# 2025 Urban Water Management Plan


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# THERMALITO WATER AND SEWER DISTRICT
# 2025 URBAN WATER MANAGEMENT PLAN

Date plan submitted to the Department of Water Resources: June 20, 2026

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The Water supplier is a Public Agency formed pursuant to Water Code § 20500 et seq. (formerly Thermalito Irrigation District).

The Water supplier is a: Retailer

Utility services provided by the water supplier include domestic and irrigation water service, and sewer collection.

Is This Agency a Bureau of Reclamation Contractor? No

Is This Agency a State Water Project Contractor? No

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# CHAPTER 1 - INTRODUCTION AND LAY DESCRIPTION

This is the 2025 Urban Water Management Plan (UWMP) for the Thermalito Water and Sewer District (District) which was organized in 1922 under the Irrigation Act (Water Code §§20500, et seq.) and authorizing statues (Water Code §§22975, et seq.). The District was originally named the Thermalito Irrigation District (TID) and provided only water service. Sanitary sewer collection and conveyance services were added to the District in 1972 and in 2008, the District's name was officially changed to the Thermalito Water and Sewer District. The District serves a population of 12,434 people for residential, municipal, recreational, industrial, and irrigation uses, as well as wastewater collection. Approximately one-third of the District's customers are within the City of Oroville city limits, with the remainder in the unincorporated areas of Butte County. As such, the District is one of the few California districts that provide a full complement of water-related services.

This UWMP has been prepared in accordance with the Urban Water Management Act (Act). The Act is defined by the California Water Code, Division 6, Part 2.6, and §§10610 through §§10657. The Act became part of the California Water Code (Code) with the passage of Assembly Bill 797 during the 1983-1984 regular session of the California legislature. The Act requires urban water suppliers providing municipal water to more than 3,000 connections or supplying more than 3,000 acre-feet (AF) of water annually to adopt and submit a plan every five years to the California Department of Water Resources (DWR). Subsequent assembly bills have amended the Act. In complying with the Act, the District has followed the DWR *Urban Water Management Plan Guidebook 2025*.

The District currently has 3,213 connections at the end of 2025. With more than 3,000 connections, the District falls under the required UWMP five-year process. This UWMP is part of District's long-term resource planning efforts to ensure adequate water supplies are available to meet existing and future water demands.

Water demands refer not only to the water used by customers, but also includes the water used as a part of the system's maintenance and operation, as well as unavoidable losses inherent in the operation of a water distribution system. Water demand within the District was 2,115 AF on average between 2020 and 2025. Taking into account historical water use, expected population increase and other growth, climactic variability, and other assumptions, water demand within the District is projected to be 2,223 AFY in 2030 and increase to 2,942 AFY by 2050. In dry year periods such as an extended 5 year drought, water demands are expected to be up to 2,760 AFY by 2050.

The Water Conservation Act of 2009 (Senate Bill X7-7) was enacted in November 2009 and requires the state of California to achieve a 20 percent reduction in urban per capita water use by December 31, 2020. In order to achieve this, each urban retail water supplier was required to establish water use targets for 2020 using methodologies established by DWR. The Thermalito Water and Sewer District achieved compliance with its 2020 water use target of 197 gallons per capita per day (GPCD), with a reported water use in 2020 of 175 GPCD.

The TWSD derives its water from surface and well water sources. The District currently has no plans of acquiring new sources of supply. The combination of surface and ground water supplies is expected

to be sufficient to support the Thermalito Water and Sewer District's projected water demand through 2050.

Calculating and reporting of water system energy intensity was a new requirement for the 2020 UWMP and is included in the 2025 update as well. Energy intensity is defined as the net energy used for water treatment, pumping, conveyance, and distribution for all water entering the distribution system. The energy intensity for the TWSD is approximately 851 kilowatt hours per acre-foot of water (kwh/AF); however, the District utilizes solar panels for self-generated renewable energy to offset the energy intensity. The TWSD treatment plant utilized 635,852 kwh. Luckily, the solar power production contributed 730,570 kwh on energy, bringing the net energy use to -94,718 kwh in 2025.

The intent of the water supply reliability assessment is to identify any potential constraints that could affect the reliability of the District's supply to support the District's planning efforts to ensure that its customers are well served. Water service reliability is assessed during normal, single dry-year, and multiple dry-year hydrologic conditions. Based on this analysis, the Thermalito Water and Sewer District expects the available supplies to be sufficient to meet projected demands in all hydrologic conditions, including a five-year drought period, and considering the impacts of climate change. Further, potential water quality is routinely monitored and the District is able to make all appropriate adjustments to its treatment and distribution system to ensure only high quality water is served.

The Water Shortage Contingency Plan (WSCP) serves as a standalone document to be engaged in the event of a water shortage such as drought or supply interruption. It defines specific policies and action that will be implemented at various shortage level scenarios. For example, implementing customer water budgets and surcharges, or restricting landscape irrigation to specific days and/or times. Consistent with DWR requirements, the WSCP includes six levels to address shortage conditions ranging from up to 10 percent to greater than 50 percent shortage.

Prior to adopting the UWMP, the District held a formal public hearing to present information on its Thermalito Water And Sewer District UWMP and WCSP on July 21, 2026, at 2:00 PM. This UWMP and corresponding WSCP were submitted to DWR within 30 days of adoption.

# CHAPTER 2 - PLAN PREPARATION

This Section provides information on how the UWMP was prepared, coordinated with other agencies and the public, and adopted.

This section includes the following subsections:
2.1 Plan Preparation
2.2 Basis for Preparing a Plan
2.3 Regional Planning
2.4 Individual or Regional Planning and Compliance
2.5 Fiscal or Calendar Year and Units of Measure
2.6 Coordination and Outreach

## 2.2 Plan Preparation

This chapter provides the guidance for determining if a water supplier is required to prepare a UWMP and describes the various levels of regional coordination that an agency may employ. It also includes guidance and tables for two pieces of information to apply consistently throughout the UWMP: the use of a fiscal calendar year, and the specific units of measure used by the supplier to report volumes.

This UWMP preparation and development was accomplished with the assistance and coordination with District personnel, NorthStar, and the UWMP 2020 Guidebook.

## 2.2 Basis for Preparing a Plan

The basis for preparing a UWMP is identified in the Water Code:

*Water Code Section 10617*
*"Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems.*

*Water Code Section 10620*
*(b)Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.*

*Water Code Section 10620*
*(a) Each urban water supplier shall update its plan at least once every five years on or before July 1, in years ending in six and one, incorporating updated and new information from the five years preceding each update.*

Thermalito Water and Sewer District (TWSD) qualifies as an Urban Water Supplier based on the California Water Code definition of providing water to more than 3,000 customers. This 2025 Urban Water Management Plan (UWMP) is being completed in 2026 as required by California Water Code

(CWC) 10621(f).

This plan document includes TWSD's current supply calculations, what impacts a customer can expect during drought periods, an analysis of water demands, and the impacts to water supply into the future.

TWSD sent notification to the City of Oroville and the County of Butte, more than 60 days prior to the UWMP public hearing and advising them that the Plan was being reviewed and changes were being considered. The District received no comments regarding the planning effort from local agencies or the public.

### 2.2.1 Public Water Systems

*Water Code Section 10644*
*(a)(2) The plan, or amendments to the plan, submitted to the department…shall include any standardized forms, tables, or displays specified by the department.*

*California Health and Safety Code 116275*
*(h) "Public Water System" means a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individual daily at least 60 days out of the year.*

TWSD serves one public water system. This UWMP represents the water use and planning information for the approximately 3,213 households receiving treated domestic water and 24 irrigation and industrial customers within the TWSD service area.

Standardized tables provided by the department have been incorporated in this report and bear the numbering scheme created by DWR. For example Table 2-1 below is the first table in UWMP Chapter 2. Public Water System information for Thermalito Water and Sewer District is summarized in Table 2-1, below.

### 2.2.2 Agencies Serving Multiple Service Areas/Public Water Systems

Thermalito Water and Sewer District serves one service area. This UWMP represents the water use and planning information for the TWSD service area only.

| Submittal Table 2-1 Retail: Public Water Systems | | | |
|---|---|---|---|
| Public Water System Number | Public Water System Name | Number of Municipal Connections 2025 | Volume of Water Supplied 2025 (AF)<br>Units: |
| Add additional rows as needed | | | |
| CA0410008 | Thermalito Water & Sewer District | 3,213 | 2,072 |
| **Total** | | 3,213 | 2,072 |
| **DWR NOTES:**<br>**Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3. | | | |
| **NOTES:** | | | |

## 2.3 Regional Planning

The Act requires the District to coordinate the preparation of its UWMP with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable. The District coordinated with and sent a letter to the appropriate agencies and other stakeholders 60 days prior to adoption stating that the 2025 UWMP was being updated, reviewed and amended. A copy of the letter is provided in Appendix B.

The District coordinates with local planning and land development agencies by providing information on the adequacy of its water supply, distribution system, and water rates to meet the area's current and future growth needs, including: cooperation with the Butte Local Agency Formation Commission to assist in the development of Municipal Service Review (MSR) Studies; cooperation with the respective planning departments of the City of Oroville and the County of Butte in the preparation of CEQA documents and processing applications for subdivisions and commercial developments; participation with other municipal water purveyors and fire departments in Butte County and the City of Oroville to plan for the implementation of new fire safety regulations. In addition, The District is one-third of a Joint Powers Agreement with the City of Oroville and Lake Oroville Area Public Utilities District (LOAPUD) being the other two entities (MSR, 2006). Copies of UWMP are available at the District's main office at 410 Grand Avenue, Oroville, CA for public review.

## 2.4 Individual or Regional Planning and Compliance

Urban water suppliers may elect to prepare individual or regional UWMPs (CWC §10620(d)(1)). TWSD is preparing an individual UWMP.

| Submittal Table 2-2: Plan Identification | | | |
|---|---|---|---|
| **Select One** | **Type of Plan** | | **Name of Regional Alliance or RUWMP** (Drop Down List) |
| X | **Individual UWMP** | | |
| | If Water Supplier is also a member of a SB X7-7 Regional Alliance, select name from the drop-down. | | |
| | **Regional Urban Water Management Plan (RUWMP)** | | |
| | If Supplier selected RUWMP, select name from the drop-down. | | |
| **NOTES:** | | | |

### 2.4.1 Regional UWMP

*Water Code Section 10620*

*(d)(1) An urban water supplier may satisfy the requirements of the part by participation in area wide, regional, watershed, or basin wide urban water management planning where those plans will reduce preparation costs and contribute to achievement of conservation, efficient water use, and improved local drought resilience.*

This UWMP reports solely on the TWSD service area. It has not been prepared to report on a combined regional service area. The TWSD is not a member of a Regional UWMP.

### 2.4.2 Regional Alliance

*Water Code Section 10608.20*

*(a)(1)… Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis as provided in subdivision (a) of Section 10608.28*

*(a) An urban retail water supplier may meets 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 consulting urban retail water supplier and urban wholesale water supplier.*

Thermalito Water and Sewer District is not a member of a regional alliance for the purpose of addressing the requirements of the Water Conservation Act of 2009 (SB X7-7).

## 2.5 Fiscal or Calendar Year and Units of Measure

### 2.5.1 Fiscal or Calendar Year

*Water Code Section 10608.20*

*(a)(1) Urban retail water suppliers… may determine the targets on a fiscal year or calendar year basis.*

Annual volumes of water reported in this UWMP are reported on a calendar year basis.

| **Submittal Table 2-3: Supplier Identification** | |
|---|---|
| Type of Supplier (select one or both) | |
| | Supplier is a wholesale supplier |
| X | Supplier is a retail supplier |
| Fiscal or Calendar Year (select one) | |
| | UWMP Tables are in calendar years |
| X | UWMP Tables are in fiscal years |
| If using fiscal years provide month and date that the fiscal year begins (mm/dd) | |
| | |
| Units of measure used in UWMP (Select from the drop down list). | |
| Unit | AF |
| **DWR NOTES:** **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. | |
| **NOTES:** | |

### 2.5.2 Reporting Complete 2020 Data

Water use and planning data reported in this UWMP for the calendar year 2025 cover the full twelve months of the year, as required by the UWMP Guidelines.

### 2.5.3 Units of Measure

Volumes of water reported in this UWMP are in units of acre-feet.

## 2.6 Coordination and Outreach

*Water Code Section 10631*

*(h) 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).*

### 2.6.1 Wholesale and Retail Coordination

There is no source of wholesale water supply available to TWSD, nor does the District have a need for such supplies.

### 2.6.2 Coordination Other Agencies and the Community

The Act requires the encouragement of public participation and public hearing as part of the UWMP approval process. As required by the Act, prior to adopting this UWMP, the District made the UWMP available for public review and held a public hearing to solicit comments. The hearing provided an opportunity for District customers, residents and employees in the service area to learn about and comment on the existing water supply and District plans for providing a reliable, safe, high-quality water supply for the future.

The District has actively encouraged community participation in its urban water management planning efforts since the first plan was developed in 1986. In January 1989 a revised plan was approved by the District Board of Directors and a copy was sent to the State Water Resource Control Board (SWRCB) in Redding. In 1990 the Department of Water Resources (DWR) reminded water agencies that updated water management plans needed to be filed with the California Department of Resource by December 31, 1990. After careful review, the District's legal counsel determined that the requirements of the Act for preparation and adoption of the UWMP did not apply to the District. The Act is applicable to agencies supplying more than 3,000 acre feet (AF) of water per year or providing water to more than 3,000 connections. Since the District did not meet the threshold for an UWMP, the 1986 Plan was not updated.

In 1995 and 2000 TWSD's Board of Directors reviewed the possible benefits an updated water management plan would provide the District. In anticipation that the District would exceed the three thousand customer threshold, it was determined that it would be in the District's best interest to update the UWMP. At each five year window, at the respective general board meeting, the updated version was approved.

However, in 2005 the District was in the midst of a management change. Since the District did not meet the Act's minimum threshold, it was decided that the District would forgo the required update at that time.

In 2010, the District serviced 2,893 accounts and a population of 9,654 residents. The 2010 UWMP update was adopted by the District's Board of Directors in July 2011.

In 2011 the District serviced over 2,917 connections and an estimated population of 9,760 residents. The 2015 UWMP includes an update of population and service data as well as discussions pertaining to Water Shortage Contingency Planning (Section 5). A part of the preparation of the UWMP is the identification of Demand Management Measures (DMMs) and Best Management Practices (BMPs), refer to Section 6. DMMs are specific actions a water supplier takes to support its water conservation efforts. BMPs have been identified by the California Urban Water Conservation Council (CUWCC) and correspond to the 14 DMMs that are to be evaluated in an UWMP. The Act requires that DMMs provide a schedule for implementation. Please refer to Section 6 for the specific DMMs that will be implemented as part of this UWMP.

In 2015, the District serviced 2,943 connections and an estimated population of 10,197 residents. Although the District did not meet the Act's minimum requirements and was not required to complete an UWMP, the district prepared an UWMP update. The document was not adopted by the District's Board of Directors, however.

The District is now required to prepare an UWMP because the District meets the Act's minimum requirements of over 3,000 connections. This 2025 UWMP update integrates planning and emergency measures and protocols to address climate change and events such as extended droughts lasting more than 5 years.

### 2.6.3 Notice to Cities and Counties

*Water Code Section 10621(b)*

*Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Sections 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.*

On 5/18/2026 the District notified Butte County Water and Resource Conservation, as well as the City of Oroville, and Butte County Development Services that it was in the process of updating its UWMP to the 2025 standards.

This UWMP was prepared by the Thermalito Water and Sewer District. If you have any questions regarding this UWMP, please contact:

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A copy of the final version of this report will be available at the public library, and the California State Library.

# CHAPTER 3 - SYSTEM DESCRIPTION

*Water Code Section 10631*
*(a) Describe the service are on 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 and 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 section provides a description of the District service area, climate, population, demographics, and the physical water supply system including transmission, treatment and distribution facilities. This section includes the following subsections:

3.1 General Description
3.2 Service Area Boundary Map(s)
3.3 Service Area Climate
3.4 Service Area Population, Demographics, and Socioeconomics
3.5 Land Uses within Service Area

The District currently serves a forecasted population of approximately 12,434 people through more than 3,213 active water meter connections. The Board of Directors is comprised of five members elected by the citizens within the service area.

## 3.1 General Description

The District is located on the east side of the Sacramento Valley at the base of the Sierra Nevada foothills in southern Butte County, California, northwest of the City of Oroville and southwest of Lake Oroville. The District is within the Sacramento River Subbasin of the Sacramento River Basin, which is comprised of the American River Subbasin, Feather River Subbasin, and Sacramento River Subbasin. The District is also located in the East Butte Groundwater Subbasin of the Sacramento Valley Groundwater Basin. The East Butte Subbasin is bounded on the west and northwest by Butte Creek, on the northeast by the Cascade Ranges, on the southeast by the Feather River and the south by the Sutter Buttes. **Figure 1, Location Map.**

The northwestern portion of District is located in the Sacramento River watershed and the southeastern portion of the District, including District's Concow Reservoir is the Feather River watershed. Predominant vegetative types within the District's watersheds include a mixture of blue oak woodland, montane hardwood forest and chaparral, grassland, and riparian vegetation.

The District was established in April 3, 1922 as Thermalito Irrigation District (TID), and supplied water to an area of approximately 3,164 acres with a population of approximately 360 properties owners.

The District was formed with the express purpose of providing agricultural water to the Thermalito community.

The District's water supply is provided primarily from the Concow Reservoir, with surface water rights allowing for the diversion of 8,200 AF annually. Under agreement with the State Department of Water Resources (DWR), the water flows from Concow Reservoir into Lake Oroville. The water is conveyed through DWR's State Water Project (SWP) facilities, including Lake Oroville, Oroville Dam, and the Thermalito Complex, which includes the Thermalito Diversion Pool and Thermalito Power Canal. The District pumps its supply from the Thermalito Power Canal to its Water Treatment Plant (WTP). **Figure 3,** TWSD Water Conveyance and Distribution System**.**

Backup or supplementary groundwater supply is provided by four wells. As currently equipped, these wells are generally sufficient for low flow winter demand conditions, but not for the maximum summer flow conditions. The sustainable capacity of these wells is unknown. However, on average they are operated to supply 373 acre-feet per year (AFY) with a peak flow of 716 AFY.

The District has 3.5 million gallons (MG) of treated storage capacity to provide pressure to the system and prevent water shortages during periods of high demand. One reservoir is a 2.5 MG distribution reservoir on the lower flanks of Table Mountain. There is also a 1 MG clearwell located at the WTP. This storage, in addition to the wells, provides backup that can support the maximum demand in the District for a short period of time.

The District has approximately 59.1 miles of water distribution pipe which consists of a 24-inch main that runs from the 2.5 MG storage reservoir to the WTP. Water is delivered to the treatment plant by a 48-inch main that taps into the Thermalito Power Canal. The WTP relies upon micro-filtration followed by disinfection for the treatment process.

Surface and groundwater sources tie into the central distribution system extending service throughout the urban areas of the District. The distribution network contains adequate surplus capacity to expand service to properties within the District's existing boundaries planned for future development.

**Treatment System**

Water is pumped from the Power Canal to the District's treatment plant, which began operation in January 1974. The plant is located on a 10.2-acre site, on the north side of the canal, approximately 1/4 mile east of State Highway 70. Water can be pre-chlorinated, if needed, as it enters the 4.0 MG microfiltration system, which was installed in 2008. The water is applied to four filter racks consisting each of 74 modules of membrane filter tubes. When water leaves the filter racks it is post-chlorinated before entering the MG clearwell approximately 100 feet from the filters.

The District has good quality raw water supplies. Water is delivered to the treatment plant by a 48-inch main that taps into the State Power Canal. Turbidity in the Power Canal averages 1 NTU (nephelometric turbidity unit) during the summer. In the winter, turbidity ranges from 15 – 20 NTU. Typically, high turbidity would require a significant amount of backwash to be run through the treatment plant; however, backwash flows stay consistent even when influent NTU goes up to 15-20 NTU during the peak of the winter season (December). Therefore, the efficiency and ultimate capacity of the plant is relatively consistent. The WTP relies upon micro-filtration followed by disinfection for the treatment process.

**Delivery System**

Water from the wet well is pumped through a microfiltration system and is disinfected and stored in the clear well at the treatment plant until the proper contact time with the chlorine is met. From the clearwell the processed water is pumped into a 24" distribution main that commutes the water directly to the base of the 2.5 MG storage tank (2.5-MGT), located 0.5-miles north of the treatment plant. From the 2.5-MGT, the water flows through a new 30" distribution main back to Table Mountain Boulevard where it begins its path through the distribution system. The 2.5-MGT was constructed in 1983 (since been replaced), to replace a 5 MG open storage reservoir, located on the same site (known as the Thermalito Water and Sewer District Forebay). That storage reservoir had been used since 1924. Gravity flow from the tank produces adequate line pressure throughout the system.

The 8.0 MG microfiltration system has adequate room for expansion. The current treatment building has adequate area to install microfiltration racks to process 10 MG of water. An additional storage tank can also be constructed adjacent to the existing 2.5 MGT tank if warranted.

## 3.2 Service Area Boundary Map

The District's service area encompasses the northwestern portion of the City of Oroville, as well as the portions of the unincorporated areas surrounding the Thermalito Forebay and northeast of Table Mountain Boulevard. Located outside of the District service boundaries is Concow Reservoir, the District's main storage reservoir. Concow Reservoir (also known as Wilenor Reservoir) is approximately 11 miles north of the District's northernmost service area boundary. The reservoir sits at an elevation of approximately 2,000 feet. **Figure 2, Service Area Map.**

## 3.3 Service Area Climate

*Water Code Section 10631(a)*
*A plan shall… Describe the service area of the supplier, including… climate*

*Water Code Section 10630*

*It is the intention of the Legislature, in enacting this part, to permit levels of water management planning… while accounting for impacts of climate change.*

The 14,873-acre service area includes an elevation range from a low point of approximately 174 to 243 feet above sea level.

The District is located in the Sacramento Valley Air Basin (SVAB). The SVAB includes Butte, Sacramento, Sutter, and Yolo Counties and parts of Solano, Placer, and El Dorado Counties. The SVAB is bounded on the west by the Coast Ranges and on the north and east by the Cascade Range and Sierra Nevada. The SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters. Summers are warm to extremely warm with temperatures ranging from the upper 60s to low 110s. Winter months are cool to cold with temperatures from the mid-30s to low-60s, and an annual average temperature of 67ºF.

The average monthly temperature ranges from a low of 54.9 in January to a high of 96.4 in July. The average monthly rainfall totals range from a low of 0.04 inches in July to a high of 5.65 inches in January, refer to **Figure 4**, District's Average Monthly Temperature and Average Monthly Rainfall Totals from 1953 to 2005.

## 3.4 Service Area Population, Demographics, and Socioeconomics

### 3.4.1 Service Area Population

*Water Code Section 10631*

*(a)Describe the service area of the supplier, including current and projected population…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 for as far as data is available.*

The District serves a population of approximately 12,434 people. Customers include single and multiple family residences, a variety of commercial and industrial uses, and public facilities including schools and recreational facilities. Land uses within the District are primarily very low and low density residential. The few commercial and industrial uses are found primarily along major roads in the District, such as Oro-Dam Boulevard West (State Route 162/SR 162) and Grand Avenue. Approximately one-third of the customers in the District are in the City of Oroville, with the remainder in nearby unincorporated areas of Butte County. The Oroville Airport is within the District's service area, but the area between the Thermalito Afterbay and the airport is outside the service area. There is significant overlap of the District's Sphere of Influence (SOI) and the City of Oroville's SOI.[1]

The District's service area encompasses the northwestern portion of the City of Oroville, as well as portions of the unincorporated areas surrounding the Thermalito Forebay northeast of Table Mountain Boulevard. Located outside of the District service boundaries is Concow Reservoir, the

[1] TWSD, Thermalito Water and Sewer District, 2012. *Water and Sewer Master Plan Report.* Page 3.

District's main storage reservoir. Concow Reservoir is approximately 11 miles north of the District's northernmost service are Boundary. The reservoir sits at an elevation of approximately 2,000 feet.

Population projections for the District were based on review of the data used in previous District plans, the City of Oroville General Plan, Butte County General Plan, Butte County Association of Governments (BCAG), and Local Agency Formation Commission (LAFCo).
The 2006 Butte County LAFCo Municipal Service Review (MSR) for the District identified a 2005 population of 9,140 people and a 2.6% growth rate. This growth rate is consistent with that used for the City of Oroville's population projections. BCAG identifies growth rates using a low to high percentage scale. Using BCAG's 2010 census growth projection, the low growth rate for the City of Oroville is 2.5% and the County's unincorporated area is 1.1%.

To determine a growth rate applicable to the District, the 2010 census data available from BCAG and census block data within the District's service area were compared. The resulting population within the District is estimated at 9,699 in 2010. Although the total county population has been increasing, the population of the unincorporated portion of Butte County has generally been declining since 1990 due to annexation.[1] The growth forecast for unincorporated areas such as Thermalito originally predicted a .52% growth rate, but the effects of the 2018 Camp Fire triggered a redistribution of Butte County's population. The service area has seen an increase in multi-family housing with 5 apartment complexes completed in the last 5 years. Utilizing a 3.8 persons per connection factor based upon historical connections along with the predicted growth rate, the forecasted populations are shown in table 3-1 below.

**Submittal Table 3-1 Retail: Population - Current and Projected**
**Water Code Section 10631(a)**

| Population Served | 2025 | 2030 | 2035 | 2040 | 2045 | 2050(opt) |
|---|---|---|---|---|---|---|
| | 12,434 | 12,682 | 12,935 | 13,193 | 13,457 | 13,726 |

**NOTES:**

### 3.4.2 Other Social, Economic, and Demographic Factors

*Water Code Section 10631*
*(a) Describe the service area of the supplier, including… Other social, socioeconomic and demographic factors affecting the supplier's water management planning.*

According to the California Department of Finance, US Census Bureau 2022 data, households in Butte County, CA have a median annual income of $64,738, which is less than the median annual income of $83,730 across the entire United States. The economy of Butte County, CA employs 87,900 people. The largest industries in Butte County, CA are Health Care and Social Assistance (16,421 people), Retail Trade (12,823 people), and Educational Services (9,625 people), and the highest paying industries are Utilities ($94,688), Transportation, Warehousing, and Utilities ($59,219), and Mining, Quarrying, and Oil and Gas Extraction ($51,369).

Population under 18: 20.4%
Population 10-64: 63%
Population over 64: 19.1%
Median Age: 36.8
Workforce: 92,000
Employed: 87,900
Unemployment Rate: 4.5%
Median Household Income: $64,738
Per Capita Income: $33,424
Families at or Below Poverty Level: 16.5%
Median Home Price: $449,000

## 3.5 Land Uses within Service Area

*Water Code Section 10631(a)*
*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…*

The City of Oroville General Plan Land Use Map designates much of the service area of the District as Residential. The designated land uses within the unincorporated areas in the District's Service Area includes Rural Residential, Very Low and Low Density Residential, and Multi-Family Residential. Areas within the District's sphere of influence are primarily designated as Agriculture in the Butte County General Plan.

