the following:*

(b) (3) For any planned sources of water supply, a description of the measures that are being undertaken to acquire and develop those water supplies.

(f) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use, as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in normal and single-dry water years and for a period of drought lasting five consecutive water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

Groundwater will likely continue to be the only supply source for the Visalia District over the planning horizon (i.e., through 2045) and Cal Water will maintain sufficient wells and distribution facilities to meet the anticipated increases in future demand as needed. Cal Water has worked collaboratively with the City of Visalia to develop and plan groundwater recharge programs and will continue to work with the City to support their implementation and to consider potential expansions. Cal Water continually investigates opportunities outside the City of Visalia to participate in conjunctive use programs or otherwise expand supplies available to the District. However, as shown in Table 6-7, there are no planned future water supply projects or programs that are expected to provide a quantifiable increase to the District's water supply.

Table 6-7. Expected Future Water Supply Projects or Programs (DWR Table 6-7)

X	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other suppliers?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Supplier
	Y/N	*If Yes, Supplier Name*				
NOTES:						

6.9 Summary of Existing and Planned Sources of Water

☑ ***CWC § 10631 (b)*** *Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

☑ ***CWC § 10631 (b) (2)*** *When multiple sources of water supply are identified, a description of the management of each supply in correlation with the other identified supplies.*

☑ ***CWC § 10631 (b) (4) (D)*** *A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

Table 6-8 summarizes the actual volumes of purchased water and groundwater production for calendar year 2020, as applicable. As discussed above, groundwater will be used to serve all projected demand within the Visalia District through 2045. Therefore, the groundwater supply amounts shown in Table 6-9 equal the projected demand in each year (see Section 7.1.1). It should be noted that the Kaweah and Tule Subbasins are not adjudicated, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

Table 6-8. Water Supplies – Actual (DWR Table 6-8)

Water Supply	Additional Detail on Water Supply	2020		
		Actual Volume	Water Quality	Total Right or Safe Yield *(optional)*
Groundwater (not desalinated)	Kaweah Subbasin	30,131	Drinking Water	
Groundwater (not desalinated)	Tule Subbasin	21	Drinking Water	
	Total	30,152		

NOTES:
(a) Volumes are in units of AF.
(b) It should be noted that the Kaweah and Tule Subbasins are not adjudicated, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

Table 6-9. Water Supplies – Projected (DWR Table 6-9)

Water Supply	Additional Detail on Water Supply	Projected Water Supply									
		2025		2030		2035		2040		2045	
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
Groundwater (not desalinated)		32,520		35,276		38,310		41,258		44,529	
	Total	32,520		35,276		38,310		41,258		44,529	

NOTES:
(a) Volumes are in units of AF.
(b) It should be noted that the Kaweah and Tule Subbasins are not adjudicated, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

6.10 Special Conditions

6.10.1 Climate Change Effects

Cal Water is committed to incorporating climate change into its ongoing water supply planning. Section 4.3 of this Plan includes a description of plausible changes to projected demands under climate change conditions, and Cal Water is currently working to consider the effects of climate change in future demand modeling. The impact of climate change on District supplies is addressed in detail in the key resources described below, which are incorporated into this Plan by reference:

- Cal Water is currently in the process of developing a multi-phase climate change study. Phase 1, which primarily consisted of a literature and tools review of previous and complementary studies, was completed in December 2020.[44] Phase 2 will include District-level vulnerability assessments of Cal Water's facilities and operations, including developing an assessment approach that evaluates climate impacts to Cal Water, identifies asset vulnerabilities, and prioritizes climate risks. Phase 3 will focus on an assessment of climate-driven impacts to water supply resources and demand. Phase 2 is expected to be completed by December 2021. The executive summary of Phase 1 of this study is included in this Plan in Appendix F.

- In 2016, Cal Water completed a study of climate change impacts on a representative subset of its districts to gain a better understanding of the potential impacts of climate change on the availability of its diverse supplies.[45] The 2016 study relied on the best available projections of changes in climate (temperature and precipitation) through the end of the century to examine how surface water flows and groundwater recharge rates may change. The executive summary of this study is included in this Plan in Appendix F.

- SGMA dictates that GSPs include basin-wide water budget models under various climate change scenarios, including future conditions which account for the effects of estimated climate change. The final Mid Kaweah GSA, Greater Kaweah GSA, and ETGSA GSPs are available on the DWR website:
  https://sgma.water.ca.gov/portal/gsp/all

[44] ICF, 2020. California Water Service Climate Change – Water Resource Monitoring and Adaptation Plan – Phase 1, prepared by ICF, dated December, 17, 2020.
[45] California Water Service Company, 2016. Potential Climate Change Impacts on the Water Supplies of California Water Service, prepared by Gary Fiske and Associates, Inc. and Balance Hydrologics, Inc., dated January 2016.

6.10.2 Regulatory Conditions and Project Development

Emerging regulatory conditions (e.g., issues surrounding the Water Quality Control Plan for the San Francisco/Sacramento-San Joaquin Delta Estuary [Bay-Delta Plan]) may affect planned future projects and the characterization of future water supply availability and analysis. The District does not have any current plans to develop additional supply sources. If the District does move forward with any plans to develop supply projects, emerging regulatory conditions will be considered, and the associated water supply reliability impacts will be assessed in future UWMP updates.