The District's service area lies in portions of Butte County Supervisorial Districts 1 and 4.

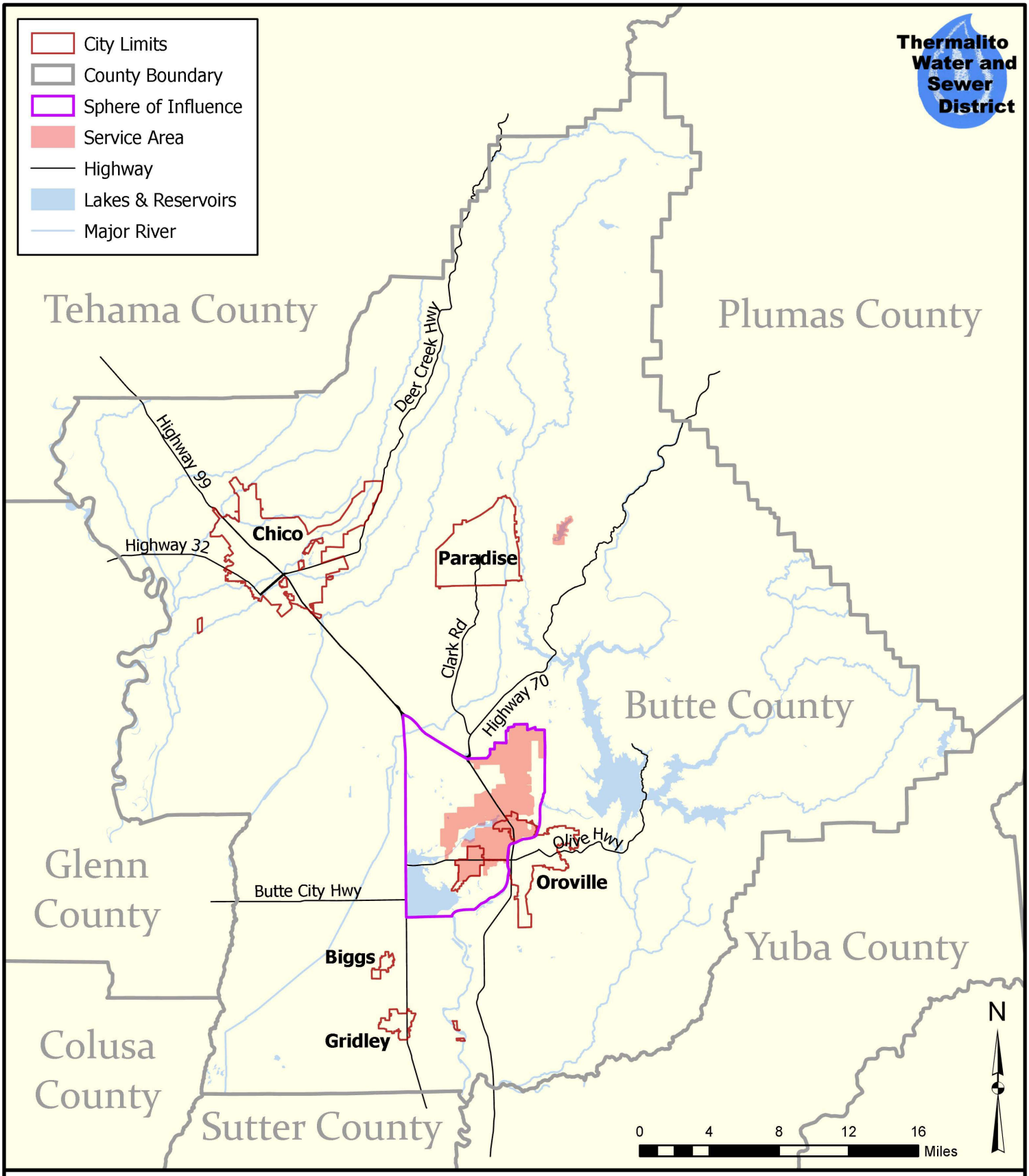



FIGURE 1: PROJECT LOCATION

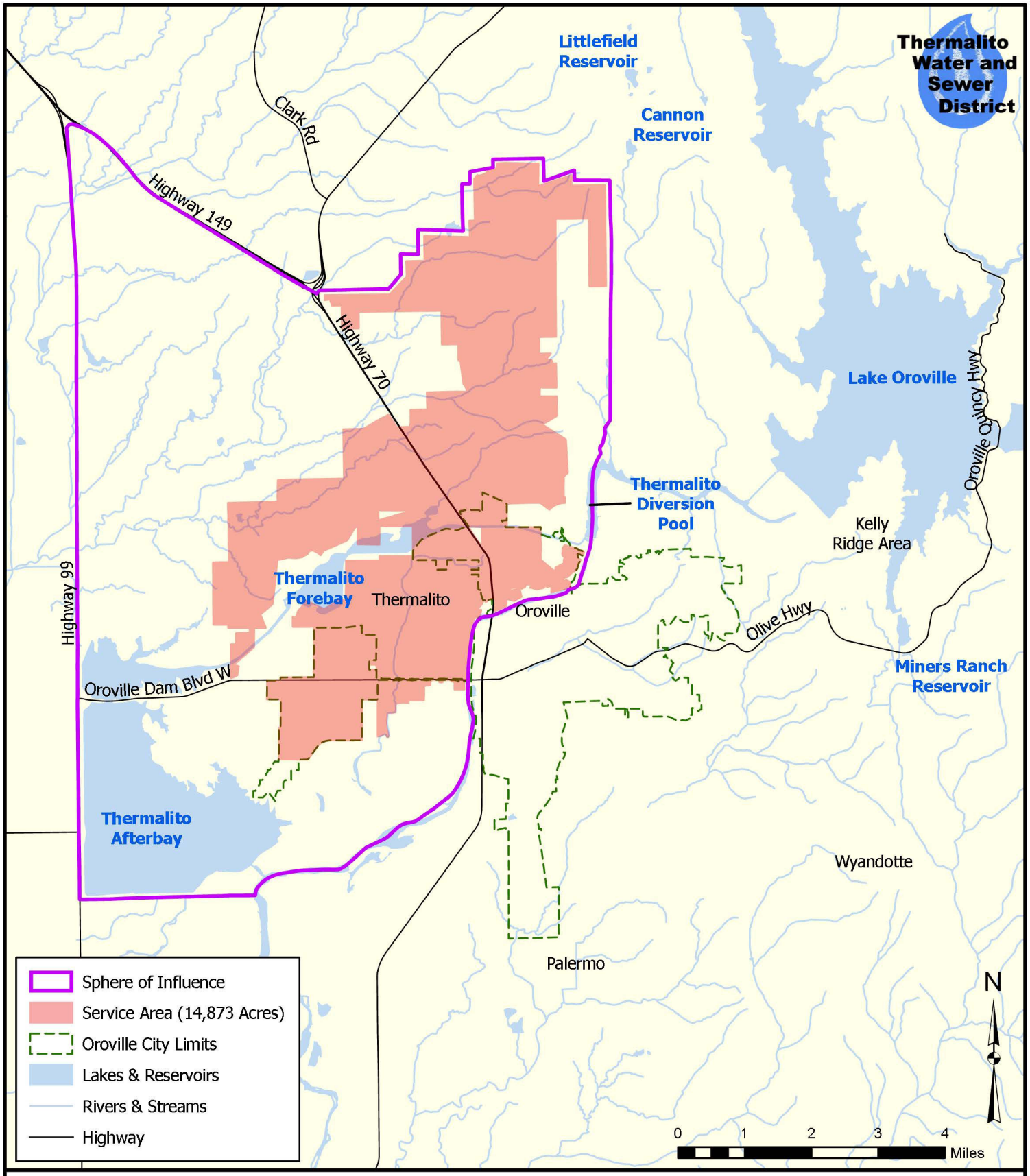
NORTHSTAR
111 MISSION RANCH BLVD., SUITE 100 CHICO, CA 95926
PHONE: (530) 893-1600 - www.NorthStarEng.com -

Thermalito Water and Sewer District
Urban Water Management Plan

| Job No. | Date Created: | Created By: |
|---|---|---|
| 21-066 | 09/08/2021 | TDA |

**Data Source:** TWSD, Butte County, Bureau of Land Management, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

**Spatial Reference:**
NAD 1983 State Plane California Zone II




# FIGURE 2: SERVICE AREA AND SPHERE OF INFLUENCE

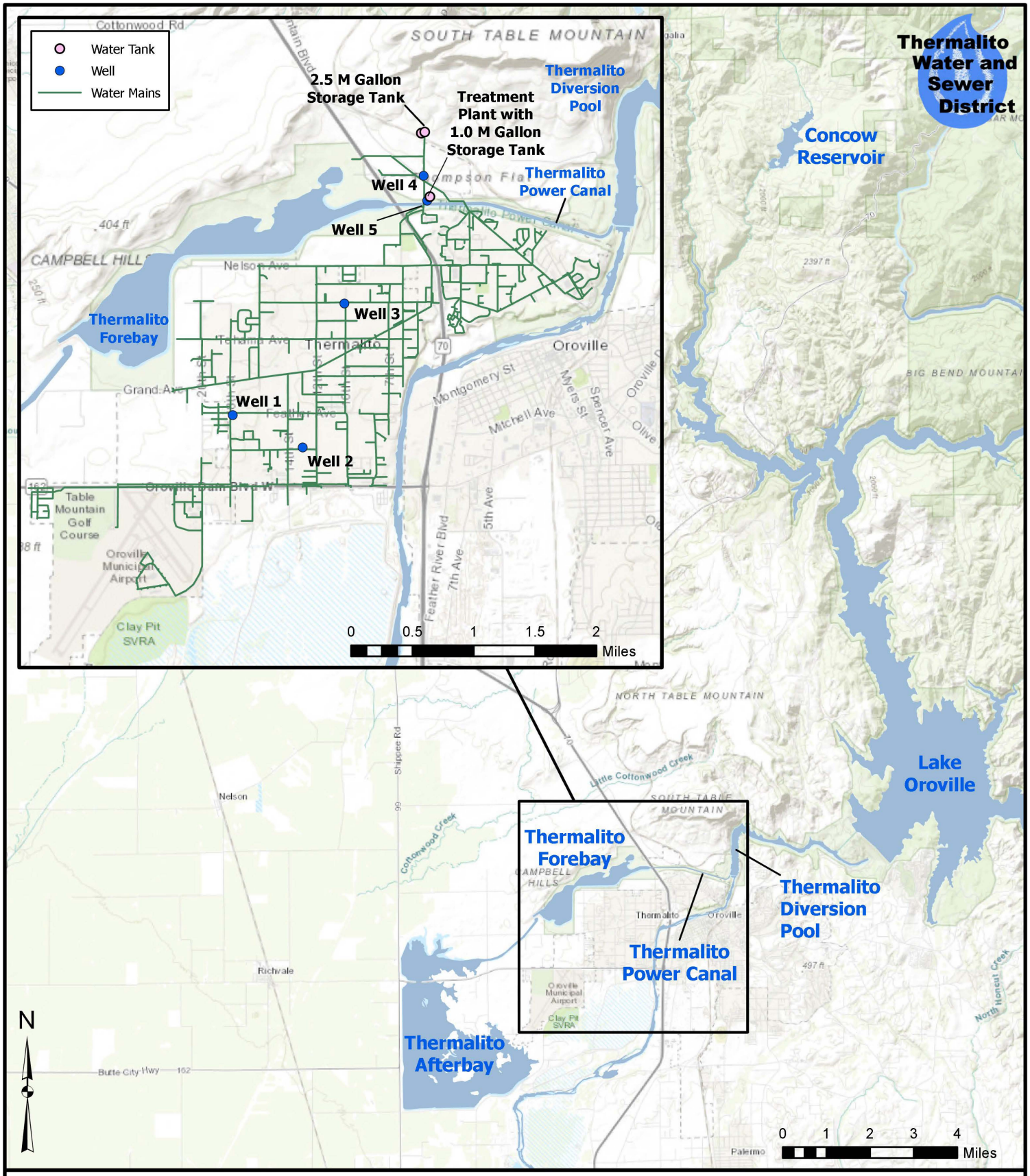
NORTHSTAR
111 MISSION RANCH BLVD., SUITE 100 CHICO, CA 95926
PHONE: (530) 893-1600 - www.NorthStarEng.com -

Thermalito Water and Sewer District
Urban Water Management Plan

| Job No. | Date Created: | Created By: |
|---|---|---|
| 21-066 | 09/08/2021 | TDA |

**Data Source:** TWSD, Butte County, Bureau of Land Management, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

**Spatial Reference:**
NAD 1983 State Plane California Zone II



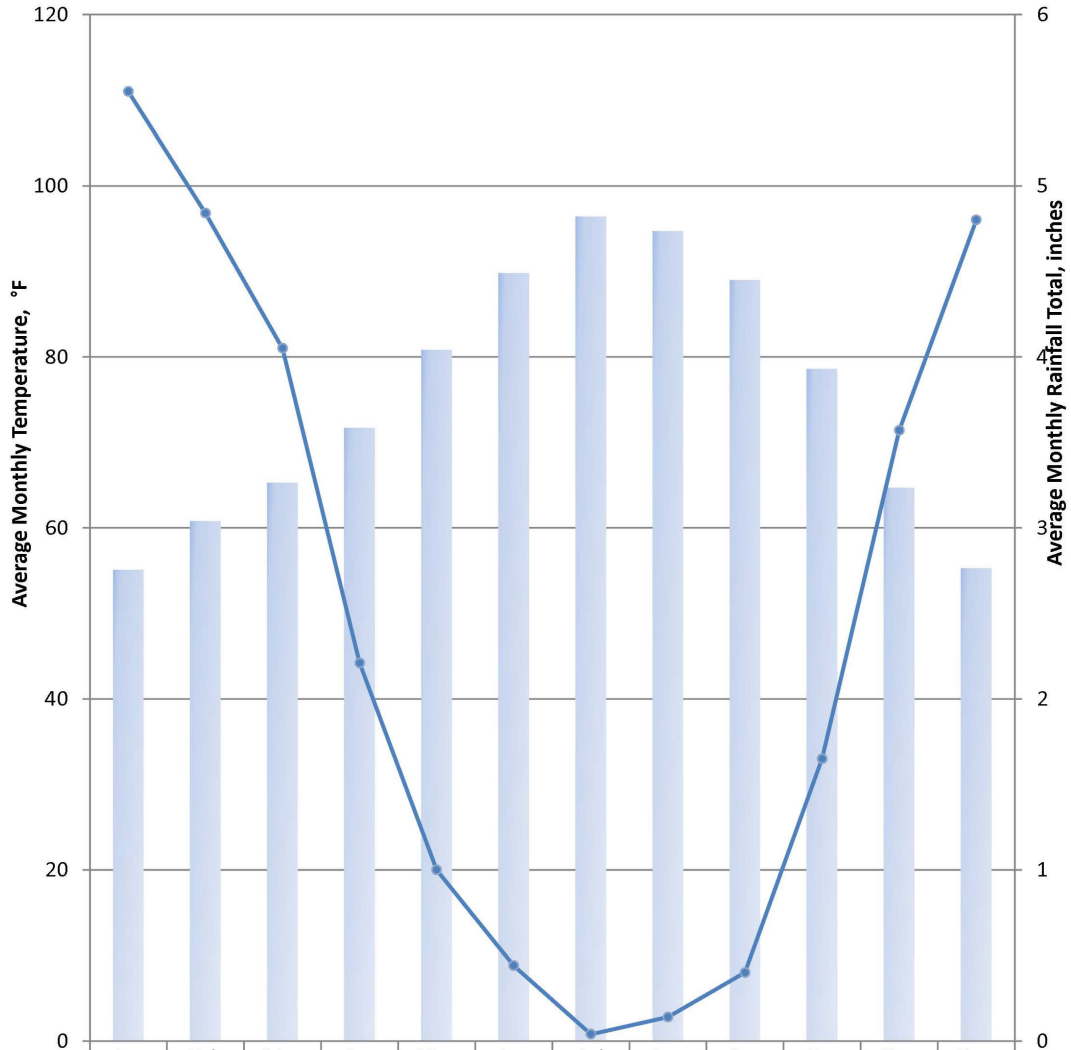

# FIGURE 3: WATER CONVEYANCE AND DISTRIBUTION SYSTEM

NORTHSTAR
111 MISSION RANCH BLVD., SUITE 100 CHICO, CA 95926
PHONE: (530) 893-1600 - www.NorthStarEng.com -

Thermalito Water and Sewer District
Urban Water Management Plan

**Data Source:** TWSD, Butte County, Bureau of Land Management, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

| Job No. | Date Created: | Created By: | **Spatial Reference:** |
|---|---|---|---|
| 21-066 | 09/08/2021 | TDA | NAD 1983 State Plane California Zone II |




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average Monthly High Temperature(°F) | 55.1 | 60.8 | 65.3 | 71.7 | 80.8 | 89.8 | 96.4 | 94.7 | 89 | 78.6 | 64.7 | 55.3 |
| Average Monthly Rainfall (Inches) | 5.55 | 4.84 | 4.05 | 2.21 | 1 | 0.44 | 0.04 | 0.14 | 0.4 | 1.65 | 3.57 | 4.8 |

FIGURE 4: Average Monthly Temperatures and Rainfall

NORTHSTAR
111 MISSION RANCH BLVD., SUITE 100 CHICO, CA 95926
PHONE: (530) 893-1600 - www.NorthStarEng.com -

Thermalito Water and Sewer District
Urban Water Management Plan

**Data Source:** WESTERN REGIONAL CLIMATE CENTER - OROVILLE, CALIFORNIA (046521)

| Job No. | Date Created: | Created By: | **Period of Record:** |
|---|---|---|---|
| 21-066 | 11/22/2021 | TDA | 03/01/1893 to 05/31/2016 |

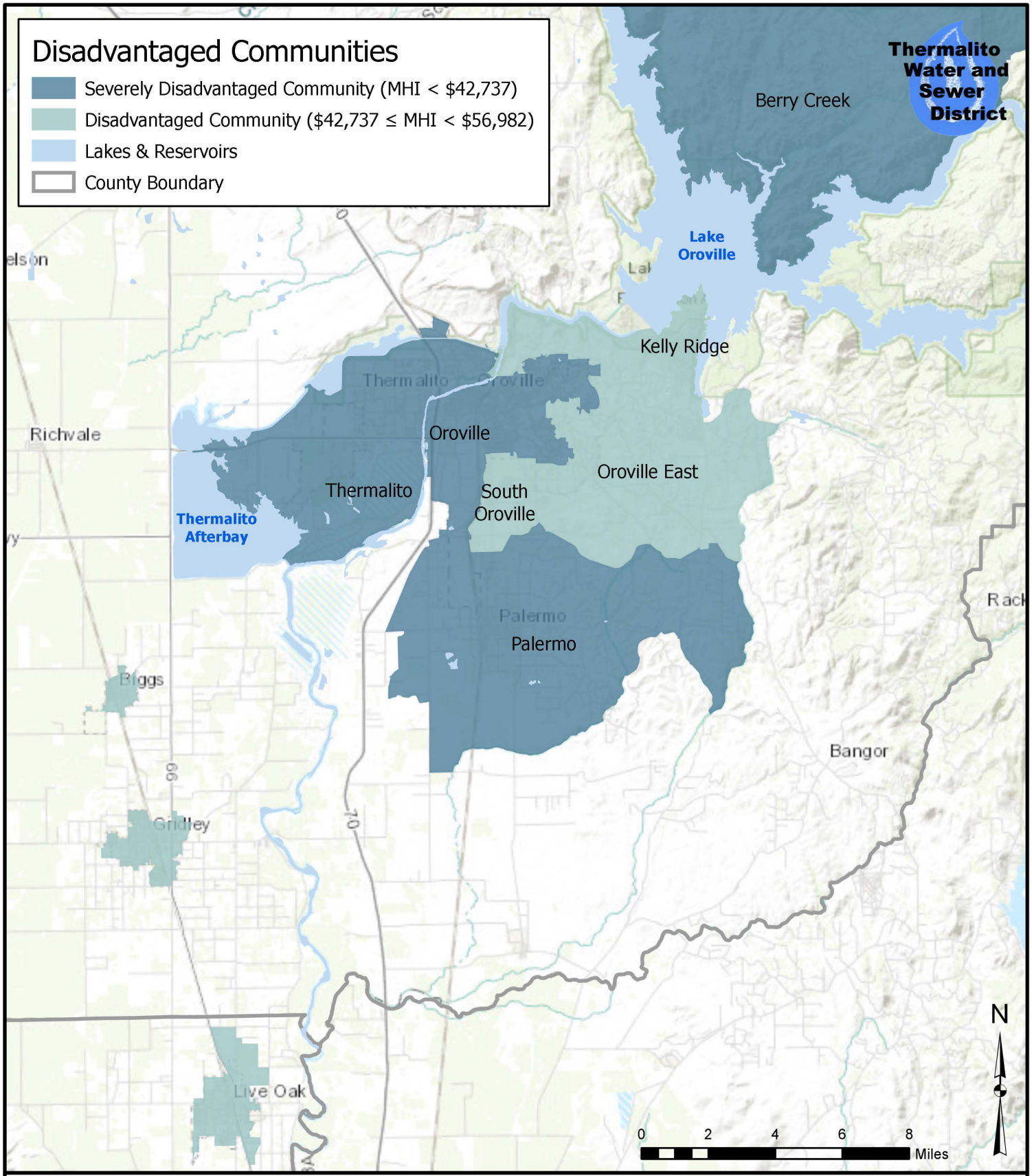



FIGURE 5: Disadvantaged Communities, Thermalito

NORTHSTAR
111 MISSION RANCH BLVD., SUITE 100 CHICO, CA 95926
PHONE: (530) 893-1600 - www.NorthStarEng.com -

Thermalito Water and Sewer District
Urban Water Management Plan

| Job No. | Date Created: | Created By: |
|---|---|---|
| 21-066 | 11/22/2021 | TDA |

**Data Source:** TWSD, Butte County, Bureau of Land Management, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

**Spatial Reference:** NAD 1983 State Plane California Zone II

# CHAPTER 4 – WATER USE CHARACTERIZATION

This chapter provides descriptions and quantifications of TWSD's past, current, and future water use projected uses through the year 2050. This characterization provides a realistic projection of future water supply and demand needs.

This chapter is divided into the following subsections:



## 4.1 Non-Potable vs. Potable Water Use

Thermalito Water and Sewer District does not currently make use of recycled water because there is no wastewater recycled for direct use within the service area. For the District the focus of this chapter is the historical and projected potable water uses.

## 4.2 Past, Current, and Projected Water Use by Sector

*Water Code Section 10635*

*(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability if 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.*

*Water Code Section 10631 (d)*

*(1) 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…*

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

### 4.2.1 Water Use Sectors Listed in Water Code

*Water Code Section 10631 (d)*

*(1) 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*

Using available historical records, water demands are provided by customer type and projected over the next 25 years as shown table 4-2. Records for actual historical water use were provided from the District's DWR Public Water System Statistics. Projected demands are based on the estimated population and growth rate.

As seen in Table 4-1 below, water use is presented in the following use categories: single family residential, multi-family residential, commercial, industrial, institutional/governmental, agricultural irrigation, and distribution losses.

### 4.2.2 Past Water Use

Population estimates that drive the projections of water use were derived from the California Department of Finance. The Butte County Association of Governments used their data to provide projections for growth in Butte County into the future. These population estimates together with the water use targets provide the basis for projected water use.

### 4.2.3 Current Water Use

The District does not regularly sell water to other agencies, nor does it provide water for saline barriers, groundwater recharge, conjunctive use, or recycling. Water use is broken out by demand sector to the extent possible using available records. The District has been working at improving data reporting for each use category.

| Submittal Table 4-1 Retail: Total Uses for Potable and Non-Potable Water — Actual<br>Water Code Section 10631(d)(1) | | | |
|---|---|---|---|
| Use Type | Additional Description (as needed) | 2025 Actual Water Use | |
| **Drop down list**<br>May select each use multiple times<br>These are the only use types that will be recognized by the WUEdata online submittal tool | | **Potable or Non-Potable**<br>(OPTIONAL)<br>Drop down list | Volume (AF) |
| Add additional rows as needed | | | |
| Single Family | | Potable | 1,313 |
| Multi-Family | | Potable | 316 |
| Commercial | | Potable | 58 |
| Institutional/Governmental | | Potable | 318 |
| Industrial | | Potable | 24 |
| Landscape | | Potable | 43 |
| Distribution System Water Loss | Leaks, flushing, sampling/testing | Potable | 90 |
| Subtotal Potable | | | 2162 |
| Subtotal Non-Potable | | | 0 |
| **Total** | | | 2,162 |
| **DWR NOTES: Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3. | | | |
| **NOTES:** | | | |

### 4.2.4 Projected Water Use

*Water Code Section 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 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.*

*Water Code Section 10631*

*(h) 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 ads 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).*

*Water Code Section 10631 (d) (4)*
*(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 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.*

Projected Water Use through 2045 is summarized in Table 4-2. Future demands (year 2025 and following) were projected as the product of the estimated population for the target year and the 2020 consumption records. Future sector demands were projected proportionally to actual sector demands experienced from 2015 to 2020.

| Submittal Table 4-2 Retail: Total Uses for Potable, and Non-Potable Water — Projected<br>Water Code Section 10631(d)(1) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Use Type** | Additional Description (as needed) | **Projected Water Use** (Report To the Extent that Records are Available) | | | | | |
| **Drop down list**<br>May select each use multiple times<br>These are the only Use Types that will be recognized by the WUEdata online submittal tool | | **Potable or Non-Potable** (OPTIONAL) Drop down list | **2030 (AF)** | **2035 (AF)** | **2040 (AF)** | **2045 (AF)** | **2050 opt (AF)** |
| Add additional rows as needed. | | | | | | | |
| Single Family | | Potable | 1,413 | 1,521 | 1,637 | 1,761 | 1,895 |
| Multi-Family | | Potable | 331 | 346 | 362 | 379 | 396 |
| Commercial | | Potable | 63 | 67 | 73 | 79 | 85 |
| Institutional/Governmental | | Potable | 343 | 370 | 399 | 430 | 464 |
| Industrial | | Potable | 25 | 26 | 27 | 28 | 29 |
| Landscape | | Potable | 48 | 53 | 59 | 66 | 73 |
| | | | | | | | |
| | | | | | | | |
| Subtotal Potable | | | 2,223 | 2,383 | 2,557 | 2,743 | 2,942 |
| Subtotal Non-Potable | | | 0 | 0 | 0 | 0 | 0 |
| **Total** | | | 2,223 | 2,383 | 2,557 | 2,743 | 2,942 |
| **DWR NOTES: Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3. | | | | | | | |
| **NOTES:** | | | | | | | |

| Submittal Table 4-3 Retail: Inclusion in Water Use Projections<br>Water Code Section 10631 (a), 10631 (d)(4)(A), and 10631 (d)(4)(B) | |
|---|---|
| **Are Future Water Savings Included in Projections?**<br>**Drop down list (y/n)** | No |
| 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.<br>***Optional*** Suppliers may complete Optional Submittal Table 4-4 R to quantify the expected savings. | |
| **Are Lower Income Residential Demands Included In Projections?**<br>**Drop down list (y/n)** | No |
| ***Optional*** If the method for accounting Lower Income Residential Demands has been included, provide page number where this accounting can be found. | |
| **DWR NOTES:** Additional guidance is provided in Appendix K. | |

### 4.2.5 Distribution System Water Loss

*Water Code Section 10631(d) (1)*

*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 on information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following…*

*(J) Distribution system water loss…*

*Water Code Section 10631(d)(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 quantified 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 by 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.*

System losses are a result of distribution and treatment system maintenance and is non-metered water. Table 4-4 below, depicts a five year audit of system real and apparent water losses. Water loss within the District has been reduced since 2000 due to system improvements and replacement projects.

| **Submittal Table 4-5 Retail: Water Loss Audit Reporting Water Code Section 10631(d)(3)(A)** | | |
|---|---|---|
| **Public Water System ID # Reported in Table 2-1 R** | Reporting Period | Submitted to DWR Water Loss Audit Program (yes/no) |
| **Report submittal status for all five years for each Public Water System as available. Add rows as needed** | | |
| | **2020** | Yes |
| | **2021** | Yes |
| | **2022** | Yes |
| | **2023** | Yes |
| | **2024** | Yes |
| **DWR NOTES:** Suppliers will provide a link to the WUEdata submittals of their Water Loss Audit Reports. | | |
| **NOTES:** | | |

## 4.3 Water Use for Lower Income Households

*Water Code Section 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 service area of the supplier.*

*California Health and Safety Code Section 50079.5 (a)*

*"Lower income households" means persons and families whose income does not exceed the qualifying limits for lower income families… In the event the federal standards are discontinued, the department shall, by regulation, establish income limits for lower income households for all geographic areas of the state at 80 percent of area median income, adjusted for family size and revised annually.*

California State Bill No. 1087 (SB 1078), Chapter 727, became effective January 1, 2006 and amended Government Code Section 65589.7 and Water Code Section 10631.1 SB 1087 requires local governments to provide a copy of their adopted housing element to water and sewer providers. In addition, it requires water providers to grant priority for service allocations to proposed developments that include housing units for lower income families and workers. Subsequent revisions to the Urban Water Management Planning Act require water providers to develop water demand project for lower income single and multi-family households.

The District does not maintain records of the income level of its customers and does not discriminate in terms of supplying water to any development. Connections in the District are provided first come, first serve based upon available capacity. The District serves any development that occurs within its service area, regardless of the targeted income level of the future residents. It is ultimately the City's or County's responsibility to approve or not approve developments within the service area.

## 4.4 Climate Change Considerations

*Water Code Section 10630*

*It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied, while accounting for impacts from climate change.*

*Water Code Section 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…*

*(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.*

TWSD is not a large enough water District to embark on the creation of planning documents beyond the scope of its service area. The district does, however, participate in countywide planning efforts, and utilizes those documents for general guidance. The Butte County Climate Action Plan (CAP) is an implementation mechanism of the county's General Plan, and provides goal, policies, and programs to reduce greenhouse gas (GHG) emissions, address climate change adaptation, and improve quality of life in the county. Programs and actions defined in the CAP will help the county sustain its natural resources, grow efficiently, ensure long-term resiliency to a changing environmental and economic climate, and improve transportation. Climate change is expected to influence existing hazards and vulnerabilities. While anticipating consequences of a changing climate is a challenging task, the work plan prioritizes actions for the County to adopt to protect resources and prepare for changing precipitation patterns, reduced water supply, and increased hazards such as flooding, heat waves, and wildfire. Measures in the CAP and proactive steps will help the County achieve the General Plan vision of thriving communities, a strong agricultural base, and healthy natural resources.

Changes is precipitation patterns may affect snowpack in the mountains to the east of the county as well as reduce groundwater recharge. Both of these effects can reduce access to drinking water and agricultural irrigation. Through education, efficiency, and conservation, the following District supported adaptations actions will help our customers, and all Butte County residents, prepare for a future where water may be less plentiful and more expensive.

- Collaborate with Northern Sacramento Valley Integrated regional Water Management agencies to include climate change considerations in the Integrated Regional Water Resource Management Plan (IRWRMP). Monitor climate change effects on water resources and update future IRWIMPs accordingly.
- Support other agencies to help vulnerable populations conserve water and reduce household resource costs through income-qualified subsidies and rebates for water efficient equipment upgrades.
- Collaborate with water providers to incorporate anticipated water supply changes that may result from reduced snowpack and lower groundwater levels into agricultural management plans.

California is currently in the process of adopting a 2021 State Climate Adaptation Strategy that further defines goals and metrics for building resilience and reducing climate induced risks across the state.

# CHAPTER 5 – SBX7-7 BASELINES, TARGETS, AND 2025 REPORTING

The goal of the SBX7-7 Baseline, Targets, and 2020 Compliance chapter in the supplier's 2020 UWMP was to allow the retail Supplier to demonstrate its compliance with its 2020 targeted water-use reduction, as required in the Water Conservation Act of 2009. The calculation of baselines, targets, and 2020 compliance is a very important but highly technical portion of the UWMP.

This chapter includes the following sections:



## 5.1 Baseline and Target Calculations for 2025 UWMPs

TWSD did not complete additional SBX7-7 tables as it met its 2020 Target as summarized below and outlined in the 2020 UWMP

**Submittal Table 5-1 Retail: SB X7-7 2020 Target Progress**
**Water Code Section 10608.40**

| | **Check the box if the Supplier was not an Urban Water Supplier during or before the 2020 UWMP reporting cycle. Proceed to the next table.** | | | | | |
|---|---|---|---|---|---|---|
| Was Supplier part of a merger or consolidation since 2020? | Regional Alliance Target or Individual Target? Drop down list | 2020 Target | Actual 2020 GPCD | Did Supplier Achieve Targeted Reduction for 2020? | **Only for suppliers that did not meet the Target in 2020** **See DWR NOTES below.** | |
| | | | | | Actual 2025 GPCD (From SB X7-7 Compliance Form) | Did Supplier meet the 2020 Target in 2025? |
| No | Individual Target | 197 | 175 | Yes | | NA |

**DWR NOTES:**
**Suppliers calculating a 2025 GPCD** will need to complete and submit SB X 7-7 Compliance Tables to verify the use of SB X7-7 Methodologies.
**Suppliers that were part of a merger or consolidation since 2020** see Chapter 5 and Appendix P for guidance.
NA=Not Applicable

## 5.2 Methods for Calculating Population and Gross Water Use

### 5.2.1 Department of Finance

*Water Code Section 10608.20 (e)*
*An urban retail water supplier shall include in its urban water management plan due in 2010… the baseline per capita water use…along with the bases for determining those estimates, including references to supporting data.*

*(f) When calculating per capita values for the purpose of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.*

*Water Code Section10644*
*(a)(2) The plan…shall include any standardized forms, tables or displays specified by the department.*

Service population for this UWMP was calculated based upon Department of Finance Data. Information on how the population figures were developed is included in Section 3 above. Population data is included in table 3-1, above. Service area population for the baseline periods is summarized in SB X7-7 Table 3.

### 5.2.2 Gross Water Use

*Water Code Section 10608.12*
*(h) "Gross Water Use" means total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:*
*(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier.*
*(2) The net volume of water that the urban retail water supplier places into long term storage*
*(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier*
*(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24*

*California Code of Regulations Title 23 Division 2 Chapter 5.1 Article 1 Section 596*
*(a) An urban water supplier that has a substantial percentage of industrial water use in its service area is eligible to exclude the process water use of existing industrial water customers from the calculation of its gross water use to avoid a disproportionate burden on another customer sector.*

All Gross Water Use within the District is treated and distributed to all customer types. Gross water use does not incorporate any recycled water use. See Submittal tables 4-1 and 4-2, above.

## 5.3 2020 Compliance Daily Per-Capita Water Use (GPCD)

*Water Code Section 10608.12*
*(f)"Compliance daily per-capita water use" means the gross water use during the final year of the reporting period…*

*Water Code Section 10608.20*

*(e) An urban retail water supplier shall include in its urban water management plan due in 2010… compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.*

### 5.3.4 2020 Adjustments for Factors Outside of Supplier's Control

*Water Code Section 10608.24*

*(d)(1) When determining compliance daily per-capita water use, an urban retail water supplier may consider the following factors:*

*(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period*

*(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period*

*(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period*

*(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40*

### 5.3.5 If Supplier Does Not Meet 2020 Target

*Water Code Section 10608.56*

*(a) On and after July1, 2016, an urban retail water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.*

# CHAPTER 6 – WATER SUPPLY CHARACTERIZATION

A thorough Characterization and analysis of water supplies can provide a realistic reliability assessment of an urban water supplier's water assets under various hydrological and regulatory conditions. A thorough analysis examines surface water rights, water entitlements (i.e., contracts for water delivery), groundwater supplies, raw water supplies, and recycled water supplies. Moreover, it considers each water asset in the context of the infrastructure systems that convey water to the supplier's service area- including infrastructure systems that are shared with other water suppliers. A detailed water supply analysis examines each water asset and then aggregates the information into a comprehensive picture of the supplier's water supply portfolio.

This chapter includes the following sections:



## 6.1 Water Supply Analysis Overview

*Water Code Section 10631(b)*

*Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier [in five-year increments to 20 years or as far as data is available] providing supporting and related information, including all of the following:*

*(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.*

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

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

The water supply for District customers is a combination of two sources:

- Surface Water
- Groundwater Wells

Surface Water is available from the Concow Reservoir. Groundwater used by the District is extracted from the Wyandotte Creek Subbasin of the Sacramento River Groundwater Basin. Groundwater extraction is accomplished using four active wells located throughout the District's service area. The maximum output of the wells is roughly 3,258.5 AFY. However, the average acre-feet per year is estimated at 300 AFY or 14.5% of the total water supplied to consumers. The distribution of each year's supply is dependent on several factors. The exact amount of water projected to be used from each source is difficult to predict. However, for both surface water and groundwater, there is a surplus available throughout the planning horizon of this UWMP. To simplify this analysis, the District has assumed that the available supply is equal to the projected demand in any given year.

## 6.2 Supplier's UWMP Water Supply Characterization

### 6.2.1 Purchased or Imported Water

TWSD does not purchase or import any supply, but rather relies on permitted rights to surface water originating from the combined Concow Reservoir and Feather River Watershed.

### 6.2.2 Groundwater

Ground water in Butte County is governed by the County's Groundwater Management Plan.[2] The TWSD service area is included in Butte County Groundwater Management Plan as a portion of the Wyandotte Creek Subbasin of the Sacramento Valley groundwater basin. See Wyandotte Creek GSA website for description of the subbasin. The monitoring wells within the basin have experienced a declining trend for groundwater levels from 1998 to 2018.[3] The District is not dependent on groundwater and can meet water use projections to 2045 with Surface Water supplies.

There are currently four groundwater wells in service within the District's service area (refer to Figure 3 for the TWSD Water Conveyance and Distribution System in Chapter 3). The primary purpose of these wells is threefold:

1. Back-up water supply when the primary supply of surface water through the Water Treatment Plant is shut down or reduced in capacity. This could occur during routine maintenance, system construction activities, or emergency supply disruption.
2. Additional water to augment the District's surface water supply during peak demand periods.
3. Water blending to reduce the total effects of the disinfectant byproducts derived from the Water Treatment Plant microfiltration process.

All of the existing wells are equipped with annular seals. Wells #3, #4 and #5 are on the north end of the District's service area, producing high quality water which does not require treatment. Well #2 is located adjacent to residential developments. Each well is equipped with a sand extraction system. Preventative chlorination treatment is provided at each well to prevent contamination. The maximum flow capacity for each of these four wells ranges from 350 gpm to 770 gpm. This results in a combined peak capacity potential of 2,020 gpm. The "sustainable" capacity of these wells is unknown.

2 http://www.buttecounty.net/waterresourceconservation/groundwatermanagementplan

3 California's Groundwater Update 2020 https://water.ca.gov/programs/groundwater-management/bulletin-118

**Submittal Table 6-1 Retail: Groundwater Volume Pumped**
**Water Code Section 10631(4) and 10631(4)(c)**

| | |
|---|---|
| ☐ | Check the box if the Supplier does not pump groundwater. Proceed to the next table. |
| ☑ | Check the box if all or part of the groundwater described below is desalinated. (OPTIONAL) |

| Groundwater Type **Drop Down List** May use each category multiple times | Potable or Non-Potable (OPTIONAL) **Drop down list** | Location or Basin Name | 2021 (AF) | 2022 (AF) | 2023 (AF) | 2024 (AF) | 2025 (AF) |
|---|---|---|---|---|---|---|---|
| **Add additional rows as needed** | | | | | | | |
| Alluvial Basin | Potable | Sacramento Valley Basin | 645 | 501 | 351 | 72 | 49 |
| | | **Total** | 645 | 501 | 351 | 72 | 49 |

**DWR NOTES:**
**Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.

**NOTES**

### 6.2.3 Surface Water

Concow Creek is a minor stream within the Feather River Watershed and drains into Lake Oroville. The District's primary water supply system is reliant upon water captured and stored from the Concow Creek watershed in the Concow Reservoir. In August 1923, the District purchased land from the Pacific Gas & Electric Company (PG&E) for the purpose of development of a reservoir. Construction of the Concow Dam began in November of 1923 and was completed in December 1924. The acreage of Concow Reservoir watershed is estimated by DWR as 9,587 acres. Flow in the catchment area is seasonal and responds to and follows the pattern of precipitation. Elevations range from 2,000 feet at the base of Concow Dam to 3,600 feet at the uppermost elevation in the watershed.

In the early years, Concow Reservoir water was used almost solely for irrigation; almost all residences used the District water for domestic purposes. There were a few private wells in the District, as the majority of residences could not afford to install wells as the hardpan layers in the Thermalito area made it cost prohibitive to drill.

Construction of the Oroville Dam and appurtenant facilities of the State Water Project in the 1960's provided an alternative means of conveying the District's Concow water to the service area. In 1965 the District entered into an agreement with DWR to release its share of Concow water into the West

Branch of the Feather River, either by way of Concow Creek or through the PG&E Lime Saddle power plant. In 1966 Oroville Dam and Thermalito Diversion Dam were added to the water rights license as points of power diversion and re-diversion to the District. In 1971, the District's agreement with DWR was amended in 1971 to allow delivery of Concow water via Concow Creek to Lake Oroville. DWR gives credit for water delivered and provides an equivalent amount of Lake Oroville water to the District delivered through the Thermalito Power Canal. The District has a water right of 8,200 acre feet from the Concow watershed and at no time shall the reservoir capacity drop below 1,000 acre-feet to accommodate the fish population. When full, the Concow Reservoir has a capacity of 7,225 acre feet.

The District's water system has changed throughout the years with alterations in conveyance routes and systems, joint agreements with other agencies including PG&E, California Water Service and DWR, variations in the primary sources of water used, and acquisition of treatment facilities for domestic consumption of surface water.

The District has developed a conjunctive water system utilizing both surface and groundwater supplies. Surface water supplies from the Concow Reservoir comprise the primary source.

### 6.2.4 Stormwater

Stormwater is not projected for beneficial reuse within the service area of the District.

### 6.2.5 Wastewater and Recycled Water

The City of Oroville operates and maintains a sewage collection system in portions of the District's service area. The sewage collection systems of the City of Oroville terminate at Sewage Commission – Oroville Region's (SC-OR) treatment facility. SC-OR's treated effluent is discharged to the Feather River south of the City of Oroville. SC-OR does not operate a recycled water program. Thus, recycled water is not available to the District for use as a water source.

| Submittal Table 6-2 Retail: Wastewater Collected Within Service Area<br>Water Code Section 10633(a) | | | | |
|---|---|---|---|---|
| ☐ | Check the box if there is no wastewater collection system.<br>Proceed to the next table. | | | |
| | Percentage of 2025 service area served by wastewater collection system (OPTIONAL) | | | |
| | Percentage of 2025 service area population served by wastewater collection system (OPTIONAL) | | | |
| **Wastewater Collection** | | | **Recipient of Collected Wastewater** | |
| Name of Wastewater Collection Agency | Wastewater Volume Metered or Estimated?<br>OPTIONAL<br>**Drop Down List** | Volume of Wastewater Collected from UWMP Service Area 2025 (AF) | Name of Wastewater Treatment Plant (WWTP) and Place ID Number<br>**Drop down list** | Is WWTP Located Within UWMP Area?<br>**Drop Down List** |
| Add additional rows as needed | | | | |
| TWSD | Metered | 502 | Sewerage Commission Oroville Region WWTP, Place ID 246251 | No |
| **Total Wastewater Received from UWMP Service Area in 2025:** | | 502 | | |
| **DWR NOTES: Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.<br>**Additional Guidance**: See Appendix M, Section M.21 for detailed guidance on this table. | | | | |
| **NOTES:** | | | | |

No recycled water supply is expected to be available for the District's service area within the next 20 years. This is primarily because potential customers are approximately three miles from the treatment plant, and the costs of transmission and distribution of the recycled water could not be justified. There is potential for recycling water for irrigation along the freeway corridor and in process water for industrial uses or a power plant near the SC-OR treatment plant. Interest has been expressed, but no progress forward has taken place thus far. Therefore, the current projected recycled water supply for the District's service area through 2045 is 0 AFY. The District has not implemented any incentive programs to encourage recycled water use because they do not own and operate the wastewater system. The implementation of a recycled water program would involve longer-term measures and require regional participation by other agencies.

| Submittal Table 6-3 Retail: Wastewater Treatment and Outcomes Within UWMP Service Area<br>Water Code Section 10633(b) | |
|---|---|
| ☑ | **Check the box if no wastewater is treated or disposed of within the UWMP service area.**<br>Proceed to the next table. |

| Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area<br>Water Code Section 10633 (c),(d),(e) | |
|---|---|
| ☑ | Check box if recycled water is not used and is not planned for use within the service area of the supplier. The supplier will only complete the column on "Potential Recycled Water Use" and submit an accompanying narrative on the feasibility of that potential recycled water use. |

| Submittal Table 6-5 Retail: 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual<br>Water Code Section 10633(e) | |
|---|---|
| ☑ | Check the box if recycled water was not used in 2025 nor previously projected for use in 2020.<br>Proceed to the next table. |

### 6.2.6 Desalinated Water

There are no opportunities for the development of desalinated water in the District. The District is located in the inland Central Valley, which is more than 120 miles from potential sources of saline water.

### 6.2.7 Water Exchanges and Transfers

The District has surplus water in most years. Thus, there is a potential to transfer a portion of this water to other water agencies. In 2012, the District transferred 1,753 AF of water to the Westlands Irrigation District. The District will continue to explore these possibilities as a means to offset supply deficiencies in other service areas and as a means of generating revenues to provide system improvements to the District.

### 6.2.8 Future Water Projects

The District currently does not have future project planned with the objective of increasing water supply.

In 2019, the District removed its existing 1.0 MG welded steel clearwell tank and replaced it with a 1.0 MG glass-steel fused tank. In 2020, the 2.5 MG welded steel distribution tank was also replaced with a 2.5 MG glass-steel fused tank. Neither of the projects increased the storage capacity, but it significantly improved contact time and turn-over rates for both tanks. This was primarily due to reconfigured inlet and outlet pipes.

| Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs<br>Water Code Section 10631(f) | |
|---|---|
| ☑ | Check the box if there are no expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply.<br>Proceed to the next table. |

### 6.2.9 Summary of Existing and Planned Sources of Water

*Water Code 10631*

*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…*

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

*(h) An urban water supplier that relies upon a wholesale agency for source of water shall provide the wholesale agency with water use projections from that agency for the 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, 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 of 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).*

**Submittal Table 6-8 Retail: Water Supplies — Actual**
**Water Code Section 10631(b)**

| Water Supply | Additional Description (as needed) | 2025 | | |
|---|---|---|---|---|
| **Drop down list** May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool | | **Potable or Non-Potable** (after treatment if treated) (OPTIONAL) Drop Down list | Actual Volume (AF) | Total Entitlement (OPTIONAL) See 'DWR Notes' below (AF) |
| Add additional rows as needed | | | | |
| Groundwater (not desalinated) | | Potable | 49 | |
| Surface water (not desalinated) | | Potable | 8,200 | 8,200 |
| | | Subtotal Potable | 8,249 | 8,200 |
| | | Subtotal Non-Potable | 0 | 0 |
| | | **Total** | 8,249 | 8,200 |

**DWR NOTES:**
**Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.
**Total Entitlement:** e.g. Water Right, Groundwater Allocation, Contracted Amount.

**NOTES:**

| Submittal Table 6-9 Retail: Water Supplies — Projected<br>Water Code Section 10631 (b) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Water Supply** | | | **Projected Water Supply (Report to the Extent Practicable)** | | | | | | | | | |
| **Drop down list**<br>May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool | Additional Detail on Water Supply | **Potable or Non-Potable** (after treatment if treated) (OPTIONAL)<br>Drop Down list | **2030** | | **2035** | | **2040** | | **2045** | | **2050 (opt)** | |
| | | | Reasonably Available Volume (AF) | Total Entitlement (OPTIONAL)<br>See 'DWR Notes' below (AF) | Reasonably Available Volume (AF) | Total Entitlement (OPTIONAL)<br>See 'DWR Notes' below (AF) | Reasonably Available Volume (AF) | Total Entitlement (OPTIONAL)<br>See 'DWR Notes' below (AF) | Reasonably Available Volume (AF) | Total Entitlement (OPTIONAL)<br>See 'DWR Notes' below (AF) | Reasonably Available Volume (AF) | Total Entitlement (OPTIONAL)<br>See 'DWR Notes' below (AF) |
| Add additional rows as needed | | | | | | | | | | | | |
| Groundwater (not desalinated) | | Potable | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 |
| Surface water (not desalinated) | | Potable | 2,222 | 8,200 | 2,383 | 8,200 | 2,556 | 8,200 | 2,742 | 8,200 | 2,942 | 8,200 |
| Subtotal Potable | | | 2,822 | 8,800 | 2,983 | 8,800 | 3,156 | 8,800 | 3,342 | 8,800 | 3,542 | 8,800 |
| Subtotal Non-Potable | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | | | 2,822 | 8,800 | 2,983 | 8,800 | 3,156 | 8,800 | 3,342 | 8,800 | 3,542 | 8,800 |
| **DWR NOTES:**<br>**Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3.<br>**Total Entitlement:** e.g. Water Right, Groundwater Allocation, Contracted Amount. | | | | | | | | | | | | |
| **NOTES:** | | | | | | | | | | | | |

## 6.3 Energy Use

*Water Code Section 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 non-treated 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*

The TWSD Treatment Plant's Solar Energy System was installed in 2012 in order to defray utility costs to operate the treatment facility. Power performance capabilities are monitored in real-time, and monthly analysis is conducted. For the calendar year of 2020, on average the power demand for operation of the treatment plant was completely provided by on-site solar. The months of June through October are the highest months for power demand and on average the on-site solar provides 80% of the demand with the other months of the year exceeding the demand by 40% on average.

## *Optional* Submittal Table O-1B: Recommended Energy Reporting - SINGLE DELIVERY PRODUCT - TOTAL UTILITY APPROACH

| | | | | |
|---|---|---|---|---|
| **Water Delivery Product** drop down list (If delivering more than one type of product recommend using Table O-1C) | Retail Potable Deliveries | **Only for Water Delivery Products Under the Urban Water Supplier's Operational Control** | | |
| Start Date of Reporting Period | 1/1/2025 | **Sum of All Water Management Processes** | **Non-Consequential Hydropower** | |
| End Date of Reporting Period | 12/31/2025 | | | |
| Is upstream embedded energy in the values reported? | No | | | |
| Units of Measure for Water | AF | **Total Utility** See DWR NOTES | **Hydropower** | **Net Utility** |
| Volume of Water Entering Process | | 2,292 | - | 2,292 |
| Energy Consumed (kWh) | | 635,852 | - | 635,852 |
| Energy Intensity (kWh/vol. converted to MG) | | 851 | - | 851 |

**DWR NOTES:**
**Total Utility:**The volume of water entered in the "Total Utility" column should equal the volume of water entering the distribution system (excluding recycled water); in most cases, this is the total volume calculated in UWMP Table 4-1: 2025 Actual Total Uses for Potable and Non-Potable Water. Note if recycled water is included in your Submittal Table 4-1, you must exclude it from your volume in this table.

**Quantity of Self-Generated Renewable Energy**

| | |
|---|---|
| 730,570 | kWh |

**Data Quality** (Estimate, Metered Data, Combination of Estimates and Metered Data)

Metered Data

**Data Quality Narrative:**

Both treatment plant energy used and solar energy produced are metered.

**Narrative:**

The TWSD treatment plant utilized 635,852 kwh. The solar production at the plant was 730,570 kwh, bringing the net energy use to -94,718 kwh in 2025.

**NOTES:**

# CHAPTER 7 – WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENT

This chapter addresses the reliability of the District's 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 other. Based on available historical information and projections of future water uses, regulatory and legal constraints, and hydrological and environmental conditions, including climate change, TWSD has made its best determination of the future reliability of the District's water supplies.

This chapter includes the following sections:



In this 2020 UWMP, water supply reliability is evaluated in two assessments: 1) the Water Service Reliability Assessment and 2) the Drought Risk Assessment (DRA). The Water Service reliability assessment compares projected supply to projected demand for three sets of hydrological conditions: a normal year, a single dry year, and a drought period lasting five consecutive years. The DRA is a new requirement in the UWMP that assesses water supply reliability under a severe drought period. The hydrologic conditions yielding the least supply are overlain the population estimates for the next five consecutive years in order to simulate a five year drought period from 2021 to 2025. Factors affecting reliability, such as climate change, regulatory requirements and localized watershed conditions, are also considered to prepare more realistic assessments.