6.10.3 Other Locally Applicable Criteria

Other locally applicable criteria may affect characterization and availability of an identified water supply (e.g., changes in regional water transfer rules may alter the availability of a water supply that had historically been readily available). The District does not have any current plans to develop additional supply sources. If the District does move forward with any plans to develop supply projects, locally applicable criteria will be considered, and the associated water supply reliability impacts will be assessed in future UWMP updates.

Under SGMA, GSAs have the authority to implement projects and management actions that help basins reach their sustainability goal, including such actions as setting allocations for groundwater pumping, prohibiting development of new groundwater wells, or implementing fees for pumping volumes. As described in Section 6.2, the GSAs within the Kaweah and Tule Subbasins are in the process of developing accounting and allocation programs, which could impact future Visalia District supplies. As such actions are implemented, Cal Water will consider them as a part of its future supply planning efforts.

6.11 Energy Intensity

☑ ***CWC § 10631.2***

(a) In addition to the requirements of Section 10631, an urban water management plan shall include any of the following information that the urban water supplier can readily obtain:
(1) An estimate of the amount of energy used to extract or divert water supplies.
(2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.
(3) An estimate of the amount of energy used to treat water supplies.
(4) An estimate of the amount of energy used to distribute water supplies through its distribution systems.
(5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.
(6) An estimate of the amount of energy used to place water into or withdraw from storage.
(7) Any other energy-related information the urban water supplier deems appropriate.
(b) The department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems. The department may consider studies and calculations conducted by the Public Utilities Commission in developing the methodology.
(c) The Legislature finds and declares that energy use is only one factor in water supply planning and shall not be considered independently of other factors.

The "Total Utility Approach" as defined by DWR in the UWMP Guidebook 2020 is used to report water-related energy-consumption data for the Visalia District. Calendar year 2019 is selected as the one-year reporting period, and utility bills for the associated time period are used as the source for energy consumption data. Utility bills reported the following energy consumption data for the Visalia District during calendar year 2019:

$$Total\ Energy\ Consumed\ by\ the\ Visalia\ District = 13{,}704{,}612\ kilowatt\ hour\ (kWh)$$

Table 6-10 shows the energy consumed for each acre-foot (AF) of water entering the distribution system in the Visalia District, including energy associated with the pumping, treatment, conveyance, and distribution of drinking water, but not including energy associated with the treatment of wastewater. Based on this, the energy intensity is estimated to be approximately 474 kilowatt hours per acre-foot (kWh/AF).

Table 6-10. Recommended Energy Intensity – Total Utility Approach (DWR Table O-1B)

Urban Water Supplier: *Visalia District*

Water Delivery Product

Retail Potable Deliveries

Enter Start Date for Reporting Period	1/1/2019	Urban Water Supplier Operational Control		
End Date	12/31/2019			
Is upstream embedded in the values reported?		Sum of All Water Management Processes	Non-Consequential Hydropower	
Water Volume Units Used	AF	Total Utility	Hydropower	Net Utility
Volume of Water Entering Process (volume unit)		*28,919*	*0*	*28,919*
Energy Consumed (kWh)		*13,704,612*	*0*	*13,704,612*
Energy Intensity (kWh/volume)		*474*	*0.0*	*474*

Quantity of Self-Generated Renewable Energy

N/A kWh

Data Quality

Metered Data

Data Quality Narrative:

Utility bills for the associated time period are used as the source for energy consumption data.

Narrative:

Total energy consumption represents the energy consumed during pumping, treatment, conveyance, and distribution.

Chapter 7
Water Supply Reliability Assessment

☑ ***CWC § 10620 (f)***

An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

☑ ***CWC § 10630.5***

Each plan shall include a simple lay description of how much water the agency has on a reliable basis, how much it needs for the foreseeable future, what the agency's strategy is for meeting its water needs, the challenges facing the agency, and any other information necessary to provide a general understanding of the agency's plan.

This chapter describes the reliability of the Visalia District's (also referred to herein as the "District") water supplies. Assessment of water supply reliability is complex and dependent upon a number of factors, such as the number of water sources, regulatory and legal constraints, hydrological and environmental conditions, climate change, and expected growth, among others. Based on available historical information and projections of future water uses, regulatory and legal constraints, and hydrological and environmental conditions, including climate change, California Water Service Company (Cal Water) has made its best determination of future water supply reliability of for the Visalia District. This chapter includes the following sections:

7.1 Constraints on Water Sources

7.2 Reliability by Type of Year

7.3 Supply and Demand Assessment

7.4 Water Supply Management Tools and Options

7.4 Water Supply Management Tools and Options

7.5 Drought Risk Assessment

7.1 Constraints on Water Sources

Groundwater is the sole supply for the Visalia District. Cal Water has identified several potential constraints on future groundwater supply availability, water quality, and climate change. These constraints, along with associated management strategies are summarized in the following sections.

7.1.1 Supply Availability

As discussed in Chapter 6, Cal Water expects that, under all hydrologic conditions, its groundwater supply for the Visalia District will fully meet future demands. This assessment is based on the available information regarding groundwater supply availability to the Visalia District and the additional information presented below.