## 7.1 Water Service Reliability

*Water Code Section 10635 (a)*

*Every urban water supplier shall include, as part of its urban water management plan, as 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 normal water year, a single dry water year, and a drought lasting more than five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including population projections within the service area of the urban water supplier.*

| *Optional* Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment) | | | |
|---|---|---|---|
| **Year Type** | **Base Year** If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2024-2025, use 2025 | **Available Supplies if Year Type Repeats** | |
| | | ☐ | Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. **Location:** [insert location from UWMP] |
| | | Quantification of available supplies is provided in this table as either volume only, percent only, or both. | |
| | | **Volume Available (AF)** | **% of Average Supply** |
| Average Year | 2025 | 2072 | 25% |
| Single-Dry Year | 2013 | 2487 | 30% |
| Consecutive Dry Years 1st Year | 2001 | 2688 | 33% |
| Consecutive Dry Years 2nd Year | 2002 | 2914 | 35% |
| Consecutive Dry Years 3rd Year | 2003 | 2575 | 31% |
| Consecutive Dry Years 4th Year | 2004 | 2724 | 33% |
| Consecutive Dry Years 5th Year | 2005 | 2547 | 31% |
| **DWR NOTES:** Supplier may use multiple versions of Submittal Table 7-1 R if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Submittal Table 7-1 R, in the "Note" section of each submittal table, state that multiple versions of Submittal Table 7-1 R are being used and identify the particular water source that is being reported in each submittal table. **Units of measure (AF, CCF, MG**) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table reports the units of measure reported in Submittal Table 2-3. | | | |
| **NOTES:** | | | |

The District's surface water source is from the Feather River watershed above Lake Oroville, including runoff from Concow Creek, which is stored in Concow Reservoir. The water is conveyed via Concow Creek to Lake Oroville. Downstream from the Oroville Dam, water is moved through the SWP's facilities, including the Thermalito Complex (comprised of the Thermalito Diversion Pool and Power Canal). The District draws its water from the Thermalito Power Canal to be treated at the District's WTP. Concow Reservoir provides the majority of the water needs for the District. Under normal conditions, surface water is conveyed through the SWP facilities without issue with regard to supply and reliability. However, in 1997 there was an occurrence when water from Lake Oroville had water

quality issues with regard to turbidity and the District was unable to draw water from the Thermalito Power Canal. However, this issue was resolved as a result of the 2008 microfiltration system addition at the WTP.

An average of approximately 14.5 percent of the District's water is provided from the District's four groundwater wells). Groundwater is drawn from the East Butte Subbasin. Groundwater used by the District is treated with sodium hypochlorite as a preventative procedure against possible biological contamination. In the future, depending on climatic changes and drought conditions (discussed further below), groundwater supplies may be subject to environmental and climatic issues that reduce reliability.

The District recognizes that variations in weather can result in different quantities of water supplied within the watershed. In some years, dry weather or drought conditions may occur which will result in varying degrees of water shortage. The District also recognizes that future climate change may impact the intensity and duration of future droughts.

## 7.2 Supply and Demand

Normal Year

Water supply and demand patterns change during normal, single dry, and multiple dry years. To analyze these changes, the District relies on historical usage to document expected changes in future usage in water demand; such as assuming a reduced demand during wet years or an initial increased demand due to additional irrigation needs caused to dry conditions, followed by a decrease in demand due to awareness of drought conditions.

Table 7-2, below indicates that supplies will be reliable throughout the planning horizon of the UWMP and that no supply deficiencies are expected.

**Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison**
**Water Code Section 10635 (a)**

| | 2030 (AF) | 2035 (AF) | 2040 (AF) | 2045 (AF) | 2050 (AF) |
|---|---|---|---|---|---|
| Supply totals (autofill from Submittal Table 6-9 R) | 2,822 | 2,983 | 3,156 | 3,342 | 3,542 |
| Use totals (autofill from Submittal Table 4-2 R) | 2,223 | 2,383 | 2,557 | 2,743 | 2,942 |
| Surplus/(shortfall) | 599 | 600 | 599 | 599 | 600 |

**DWR NOTES : Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3.

**NOTES:**

Single Dry Year

In general and from operational records, the District's demand had shown to decrease during a single-dry year as compared to normal years. The water demand generally returns close to that of a normal dry year, primarily due to maintenance of landscaping and other high water uses what would normally be supplied by precipitation.

The District assumes that the total supply will equal the demand in all future years. Therefore, the supply is 100 percent reliable in single dry years, as shown in Table 7-3.

**Submittal Table 7-3 Retail: Single Dry Year Supply and Use Comparison Water Code Section 10635(a)**

| | 2030 (AF) | 2035 (AF) | 2040 (AF) | 2045 (AF) | 2050 (AF) |
|---|---|---|---|---|---|
| Supply totals | 8,800 | 8,800 | 8,800 | 8,800 | 8,800 |
| Use totals | 2,222 | 2,383 | 2,556 | 2,742 | 2,942 |
| Surplus/(shortfall) | 6,578 | 6,417 | 6,244 | 6,058 | 5,858 |

**DWR NOTES : Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3.

NOTES

Multiple Dry Years

Table 7-4 below contains supply and demand estimates for a multiple dry year scenario. These data suggests that District has confidence that the water supply will exceed the water demand through a multi-year drought.

**Submittal Table 7-4 Retail: Multiple Dry Years Supply and Use Comparison**
**Water Code Section 10635(a)**

| | | 2030 (AF) | 2035 (AF) | 2040 (AF) | 2045 (AF) | 2050 (AF) |
|---|---|---|---|---|---|---|
| **First year** | Supply totals | 8,800 | 8,800 | 8,800 | 8,800 | 8,800 |
| | Use totals | 2,222 | 2,383 | 2,556 | 2,742 | 2,942 |
| | Surplus/(shortfall) | 6,578 | 6,417 | 6,244 | 6,058 | 5,858 |
| **Second year** | Supply totals | 8,800 | 8,800 | 8,800 | 8,800 | 8,800 |
| | Use totals | 2408 | 2583 | 2770 | 2972 | 3189 |
| | Surplus/(shortfall) | 6,392 | 6,217 | 6,030 | 5,828 | 5,611 |
| **Third year** | Supply totals | 8,800 | 8,800 | 8,800 | 8,800 | 8,800 |
| | Use totals | 2151 | 2307 | 2474 | 2655 | 2848 |
| | Surplus/(shortfall) | 6,649 | 6,493 | 6,326 | 6,145 | 5,952 |
| **Fourth year** | Supply totals | 8,800 | 8,800 | 8,800 | 8,800 | 8,800 |
| | Use totals | 1944 | 2084 | 2236 | 2399 | 2574 |
| | Surplus/(shortfall) | 6,856 | 6,716 | 6,564 | 6,401 | 6,226 |
| **Fifth year** | Supply totals | 8,800 | 8,800 | 8,800 | 8,800 | 8,800 |
| | Use totals | 2084 | 2235 | 2398 | 2572 | 2760 |
| | Surplus/(shortfall) | 6,716 | 6,565 | 6,402 | 6,228 | 6,040 |

**DWR NOTES: Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3.

**NOTES: Based on the five driest years from historical record 2001-2020, noted as 2007-2011.**

Management Tools and Options

*Water Code Section 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.*

The District has adopted a Water Shortage Contingency Plan that corresponds to specific levels of water supply shortage, and thus promotes water conservation. At each higher stage the District will become more aggressive in requiring water use reductions from its customers. These stages are designed to guide District personnel in making informed decisions during water shortages.

## 7.3 Drought Risk Assessment

*Water Code Section 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.*

In 2004, the Butte County Board of Supervisors adopted the Drought Preparedness and Mitigation Plan through Resolution 04-200. A major element of the Drought Preparedness and Mitigation Plan was the creation of the Drought Task Force. Through the Drought Taskforce, the Board of Supervisors receives recommendations on current conditions and actions that the county should take. Any time the Drought Task Force is activated, TWSD will participate as a member of the public in order to obtain and share any relevant data sets.

In accordance with Water Code Section 10612, the DRA is based on the five driest consecutive years on record. Table 7-5 below incorporates 2020 consumption data, DOF/BCAG population estimates for 2020-2040, and watershed yield.

| Submittal Table 7-5 Retail: Five-Year Drought Risk Assessment<br>Water Code Section 10635(b)(3) | |
|---|---|
| **2026** | **Total** |
| Total Water Use (AF) | 2,113 |
| Total Supplies (AF) | 8,800 |
| Surplus/Shortfall w/o WSCP Action | 6,687 |
| **2027** | **Total** |
| Total Water Use (AF) | 2,155 |
| Total Supplies (AF) | 8,800 |
| Surplus/Shortfall w/o WSCP Action | 6,645 |
| **2028** | **Total** |
| Total Water Use (AF) | 2,198 |
| Total Supplies (AF) | 8,800 |
| Surplus/Shortfall w/o WSCP Action | 6,602 |
| **2029** | **Total** |
| Total Water Use (AF) | 2,242 |
| Total Supplies (AF) | 8,800 |
| Surplus/Shortfall w/o WSCP Action | 6,558 |
| **2030** | **Total** |
| Total Water Use (AF) | 2,287 |
| Total Supplies (AF) | 8,800 |
| Surplus/Shortfall w/o WSCP Action | 6,513 |
| **DWR NOTES: Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. | |
| **NOTES:** | |

# CHAPTER 8 - WATER SHORTAGE CONTINGENCY PLANNING

The WSCP is a detailed proposal for how a supplier intends to act in the case of an actual water shortage condition. This plan is part of good drought policy even if a supplier's water supply appears to have low probability of shortage conditions, as it improves preparedness for droughts and other impacts on water supplies. This WSCP anticipates a water supply shortage and provides pre-planned guidance for managing and mitigating a supplier's shortage. A well-structured WSCP allows real-time water supply availability assessment and structured steps designed to respond to actual conditions, to allow for efficient management of any shortage with predictability and accountability. In severe drought conditions, a supplier's WSCP serves as its road map for action for how to proceed through various levels of shortage.

*Water Code Section 10632.3*
*It is the intent of the Legislature that, upon proclamation by the governor of a state of emergency under the California Emergency Services Act (Chapter 7 (commencing with section 8550) of Divisions 1 of Title 2 of the Governmental Code) based on drought conditions, the board defer to implementation of locally adopted water shortage contingency plans to the extent practicable.*

As Part of its UWMP, Water Code Section 10632 requires suppliers to prepare and adopt a WSCP that consists of each of the following elements:

- 8.1 Water Supply Reliability Analysis
- 8.2 Annual Water Supply and Demand Assessment Procedures
- 8.3 Six Standard Water Shortage Stages
- 8.4 Shortage Response Actions
  - 8.4.1 Demand Reduction
  - 8.4.2 Supply Augmentation
  - 8.4.3 Operational Enhancements
  - 8.4.4 Rationing Stages to Address Water Supply Shortages
  - 8.4.5 Emergency Response
  - 8.4.6 Seismic Risk Assessment and Mitigation Plan
- 8.5 Communication Protocols
- 8.6 Compliance and Enforcement
- 8.7 Legal Authorities
- 8.8 Financial Consequences of WSCP Activation
- 8.9 Monitoring and Reporting
- 8.10 WSCP Refinement Procedures
- 8.11 Special Water Feature Distinction
- 8.12 Plan Adoption, Submittal, and Availability

## 8.1 Water Supply Reliability Analysis

*Water Code Section 10632 (a)(1)*
*The Analysis of water supply reliability conducted pursuant to Section 10635.*

The District's surface water source is from the Feather River watershed above Lake Oroville, including runoff from Concow Creek, which is stored in Concow Reservoir. The water is conveyed through

SWP's facilities, including the Thermalito Complex (comprised of the Thermalito Diversion Pool and Power Canal). The District draws it water from the Thermalito Power Canal to be treated at the District's WTP. Concow Reservoir provides the majority of the water needs for the District. An average of approximately 14.5 percent of the District's water is provided from the District's four groundwater wells. Ground water is drawn from the East Butte Subbasin.

In the future, considering drought conditions, reservoir and ground water supplies are projected to be -adequate and reliable to meet the current and projected demand through 2045.

## 8.2 Annual Water Supply and Demand Assessment Procedures

*Water Code Section 10632 (a)(2)*
*The procedures used in conducting an annual water supply and demand assessment that include, at a minimum, both of the following:*
*(A) The written decision-making process that an urban water supplier will use each year to determine its water supply reliability.*
*(B) The key data inputs and assessment methodology used to evaluate the urban water supplier's water supply reliability for the current year and one dry year, including all of the following:*
*(i) Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.*
*(ii) Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.*
*(iii) Existing infrastructure capabilities and plausible constraints.*
*(iv) A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply demand assessment*
*(v) A description and quantification of each source of water supply*

*Water Code Section 10632.1*
*An urban water supplier shall conduct an annual water supply and demand assessment pursuant to subdivision (a) of Section 10632 and, on or before July 1 of each year, submit an annual water shortage assessment report to the department with information for an anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier's water shortage contingency plan. An urban water supplier that relies upon the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, on or by July 1 of each year, whichever is later.*

If the available water supply continues to remain greater than customer demand, no further action will be required. However, if in any given year, the typical customer demand appears to be greater than available supply, the TWSD Board of Directors may enact any stage of the Water Shortage Contingency Plan (WSCP) by adopting a resolution in response to local or regional water supply conditions. Several data sources will be consulted, including but not limited to, internal and external hydraulic data, as well as all customer consumption records. The WSCP may be enacted based on a number of conditions, including:

- An actual or potential local water supply restriction or emergency affecting the TWSD system;

- A collective recommendation from Butte County Water and Resource Conservation and the City of Oroville;
- A formal water supply shortage notification by the Governor;

The Conservation Stages will normally be implemented in a progressive manner; however I may be necessary for the District to skip stages in the use reduction plan in response to catastrophic supply reductions. In general, conservation/use reduction levels will be set according to the anticipated reduction in available water supplies.

The District takes seriously the charge to protect the resource for all available beneficial uses, and will continue to advance internal abilities to accurately conduct Annual Water Supply and Demand Assessments over the course of the next five years. At such time that the Department of Water Resources publishes its stand-alone guidance document the District will follow that framework, in the meantime, this WSCP outlines District specific procedures for conducting the Annual Assessment.

## 8.3 Six Standard Water Shortage Stages

*Water Code Section 10632(a)(3)*
*(A) Six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortage. Urban water suppliers shall define these shortage levels based on the suppliers water supply conditions, including percentage reductions in water supply, changes in groundwater levels, changes in surface elevation or level of subsidence, or other changes in hydrological or other local conditions indicative of the water supply available for use. Shortage levels shall also apply to catastrophic interruption of water supplies, including, but not limited to, a regional power outage, an earthquake, and other potential emergency events.*
*(B) An urban water supplier with an existing water shortage contingency plan that uses different water shortage levels may not comply with the requirement in subparagraph (A) by developing and including a cross-reference relating its existing categories to the six standard water shortage levels.*

Each of the below listed water shortage responses is intended to involve District customers in the process of reducing consumer demand during years of diminished supply due to reduced precipitation or any other event that could significantly reduce supply.

| Submittal Table 8-1<br>Water Shortage Contingency Plan Levels | | |
|---|---|---|
| **Shortage Level** | **Percent Shortage Range** | **Shortage Response Actions**<br>**(*Narrative description)*** |
| 1 | Up to 10% | Request voluntary customer conservation measures be implemented. Maintain an ongoing public information campaign such as "Water Wise" informational handouts. Maintain school educational programs. |
| 2 | Up to 20% | Increase and continue all actions from level 1. There shall be no hose washing of sidewalks, walkways, buildings, walls, patios, driveways, parking areas or other paved surfaces, except to eliminate dangerous conditions for the public. Washing of motor vehicles, trailers, boats, and other equipment shall be done with hand held bucket and hose equipped with a positive shut-off nozzle for rinses. All water users shall promptly repair all leaks. Outside water uses between hours of 12:00 noon and 6:00 pm will be prohibited. Use of potable water in fountain or decorative water fixtures will be prohibited unless the fixture has a water circulation system. Monitor water use for compliance with reduction targets. |
| 3 | Up to 30% | Restriction in levels 1 and 2 shall be in effect, except that the restrictions on watering lawn, landscape, or other turf area shall be modified to allow watering every third day, except between the hours of 12:00 noon to 6:00 PM. The use of water from fire hydrants shall be limited to fire fighting and related activities and other uses of water for municipal purposes shall be limited to activities necessary to maintain the public health, safety, and welfare. |
| 4 | Up to 40% | Restrictions listed in levels 1-3 shall be in effect, except that there shall be no residential outside watering of lawn, landscaping, and other turn areas at any time. |
| 5 | Up to 50% | Restrictions listed in levels 1-4 shall be in effect. Commercial nurseries, schools, parks, and other public open spaces and landscaped areas shall be prohibited from watering lawn, landscaping, and other turf areas more often than every third day between the hours of 6:00 AM and 6:00 PM. |
| 6 | >50% | Discontinue service for repeat offenders. Monitor water use weekly for compliance with reduction targets. Prohibit potable water use for landscape irrigation. |

## 8.4 Shortage Response Actions

*Water Code Section 10632 (a)(4)*
*Shortage response actions that align with the defined shortage levels and include, at a minimum, all of the following:*
*(A) Locally appropriate supply augmentation*
*(B) Locally appropriate demand reduction action to adequately respond to shortages*
*(C) Locally Appropriate operational changes*
*(D) Additional, mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions*
*(E) For each action, an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action*

### 8.4.1 Supply Augmentation

The following Supply Augmentation Actions, found in Table 8.2, correspond to the six water shortage levels outlined in the above section.

| **Submittal Table 8-2 Retail: Supply Augmentation and Other Actions<br>Water Code Section 10632(a)(4)(A),(C) and (E)** | | | | |
|---|---|---|---|---|
| Yes | Is the Supplier completing this table using the standard six levels? (yes/no) | | | |
| Shortage Level | Supply Augmentation Methods and Other Actions by Water Supplier<br>**Drop down list**<br>These are the only categories that will be accepted by the WUEdata online submittal tool | How much is this going to reduce the shortage gap? | | Additional Explanation or Reference (OPTIONAL) |
| | | Volume or Percentage<br>Drop down | Shortage Gap Reduction Value (May be a range) (AF) | |
| Add additional rows as needed | | | | |
| 1 | Expand Public Information Campaign | Percentage | 5 | |
| 2 | Improve Customer Billing | Percentage | 1 to 3 | |
| 3 | Implement or Modify Drought Rate Structure or Surcharge | Percentage | 6 | |
| 4 | Stored Emergency Supply | Percentage | 10 | |
| 5 | Other Actions (describe) | Percentage | 10 | Interconnect with Calwater Oroville |
| 6 | Other Purchases | Percentage | 10 | Purchase Table A or DWR |
| **DWR NOTES: Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. | | | | |
| NOTES: | | | | |

### 8.4.2 Demand Augmentation

The following Demand Reduction Actions, found in Table 8.3, correspond to the six water shortage levels outlined in the above section.

| **Submittal Table 8-3 Retail: Demand Reduction Actions**<br>**Water Code Section 10632(a)(4)(B),(D), and (E)** | | | | | |
|---|---|---|---|---|---|
| Yes | Is the Supplier completing this table using the standard six levels? (yes/no) | | | | |
| Shortage Level | Demand Reduction Actions<br>**Drop down list**<br>These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply. | How much is this going to reduce the shortage gap? | | Additional Explanation or Reference (OPTIONAL) | Penalty, Charge, or Other Enforcement?<br>**For Retail Suppliers Only**<br>Drop Down List |
| | | Volume or Percentage<br>Drop down | Shortage Gap Reduction Value (May be a range) (AF) | | |
| Add additional rows as needed | | | | | |
| 1 | Expand Public Information Campaign | Percentage | 5 | | No |
| 2 | Improve Customer Billing | Percentage | 1 to 3 | | No |
| 2 | Increase Frequency of Meter Reading | Percentage | 2 | | No |
| 2 | Landscape - Limit landscape irrigation to specific times | Percentage | 4 | | Yes |
| 3 | Landscape - Limit landscape irrigation to specific times | Percentage | 6 | More stringent timing reductions | Yes |
| 3 | Landscape - Limit landscape irrigation to specific days | Percentage | 8 | | Yes |
| 4 | Landscape - Prohibit all landscape irrigation | Percentage | 6 | | Yes |
| 5 | Landscape - Other landscape restriction or prohibition | Percentage | 6 | | Yes |
| 6 | Other | Percentage | 10 | Discontinue service for repeat offenders | Yes |
| **DWR NOTES: Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Submittal Table 2-3. | | | | | |
| NOTES: | | | | | |

### 8.4.3 Supply Augmentation

The District has completed multiple demand and supply assessment scenarios, and at this time, none of those scenarios would require supply augmentation.

### 8.4.4 Operational Enhancements

The District continues to implement water conservation and water loss improvements. Improved monitoring, analysis and tracking of system operations and customer usage will continually improve the quality of annual water reliability assessments. During time of supply shortage, the District will reduce system flushing, increase hydrant and filling station security, and intensify the meter calibration program.

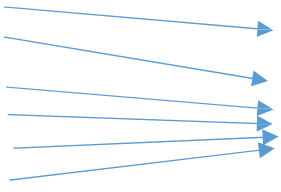
### 8.4.5 Rationing Stages to Address Water Supply Shortages

As a water purveyor, the District must provide the minimum health and safety water needs of the community. Although the District has adequate supplies to serve its customers even if the available supply is reduced to 50 percent of its total surface and groundwater supplies. However, the District believes that it is important to respond to regional and state wide water conditions and use water wisely.

The District has adopted a Water Shortage Contingency Plan that corresponds to specific levels of water supply shortage, and thus promotes water conservation. At each higher stage the District will become more aggressive in requiring water use reductions from its customers. The decision to enter a new stage will be made by careful consideration of a variety of factors including supply, availability of alternative supplies, time of year, and regional coordinated activities. These stages are designed to guide District personnel in making informed decisions during water shortages. A certain amount of flexibility is built in to the stages to allow for the unique characteristics of each water shortage event and the unique characteristics within the district.

Water Code 10632(a)(3)(B) authorizes suppliers to continue using their own water shortage levels that may have been included in past WSCP. If the supplier chooses to continue to do so in its new WSCP, it must include a narrative or graphic describing the supplier's water shortage levels in relationship to the six standard water shortage levels prescribed by statue. In other words, the supplier must provide a crosswalk that clearly translates the supplier's water shortage levels to those mandated by statue.

| 2020 WSCP Levels | Shortage Level |
|---|---|
| 1 | <10% |
| 2 | 10-20% |
| 3 | 20-30% |
| 4 | 30-40% |
| 5 | 40-50% |
| 6 | >50% |



| 2015 UWMP Stage | Shortage Level |
|---|---|
| I | 10-15% |
| II | 15-20% |
| III | 20-30% |
| IV | 30-50% |

In Stages I and II shortages, customers may adjust their interior or outdoor water use (or both), in order to meet the voluntary water reduction goal. These water conservation activities are consistent with the State Water Resources Control Board's proposed Emergency Regulations regarding residential water use in drought conditions.

Under Stage III, mandatory rationing programs would occur. The District has determined that a reduction of 30% would be required; that amount of water is sufficient for essential interior water needs with limited habitat such as trees, shrubs, and other landscape plantings, and residential grass will be to no more than two irrigations per week. To qualify for limited irrigation, all plumbing fixtures within the facility would be changed to low or ultra-low flow.

Under Stage IV mandatory rationing, which is likely to be declared only as the result of a prolonged water shortage or as a result of a disaster, all habitat irrigation will cease and the health and safety allotment would be reduced to 50 Percent of average use if the water stage should drop below 45 percent. This allotment still provides enough water for essential interior water use, plus a minimal amount of outside use.

### 8.4.6 Emergency Response

In addition to drought conditions, there are other triggers that may result in a partial loss of water supply due to mechanical failure resulting from natural disasters, chemical contamination, or other water quality issues.

The steps that Thermalito Water and Sewer District has taken to prepare for a catastrophic water supply interruption are summarized below:

1. Designed all well site infrastructure and water treatment facilities to latest UBC code.
2. Have emergency disinfection products and procedures available in case of contamination from flooding or loss of use of the surface water treatment plant facility.
3. Continue to periodically test and maintain emergency backup generators, and annually review interties with equipment rentals for first access of generators when in state of emergencies.

The District has developed an Emergency Disaster and Response Plan. This plan sets forth the necessary manpower, equipment and other resources to effectively respond to various disasters. The District also has an intertie agreement with California Water Service Company (CalWater) to provide mutual assistance during water shortage emergencies. The District has developed other emergency plans with the Department of Health Services, California Office of Emergency Services, and Butte County Office of Emergency Services. The City of Oroville Disaster Plan and the District Emergency Disaster and Response Plan Include the Following elements:

- Contamination of Water Systems
- Structural Damage from Explosive Device
- Chemical Release
- Power Outage
- Natural Events
- Water Supply Interruption

The four most likely scenarios for catastrophic water supply interruption for the District are fire, earthquake, flooding, and power outages. Provided below is a brief discussion of the actions that would be taken if there is a reduction in water supplies resulting from a catastrophic event.

Fire

In the event of a major fire, the District's water treatment and distribution storage tanks will be operated at maximum capacity.

Flooding

Flooding is a possibility in Thermalito if there should be a topping or catastrophic damage to the Oroville Dam. One danger from flooding is contamination of drinking water. The District employs disinfection procedures and stores disinfection supplies in case the drinking water system becomes contaminated. Another impact of severe flooding is that groundwater pumping and treatment equipment could become damaged. Evaluation, repair and replacement of groundwater pumping and treatment equipment are part of the District's emergency response protocol.

Reservoir Contamination

If contamination of the District's surface water supply (from Concow Reservoir via Lake Oroville) should occur, the District would implement rationing, activate the intertie agreement with Cal Water, and start pumping from the District's wells.

Major Power Outages

The District is able to operate, at full capacity, the raw water pump station and water treatment plant during power outages using a 750 KVA diesel generator. External electrical power provisions are provided at each well site and rental generators can be used at the District's wells to provide groundwater if needed.

### 8.4.7 Seismic Risk Assessment and Mitigation Plan

In the event of a major earthquake where significant portions of the distribution system or treatment facilities are damaged, District crews or contractors will work on isolating and rerouting water supplies.

In the event that the District's raw water reservoir is damaged beyond use, the District would procure water from the Butte County water right. One of the first things the District would do is flush all wells for water purity and pumping ability. All wells that were able to provide water would be put on-line. If available, the District would activate the intertie agreement with California Water Service Company (Cal Water). Construction of this interconnection was completed in early 2002. The intertie with Cal Water has a maximum capacity of 750 gallons per minute (gpm) or 3.3 AF/day.

During disasters or large- scale incidents, the Butte County Office of Emergency Management (OEM) coordinates the overall response through the Emergency Operations Center (EOC). When activated, the OC provides a central location for responding and supporting agencies to collaborate response and recovery efforts in order to effectively and efficiently provide information and deploy resources. In non-disaster times, the Butte County EOM supports and coordinates disaster planning, community

preparedness, mitigation, and training. TWSD participated in the 2019 update of the Butte County Local Hazard Mitigation Plan (LHMP) update, and the hazard mitigation planning elements specific to TWSD are incorporated in the plan as Annex G.

## 8.5 Communication Protocols

*Water Code Section 10632 (a)(5)*
*Communication protocols and procedures to inform customers, the public, interested parties, and local, regional, and state governments, regarding, at a minimum, all of the following:*
*(A) Any current or predicted shortages as determined by the annual water supply and demand assessment described pursuant to section 10632.1*
*(B) Any shortage response actions triggered or anticipated to be triggered by the annual water supply and demand assessment described pursuant to Section 10632.1*
*(C) Any other relevant communications*

This section lists a number of strategies that the Agency will employ to communicate with customers, land use and planning entities for the City of Oroville, and County of Butte, as well as community partners.

- Supply clear, consistent and understandable messaging to encourage increased voluntary conservation via billing inserts and on the website.
- Collaborate with City and County partners to Development effective communications regarding current conditions and specifically the District's WSCP.
- Regularly communicate with local, state and other elected officials in the region about the importance of achieving voluntary water conservation and encourage them to publicly promote such efforts.