Historically, the groundwater supplies available to the Visalia District from the underlying Kaweah and Tule Subbasins have always been sufficient to meet District demands. Due to successful conservation efforts and response to the historic drought spanning water years 2012-2015, water demand (and thus District groundwater pumping volumes) were significantly lower from 2014 through 2019 (i.e., averaging 27,736 acre-feet per year [AFY]) than they had been in the previous ten years (i.e., averaging 32,502 AFY).

It is also important to note that the majority of groundwater pumping in the Kaweah Subbasin is for agricultural use. From a regional and basin-wide standpoint, Visalia District pumping is only a small fraction of total groundwater pumping. Based on the Kaweah Subbasin water budget information presented in the Mid-Kaweah Groundwater Sustainability Plan (GSP), average annual groundwater pumping from 1981 through 2017 totaled approximately 754,415 AFY, including approximately 685,375 AFY for irrigated agriculture and 69,040 AFY for Municipal & Industrial (M&I) use.[46] These data show that M&I pumping accounted for approximately 9 percent of total pumping in the Kaweah Subbasin, and Visalia District pumping in the Visalia and Tulco Public Water Systems (PWSs) accounts for only a portion of the total M&I pumping.

Similarly, the majority of groundwater pumping in the Tule Subbasin is for agricultural use. Based on the Tule Subbasin water budget information presented in the Eastern Tule GSP, average annual groundwater pumping from water year 1986/87 through water year 2016/17 totaled approximately 712,200 AFY, including approximately 664,000 AFY for irrigated agriculture, 28,200 AFY for exports, 600 AFY for groundwater banking extraction, and 19,400 AFY for M&I use.[47] These data show that M&I pumping accounted for approximately 3 percent of total pumping in the Tule Subbasin, and Visalia District pumping in the Mullen PWS accounts for only a very small portion of the total M&I pumping. It is therefore likely that management of agricultural groundwater use, rather than M&I use, will be a much larger determining factor in maintaining groundwater sustainability in both the Kaweah and Tule Subbasins in the future.

Cal Water holds certain water rights to groundwater it has pumped and used as an overlying owner and appropriator. Cal Water's water rights have been dedicated to a public use, and Cal Water is required by the California Public Utilities Commission to provide water to all customers

[46] Mid-Kaweah GSA, 2019. Mid-Kaweah GSA GSP – Appendix 1F, dated December 2019.
[47] ETGSA, 2020. ETGSA GSP – Appendix 2G: Tule Subbasin Coordination Agreement, dated January 2020.

within its designated service area under reasonable rules and regulations. Further, under California law municipal water rights and uses have a higher priority and are entitled to more protection than other uses of water, including in connection with the Sustainable Groundwater Management Act (SGMA). Use of water for domestic purposes is recognized as the "highest use" of water in the State of California pursuant to California Water Code (CWC) §106, and the rights of urban water purveyors should be protected to the fullest extent necessary for existing and future uses, pursuant to CWC §106.5.

SGMA was intended to preserve the security of water rights in the state to the greatest extent possible, and was not intended to determine, modify or alter any surface water or groundwater rights or priorities (CWC §10720.1(b), 10720.5(a) and (b)). SGMA should therefore not reduce, adversely impact or limit Cal Water's present or future exercise of its domestic water rights or its obligation to serve its municipal customers, and Cal Water's rights should be subject to less restrictions and limitations than any other types of water rights or uses.

Further, although a significant amount of growth is projected in the Visalia District over the planning horizon (i.e., the District is projecting that service area population will increase by more than 50 percent over the next 25 years), as discussed in Section 3.5, it is anticipated that some land currently used for agricultural production will be converted to residential and non-residential urban uses to accommodate future growth. Irrigated agriculture typically uses more water on a per-acre basis than urban uses, thus, some future growth within the District will likely result in a net decrease in water use within the subbasins.

Additionally, Cal Water is actively pursuing a variety of supply reliability planning efforts to address potential future shortfalls in the Visalia District. Cal Water has proposed a Water Supply Reliability Study (Reliability Study) for Visalia to be completed in 2021. The Reliability Study will build on this UWMP, but will incorporate integrated resource planning methods, which are a more comprehensive form of resource planning process that will create, or utilize existing, statistical models to support scenario planning and the development of a portfolio of options for water reliability. Its ultimate objective is to establish long-term, least-cost goals that sustainably support each community's needs.

7.1.2 Water Quality

☑ ***CWC § 10634***

The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Impaired water quality also has the potential to affect water supply reliability. Cal Water has and will continue to meet all state and federal water quality regulations. All drinking water standards are set by the U.S. Environmental Protection Agency (USEPA) under the authorization of the Federal Safe Drinking Water Act of 1974. In California, the State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW) can either adopt the USEPA standards or set more stringent standards, which are then codified in Title 22 of the California Code of Regulations. There are two general types of drinking water standards:

- **Primary Maximum Contaminant Levels (MCLs)** are health protective standards and are established using a very conservative risk-based approach for each constituent that takes into potential health effects, detectability and treatability, and costs of treatment. Public water systems may not serve water that exceeds Primary MCLs for any constituent.

- **Secondary MCLs** are based on the aesthetic qualities of the water such as taste, odor, color, and certain mineral content, and are considered limits for constituents that may affect consumer acceptance of the water.

Cal Water routinely monitors its wells and the water that is treated and served to customers to ensure that water delivered to customers meets these drinking water standards. The results of this testing are reported to the SWRCB DDW following each test and are summarized annually in Water Quality Reports (also known as "Consumer Confidence Reports"), which are provided to customers by mail and made available on Cal Water's website: https://www.calwater.com/waterquality/water-quality-reports/. Additionally, a detailed review of the water quality conditions of the underlying Kaweah and Tule subbasins are provided in the Mid-Kaweah GSA GSP, Greater Kaweah GSA GSP, and the Eastern Tule GSA GSP, available on the DWR SGMA Portal website: https://sgma.water.ca.gov/portal/gsp/all.

Although there is the potential for some regulated constituents to be present in source water, as documented in the Water Quality Reports, the District's monitoring, management, and treatment of its water results in high quality drinking water meeting all drinking water standards being served to customers. Cal Water tracks changes in constituent concentrations to proactively address water quality issues before they impact supply reliability.[48] In the event that water quality constituents are detected in source water at concentrations requiring treatment, the District is able to take impacted wells offline to implement appropriate treatment. Further, as part of the siting process for all new wells, Cal Water evaluates the presence of groundwater contamination and avoids placing wells in areas of known contamination.

[48] Cal Water, 2018. Direct Testimony of Director of Water Quality, 2018 CPUC Rate Case Filing.

Given Cal Water's proactive monitoring and management of water quality in its source water supplies, water quality is not expected to impact the reliability of the District's available supplies within the planning horizon (i.e., through 2045).

7.1.3 Climate Change

☑ ***CWC § 10631 (b) (1)***

…For each source of water supply, consider any information pertinent to the reliability analysis conducted pursuant to Section 10635, including changes in supply due to climate change.

Section 6.10.1 provides a summary of the assessments of the applicable climate change on supplies that Cal Water has previously performed and those planned for the near term, as well as those related to SGMA efforts for the Kaweah and Tule Subbasins. The GSP water budget modeling efforts in both the Kaweah and Tule Subbasins incorporated climate change factors for hydrology and surface water supplies using the California Department of Water Resources (DWR) Central Tendency climate change scenarios to obtain estimated climate change impacts. Section 4.3 of this Urban Water Management Plan (UWMP or Plan) presents information on how the impacts of climate change are factored into projected demands in the District. Cal Water is actively working to further quantify and consider future climate change impacts as part of its ongoing supply and operations planning.

7.2 Reliability by Type of Year

☑ ***CWC § 10631 (b)***

Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a), providing supporting and related information, including all of the following:

☑ ***CWC § 10631 (b)(1)***

A detailed discussion of anticipated supply availability under a normal water year, single dry year, and droughts lasting at least five years, as well as more frequent and severe periods of drought, as described in the drought risk assessment. For each source of water supply, consider any information pertinent to the reliability analysis conducted pursuant to Section 10635, including changes in supply due to climate change.

☑ ***CWC § 10635 (a)***

Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

Per the UWMP Guidebook 2020, the water service reliability assessment includes three unique year types:

- A normal hydrologic year represents the water supplies available under normal conditions, this could be an averaged range of years or a single representative year,
- A single dry year represents the lowest available water supply, and
- A five-consecutive year drought represents the driest five-year period in the historical record.