## 8.6 Compliance and Enforcement

*Water Code Section 10632(a)(6)*
*For an urban retail water supplier, customer compliance, enforcement, appeal, and exemption procedures for triggered shortage response actions as determined pursuant to Section 10632.2*

In the event that restrictions or prohibitions set in place during a water shortage are violated, penalties and charges would be implemented. The penalty would take effect when Prohibition Stages II-IV are in effect and would invoke a drought rate or surcharge.

## 8.7 Legal Authorities

*Water Code Section 10632 (a)(7)*
*(A) A description of the legal authorities that empower the urban water supplier to implement and enforce its shortage response actions specified in paragraph (4) that may include, but are not limited to, statutory authorities, ordinances, resolutions, and contract provisions.*
*(B) A Statement that an urban water supplier shall declare a water shortage emergency in accordance with chapter 3 (commencing with Section 350) of Division 1. [See below]*
*(C) A statement that an urban water supplier shall coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.*

California Water Code Chapter 3 Sections 350-359 outlines that " The governing body of a distributor of a public water supply, whether publicly or privately owned and including mutual water company, shall declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection."

## 8.8 Financial Consequences of WSCP Activation

*Water Code Section 10632 (a)(8)*
*A description of the financial consequences of, and responses for, drought conditions, including, but not limited to, all of the following:*
*(A) A description of potential revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4)*
*(B) A description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4)*
*(C) A description of the cost of compliance with Chapter 3.3 (commencing with Section 365) Divisions 1. [Retail urban suppliers only]*

During water supply shortages the District would expect to see a reduction in revenue. Since all of the District's customers are metered, revenue impacts from decreasing consumer use would occur. Furthermore, although expenditures on water purchases would decrease, administration and operations and maintenance expenses for the District would remain the same, or possibly increase with additional operations and administrative activity. The amount of this reduction would depend on the total amount of water not being used and the price not being charged.

The District has established operating reserves which would fund the majority of the financial impact. After a water shortage has developed, the District may use a combination of rate adjustments, operational resource evaluations, and postponement of capital projects to address revenue impacts of the reductions in consumption that the contingency fund cannot meet.

## 8.9 Monitoring and Reporting

*Water Code Section 10632(a)(9)*
*For an urban water supplier, monitoring and reporting requirements and procedures that ensure appropriate data collected, tracked, and analyzed for purposes of monitoring customer compliance and to meet state reporting requirements.*

Thermalito Water and Sewer will continue to track monthly production and consumption data, along with monitoring hydrologic conditions throughout the watershed and Sacramento Valley. Staff will present the annual Water Supply Reliability Analysis to the Board of Directors at their publicly held meeting each year.

## 8.10 WSCP Refinement Procedures

*Water Code Section 10632(a)(10)*
*Reevaluation and improvement procedures for systematically monitoring and evaluating the functionality of the water shortage contingency plan in order to ensure shortage risk tolerance in adequate and appropriate water shortage mitigation strategies are implemented as needed.*

The TWSD Board of Directors maintains a draft resolution declaring the Water Shortage Contingency Program. This resolution remains an effective tool that may be implemented as deemed necessary by the Board of Directors, or in conjunction with a declared State of Emergency by the County of Butte or the State.

TWSD will continually make refinements to the WSCP based on real-time hydrologic conditions. As the current and historical conditions can only be used as a predictive tool, it will be necessary to make adjustments as more data is accumulated. Any updates to the WSCP will be presented to the Board of Directors and approved and adopted as required.

## 8.11 Special Water Feature Distinction

*Water Code Section 10632(b)*
*For purposes of developing the water shortage contingency plan pursuant to subdivision (a), an urban water supplier shall analyze and define water features that are artificially supplied with wither, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of Health and Safety Code.*

TWSD will consider water features separately from pools and spas in the WSCP. Non-pool or non-spa water features such as decorative water features and recreational water features may use or be able to use recycled water, whereas pools and spas much use potable water for health and safety consideration. Limitations to pools and spas may require different considerations compared to non-pool or non-spa water features.

## 8.12 Plan Adoption, Submittal, and availability

*Water Code Section 10632 (c)*
*The urban water supplier shall make available the water shortage contingency plan prepared pursuant to this article to its customers and any city or county within which it provides water supplies no later than 30 days after adoption of the water shortage contingency plan.*

TWSD will follow these steps prior to the adoption of the WSCP:
1. The Agency will provide notification to customers, City and County officials and the public at large by publishing the notice of a public hearing in a local newspaper for two consecutive weeks prior to the hearing.
2. The District will hold a public hearing to gather public feedback.
3. Following the hearing, or at a subsequent Board meeting, the Board of Directors shall adopt the WSCP.
4. The District will make the WSCP publicly available on the District website no later than 30 days after it is adopted.
5. Each time the District makes announcements regarding the WSCP, the above process shall be followed.

# CHAPTER 9 – DEMAND MANAGEMENT MEASURES

Demand management is an integral part of sustainability managing water resources in California. As population continues to grow, demand for water typically increases. This increase in water demand, coupled with reduced supplies or shifts in supplies because of climate change and other factors, can jeopardize water reliability if no mitigation is in place. To better prepare for and reduce effect caused by these situations, implementing water use-DMMs that help lower demands can improve water service reliability and help meet state and regional water conservations goals. Reducing demands can also benefit suppliers by reducing energy costs, putting the supplier in a better position for its future water security.

This chapter contains the following sections:



## 9.1 Demand Management Measures for Retail Suppliers

*Water Code Section 10631*

*(e) Provide a description of the supplier's water demand management measures. The description shall include all of the following:*

*(1)(A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measure that the supplier plan to implement to achieve its water use targets pursuant to Section 10608.20*

*(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:*

*(i) Water waste prevention ordinances*

*(ii) Metering*

*(iii) Conservation Pricing*

*(iv) Public education*

*(v) Programs to assess and manage distribution system real loss*

*(vi) Water conservation program coordination and staffing support*

*(vii) Other demand management measures that have a significant impact on water use measured in gallons per capita per day, including innovative measures, if implemented*

### 9.1.1 Metering

Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

The District has historically required meters to all services since 1955 and will continue this requirement into the future. The customer is billed a service charge with each billing and a consumption charge for all water passing through the meter.

At the present the District has 3,134 accounts and all are metered. The District replaced over 2,500 meters from 1999 to the present with the remaining 634 meter of ages ranging between 15 to 58 years old.

The District has a single billing rate for all customers and has found that raising the single rate has generated great water conservation practices by its customers. In the event of a water shortage the Board is studying a tiered system that raises the billing units by as much as 25% when a single user exceeds 1200 billing units. For multiple dwelling unit accounts there will be a dwelling unit factor applied per 1000 billing units. There are a lot of issues to consider on this, but the primary issue will establishing a life line level that is equitable for all. The Board is studying and has required more fact finding before there is any action on this issue.

### 9.1.2 Public Education and Outreach

Public Information Programs

The District promotes water conservation several ways. The primary source of conservation information to our customers is through our website and bulletin board in the office. The District also provides information to new customers encouraging water conservation. A section is dedicated to conservation and one of our most popular sites is the drought tolerant plant section.

### 9.1.3 Water Conservation Program Coordination and Staffing Support

Designation of an Official Water Conservation Coordinator

The District is not a large organization and the District's Compliance Supervisor under direct supervision under the District Manager will coordinate the water conservation activities of the District.

The District will continuously evaluate the need to provide additional resources beyond the use of the Compliance Supervisor and District Manager

### 9.1.4 Water Waste Prevention Ordinances

Water Survey Programs for Single-Family Residential and Multifamily Residential Customers

Since 2004, the District has provided water audits at the request of customers. The public has the opportunity on the District's website to schedule a water audit. This is available to all types of users in the District.

The District issues letters to customers that show a higher than normal consumption use indicating they may have a problem. The letter offers a water audit to these customers and provides information on water conservation. We conduct an average of three audits per year.

Our Utility Billing Supervisor and Compliance Supervisor conduct the audits. The customers are provided with a bucket for measuring use, a low flow showerhead, a low flow hose nozzle, toilet tank dye tablets, a toilet tank bag, and a conservation fact sheet. An interior check for leaks is conducted with a review of the customer's irrigation system.

The District will continue to offer this program in the future. It is too difficult to quantify the savings, but the positive public relations the audits supply are worth the expense to the District.

## 9.2 Reporting Implementation

System Water Audits, Leak Detection, and Repair

The District's monthly Superintendents report tracks and updates on a monthly basis the unaccounted water in the District. The percentage of lost water is consistently low due to a 13 year service line replacement program and meter replacement program. The District's main water loss sources are the old galvanized service lines and the un-accounted water loss due to old meter inaccurate readings.

The District has continued to focus on service line replacement, and meter replacement. The District started utilizing meters in 1955 and did not have a meter replacement program until 1999. Over the years the meter replacement program has shown a greater reduction of lost water than any other improvement implemented.

Monthly Superintendent reports with water system audits, leak repair, and minor mainline replacements will continuously be implemented at the District. The replacement of aging facilities is a primary focus of the District for the foreseeable future.

### 9.2.1 Implementation to Achieve Water Use Targets

All DMMs described above are meant to contribute to the District's effort to comply with its SB x7-7 2020 target GPCD.

## 9.3 Water Use Objectives

TWSD will continue to meter and track water loss, coordinate public information programs targeting customer conservation, and determine where infrastructure improvements should be prioritized.

# CHAPTER 10 - PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

This chapter provides guidance for addressing the Water Code requirements for a public hearing, the Urban Water Management Plan and Water Shortage Contingency Plan adoption process, submitting and adopted UWMP and WSCP and making these plans available to the public, plan implementation, and the process for amending an adopted UWMP and WSCP.

This chapter includes the following sections:



## 10.1 Inclusion of All 2025 Data

This UWMP contains all of the water use and planning data for the entire calendar year of 2025.

## 10.2 Notice of Public Hearing

### 10.2.1 Notice to Local Government

*Water Code Section 10621(b)*

*Every urban water supplier required to prepare a plan shall… at least 60 days prior to the public hearing on the plan… notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.*

*Water Code Section 10642*

*The urban water supplier shall provide notice of the time and place of a hearing to any city or county within which the supplier provides water supplies. Notices by a local public agency pursuant to this section shall be provided pursuant to Chapter 17.5 (commencing with Section 7290) of Division 7 of Title 1 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area…*

*Government Code Section 7291*

*…every local public agency… serving a substantial number of non-English-Speaking people, shall employ a sufficient number of qualified bilingual persons in public contact positions or as interpreters*

*to assist those in such positions, to ensure provision of information and services in the language of the non-English-Speaking person.*

There are two audiences to be notified for the public hearing: cities and counties, and the general public. On 8/25/2021 the District notified Butte County Water and Resource Conservation as well as City of Oroville Administration, and Butte County Development Services that it was developing a 2020 UWMP. Additionally, the preparation notice was sent to local wastewater collection and treatment agencies. This was in advance of the 60-day notification prior to a public hearing requirement.

| **Submittal Table 10-1 Retail: Notification to Cities and Counties<br>Water Code Section 10621(b) and 10642** | | |
|---|---|---|
| City Name | 60 Day Notice<br>**Drop Down (yes/no)** | Notice of Public Hearing<br>**Drop Down (yes/no)** |
| Add additional rows as needed | | |
| City of Oroville | Yes | Yes |
| County Name<br>**Drop Down List** | 60 Day Notice<br>**Drop Down (yes/no)** | Notice of Public Hearing<br>**Drop Down (yes/no)** |
| Add additional rows as needed | | |
| Butte County | Yes | Yes |
| **NOTES:** | | |

### 10.2.2 Notice to the Public

*Water Code Section 10642*

*Prior to adopting either [the plan or water shortage contingency plan], the urban water supplier shall make both the plan and the water shortage contingency plan available for the public inspection and shall hold a public hearing or hearings thereon. Prior to any of these hearings, notice of the time and place of the hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code [see below]. The urban water supplier shall provide notice of the time and place of a heating to any city or county within which the supplier provides water supplies.*

*Government Code Section 6066*

*Publication of notice pursuant to this section shall be once a week for two successive week. Two publications in a newspaper publishes once a week or oftener, with at least five days intervening between the respective publication dates not counting such publications dates, are sufficient. The period of notice commences upon the first day of publication and terminates at the end of the fourteenth day, including therein the first day.*

Notice to the public is included in the July 21, 2026 Board Agenda Packet.

The UWMP, along with the WSCP were both available for public access and inspection at the District's office at 410 Grand Avenue in Oroville, Ca. The document is also available to the public on the District's website at www.twsd.info, and the local library. Legal public notices were published in the local newspapers and posted at local facilities. A copy of the Legal Notice and Affidavit of Publication for the Public Hearing is attached as Appendix X.

## 10.3 Public Hearing and Adoption

*Water Code Section 10642*
*Prior to adopting either, the ]plan or water shortage contingency plan], the urban water supplier shall make both the plan and the water shortage contingency plan available for public inspection and shall hold a public hearing or hearings thereon.*

*Water Code Section 10608.26(a)*
*In complying with this part, an urban retail water supplier shall conduct at least once public hearing to accomplish all of the following:*
*(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.*
*(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.*
*(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20 for determining its urban water use target.*

The public hearing for both the UWMP and the WSCP took place at the April 19, 2022 Board of Directors meeting. The Agenda included the public hearing as an agenda item, and was properly noticed as required of a public agency.

The Thermalito Water and Sewer District prepared this 2020 Urban Water Management Plan. A public hearing for review of the Plans was held at the District Office on April 19.2022 at 2:00PM.

The 2020 UWMP and the WSCP were adopted by the District's Board of Directors on XXX XX, 2021. Attached as Appendix X are copies of the signed Resolution of Plan Adoption for both plans.

## 10.4 Plan Submittal

*Water Code Section 10621(e)*
*Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 20201*

*Water Code Section 10644(a)(1)*
*An urban water supplier shall submit to the department, the California State Library, and any city of county within which the supplier provides water Supplies a copy of it plan no later than 30 days after adoption.*

*Water Code Section 10635(c)*
*The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.*

### 10.4.1 Submitting the UWMP to DWR

After UWMP and WSCP adoption at the Jul 21, 2026 Board of Directors meeting, TWSD will electronically submit the plans and all associated references to the WUE data portal. This electronic submission will be completed on July 22, 2026

### 10.4.2 Submitting the UWMP to the CA State Library

On July 22, 2026, which is not later than 30 days after adoption at the July 21, 2026 public hearing, the District will submit a CD or hardcopy of the adopted 2025 UWMP, including the adopted WSCP, to the California State Library at:

California State Library Government Publication Section
Attn: Coordinator, Urban Water Management Plans
P.O. Box 942837 Sacramento, CA 94237-0001

### 10.4.3 Submitting the UWMP to Cities and Counties

No later than 30 days after adoption, the District will submit a copy of the adopted 2020 UWMP, including the WSCP, to any city or county to which the supplier provides water. This copy may be in an electronic format, which will satisfy Water Code Section 10635(b).

## 10.5 Public Availability

*Water Code Section 10645*
*(a) Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.*
*(b) Not later than 30 days after filing a copy of its water shortage contingency plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.*

The Thermalito Water and Sewer District prepared this 2025 Urban Water Management Plan. A public Hearing for review of the Plan was held at the District Office on July 21, 2026 and 2:00 PM.

The 2025 UWMP and WSCP were adopted by the District's Board of Directors on July 21, 2026. Attached as Appendix E are copies of the signed Resolution of the Plan Adoption for both Plans.

## 10.6 Notification to Public Utilities Commission

*Water Code Section 10621 (c)*
*An urban water supplier regulated by the Public Utilities Commission shall include its most recent plan and water shortage contingency plan as part of the supplier's general rate case filings. Per Water Code Section 10621(c), those Suppliers that are regulated by the California Public Utilities Commission (CPUC) must submit their UWMP and WSCP to the CPUC as part of its general rate case filings.*

## 10.7 Amending an Adopted UWMP or Water Shortage Contingency Plan

*Water Code Section 10621 (d)*

*The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).*

*Water Code Section 10644(a)(1)*

*Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the Supplier provides water supplies within 30 days after adoption.*

Should TWSD amend either the adopted UWMP or WSCP, each of the steps nor notification, public hearing, adoption, and submittal will be followed.

# Appendix A: Water Shortage Contingency Plan

# Water Shortage Contingency Plan

**Law 10632:** The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

## Water Shortage Stages and Triggering Mechanisms

As a water purveyor, TWSD must provide the minimum health and safety water needs of the community at all times. The water shortage response is designed to provide a minimum of 50% of normal surface and groundwater supply during a severe or extended water shortage. The rationing program triggering levels shown below were established to ensure this goal is met.

Although an actual shortage may occur at any time during the year, the District will use the critical months of May through September to determine potential restrictions.

**Table 12**
**Water Supply Shortage Stages and Conditions**
**RATIONING STAGES**

| Stage No. | Water Supply Conditions on May 1st | % shortage |
|---|---|---|
| I | Total Surface and Ground water Capacity < 9,739.7 Acre/ft | 15% |
| II | Total Surface and Ground water Capacity < 9,166.8 Acre/ft | 20% |
| III | Total Surface and Ground water Capacity < 8,020.9 Acre/ft | 30% |
| IV | Total Surface and Ground water Capacity < 5729.3 Acre/ft | 50% |

Projected water deliveries for 2035 would be 3,252.6 acre feet

## Impacts to Customers (refer to above Table 12)

In Stages I and II shortages, customers may adjust either interior or outdoor water use (or both), in order to meet the voluntary water reduction goal.

Under Stage III, mandatory rationing programs would occur. The District has determined that a reduction of 30% (Stage III) would be required; that amount of water is sufficient for essential interior water with limited habitat such as trees, shrubs and other landscape plantings, and residential grass will be limited to no more than two irrigations per week. To qualify for limited irrigation, all plumbing fixtures within the facility would be changed to low or ultra-low flow.

Under Stage IV mandatory rationing, which is likely to be declared only as the result of a prolonged water shortage or as a result of a disaster, all habitat irrigation will cease and the health and safety allotment would be reduced to 50% of average use if the water stage should drop below 45%. This allotment still provides enough water for essential interior water use, plus a minimal amount of outside use.

**Restriction on the Use of Water By Stages**

Stage I and II – 15 to 20% Reduction

1) There shall be no hose washing of sidewalks, walkways, buildings, walls, patios, driveways, parking areas or other paved surfaces and walls, except to eliminate conditions dangerous to public health or safety, or when required as surface preparation for the application of architectural coating or painting.

2) Washing of motor vehicles, trailers, boats and other types of equipment shall be done only with a hand-held bucket or a hose equipped with a positive shut-off nozzle for quick rinses. The exception: washing may be done by a commercial car wash using recycled water.

3) All water users shall promptly repair all leaks from indoor and outdoor plumbing fixtures.

4) Outside water uses between the hours of 12:00 noon and 6:00 p.m. every day will be prohibited.

Stage III - 30% Reduction

1) Restrictions listed in Stage I and II shall be in effect, except that the restrictions on watering lawn, landscape or other turf area shall be modified to allow watering every third day except between the hours of 12:00 noon to 6:00 p.m.

2) The use of water from fire hydrants shall be limited to fire fighting and related activities and other uses of water for municipal purposes shall be limited to activities necessary to maintain the public health, safety and welfare.

Stage IV - 50% Reduction

1) Restriction listed in Stage III shall be in effect, except that there shall be no residential outside watering of lawn, landscaping and other turf areas at any time.

2) Restrictions listed in Stages I, II, and III shall be in effect.

3) Commercial nurseries, schools, parks and other public open spaces and landscaped areas shall be prohibited from watering lawn, landscaping and other turf areas more often than every third day and between the hours of 6:00 a.m. and 6:00 p.m.

A water user may file an appeal for relief from any provisions of the various stages. The District manager shall develop such procedures as he or she considers necessary to resolve such appeals and shall, upon the filing by a water user of an appeal, take such steps as he or she deems reasonable to resolve the appeal.

**Water Allotment Methods**

Customer allotments are based on a three-year period. This gives the District a more accurate view of the usual water needs of each customer and provides additional flexibility in determining allotments and reviewing appeals. However, no allotment may be greater than the amount used in the most recent year of the five-year base period.

It is the intent of the District to spread the reductions equally among all customers**.** Customers may be notified of their classification and allotment by mail before the effective date of the Water Shortage Emergency. New customers will be notified at the time the application for service is made. In a disaster, prior notice of allotment may not be possible; therefore notice will be provided by other means. Any customer may appeal the District's manager's classification on the basis of use or the allotment on the basis of incorrect calculation.

**Three-Year Minimum Supply**

**Law 10632:** The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

**Three-Year Minimum Supply**

The three-year minimum supply table shown below estimates the supply based on the historical three-year driest on record. The three driest years on record correspond to the first three years of the multiple dry years estimates shown in the tables at the beginning of the plan (2007-2009).

**Table 13**
**Three-Year Estimated Minimum Water Supply-AF Year**

| Source | Normal | 2007 | 2008 | 2009 |
|---|---|---|---|---|
| Concow Reservoir | 7,200 | 7,200 | 6,759 | 7,166 |
| | | | | |

The groundwater supply is not included as there is no data to validate its capacity at this time.

# Appendix B: UWMP NOTICE

5/20/2026

Thermalito Water and Sewer District
410 Grand Ave,
Oroville, CA 95965

**NOTICE OF PREPARATION FOR 2020 URBAN WATER MANAGEMENT PLAN (UWMP).**

The Urban Water Management Planning Act (California Water Code 10608-10656) requires that Thermalito Water and Sewer Update its Urban Water Management Plan (UWMP) every 5 years.

Notice is hereby given that Thermalito Water and Sewer District (TWSD) will hold a public hearing regarding review and adoption of its Urban Water Management Plan (UWMP). The UWMP documents the Agency's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

Coordination with other water suppliers, cities, counties, and community organizations in the region is an important part of the preparation of Thermalito Water and Sewer's UWMP. In compliance with the Water Conservation Act of 2009, a draft of the 2025 UWMP will be made available for public review and a public hearing. The public hearing will be held as part of the TWSD's Board of Directors regular meeting on July 21, 2026. We will notify you when the draft is available for review, how to access it, and details regarding the public hearing.

If you would like more information regarding our 2025 UWMP please contact:

Chris Heindell
Thermalito Water and Sewer District
Phone: (530) 533-0740
Email: Cheindell@twsd.info

**Butte LAFCo**
1453 Downer St #C
Oroville, CA 95965

**Butte County Public Health Department**
695 Oleander Ave
Chico, CA 95926

**Butte County Department of Water Resources**
308 Nelson Ave
Oroville, CA 95965

**Butte County Development Services**
7 County Center Drive
Oroville, CA 95965

**City of Oroville**
1735 Montgomery Street
Oroville, CA 95965

**Lake Oroville Area Public Utility District**
1960 Elgin St.
Oroville, CA 95966

**South Feather Water & Power Agency**
2310 Oro Quincy Hwy
Oroville, CA 95966

**North Yuba Water District**
8691 La Porte Rd
Brownsville, Ca 95919

**California Water Service, Chico**
2222 Dr. Martin Luther King Jr Pkwy
Chico, CA 95928

**Sewerage Commission - Oroville Region**
2880 S 5th Ave
Oroville, CA 95965

**California Water Service, Oroville**
1905 High St
Oroville, Ca 95965

# Appendix C: Local Hazard Mitigation Plan 2024

# Annex S Thermalito Water and Sewer District

## S.1 Introduction

This Annex details the hazard mitigation planning elements specific to the Thermalito Water and Sewer District (TWSD or District), a previously participating jurisdiction to the 2019 Butte County Local Hazard Mitigation Plan (LHMP) Update. This Annex is not intended to be a standalone document but appends to and supplements the information contained in the Base Plan document. As such, all sections of the Base Plan, including the planning process and other procedural requirements apply to and were met by the District. This Annex provides additional information specific to TWSD, with a focus on providing additional details on the planning process, risk assessment, and mitigation strategy for this District.

## S.2 Planning Process

As described above, TWSD followed the planning process detailed in Chapter 3 of the Base Plan. In addition to providing representation on the Butte County Hazard Mitigation Planning Committee (HMPC), the District formulated their own internal planning team to support the broader planning process requirements. Internal planning participants, their positions, and how they participated in the planning process are shown in Table S-1. Additional details on Plan participation and District representatives are included in Appendix A.

### *Table S-1 TWSD – Planning Team*

| Name | Position/Title | How Participated |
|---|---|---|
| Christopher Heindell | District Engineer | Meeting coordination, plan preparation and mitigation project implementation/coordination |
| Jayme Boucher | General Manager | Meeting coordination, plan preparation and mitigation project implementation/coordination |
| Carolyn Padilla | Office Manager | Mitigation project implementation and coordination |

Coordination with other community planning efforts is paramount to the successful implementation of this LHMP Update. This section provides information on how the District integrated the previously approved 2019 LHMP into existing planning mechanisms and programs. Specifically, the District incorporated into or implemented the 2019 LHMP through other plans and programs shown in Table S-2.