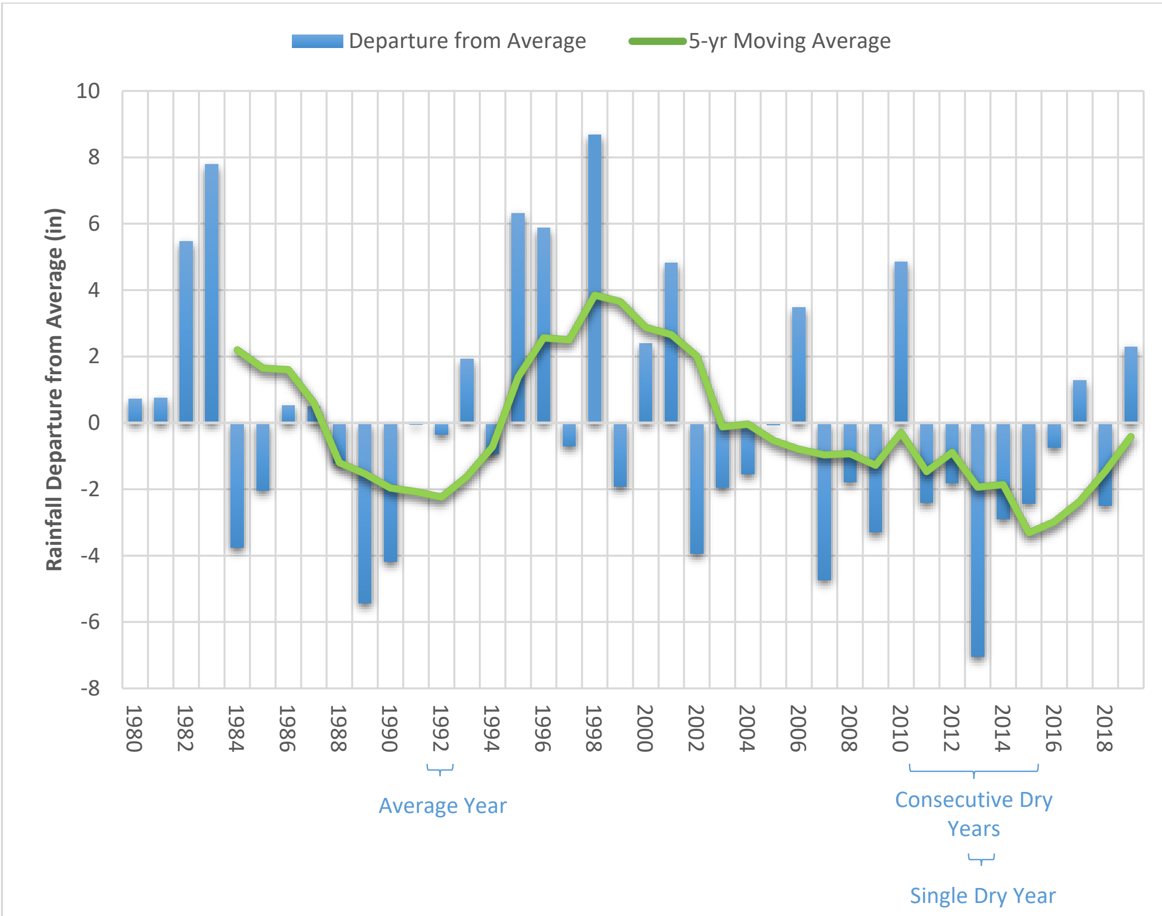
Identification of these dry year periods consistent with the UWMP Guidebook 2020 methodology is provided below. Figure 7-1 compares annual rainfall to the historic average (10.42 inches). The designation of Base Years for drought planning shown in Table 7-1 below comes from the data underlying this chart. The Cal Water production data record for the Visalia District begins in the year 1980; therefore, the following year type analysis uses the historical period from 1980 to 2019.

A normal hydrologic year occurred in 1991 when precipitation was approximately 0.4 percent below the historic average for the period from 1980 to 2019. The driest year occurred in 2013 when the rainfall was approximately 68 percent below average (3.38 inches). This is taken as the single dry year shown in Table 7-1. The multiple dry water years used to represent a five-consecutive year drought are 2011 through 2015. This period represents the driest five-year period on record for the historical period from 1980 to 2019, with an average precipitation of 7.11 inches per year.

As discussed in Section 7.1.1, the District's water supplies are reliable regardless of water year type. Therefore, total supplies are expected to be sufficient to meet projected water demands of the District under all hydrologic conditions, including in normal, single dry, and multiple dry years. As such, the projected "volume available" estimates presented in Table 7-1 are equal to the maximum demands across projected years and year types shown in Table 7-2, Table 7-3, and Table 7-4. For example, the assumed volume available in a representative single dry year in Table 7-1 is equal to the projected single dry year demand for the year 2045 shown in Table 7-3.

It should be noted that supply volumes in Table 7-1, Table 7-2, Table 7-3, and Table 7-4 do not represent the total amount of water supply that may be available to the District in a given year, but rather reflect the fact that the water supply has always been sufficient to meet demands, and is projected to continue to be sufficient to meet demands in the future. It should also be noted that the Kaweah and Tule Subbasins are not adjudicated, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

Figure 7-1. Deviation of Annual Rainfall from Long-Term Average



Source: PRISM Climate Group, Oregon State University, http://prism.oregonstate.edu

Table 7-1. Basis of Water Year Data (Reliability Assessment) (DWR Table 7-1)

Year Type	Base Year	Available Supplies if Year Type Repeats	
			Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location ___________________________
		X	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	% of Average Supply
Average Year	1991	44,529	
Single-Dry Year	2013	45,400	
Consecutive Dry Years 1st Year	2011	45,939	
Consecutive Dry Years 2nd Year	2012	45,939	
Consecutive Dry Years 3rd Year	2013	45,939	
Consecutive Dry Years 4th Year	2014	45,939	
Consecutive Dry Years 5th Year	2015	45,939	

NOTES:
(a) Volumes are in units of AF.
(b) As discussed in Section 7.1, total available supplies are considered to be equal to the projected demand under all year types. Therefore, available volumes presented here are the maximum demands across projected years in Table 7-2, 7-3, and 7-4.

7.3 Supply and Demand Assessment

Water supply and demand patterns change during normal, single dry, and multiple dry years. Cal Water has relied on the demand modeling described in Chapter 4 to forecast demands for normal, single dry and multiple dry years. As described above, Cal Water's groundwater supply for the Visalia District is expected to be able to serve those demands in all year types through 2045.[49]

Table 7-2 shows the projected supply and demand totals for a normal year. The supply and demand totals are consistent with those in Table 6-9 and Table 4-3, respectively[50]. Table 7-3 shows the projected supply and demand totals for the single dry year, and Table 7-4 shows the projected supply and demand totals for multiple dry year periods extending five years. It should

[49] The balance between supply and demand totals excludes usage reductions that are not directly a function of Cal Water supplies, but are externally-imposed by other entities, such as the 2015 State-mandated cutbacks.
[50] Pumping by the Mullen PWS in the Tule Subbasin has historically comprised approximately 0.1% of the total District pumping. Given this, projected District demands and supplies included in this Plan are not apportioned by groundwater subbasin, but presented on a District-wide basis.

be noted that the Kaweah and Tule Subbasins are not adjudicated, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

Table 7-2. Normal Year Supply and Demand Comparison (DWR Table 7-2)

	2025	2030	2035	2040	2045
Supply totals *From DWR Table 6-9*	32,520	35,276	38,310	41,258	44,529
Demand totals *From DWR Table 4-3*	32,520	35,276	38,310	41,258	44,529
Difference	0	0	0	0	0

NOTES:
(a) Volumes are in units of AF.
(b) Neither the Kaweah or Tule Subbasins are adjudicated, and this projected supply volumes do not comprise a determination of water rights or maximum allowable pumping.

Table 7-3. Single Dry Year Supply and Demand Comparison (DWR Table 7-3)

	2025	2030	2035	2040	2045
Supply totals	33,152	35,962	39,057	42,063	45,400
Demand totals	33,152	35,962	39,057	42,063	45,400
Difference	0	0	0	0	0

NOTES:
(a) Volumes are in units of AF.
(b) Neither the Kaweah or Tule Subbasins are adjudicated, and this projected supply volumes do not comprise a determination of water rights or maximum allowable pumping.

Table 7-4. Multiple Dry Years Supply and Demand Comparison (DWR Table 7-4)

		2025	2030	2035	2040	2045
First year	Supply totals	33,543	36,387	39,520	42,562	45,939
	Demand totals	33,543	36,387	39,520	42,562	45,939
	Difference	0	0	0	0	0
Second year	Supply totals	33,543	36,387	39,520	42,562	45,939
	Demand totals	33,543	36,387	39,520	42,562	45,939
	Difference	0	0	0	0	0
Third year	Supply totals	33,543	36,387	39,520	42,562	45,939
	Demand totals	33,543	36,387	39,520	42,562	45,939
	Difference	0	0	0	0	0
Fourth year	Supply totals	33,543	36,387	39,520	42,562	45,939
	Demand totals	33,543	36,387	39,520	42,562	45,939
	Difference	0	0	0	0	0
Fifth year	Supply totals	33,543	36,387	39,520	42,562	45,939
	Demand totals	33,543	36,387	39,520	42,562	45,939
	Difference	0	0	0	0	0

NOTES:
(a) Volumes are in units of AF.
(b) Neither the Kaweah or Tule Subbasins are adjudicated, and this projected supply volumes do not comprise a determination of water rights or maximum allowable pumping.

7.4 Water Supply Management Tools and Options

☑ ***CWC § 10620 (f)***

An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

Cal Water coordinates on an ongoing basis with all relevant agencies in the region to optimize the use of regional water supplies. This includes the City of Visalia, Tulare County, the GSAs within which the District lies, and other public and private entities with which Cal Water can collaborate to protect and enhance local groundwater and surface water resources.

Cal Water is currently in the process of developing multiple regional water supply reliability studies using integrated resource planning practices to create a long-term supply reliability strategy through 2050 for Cal Water districts throughout California. The studies will create long-term strategies to address a wide range of water supply challenges including climate change, new regulatory requirements (e.g., SGMA), and potential growth in demands due to new development. These water supply reliability studies will be completed on a rolling basis over the next several years, with all studies anticipated to be complete by 2024. The Visalia District will be included in the Central Valley Water Reliability Study.

Cal Water also has its own aggressive and comprehensive water conservation program that has and will continue to reduce per-capita usage and therefore demands on critical water sources. Cal Water is committed to helping its customers use water efficiently and has developed a range of water conservation programs to support this goal. To ensure that it is providing the right mix of programs in the most cost-effective manner possible, Cal Water routinely conducts comprehensive conservation program analysis and planning. This is done on a five-year cycle in tandem with the UWMP. Cal Water's Conservation Master Plan provides the basis for the information on the implementation of and expected water savings from Demand Management Measures (DMMs) presented in Chapter 9.

Cal Water also monitors and supports the goals of the Kaweah River Basin Integrated Regional Water Management Plan (IRWMP) and the Tule River Basin IRWMP.

7.5 Drought Risk Assessment

☑ ***CWC § 10635(b)***

Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following:

(1) A description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive water years, starting from the year following when the assessment is conducted.

(2) A determination of the reliability of each source of supply under a variety of water shortage conditions. This may include a determination that a particular source of water supply is fully reliable under most, if not all, conditions.

(3) A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.