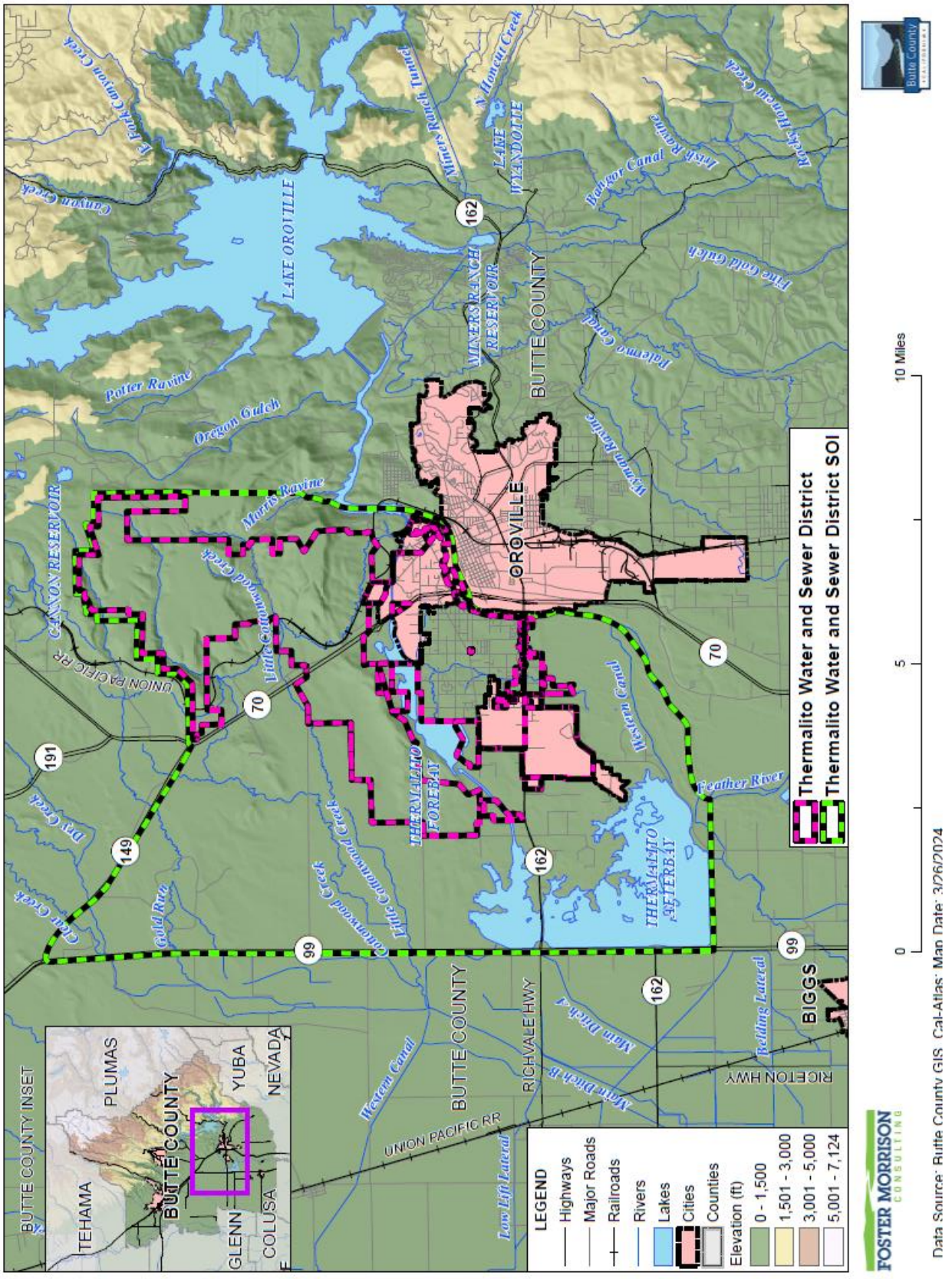
### *Table S-2 2019 LHMP Incorporation*

| Planning Mechanism 2019 LHMP Was Incorporated/Implemented In. | Details: How was it incorporated? |
|---|---|
| 2021 Update to Emergency/Disaster Response Plan | The hazards listed in the previous TWSD annex were reviewed, and response plans for many of those hazards were formulated. |

## S.3 Community Profile

The community profile for the TWSD is detailed in the following sections. Figure S-1 displays a District map and the location of TWSD within Butte County.

## *Figure S-1 TWSD*



## S.3.1. Overview and Background

Located in southern Butte County, California, the Thermalito Water and Sewer District was established in April 3, 1922 as Thermalito Irrigation District and supplied water to an area of approximately 3,164 acres with a service population of approximately 360 properties owners. The District's initial boundaries were much larger but only 3,164 acres could be served with water by the existing distribution system. The District was formed with the express purpose of providing agricultural water to the Thermalito community. The District was authorized to operate by the California Water Code, Division 11, Section 20500 to 29978 derived from the 1897 Irrigation District law. The District was organized to bond itself to the extent of $270,000.00 to finance the construction or purchasing the necessary irrigation canals and acquiring the necessary property, water, water rights, reservoirs, reservoir sites and other property necessary for the purposes of the District. On July 1, 2008 the District changed its name to Thermalito Water and Sewer District.

In August 1923, for the sum of $10,000, the District purchased land from the Pacific Gas & Electric Company for the purpose of development of a reservoir. Construction of the Concow Dam on Concow Creek began in November of 1923 and was completed in December 1924. The Concow watershed was chosen because it was part of the original water distribution system owned by Pacific Gas & Electric Company and was not included when Thermalito Irrigation District incorporated. PG&E did not provide the Wilnore/Concow water storage system, and it was essential the District acquire the old Wilnore dam and land for the water rights needed. During the early years, Wilnore/Concow Reservoir water was used almost solely for irrigation; almost all residences used the District water for domestic purposes. There were a few private wells in the District, but the majority of residences could not afford to dig for water as the hard pan layers under Thermalito made it cost prohibitive to dig.

The Concow Reservoir, also known as the Wilnore Reservoir, has a capacity of 7,225-acre feet. Under the original appropriative water rights licenses issued in 1928 and 1929, TID/TWSD held title to 45% of the water and the remaining 55% was held by TMID (Table Mountain Irrigation District). Water released from the reservoir was diverted into the Wilnore Ditch through the Wilnore siphon under the West Branch of the Feather River and into the Pacific Gas & Electric Company's Miocene Ditch. The water was then used to generate power at PG&E's powerhouses at Lime Saddle and Coal Canyon and was conveyed from the Coal Canyon powerhouse to the Miocene Ditch (also referred to as the Powers Canal, owned by California Water Service), and delivered to the TID/TWSD service area at the site of the present water storage tank.

Construction of the Oroville Dam and appurtenant facilities of the State Water Project in the 1960's provided an alternative means of conveying the District's Concow water to the service area. In 1965 TID/TWSD entered into an agreement with the California Department of Water Resources (DWR) to release its share of Concow water into the West Branch of the Feather River, either by way of Concow Creek or through the PG&E Lime Saddle power plant. In 1966 Oroville Dam and Thermalito Diversion Dam were added to the water rights license as points of power diversion and re-diversion to the District.

The condition of the Wilnore and Spring Valley Ditch system gradually declined over the years until it became so dry that its water retention capacity was questionable and seepage losses were becoming prohibitive. TID/TWSD's agreement with the Department of Water Resources was amended in 1971 to allow delivery of Concow water via Concow Creek to Lake Oroville. The earthquake of August 1975 so

damaged the ditch system that it was imperative that the District utilize the new contractual agreement. DWR gives credit for water delivered and provides an equivalent amount of Lake Oroville water to the District delivered through the Thermalito Power Canal.

The primary agricultural crops within the area, when the District was formed, were olive and orange orchards, irrigated pasture, grapes and a couple of dairy operations. The District has a water right of 8,200 acre-feet from the Concow watershed and at no time shall the reservoir capacity drop below 1,000 acre-feet to accommodate the fish population. When full, the Concow Lake has a capacity of 7,225 acre-feet.

In addition to the District's surface water, groundwater supplies were developed from six wells located throughout the District. Wells #1 & #6 where abandoned and a new well site was grant deeded for the future replacement of Well #1. Although these wells have been used to supply a majority of domestic water demands in the past, they are used as a supplemental source at present; surface water from the Concow system provides the primary supplies. In April 2008 the District constructed a membrane filtration system to meet state health standards and began to phase out the old pressure vessel system. It was found that the wells would be needed to reduce the effects of disinfectant byproducts that pass through the membrane filtration system so Wells #4 and #5 are used during the year to dilute the concentration of the production seasons. The water supply capacity of the District was further enhanced by a 1995 decision of the State Water Resources Control Board, which allowed TID/TWSD consumptive water use of 8,200-acre feet of Concow Reservoir water.

## S.4 Risk Assessment

As defined by FEMA, risk is a combination of hazard, vulnerability, and exposure. "It is the impact that a hazard would have on people, services, facilities, and structures in a community and refers to the likelihood of a hazard event resulting in an adverse condition that causes injury or damage."

The TWSD risk assessment identifies and profiles relevant hazards and assesses the exposure of lives, property, infrastructure, and the environment to these hazards. The process allows for a better understanding of the District's potential risk to hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

Building on the Community Profile above, a risk assessment was performed for the District. This includes the following sections:

- S.4.1 Assets Inventory and Growth and Development Trends
- S.4.2 Hazard Identification
- S.4.3 Hazard Profiles and Vulnerability to Specific Hazards

### S.4.1. Assets Inventory and Growth and Development Trends

This section provides an inventory of the TWSD's total assets potentially at risk to hazards and an overview of growth and development trends. This section is broken into two parts:

- **Asset Inventory** – The assets inventory identifies TWSD's total assets, including the people and populations; structures; critical facilities and infrastructure; community lifelines; natural, historic, and

cultural resources; and economic assets and community activities of value. This data is not hazard specific, but is representative of total assets within the District, potentially at risk to identified hazards as discussed in Section S.4.3 Hazard Profiles and Vulnerability to Specific Hazards.

- **Growth and Development Trends** – A discussion of growth and development trends in the District, both current and future, is presented.

## *Assets Inventory*

The District's asset inventory is detailed in the following sections:

- People and Populations
- Structures
- Critical Facilities and Infrastructure
- Community Lifelines
- Natural, Historic, and Cultural Resources
- Economic Assets and Community Activities of Value

A discussion of each of these assets follows and serves as the template for the asset discussion for each hazard in Section S.4.3.

### People and Populations

The most important asset within any community are the people and populations that reside in the community. This section includes an inventory of past and current populations of the District and also discusses socially vulnerable populations and underserved communities as a subsection of people and populations located within the District and potentially at risk to hazards. Information from the District, US Census Bureau, California Department of Finance, and other sources as detailed below form the basis of this discussion.

The District's service population is defined as a disadvantaged community (as defined in Title 22, Division 4, Chapter 14.5, section 64300 of the California Code of Regulations). This is based upon the service area's Median Household Income. The District provides payment plans to customers who experience financial hardships.

#### Historic Population Trends and Current Population

The most important asset within any community are the people and populations that reside in the District. The District provides services to approximately 12,000 residents.

### Structures and Critical Facilities

This section considers the TWSD's assets at risk, with a focus on key District assets such as critical facilities, infrastructure, and other District assets and their values. With respect to District assets, the majority of these assets are considered critical facilities as defined for this Plan. Critical facilities are defined for this Plan as:

***Any facility, including without limitation, a structure, infrastructure, property, equipment or service, that if adversely affected during a hazard event may result in severe consequences to public health and safety or interrupt essential services and operations for the community at any time before, during and after the hazard event.***

Table S-3 lists critical facilities and other District assets identified by the District Planning Team as important to protect in the event of a disaster. TWSD's physical assets, valued at over $110 million, consist of the buildings and infrastructure to support the District's operations.

***Table S-3 TWSD Critical Facilities, Infrastructure, and Other District Assets***

| Name of Asset | Facility Type | Replacement Value | Which Hazards Pose Risk |
|---|---|---|---|
| Concow Reservoir & Dam | 97' High arch cement dam | $30,000,000 | Flooding, Earthquakes, Fires |
| Water Treatment plant | Micro Membrane system | $7,320,000 | Power Outages, Earthquakes, Fire |
| Office and maintenance yard | Office and equipment storage & repair | $1,100,000 | Flooding, Earthquake and Fires |
| Four deep water wells | Three wells are centrifugal 1submersable | $3,000,000 | Power Outages, Earthquakes, Fire |
| Clearwell Storage | Water Storage tank | $770,000 | Flooding, Earthquake and Fires |
| 2.5 MG Storage | Water Storage Reservoir | $1,500,000 | Flooding, Earthquake and Fires |
| 59 Mile Distribution Pipe system | 2" to 30" pipe for water Delivery | $38,940,000 | Flooding, Earthquake and Fires |
| 34.7 Miles of sewer Collector system | 6" to 18" pipe for sewer collection | $27,482,400 | Flooding, Earthquake and Fires |
| Sewer Lift Station | Pump station | $110,000 | Power Outages, Earthquakes, Fire |
| **Total** | | **$110,222,400** | |

Source: TWSD

## Community Lifelines

Assessing the vulnerability of the TWSD to natural hazards and disasters also involves reviewing and inventorying the community lifelines in place that could be affected. It is important to include these items in hazard discussions as the continuous operation of critical government and business functions is essential to human health and safety, property protection, and economic security. The importance of community lifelines is discussed below:

- Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function.
- FEMA has developed a construct for objectives-based response that prioritizes the rapid stabilization of Community Lifelines after a disaster.

- The integrated network of assets, services, and capabilities that provide lifeline services are used day-to-day to support the recurring needs of the community and enable all other aspects of society to function.
- When disrupted, decisive intervention (e.g., rapid re-establishment or employment of contingency response solutions) is required to stabilize the incident.

Community lifelines, as defined by FEMA, include the following:

- **Safety and Security** – Law Enforcement/Security, Fire Service, Search and Rescue, Government Service, Community Safety
- **Food, Hydration, Shelter** – Food, Water, Shelter, Agriculture
- **Health and Medical –** Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management
- **Energy –** Power Grid, Fuel
- **Communications** – Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch
- **Transportation** – Highway/Roadway/Motor Vehicle, Mass Transit, Railway, Aviation, Maritime
- **Hazardous Material –** Facilities, HAZMAT, Pollutants, Contaminants
- **Water Systems** – Potable Water Infrastructure, Wastewater Management

In Butte County, there is an interplay in community lifelines between all jurisdictions in the County. In fact, most of the District's community lifelines overlap the County's. It should also be noted that these lifelines collectively include many of the critical facilities and infrastructure assets inventoried for this LHMP. Due to this fact, specific information on these community lifelines in the District and how they may be affected by a hazard event or disaster are discussed in each hazard section; however, many of these sections refer back to the detailed lists that are captured in the Section 4.2.1 of the Base Plan.

### Natural, Historic, and Cultural Resources

Assessing the vulnerability of the District to natural hazards and disasters also involves inventorying the natural, historic, and cultural assets of the area. This step is important for the following reasons:

- Environmental and natural resources add to a community's identity and quality of life. They also help the local economy through agriculture, tourism and recreation. They support ecosystem services, such as clean air and water.
- Conserving the environment may help people mitigate risk. It can also protect sensitive habitats, develop parks and trails, and build the economy.
- The community may decide that these types of resources warrant a greater degree of protection due to their unique and irreplaceable nature and contribution to the overall economy.
- If these resources are impacted by a disaster, knowing so ahead of time allows for more prudent care in the immediate aftermath, when the potential for additional impacts are higher.
- The rules for reconstruction, restoration, rehabilitation, and/or replacement are often different for these types of designated resources.
- Natural resources can have beneficial functions that reduce the impacts of natural hazards, such as wetlands and riparian habitat, which help absorb and attenuate floodwaters.

#### Natural Resources

TWSD has a variety of natural resources of value to the District. These natural resources parallels that of Butte County as a whole. Information can be found in Section 4.2.1 of the Base Plan.

#### Historic and Cultural Resources

TWSD has a variety of historic and cultural resources of value to the District. Specifically, there are remnants of a meeting house and stone carvings from the Concow Indians near Lake Concow. These historic and cultural resources parallels that of Butte County as a whole. Information can be found in Section 4.2.1 of the Base Plan.

### Economic Assets and Community Activities of Value

Assessing the vulnerability of the TWSD to natural hazards and disasters also involves inventorying the economic assets and community activities of value in the District.

#### Economic Assets

After a disaster, economic resiliency is one of the major drivers of a speedy recovery. Each community has specific economic drivers. Economic assets for the County were discussed in Section 4.2.1 of the Base Plan and are assumed to be the same or similar for the District.

#### Community Activities of Value

Inventorying economic assets in the District and their vulnerability to natural hazards and disasters also involves inventorying activities that have value to the community. This includes activities that are important to a community, like long-standing traditions such as a festival or fair. Community Activities of Value for the County were discussed in Section 4.2.1 of the Base Plan and are assumed to be the same or similar for the District.

## *Growth and Development Trends*

As part of the planning process, the District looked at changes in growth and development, both current and future, and examined these changes in the context of hazard-prone areas, and how the changes in growth and development affect loss estimates and vulnerability over time.

### Population Trends and Projections

The District has no control over populations in its service territory. Growth is expected to continue.

### Development since 2019 Plan

There has been significant development in Thermalito since the last LHMP update. Primary development has been in multi-family housing. The development has not occurred in hazard prone areas. Thus, with the exception of more people living in the area potentially exposed to natural hazards, this growth should not cause a significant change in vulnerability of the District to identified priority hazards.

### Future Development Areas

It is important to review future development plans for the District. Future development should be sited in areas that are away from known hazard risks. If this is not possible, mitigation should be done to ensure that future development is protected against future hazards. The District has no control over future development in areas the District provides water and sewer service in. Future development areas in Thermalito are in single and multi-family residential zoned areas. They are not located in significant hazard prone areas.

## S.4.2. Hazard Identification

TWSD identified the hazards that affect the District and summarized their location, extent, likelihood of future occurrence, potential magnitude, and significance specific to the District (see Table S-4).

### *Table S-4 TWSD—Hazard Identification Assessment*

| Hazard | Geographic Extent | Likelihood of Future Occurrences | Magnitude/ Severity | Significance | Climate Change Influence |
|---|---|---|---|---|---|
| Climate Change | Extensive | Highly Likely | Limited | Low | – |
| Dam Failure | Extensive | Occasional | Catastrophic | High | Medium |
| Drought & Water shortage | Extensive | Likely | Limited | Low | High |
| Earthquake | Extensive | Occasional | Catastrophic | Medium | Low |
| Floods: 1%/0.5%/0.2% annual chance | Occasional | Likely | Critical | Low | Medium |
| Floods: Localized Stormwater | Significant | Highly Likely | Limited | Low | Medium |
| Invasive Species: Aquatic | Limited | Likely | Limited | Low | Low |
| Invasive Species/Agricultural Hazards | Extensive | Highly Likely | Limited | Low | Low |
| Landslide, Mudslide, and Debris Flow | Significant | Occasional | Limited | Medium | Medium |
| Levee Failure | Significant | Occasional | Critical | Low | Medium |
| Pandemic | Extensive | Occasional | Critical | Low | Medium |
| Severe Weather: Extreme Heat | Extensive | Highly Likely | Limited | Low | High |
| Severe Weather: Extreme Cold, Freeze and Winter Storm | Extensive | Highly Likely | Limited | Low | Medium |
| Severe Weather: Heavy Rain and Storms (Hail, Lightning) | Extensive | Highly Likely | Limited | Low | Medium |
| Severe Weather: Wind and Tornado | Extensive | Highly Likely | Limited | Low | Low |
| Wildfire | Extensive | Highly Likely | Catastrophic | High | High |

**Geographic Extent**
***Limited:*** Less than 10% of planning area
***Significant:*** 10-50% of planning area
***Extensive:*** 50-100% of planning area

**Likelihood of Future Occurrences**
***Highly Likely:*** Near 100% chance of occurrence in next year, or happens every year.
***Likely:*** Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less.
***Occasional:*** Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years.
***Unlikely***: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.

**Magnitude/Severity**
***Catastrophic:*** More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths
***Critical:*** 25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability
***Limited:*** 10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability
***Negligible:*** Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid

**Significance**
***Low:*** Minimal potential impact
***Medium:*** Moderate potential impact
***High:*** Widespread potential impact

**Climate Change Influence**
***Low:*** Minimal potential impact
***Medium:*** Moderate potential impact
***High:*** Widespread potential impact

## S.4.3. Hazard Profiles and Vulnerability to Specific Hazards

This section includes the hazard profiles and vulnerability assessment for hazards ranked of medium or high significance specific to the District (as identified in the Significance column of Table S-4). Chapter 4 of the Base Plan provides more detailed information about these hazards and their impacts on the Butte County Planning Area. Methodologies for evaluating vulnerabilities and calculating loss estimates are the same as those described in Section 4.2 of the Base Plan.

Each hazard is profiled in the following format:

- **Hazard Profile and Problem Description** – A hazard profile is included for each hazard. This includes information on:
  - ✓ **Hazard Overview** - A general discussion of the hazard and related issues.
  - ✓ **Location** and **Extent** - Location is the geographic area within the District that is affected by the hazard. Extent is the expected range of intensity for each hazard. These are discussed in specific detail for mapped hazards, and in more general detail for those hazards that do not have discrete mapped hazard areas.
  - ✓ **Past Occurrences** - Past occurrences are discussed for each hazard. A discussion of disaster declarations is included in each hazard section. NCDC events are also discussed. Other past occurrences data specific to the District follow the disaster declarations for each hazard.
  - ✓ **Climate Change**—This section contains the effects of climate change (as applicable). The possible influence of climate change on the hazard is discussed.

After the hazard profile, a vulnerability assessment is presented. As part of the vulnerability assessment, an estimate of the vulnerability of the District to each identified hazard, in addition to the estimate of risk of future occurrence, is provided in each of the hazard-specific sections that follow. Vulnerability is measured in general, qualitative terms and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential. It is categorized into the following classifications:

- **Extremely Low**—The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
- **Low**—Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
- **Medium**—Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **High**—Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.
- **Extremely High**—Very widespread with catastrophic impact.

After this classification, a general discussion of hazard vulnerabilities occurs. This is done in the following format:

- **Local Concerns** – The includes District provided information on how the District is uniquely affected by or vulnerable to each hazard.

- **Assets at Risk** – A discussion of the assets at risk follows, presented in the same format as in Section S.4.1 above. This includes sections on: People and Populations; Structures; Critical Facilities and Infrastructure, Community Lifelines; Natural, Historic, and Cultural Resources; and Economic Assets and Community Activities of Value. These are discussed in specific terms for mapped hazards, and in more general terms for those hazards that are unmapped.
- **Impacts** – A discussion on hazard impacts follows. Impacts describe how each hazard can affect the District and their assets. The type and severity of impacts reflect both the potential magnitude of the hazard and the vulnerability of the asset. Impacts are also affected by the community's ability to mitigate, prepare for, respond to, and recover from an event.
- **Future Development** – A discussion of how future development will be affected by the hazard is also included. This is addressed specifically for mapped hazards, and in more general terms for those hazards that are unmapped.

## Power Interruption/Power Failure: A Common Vulnerability of all Hazards

An impact of almost all hazards evaluated as part of this LHMP Update relates to power shortage and/or power failures. The US power grid crisscrosses the country, bringing electricity to homes, offices, factories, warehouses, farms, traffic lights and even campgrounds. According to statistics gathered by the U.S. Department of Energy, major blackouts are on the upswing. Incredibly, over the past two decades, blackouts impacting at least 50,000 customers have increased 124 percent. The electric power industry does not have a universal agreement for classifying disruptions. Nevertheless, it is important to recognize that different types of outages are possible so that plans may be made to handle them effectively. In addition to blackouts, brownouts can occur. A brownout is an intentional or unintentional drop in voltage in an electrical power supply system. Intentional brownouts are used for load reduction in an emergency. Electric power disruptions can be generally grouped into two categories: intentional and unintentional. More information on types of power disruptions can be found in Section 4.3 of the Base Plan.

### Public Safety Power Shutoff (PSPS)

A new intentional disruption type of power shortage/failure event has recently occurred in California. In recent years, several wildfires have started as a result of downed power lines or electrical equipment. This was the case for the Camp Fire in 2018. As a result, California's three largest energy companies (including PG&E), at the direction of the California Public Utilities Commission (CPUC), are coordinating to prepare all Californians for the threat of wildfires and power outages during times of extreme (fire) weather. To help protect customers and communities during extreme fire weather events, electric power may be shut off for public safety in an effort to prevent wildfire. This is called a PSPS. More information on PSPS criteria can be found in Section 4.3 of the Base Plan.

### Enhanced Powerline Safety Settings (EPSS)

In addition to PSPSs, to help prevent wildfires, electric utilities have begun to evolve safety efforts. This includes installing safety settings on powerlines in and around high fire-risk areas. These are known as Enhanced Powerline Safety Settings (EPSS), and they help prevent falling tree branches, animals and other hazards from starting a wildfire. By stopping ignitions, it helps prevent wildfires from starting and spreading. According to PG&E, if ignitions occur, the size of fires are much smaller due to EPSS. In 2022,

there was a 99% decrease in acres impacted by ignitions (as measured by fire size from electric distribution equipment (compared to the 2018-2020 average). This decrease occurred despite dry conditions.

### Local Concerns

The District is highly sensitive to public safety power shutoffs. Emergency generators are in place for the occurrence, but extended power shut offs can pose a significant issue. Previous PSPS events have resulted in the District to procuring several diesel fuel deliveries to maintain the emergency generators.

## *Dam Failure*

**Likelihood of Future Occurrence**–Occasional
**Vulnerability**–High

### Hazard Profile and Problem Description

Dams are manmade structures built for a variety of uses including flood protection, power generation, agriculture, water supply, and recreation. When dams are constructed for flood protection, they are usually engineered to withstand a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any given year. If prolonged periods of rainfall and flooding occur that exceed the design requirements, that structure may be overtopped or fail. Overtopping is the primary cause of earthen dam failure in the United States.

Dam failure is a natural disaster from two perspectives. First, the inundation from released waters resulting from dam failure is related to naturally occurring floodwaters. Second, a total dam failure would most probably happen as a consequence of the natural disaster triggering the event, such as an earthquake.

### Location and Extent

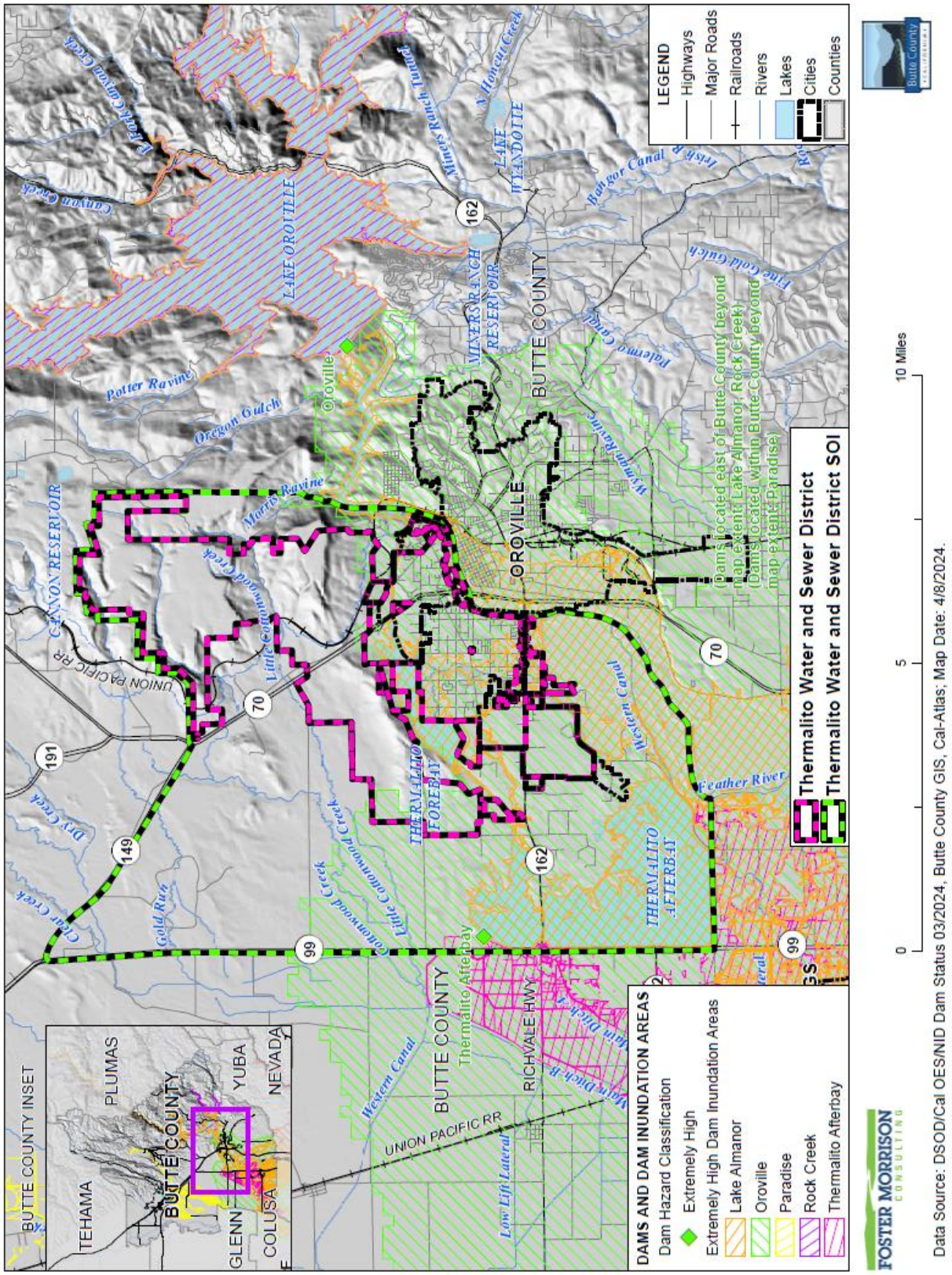
An inventory map of dams located within Butte County was shown in Section 4.3.7 in the Base Plan. Dams with an inundation area within the TWSD are shown on Figure S-2. This includes five extremely high hazard dams – Lake Almanor, Oroville, Paradise, Rock Creek, and Thermalito Afterbay. It also includes twelve high hazard dams – Bidwell Bar Canyon Saddle, Bucks Diversion, Bucks Storage, Butte Valley, Cresta, Lake Wyandotte, Magala, Miners Ranch, Philbrook, Shasta, Thermalito Diversion, Thermalito Forebay, and one significant hazard dam – Lower Three Lakes. There is no scale with which to measure dam failure. However, FEMA and CA DWR Division of Safety of Dams (DSOD) assigns hazard potential classifications to dams within the State that provides information on the potential impact should a dam fail. The following two factors are considered when assigning hazard ratings: existing land use and land use controls (zoning) downstream of the dam. FEMA categorizes the downstream hazard potential into three categories in increasing severity: Low, Significant, and High. DSOD adds a fourth category of Extremely High. Dams are classified in these four categories that identify the potential hazard to life and property. These were discussed in more detail in Section 4.3.7 of the Base Plan.