(4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

7.5.1 Data, Methods, and Basis for Water Shortage Condition

This drought risk assessment considers the effects on available water supply sources of a five-year drought commencing the year after the assessment is completed, i.e., from 2021 through

2025. In the Visalia District, the sole supply source is groundwater. As such, the same data, methodology, and basis for the conclusions of the above water supply sufficiency analysis for multiple dry year periods through 2045 holds true for purposes of this drought risk assessment (i.e., supply availability through 2025). This evaluation considers historical drought hydrology and plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

7.5.2 Drought Risk Assessment Water Source Reliability

As described in Chapter 6, groundwater is the sole source of water supply for the Visalia District. Based on discussion in Section 7.1.1, the Visalia District groundwater supply is expected to be sufficient to meet demands in all hydrologic conditions, including an extended five-year drought period.

As described in Sections 4.3 and 6.10.1 of this Plan, the impacts on climate change have already been factored into the District's demand projections and the analysis of the near- and longer-term reliability of the groundwater supply source available to the District.

Regulatory conditions that could affect future water supply availability and project development (e.g., related to the Water Quality Control Plan for the San Francisco/Sacramento-San Joaquin Delta Estuary [Bay-Delta Plan]) are discussed in Section 6.10.3 of the Plan. However, the District does not currently have plans for projects to develop additional supply sources, and so these regulatory conditions will be assessed in future UWMP updates if or when the District moves forward with any plans to develop supply projects.

Implementation of SGMA in the Kaweah and Tule Subbasins is a locally applicable consideration for the Visalia District. As discussed in Section 6.2.3 of this Plan, the long-term impacts of SGMA implementation in the Kaweah and Tule Subbasins are still uncertain. However, it is the intent of the projects and management actions planned by the within both the Kaweah and Tule Subbasins to stabilize water levels and provide for sustainable management of the groundwater resource. It is anticipated that should pumping fees or similar restrictions (i.e., allocations) be required to address future shortfalls, such actions will be focused on management of agricultural water use, as opposed to M&I pumping. As described in Section 6.2, the GSAs within the Kaweah and Tule Subbasins are in the process of developing allocation programs, which could impact future Visalia District supplies. As such actions are implemented, Cal Water will consider them as a part of its future supply planning efforts.

Cal Water holds certain water rights to groundwater it has pumped and used as an overlying owner and appropriator. Cal Water's water rights have been dedicated to a public use, and Cal Water is required by the California Public Utilities Commission to provide water to all customers within its designated service area under reasonable rules and regulations. Further, under

California law municipal water rights and uses have a higher priority and are entitled to more protection than other uses of water, including in connection SGMA. Use of water for domestic purposes is recognized as the "highest use" of water in the State of California pursuant to CWC §106, and the rights of urban water purveyors should be protected to the fullest extent necessary for existing and future uses, pursuant to CWC §106.5.

SGMA was intended to preserve the security of water rights in the state to the greatest extent possible, and was not intended to determine, modify or alter any surface water or groundwater rights or priorities (CWC §10720.1(b), 10720.5(a) and (b)). SGMA should therefore not reduce, adversely impact or limit Cal Water's present or future exercise of its domestic water rights or its obligation to serve its municipal customers, and Cal Water's rights should be subject to less restrictions and limitations than any other types of water rights or uses.

Table 7-5 provides a comparison of the water supply sources available to the Visalia District with the total projected water use for an assumed drought period of 2021 through 2025, including consideration of the above issues and climate change. It should be noted that because the District only pumps the amount of groundwater necessary to meet demands in a given year, the supply values shown in the table do not represent the total supply available to the District in a given year, but rather reflect the fact that the available groundwater supply is sufficient to meet the demands as needed. The values in Table 7-5 are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

Although water shortage conditions are not expected to arise due to drought, Cal Water has developed a WSCP (Appendix G) to address potential water shortage conditions resulting from any cause (e.g., droughts, impacted distribution system infrastructure, regulatory-imposed shortage restrictions, etc.). The WSCP identifies a variety of actions that Cal Water will implement to reduce demands and further ensure supply reliability at various levels of water shortage.

Table 7-5. Five-Year Drought Risk Assessment Tables to Address Water Code 10635(b) (DWR Table 7-5)

2021	Total
Total Water Use	31,274
Total Supplies	31,274
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	
Resulting % Use Reduction from WSCP action	

2022	Total
Total Water Use	31,813
Total Supplies	31,813
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	
Resulting % Use Reduction from WSCP action	

2023	Total
Total Water Use	32,376
Total Supplies	32,376
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	
Resulting % Use Reduction from WSCP action	

Table 7-5. Five-Year Drought Risk Assessment Tables to Address Water Code 10635(b) (DWR Table 7-5)

2024	Total
Total Water Use	32,954
Total Supplies	32,954
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	
Resulting % Use Reduction from WSCP action	

2025	Total
Total Water Use	33,543
Total Supplies	33,543
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	
Resulting % Use Reduction from WSCP action	

NOTES:
(a) Volumes are in units of AF.
(b) Because the District has sufficient supplies to meet demands in all year types, it is not anticipated that Water Shortage Contingency Plan (WSCP) actions will be required.