While a dam may fill slowly with runoff from winter storms, a dam break has a very quick speed of onset. The duration of dam failure is generally not long – only as long as it takes to empty the reservoir of water the dam held back. For dam overtopping, the speed of onset is somewhat slower than that of a dam break,

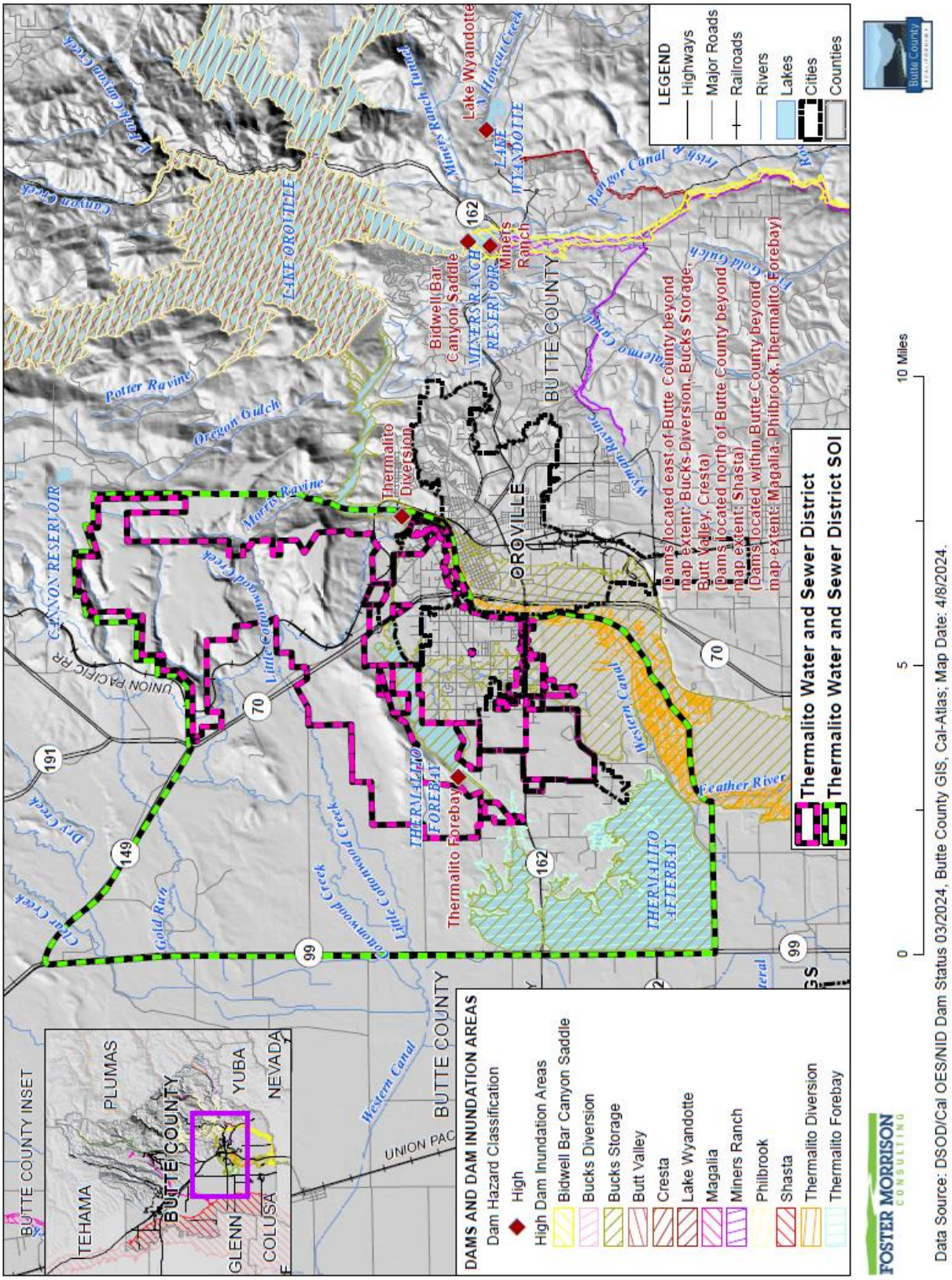
and the duration is longer (as evidenced in the 2017 Oroville Dam spillway event). The District would be affected for as long as the flood waters from the dam failure took to drain downstream.

Geographic flood extent from the DSOD and Cal OES dam inundation areas is shown on Figure S-2 and Figure S-3.

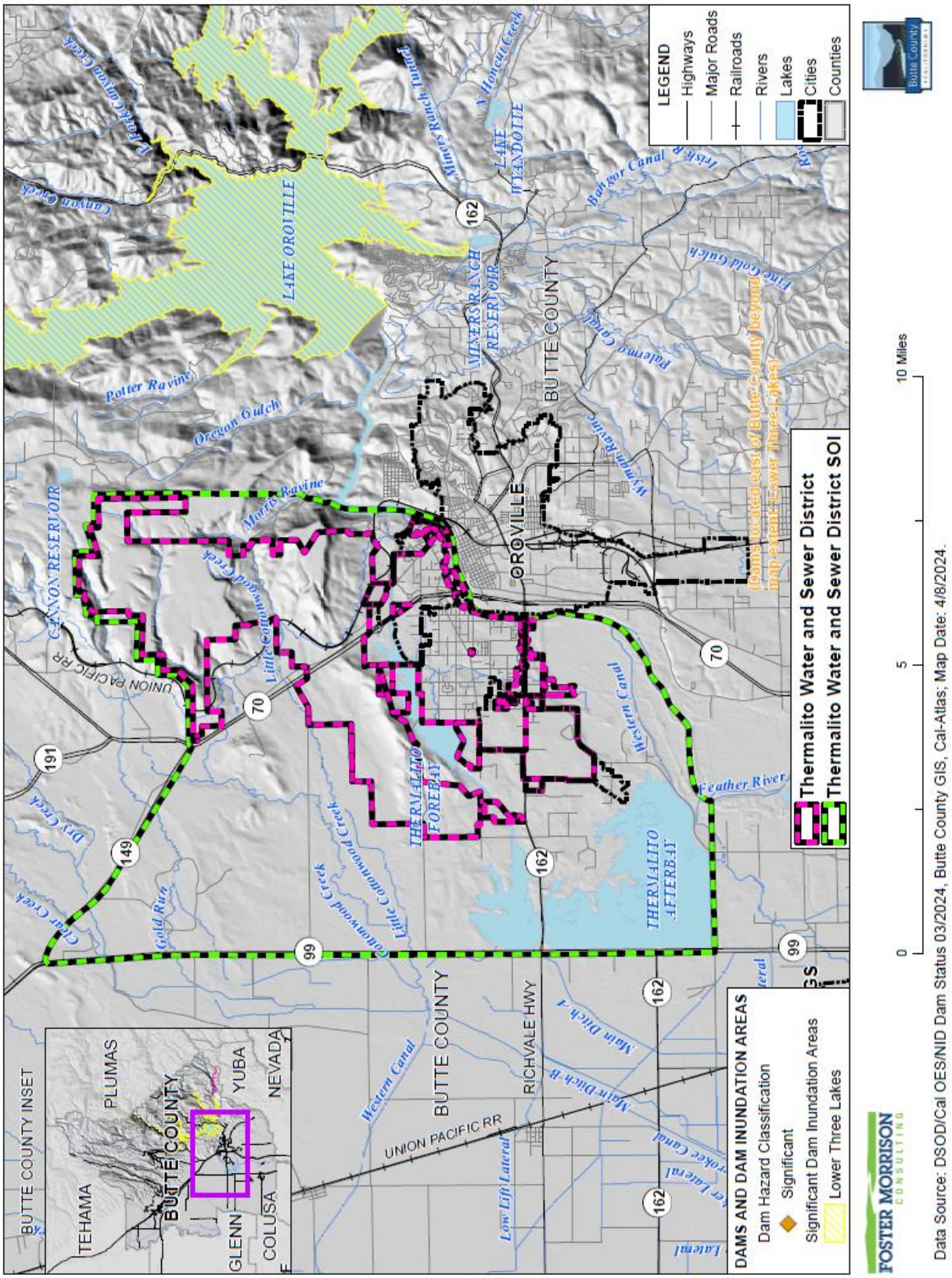
## *Figure S-2 TWSD – Extremely High Hazard Dam Inundation Areas*



## *Figure S-3 TWSD – High Hazard Dam Inundation Areas*



## *Figure S-4 Significant Hazard Dam Inundation Areas*



## Past Occurrences

### *Disaster Declaration History*

There has been one state and one federal disaster declarations for dam failure in the County from the 2017 Oroville Spillway incident.

### *Table S-5 Butte County – State and Federal Disaster Declarations from Dam Failure 1950-2024*

| Disaster Type | Federal Declarations | | State Declarations | |
|---|---|---|---|---|
| | Count | Years | Count | Years |
| Flood (from dam failure) | 1 | 2017 | 1 | 2017 |

Source: CAL OES, FEMA

### *NCDC Events*

There have been no NCDC dam failure events in Butte County. An event of flooding was reported that threatened Oroville Dam on 2/12/2017. This flooding was related to the Oroville spillway event.

### *TWSD Events*

The District noted no past dam events that have impacted or affected the area.

## Climate Change and Dam Failure

It is likely that climate change will increase the chance of future occurrence as well as future impacts associated with dam failure. More information on future impacts to the District can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

The 2023 California State Hazard Mitigation Plan noted that Modeling described in California's Fourth Climate Change Assessment projects less frequent but more extreme daily precipitation. Year-to-year precipitation will become more volatile, and the number of dry years will increase by mid-century. As the climate continues to warm, atmospheric rivers will carry more moisture, and extreme precipitation may increase. Climate model projections show a tendency for the northern part of the State to become wetter. Increases in both precipitation and heat causing snow melt in areas upstream of dams could increase the potential for dam failure and uncontrolled releases in Butte County and the District.

## Vulnerability to Dam Failure

The vulnerability of the District to dam failure flooding would vary depending on which dam fails and the nature and extent of the dam failure and associated flooding. An assessment of a community's vulnerability to dam failure begins with an understanding of local exposure to dam failure. This is included in the Local Concerns section below followed by a discussion of the District's Assets at Risk to this hazard.

## Local Concerns

The District has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce vulnerabilities to this hazard.

The District does own and maintains the Concow dam and reservoir. This is a high Hazard dam, meaning property and at least one person downstream would be at risk should the dam overtop or fail. Impacts to the TWSD from dam failure include damage to property and critical facilities, as well as potential loss of life. Other impacts include the costs to TWSD to rebuild the Concow dam if it failed. The District would lose its ability to store/convey surface water per its DWR contract. A potential mitigation action would be to assess the vulnerability of the dam structurally. Once concerns are identified, rehabilitation efforts could take place.

Mitigation efforts will focus on maintaining the dam as well as the area surrounding it. Along with this, it's important that the shoreline is cleared of debris and invasive plant species. The condition of the dam is inspected regularly by District staff and annually by the Division of Safety of Dams.

## Assets at Risk

Assets at risk from dam include people and populations served; structures and critical facilities; community lifelines; natural, historic, and cultural resources; economic assets; and community activities of value. These are discussed in the following sections.

### *People and Populations Served*

All people and populations located in dam inundation areas are vulnerable to dam failure. Certain vulnerable populations may be at increased risk to dam failure, especially during a large event with minimal advance notice. These vulnerable populations may include: the unsheltered, those with limited mobility, and those that lack the resources to leave the area. District residents that live in these dam inundation areas are often the most vulnerable. Not only are the residents at risk, but their homes and contents are all at risk, compounding the impacts associated with significant hazard events. The failure of the Oroville Dam would impact all resident equally.

### *Structures and Critical Facilities*

Most structures and critical facilities in the District have some measure of risk to dam failure. Dam failure flooding can affect the built environment of the District. Structures in dam inundation areas are at risk and depending on flood depths, can range from slight damage to totally inundated. The structure the District is worried about is the Concow Dam and Reservoir.

### *Community Lifelines*

Dam failure flooding presents a threat to life and property, including community lifelines in the District. A catastrophic dam failure could overwhelm local response capabilities and require evacuations to save lives.

Many of the District's community lifelines are the same as or similar to Butte County's. This was discussed in greater detail in Section 4.3.7 of the Base Plan.

### *Natural, Historic, and Cultural Resources*

A major dam failure event and associated flooding could have a devastating impact on the District. Large flood events can affect all natural, historic, and cultural resources that lie in the dam inundation areas. There are a number of ways floodwaters associated with a dam failure event can impact natural resources and the environment: Wildlife habitats can be destroyed by floodwaters. Contaminated floodwater can pollute rivers and habitats. Silt and sediment can destroy natural areas. Riverbanks and natural levées can be eliminated as rivers reach bankfull capacity. Rivers can be widened, and deposition can increase downstream. Trees can be uprooted by high-velocity water flow. Plants that survive the initial flood may die due to being inundated with water. Historic and cultural resources may also be affected. Generally, the impacts are associated with damage to these structures within the inundated areas, but other cultural resources such as those associated with Native Americans and old tribal areas can also be disturbed, damaged, and lost during dam failure flood events.

### *Economic Assets and Community Activities of Value*

Economic assets and community activities of value for the District are similar or the same as those for the County as a whole. Those assets and activities were discussed in greater detail in Section 4.3.7 of the Base Plan.

### Impacts from Dam Failure

Impacts to the District from dam failure flooding could be extensive and widespread and include loss of life and injury, flooding and damage to property and structures, damage to critical facilities and infrastructure, loss of natural resources, and all other flood related impacts. Levees within the District and surrounding areas may also be damaged or destroyed contributing to the flood waters. Additionally, mass evacuations may be necessary and compounded by impacts to transportation systems and infrastructure. Economic losses to the District and Butte County Planning Area can also be significant.

Other impacts associated with dam failure are landslides, bank erosion, and destruction of habitat. Dam failures can cause downstream flooding and can transport large volumes of sediment and debris and contaminants from the floodwaters. Other environmental impacts can include contamination from septic system failures and releases of contaminants from hazardous materials facilities, contamination of potable water supplies; changes in configurations of streams; loss of wildlife habitats; and degradation of wetlands. A large dam failure event could have significant and catastrophic impacts.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the District may be affected in the future by climate change. It is likely that climate change will increase the chance of future occurrence as well as future impacts associated with dam failure. Changes in population patterns (migration, density, or the makeup of socially vulnerable populations) and changes in land use and development, and the extent to which they affect this hazard, are discussed in the Future Conditions/Future Development discussion below.

### Future Conditions/Future Development

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for the District include the following:

- As discussed in the hazard profile section, climate change is anticipated to exacerbate this hazard over time.
- While population projections for the area served by the District show additional expected growth, these anticipated future changes in population are expected to be relatively small, which limits additional impacts to the District. Additional growth within the dam inundation areas of the District would place additional populations at risk to dam failure. The District noted it has no control over population changes, it merely reacts to them by providing additional (or reduced) services.
- Land use planning should be proactive to address future hazard conditions. Locating new development, structures, and critical facilities and infrastructure within or near areas of dam failure risk may put additional development at risk. However, County and Town building codes are in effect to partially reduce this risk and should be updated as necessary to continue to address future dam failure conditions. Thus, depending on the location of new development and adherence to protective building codes, changes in land use and development may or may not increase the impacts and associated vulnerabilities of the District to this hazard.

Future dam failures events may occur in the District. Given the high number of affected parcels and structures, future development in the District could be affected by dam failures and associated flooding. Siting of future development areas should take dam failure flooding into account. Future development would include preventative maintenance and any upgrades necessary to maintain the integrity of Concow Dam.

## *Earthquake*

**Likelihood of Future Occurrence**–Occasional
**Vulnerability**–Medium

### Hazard Profile and Problem Description

An earthquake is caused by a sudden slip on a fault. Stresses in the earth's outer layer push the sides of the fault together. Stress builds up, and the rocks slip suddenly, releasing energy in waves that travel through the earth's crust and cause the shaking that is felt during an earthquake. Earthquakes can cause structural damage, injury, and loss of life, as well as damage to infrastructure networks, such as water, power, gas, communication, and transportation. Earthquakes may also cause collateral emergencies including dam and levee failures, seiches, hazmat incidents, fires, avalanches, and landslides. The degree of damage depends on many interrelated factors. Among these are: the magnitude, focal depth, distance from the causative fault, source mechanism, duration of shaking, high rock accelerations, type of surface deposits or bedrock, degree of consolidation of surface deposits, presence of high groundwater, topography, and the design, type, and quality of building construction.

The District is highly concerned about earthquakes and earthquake liquefaction.

## Location and Extent

### *Surface Fault and Ground Shaking*

Since earthquakes are regional events, the whole of the District is at risk to earthquake. The District, Butte County, and surrounding areas have some measure of risk from significant seismic and geologic hazards. Faults in and around the District were shown in Section 4.3.9 of the Base Plan. A significant seismic event on any of these major faults could cause serious damage in the District.

The amount of energy released during an earthquake is usually expressed as a magnitude and is measured directly from the earthquake as recorded on seismographs. An earthquake's magnitude is expressed in whole numbers and decimals (e.g., 6.8). Seismologists have developed several magnitude scales, as discussed in Section 4.3.9 of the Base Plan.

Another measure of earthquake severity is intensity. Intensity is an expression of the amount of shaking at any given location on the ground surface. Seismic shaking is typically the greatest cause of losses to structures during earthquakes. The District is located in an area where earthquakes of significant magnitude occur, so both magnitude and intensity of earthquakes are expected to remain moderate. Seismic shaking maps for the area in Section 4.3.9 of the Base Plan show Butte County and the District fall within a low to moderate shake risk.

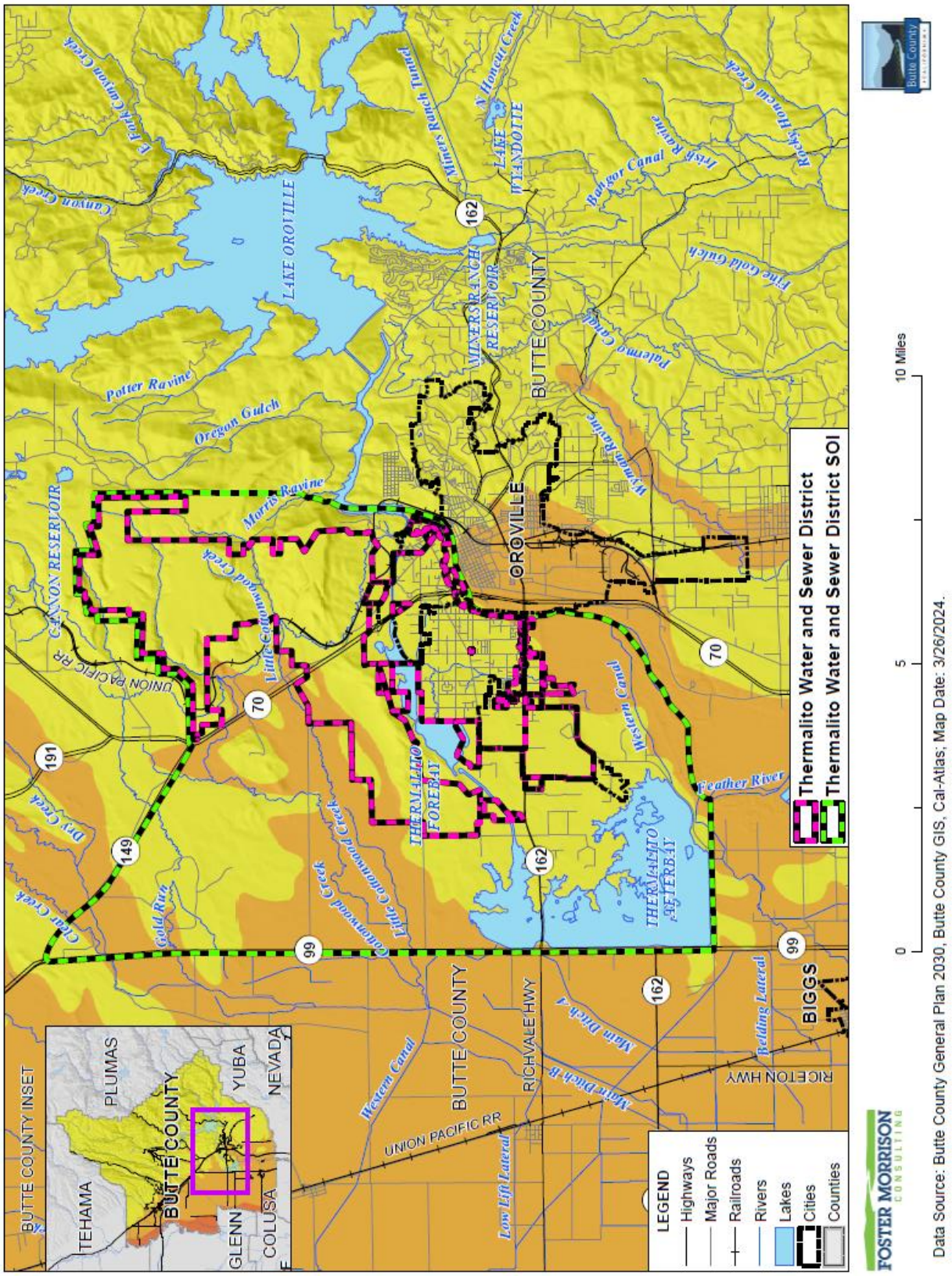
### *Earthquake-Induced Liquefaction*

When ground liquefies in an earthquake, it behaves like a liquid and may sink, spread, or erupt in sand boils. This can cause pipes to break, roads and sidewalks to buckle, and building foundations to be damaged. Liquefaction can only occur under certain circumstances. Soil that is loose, sandy, silty, or saturated with water can result in soil liquefaction if it is shaken intensely for an extended period. More details on soils and liquefaction follows:

- **Loose Soils** – The soil must be loose, such as uncompacted or unconsolidated sand and silt without much clay. This happens most often near creeks or waterways, on dry creek beds, and areas of man-made fill.
- **Soggy Soils** – The sand and silt must be soggy and saturated with water due to a high water table.
- **Ground Shaking** – The ground must be shaken long and hard enough by the earthquake to trigger liquefaction.

Liquefaction accompanies an earthquake, so the speed of onset is short. Duration is similar to the length of the earthquake shake. There are mapped areas of areas susceptible to earthquake-induced liquefaction in the District from the USGS/CGS. These areas are shown on Figure S-5. Liquefaction hazard maps express where the ground is susceptible to liquefaction, and where the ground is likely to be shaken long and intensely in an earthquake.

## *Figure S-5 TWSD – Earthquake Liquefaction Susceptibility Zones*



### Past Occurrences

#### *Disaster Declaration History*

The District noted that there has been no state and 1 federal disaster declaration from the 1975 Oroville earthquake, as shown in Table S-6.

*Table S-6 Butte County Disaster Declarations from Earthquake 1950-2024*

| Disaster Type | Federal Declarations | | State Declarations | |
|---|---|---|---|---|
| | Count | Years | Count | Years |
| Earthquake | 1 | 1975 | 0 | |

Source: Cal OES, FEMA

#### *NCDC Events*

The NCDC does not track earthquake events.

#### *TWSD Events*

As shown in the Base Plan, only the 1975 federal disaster declaration has occurred in the County due to Oroville earthquake. The District experienced several water and sewer pipeline failures due to the earthquake. The treatment plant structures also experienced some structural issues. The HMPC noted no other past occurrences of earthquakes or liquefaction that affected the District in any meaningful way.

### Climate Change and Earthquake

Climate change is unlikely to increase earthquake frequency or strength.

## Vulnerability to Earthquake

The combination of plate tectonics and associated California coastal mountain range building geology generates earthquakes as a result of the periodic release of tectonic stresses Earthquake vulnerability is primarily based on population and the built environment. Urban areas in high seismic hazard zones are the most vulnerable, while uninhabited and more rural areas are less vulnerable. The primary impacts of concern are life safety and property damage. Although several faults are located in and near the District and Butte County Planning Area, seismic hazard mapping indicates that the Planning Area has low to moderate seismic hazard potential. However, there is potential that the District and the Butte County Planning Area will be subject to some moderate to severe seismic shaking in future events. Some degree of structural damage due to stronger seismic shaking should be expected in earthquakes occurring with and epicenter near the District.

Earthquake shaking can cause liquefaction to occur in the District. Areas with loose soil and high water tables are at risk from liquefaction. There are several areas in and near the District prone to liquefaction.

The whole of the District is at some measure of vulnerability to earthquake. An assessment of a community's vulnerability to earthquakes begins with an understanding of local exposure to earthquakes. This is included in the Local Concerns section below. After that section, assets at risk are discussed.

### Local Concerns

The District has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce vulnerabilities to this hazard.

The Uniform Building Code (UBC) identifies four seismic zones in the United States. The zones are numbered one through four, with Zone 4 representing the highest level of seismic hazard. The UBC establishes more stringent construction standards for areas within Zones 3 and 4. All of California lies within either Zone 3 or Zone 4. The TWSD is within Zone 3.