Chapter 8
Water Shortage Contingency Planning

☑ ***CWC § 10640***

(a) Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

(b) Every urban water supplier required to prepare a water shortage contingency plan shall prepare a water shortage contingency plan pursuant to Section 10632. The supplier shall likewise periodically review the water shortage contingency plan as required by paragraph (10) of subdivision (a) of Section 10632 and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

The Water Shortage Contingency Plan (WSCP) for the Visalia District (also referred to herein as "District") is included in this Urban Water Management Plan (UWMP) as Appendix G. The WSCP serves as a standalone document to be engaged in the case of a water shortage event, such as a drought or supply interruption, and defines specific policies and actions that will be implemented at various shortage level scenarios. The primary objective of the WSCP is to ensure that the District has in place the necessary resources and management responses needed to protect health and human safety, minimize economic disruption, and preserve environmental and community assets during water supply shortages and interruptions. Consistent with CWC §10632, the WSCP includes six levels to address shortage conditions ranging from up to 10 percent to greater than 50 percent shortage, identifies a suite of demand mitigation measures for the District to implement at each level, and identifies procedures for the District to annually assess whether or not a water shortage is likely to occur in the coming year, among other things.

A summary of the key elements of the WSCP including water shortage levels and demand-reduction actions is shown in Table 8-1, Table 8-2, and Table 8-3. Additional details are provided in Appendix G.

Table 8-1. Water Shortage Contingency Plan Levels (DWR Table 8-1)

Shortage Level	Percent Shortage Range	Shortage Response Actions
1	Up to 10%	Demand reduction (See Table 8-2)
2	Up to 20%	Demand reduction (See Table 8-2)
3	Up to 30%	Demand reduction (See Table 8-2)
4	Up to 40%	Demand reduction (See Table 8-2)
5	Up to 50%	Demand reduction (See Table 8-2)
6	>50%	Demand reduction (See Table 8-2)
NOTES:		

Table 8-2. Demand Reduction Actions (DWR Table 8-2)

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
1	Other	9%	1. Limit landscape irrigation to specific times 2. Customers must repair leaks, breaks, and malfunctions in a timely manner 3. Restrict or prohibit runoff from landscape irrigation 4. Prohibit application of potable water to outdoor landscapes within 48 hours of measurable rainfall 5. Prohibit use of potable water for washing hard surfaces 6. Lodging establishments must offer opt out of linen service	Yes
1	Other	--	1. Expand Public Information/Media Campaign 2. Water Bill Inserts 3. Promote online water waste reporting 4. Expand Rebates or Giveaways of Plumbing Fixtures and Devices 5. Expand Rebates for Landscape Irrigation Efficiency 6. Expand CII Water Use Surveys 7. Expand Res Water Use Surveys	No

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
2	Other	16%	1. Continue with Stage 1 restrictions and prohibitions except where superseded by more stringent actions. 2. Prohibit the use of non-recirculating systems in all new conveyer car wash and commercial laundry systems 3. Prohibit the use of single pass cooling systems in new connections 4. Restaurants may only serve water upon request 5. No watering of landscape of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development 6. Prohibit Potable Water Use for Decorative Water Features that do not Recirculate Water	Yes
2	Other	--	1. Continue with Stage 1 actions except where superseded by more stringent actions. 2. Water Efficiency Workshops, Public	No

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
			Events 3. Offer Water Use Surveys 4. Provide Rebates or Giveaways of Plumbing Fixtures and Devices 5. Provide Rebates for Landscape Irrigation Efficiency	
3	Other	27%	1. Continue with Stage 1 restrictions and prohibitions except where superseded by more stringent actions. 2. Landscape - Limit landscape irrigation to 1-3 days/week 3. Landscape - Prohibit irrigation of ornamental turf on public street medians with potable water 4. Prohibit Filling Ornamental Lakes or Ponds	Yes
3	Other	--	1. Continue with Stage 1 actions except where superseded by more stringent actions. 2. Home or Mobile Water Use Reports 3. Decrease Frequency and Length of Line Flushing 4. Reduce System Water Loss 5. Increase Water Waste Patrols/Enforcement	No

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
			6. Implement Drought Rate Structure and Customer Water Budgets (Res) 7. Implement Drought Rate Structure and Customer Water Budgets (CII)	
4	Other	35%	1. Continue with Stage 1 restrictions and prohibitions except where superseded by more stringent actions. 2. Prohibit use of potable water for construction and dust control 3. Prohibit use of potable water for street washing 4. Prohibit vehicle washing except with recycled water	Yes
4	Other	--	1. Continue with Stage 1 actions except where superseded by more stringent actions. 2. Promote / Expand Use of Recycled Water	No
5	Other	49%	1. Continue with Stage 1 restrictions and prohibitions except where superseded by more stringent actions. 2. Require net zero demand Increase on new water service connections 3. Prohibit filling of pools	Yes

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
			4. Prohibit single-pass cooling systems	
5	Other	--	1. Continue with Stage 1 actions except where superseded by more stringent actions. 2. Require Pool Covers	No
6	Other	55%	1. Continue with Stage 1 restrictions and prohibitions except where superseded by more stringent actions. 2. Moratorium on new water service connections 3. Prohibit all landscape irrigation	Yes
NOTES:				

Table 8-3. Supply Augmentation and Other Actions (DWR Table 8-3)

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*
NOTES:			

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