Impacts to the District included damage to facilities and distribution lines. Concow Dam could also be impacted. District sewer infrastructure including lift stations, collection lines and manholes could also be damaged during an earthquake. A proposed mitigation action would be to replace all of the vulnerable infrastructure such as old steel mains.

### Assets at Risk

Many assets in the District are at risk to ground shaking (including liquefaction). Assets at risk from earthquake include people and populations served; structures and critical facilities; community lifelines; natural, historic, and cultural resources; economic assets; and community activities of value. These are discussed in the following sections.

#### *People and Populations Served*

All people and populations are at risk from earthquake shaking and surface fault. Those at heightened risk include:

- The unsheltered
- Infants and children under age five and their caregivers
- Elderly (65 and older)
- Individuals with disabilities
- Individuals dependent on medical equipment
- Individuals with impaired mobility

The greatest risk to people and populations from earthquake is death and injury. More information on people and populations at risk to earthquake shaking events can be seen in the Hazus scenarios developed for this LHMP. More information on the Hazus scenarios and how the Butte County Planning Area is affected is included in Section 4.3.9 of the Base Plan. Information on populations at risk to liquefaction is detailed below.

### *Structures and Critical Facilities*

All structures in the District are vulnerable to earthquakes, depending on the severity and location of the shake. Unreinforced masonry (URM) is at a much greater risk to earthquakes. There are no URM or soft story buildings in the District. The District has specific facility concerns with earthquake this includes those facilities shown on Table S-7.

### *Table S-7 TWSD – Facilities at Risk from Earthquake*

| Name of Asset | Facility Type | Replacement Value |
|---|---|---|
| Concow Reservoir & Dam | 97' High arch cement dam | $30,000,000 |
| Water Treatment plant | Micro Membrane system | $7,320,000 |
| Office and maintenance yard | Office and equipment storage & repair | $1,100,000 |
| Four deep water wells | Three wells are centrifugal 1submersable | $3,000,000 |
| Clearwell Storage | Water Storage tank | $770,000 |
| 2.5 MG Storage | Water Storage Reservoir | $1,500,000 |
| 59 Mile Distribution Pipe system | 2" to 30" pipe for water Delivery | $38,940,000 |
| 34.7 Miles of sewer Collector system | 6" to 18" pipe for sewer collection | $27,482,400 |
| Sewer Lift Station | Pump station | $110,000 |
| **Total** | | **$110,222,400** |

Source: TWSD

Earthquake and its related hazards (like liquefaction) are a concern to the District. Earthquakes can damage critical facilities and infrastructure that provide vital services to the District. The critical facilities at risk to earthquake are presented in the Hazus analysis in Section 4.3.9 of the Base Plan.

### *Community Lifelines*

All community lifelines in the District are vulnerable to earthquakes, depending on the severity and location of the shake. A major earthquake event could cause these lifelines to be overwhelmed. Some of these would be able to be restored to service quickly, while others would take more time having a prolonged impact on the people and structures within the District. More information on lifelines at risk can be seen in the Hazus scenarios in Section 4.3.9 of the Base Plan.

### *Natural, Historic, and Cultural Resources*

The 2023 State Hazard Mitigation Plan noted that environmental problems from earthquakes can be numerous. It is possible for earthquakes to reroute streams, which can change the water quality, possibly damaging habitat and feeding areas. Streams fed by groundwater and/or springs may dry up because of changes in underlying geology. Another threat to the environment from earthquakes is the potential release of hazardous materials. Historical and cultural resources are at risk, often due to their age and construction types. The Hazus scenarios in Section 4.3.9 of the Base Plan and included below are relatively silent on the vulnerability to natural, historic, and cultural resources, but impacts to these resources could be long lasting.

Any natural, historic, or cultural resource that is in the earthquake liquefaction zone would be at potential risk. For the natural resources, this is likely to be limited. Historic and cultural resources that are structures or housed in structures could be vulnerable to liquefaction. It is more likely that earthquake would have a much greater effect than the follow-on liquefaction.

### *Economic Assets and Community Activities of Value*

Economic assets and community activities of value for the District are similar or the same as those for the County as a whole. Those assets and activities were discussed in greater detail in the Hazus scenarios in Section 4.3.9 of the Base Plan.

### Impacts from Earthquake (and liquefaction)

Earthquakes can strike without warning and cause dramatic changes to the landscape of an area that can have devastating impacts on the built environment. The greatest impact is to life safety of TWSD residents and visitors. Other impacts to the District would include damages to infrastructure such as roads, bridges, and dams; damages and loss of services to utilities and critical infrastructure, including those related to gas, power, water, wastewater and communication systems; damages to structures and other development; and possible loss of life and injuries.

Earthquakes can also cause failure of dams, levees, and reservoirs. Facilities and land downslope from dams or water reservoirs or behind levees might be subject to flooding, if the dams, reservoirs, or levees fail as a result of an earthquake.

Ground settlement during liquefaction can cause damage when the amount of settlement varies significantly across the length of a structure. Liquefaction can occur in susceptible soils below bodies of water and can severely damage bridges, wharves, piers, and other structures at ports and harbors, as well as underwater utility lines.

Impacts that are not quantified, but can be anticipated in large future events, include:

- Injury and loss of life;
- Commercial and residential structural and property damage;
- Disruption of and damage to public infrastructure, utilities, and services;
- Damage to roads/bridges resulting in loss of mobility;
- Significant economic impact (jobs, sales, tax revenue) to the community; and
- Negative impact on commercial and residential property values

Impacts to identified assets at risk to this hazard and the overall vulnerability of the District may be affected in the future by climate change. Climate change is not thought to affect future impacts associated with earthquake. Changes in population patterns (migration, density, or the makeup of socially vulnerable populations) and changes in land use and development, and the extent to which they affect this hazard, are discussed in the Future Conditions/Future Development discussion below.

### Future Conditions/Future Development

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for the District include the following:

- As discussed in the hazard profile section, climate change is not anticipated to affect this hazard over time.
- While population projections for the area served by the District show additional expected growth, these anticipated future changes in population are expected to be relatively small, which limits additional impacts to the District. Vulnerable population groups could face disproportionate effects from an earthquake and should be planned for. The District noted it has no control over population changes, it merely reacts to them by providing additional (or reduced) services.
- Any changes in land use and development will affect the earthquake risk in the District, as additional buildings equate to additional risk. Building codes are in effect to reduce this risk and should be updated as necessary to continue to address future earthquake conditions. With adherence to development standards, future losses to new development should be minimal.

Although new growth and development corridors would fall in the area affected by earthquake, given the small chance of major earthquake and the building codes in effect, development in areas prone to earthquakes will continue to occur. The District enforces the state building code, which mandates construction techniques that minimize seismic hazards. All District building construction and pipeline installation will be to the current California Seismic Code.

## *Landslide, Mudslide, and Debris Flow*

**Likelihood of Future Occurrence**–Likely
**Vulnerability**–Medium

### Hazard Profile and Problem Description

Like its earthquake-generating faults, California's mountainous terrain is a consequence of dynamic geologic processes in operation as the North American Plate grinds past the Pacific Plate. According to the CGS, a landslide is a general term for a variety of mass-movement processes that generate a down-slope movement of mud, soil, rock, and/or vegetation. Landslides are classified into many different types based on form and type of movement. They range from slow-moving rotational slumps and earth flows, which can slowly distress structures but are less threatening to personal safety, to fast-moving rock avalanches and debris flows that are a serious threat to structures and have been responsible for most fatalities during landslide events. For the purposes of this LHMP Update, the term landslide includes mudslides, debris flows, and rockfalls that tend to occur suddenly; as well as hillside erosion, which is a similar process that tends to occur on smaller scales and more gradually but can exacerbate landslide events.

Landslides, debris flows and mudslides are closely related to flooding, as both processes are related to precipitation, runoff, and the saturation of ground by water. In addition, landslides, mud flows, and debris flows can occur on small, steep stream channels and are often mistaken for floods. However, landslide

events may be much more destructive than floods because of their higher densities, high debris loads, and high velocities.

Soil erosion is another common form of soil instability. Erosion is a function of soil type, slope, rainfall intensity, and groundcover. It accounts for a loss in many dollars of valuable soil, is aesthetically displeasing, and often induces even greater rates of erosion and sedimentation. Sedimentation is simply the accumulation of soil as a result of erosion. Construction activities often contribute greatly to erosion and sedimentation. Besides being a pollutant in its own right, sediment acts as a transport medium for other pollutants, especially nutrients, pesticides, and heavy metals, which adhere to the eroded soil particles. As the sediment drains into watercourses, the combination of these pollutants adversely affects water quality.

Natural conditions that contribute to landslide, mudslides, debris flows, hillside and streambank erosion, include the following:

- Degree of slope
- Water (heavy rain, river flows, or wave action)
- Unconsolidated soil or soft rock and sediments
- Lack of vegetation (no stabilizing root structure)
- Previous wildfires and other forest disturbances (discussed in the Wildfire section below)
- Road building, excavation, and grading
- Earthquake

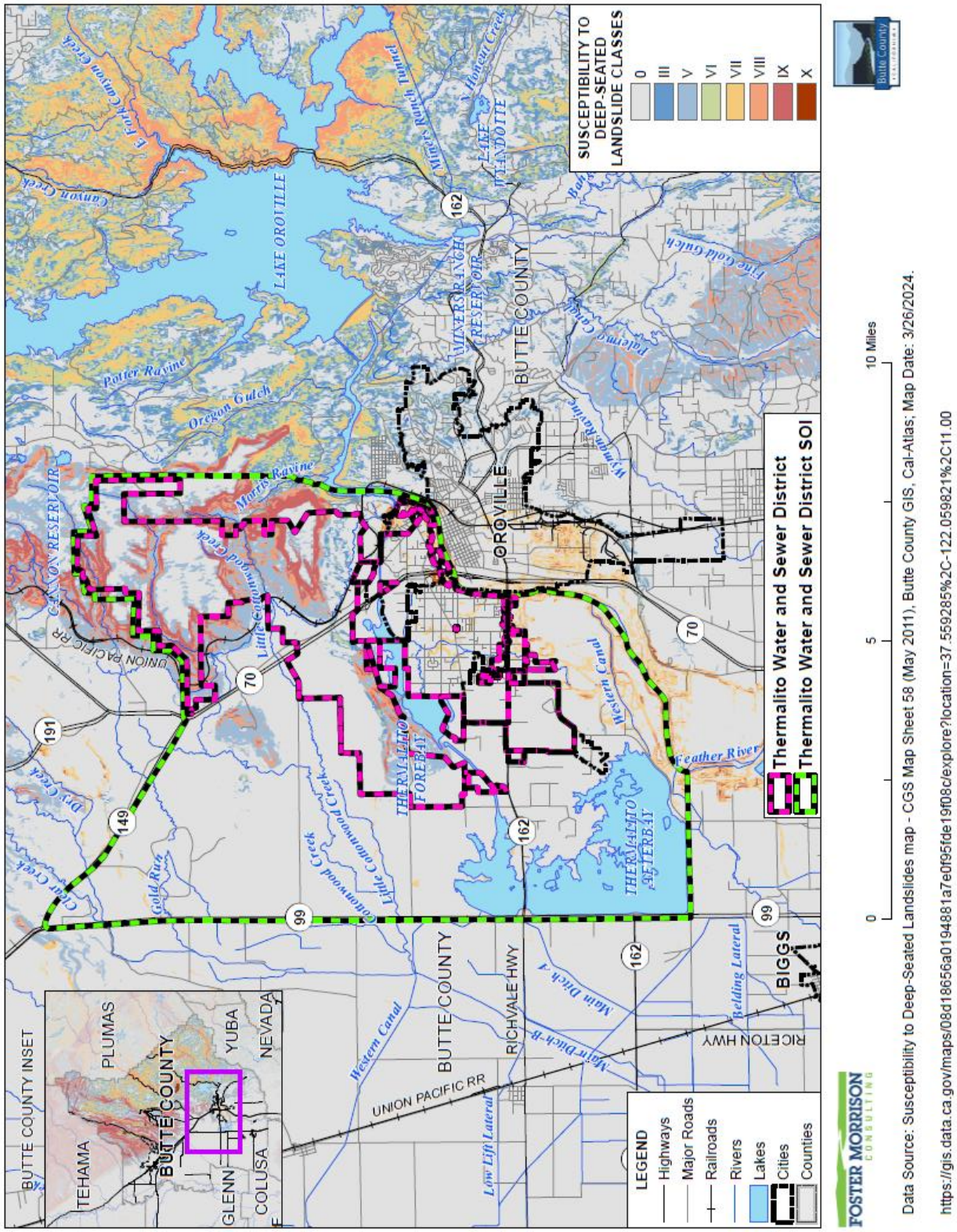
The 2023 California State Hazard Mitigation Plan noted that more than one third of California is mountainous terrain that generally trends parallel to the coast, forming a barrier that captures moisture from offshore storms originating in the Gulf of Alaska and Mexico. Steep topography, weak rocks, heavy winter rains, and occasional earthquakes all lead to slope failures more frequently than would otherwise occur under gravity alone. This is true in the sloped areas in the District.

### Location and Extent

Landslides can be expected in areas with steep slopes and weak soils. It can also occur in areas where erosion has previously occurred. Both winter storms (precipitation-induced) and earthquake triggered landslides tend to occur in or near places that have experienced previous landslides. However, landslides may also occur in other locations over time.

Figure S-6 shows the CGS areas at susceptible to deep-seated landslides. The legend on Figure S-6 shows the susceptibility scale (from 0-X with 0 being the least and X being the most susceptible) that the CGS uses to show the susceptibility of landslides. It is a primarily a combination of slope class and rock strength. According to the 2023 State Hazard Mitigation Plan, the susceptibility classes were further categorized into Very High (susceptibility class X) and High (susceptibility classes VII, VIII, & IX) for exposure analysis. The rest of the classes were not categorized. CGS mapping indicates that the eastern portions of the District and surrounding area are at high to very high susceptibility areas for landslides. This can be seen in the darker orange and red colors. The speed of onset of landslide is often short, especially in post-wildfire burn scar areas, but it can also take years for a slope to fail. Landslide duration is usually short, though digging out and repairing landslide areas can take some time.

## *Figure S-6 TWSD – Susceptibility to Deep-Seated Landslides*



### Past Occurrences

#### *Disaster Declarations*

There have been no federal or state disaster declarations from landslide.

#### *NCDC Events*

The NCDC contains no direct records for landslides in Butte County. It does however, contain a heavy rain event on January 9, 2017 caused a rock/mud slide covered the northbound lane of Highway 162 near the intersection with Simmons Rd. on the east side of Lake Oroville.

#### *TWSD Past Occurrences*

The District noted no landslide, mudslide, or debris flow events that have affected the area serviced.

### Climate Change and Landslide and Debris Flows

It is likely that climate change will increase the chance of future occurrence as well as future impacts associated with landslide and debris flow. More information on future impacts to the District can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

According to the 2021 CAS, climate change may result in precipitation extremes (i.e., wetter wet periods and drier dry periods). More information on precipitation increases can be found in the Severe Weather: Heavy Rain and Storms. While total average annual rainfall may decrease only slightly, rainfall is predicted to occur in fewer, more intense precipitation events. The combination of a generally drier climate in the future, which will increase the chance of drought and wildfires, and the occasional extreme downpour is likely to cause more mudslides, landslides, and debris flows.

## Vulnerability from Landslide

Portions of the District are at some measure of vulnerability to landslide. An assessment of a community's vulnerability to landslide begins with an understanding of local exposure to landslide. This is included in the Local Concerns section below followed by a discussion of the District's Assets at Risk to this hazard.

### Local Concerns

The District has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce vulnerabilities to this hazard.

The District has contended with sediment intrusion into the inlets of Concow Reservoir for some time. Sediment deposition increased significantly following the Camp Fire. Approximately 80% of the reservoirs watershed burned. The mitigation project for this hazard would consist of removing the deposited sediment and creating a barrier for future sedimentation.

### Assets at Risk

Assets at risk from landslide include people and populations served; structures and critical facilities; community lifelines; natural, historic, and cultural resources; economic assets; and community activities of value. These are discussed in the following sections.

#### *People and Populations Served*

All populations located within areas of landslide susceptibility, especially in the High to Very High hazard areas (i.e., Classes VII to X) are at some vulnerability to landslide. This includes those people residing in these landslide potential areas as well as those that might reside or work within the landslide run out areas. People residing in these areas may also be cut off from transportation routes if roads and streets providing a means of ingress and egress are impacted. Certain vulnerable populations may be at greater risk due to the often sudden onset of a landslide event and include: the unsheltered, those with limited mobility, and those that lack the resources to leave the area.

District residents that live in the High and Very High landslide susceptibility areas are often the most vulnerable, but those who live in in the landslide run out areas (which are not mapped) are also vulnerable. Not only are the residents at risk, but their homes and contents are all at risk, compounding the impacts associated with significant hazard events.

#### *Structures*

Landslides can affect the built environment of the District and those structures and critical facilities located within the High to Very High hazard areas (i.e., Classes VII to X) are especially vulnerable, as are the structures located within the landslide run out areas. The District noted no District-owned facilities in these areas.

#### *Community Lifelines*

Community lifelines may be affected by landslide. Landslide is unlikely to overwhelm community lifelines. Many of the District's community lifelines are the same as or similar to Butte County's. This was discussed in greater detail in Section 4.3.14 of the Base Plan

#### *Natural, Historic, and Cultural Resources*

Landslides can affect natural, historic, and cultural resources that lie in the landslide area, or the landslide run out area. Landslides can destroy large tracts of forest and open space areas, destroy wildlife habitat, and remove productive soils and vegetation from slopes. It can also fill in waterways, impact water quality, and potentially affect flooding potential. Natural resources that fall in the High or Very High susceptibility areas shown on Figure S-6 would be most vulnerable, as well as those in the run out areas.

### *Economic Assets and Community Activities of Value*

Economic assets and community activities of value for the District are similar or the same as those for the County as a whole. Those assets and activities were discussed in greater detail in Section 4.3.14 of the Base Plan.

### Impacts from Landslide

Any type of landslide may result in damages or complete destruction of buildings in their path, as well as deaths and injuries. Landslides can cause road blockages by depositing debris on road surfaces or road damage if the road surface itself slides downhill. Utility lines and pipes are also prone to breakage in slide areas. Large landslides can collapse into water bodies, causing seiches. Landslides can relocate river channels. Landslides and debris flows can also impact water quality and the storage capacity of surface water reservoirs used to store potable water.

Landslides, debris flows, and mud flows impacts vary by location and severity of any given event and will likely only affect certain areas of the District susceptible to landslide. Based on the risk assessment, there is limited potential for significant landslides to occur in the District. Most, but not all, of the historic landslides in the District have been minor, localized events that are more of a nuisance than a disaster. Impacts that are not quantified, but can be anticipated in large future events, include:

- Injury and loss of life;
- Commercial and residential structural and property damage;
- Disruption of and damage to public infrastructure, utilities, and services;
- Damage to roads/bridges resulting in loss of mobility;
- Significant economic impact (jobs, sales, tax revenue) to the community; and
- Negative impact on commercial and residential property values

Impacts to identified assets at risk to this hazard and the overall vulnerability of the District may be affected in the future by climate change (which was discussed in the Likelihood of Future Occurrence discussion above), changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Changes in population patterns and land use, and the extent to which they affect this hazard, are discussed in the Future Conditions/Future Development discussion below.

Impacts to identified assets at risk to this hazard and the overall vulnerability of the District may be affected in the future by climate change. It is likely that climate change will increase the chance of future occurrence as well as future impacts associated with landslide. Changes in population patterns (migration, density, or the makeup of socially vulnerable populations) and changes in land use and development, and the extent to which they affect this hazard, are discussed in the Future Conditions/Future Development discussion below.

## Future Conditions/Future Development

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for the District include the following:

- Climate change is likely to exacerbate future landslide conditions in the District.
- While population projections for the area served by the District show additional expected growth, these anticipated future changes in population are expected to be relatively small, which limits additional impacts to the District. The District noted it has no control over population changes, it merely reacts to them by providing additional (or reduced) services.
- It is unknown how changes in land use and development will affect landslide in the District's service territory. Area planning efforts are in effect to reduce this risk and should be updated as necessary to continue to address future landslide conditions.

Although new growth and development corridors may fall in areas affected by High or Very High risk of landslide (shown as classes VII to X), local building codes in effect regarding the siting and construction of structures in identified hazard areas should limit risk to future development.

## *Wildfire*

**Likelihood of Future Occurrence**–Highly Likely
**Vulnerability**–High

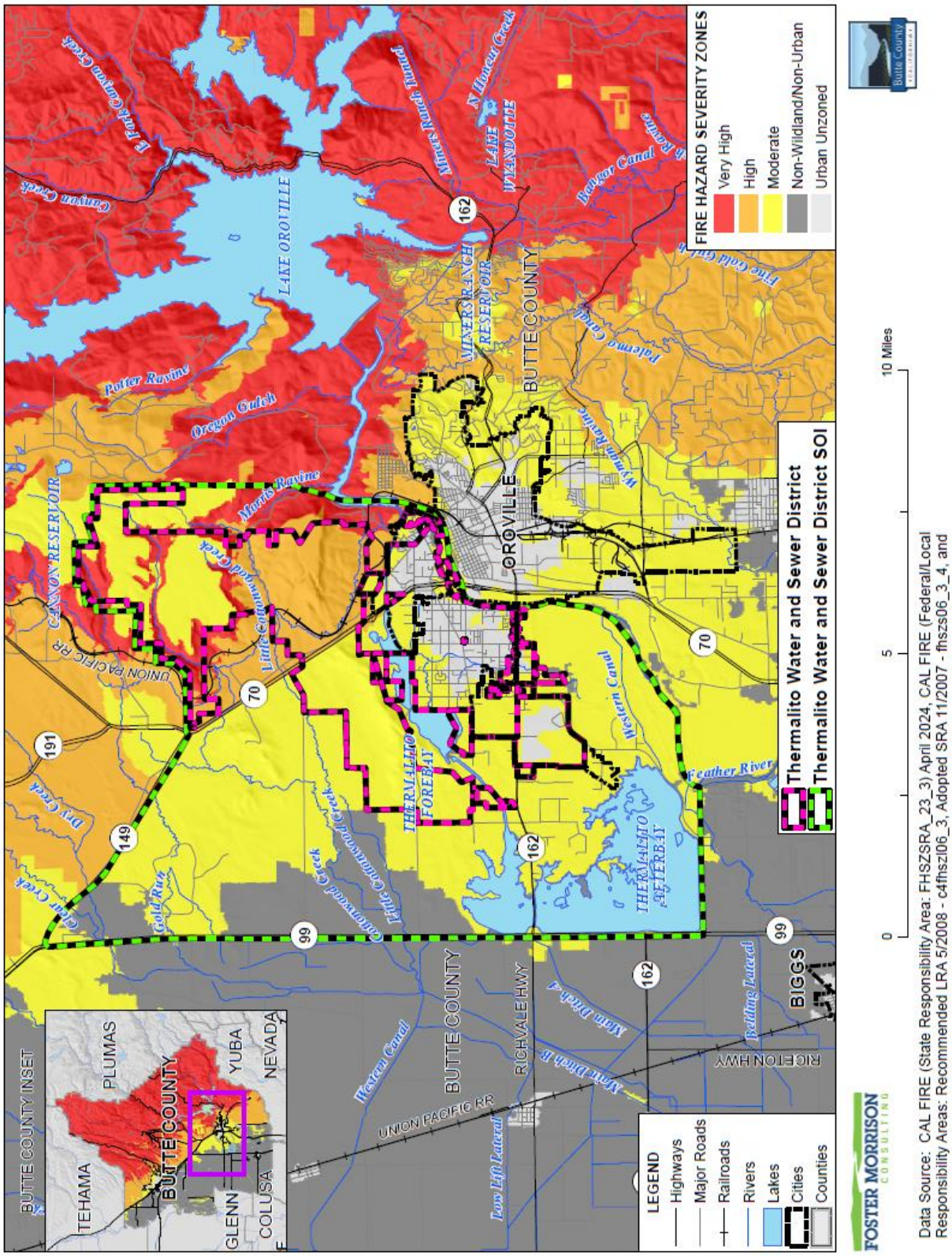
### Hazard Profile and Problem Description

Wildland fire and the risk of a conflagration is an ongoing concern for the TWSD. Throughout California, communities are increasingly concerned about wildfire safety as increased development in the foothills and mountain areas and subsequent fire control practices have affected the natural cycle of fire regimes. Wildland fires affect grass, forest, and brushlands, as well as structures. Where there is human access to wildland areas the risk of fire increases due to a greater chance for human carelessness and historical fire management practices. Historically, the fire season extends from early spring through late fall of each year during the hotter, dryer months; however, in recent years, the risk of wildfire has become a year around concern. Fire conditions arise from a combination of high temperatures, low moisture content in the air and fuel, accumulation of vegetation, and high winds. These weather conditions can result in red flag (e.g., fire weather) days, and can result in PSPS/EPSS events in the District. While wildfire risk has predominantly been associated with more remote forested areas and wildland urban interface (WUI) areas, significant wildfires can also occur in more populated, urban areas. There is also the concern of wildfires occurring in these more remote, forested areas that under certain weather conditions, can extend into areas not generally considered at a high risk to wildfire. Smoke and air quality also becomes an issue, both from fires occurring inside and outside of the Butte County Planning Area and the City.

#### Location and Extent

Wildfire can affect all areas of the District. CAL FIRE has estimated that the risk varies across the District and has created maps showing risk variance. Following the methodology described in Section 4.3.17 of the Base Plan, wildfire maps for the TWSD were created. Figure S-7 shows the CAL FIRE Fire Hazard Severity Zone (FHSZ) in the District. As shown on the maps, FHSZs within the District range from Urban Unzoned to Very High.

## *Figure S-7 TWSD – CAL FIRE Fire Hazard Severity Zones*



Wildfires tend to be measured in structure damages, injuries, and loss of life as well as on acres burned. Fires can have a quick speed of onset, especially during periods of drought or during hot dry summer months. Fires can burn for a short period of time or may have durations lasting for a week or more.

## Past Occurrences

### *Disaster Declaration History*

There has been 15 federal and 9 state disaster declaration due to fire, as shown in Table S-8.

*Table S-8 Butte County – State and Federal Wildfire Disaster Declarations 1950-2024*

| Disaster Type | Federal Declarations | | State Declarations | |
|---|---|---|---|---|
| | Count | Years | Count | Years |
| Wildfire | 15 | 1999, 2004, 2008 (four), 2017 (four), 2018 (three), 2020 (twice) | 9 | 1961, 1987, 1999, 2017 (three), 2018, 2020 (twice) |

Source: Cal OES, FEMA

### *NCDC Events*

The NCDC has tracked 33 wildfire events in the County dating back to 1993.

### *TWSD Events*

An event in the summer of **1998** was of concern to the District. Wildfires in the Concow watershed affected both the District and those that the District serves. Concow road was closed for the duration of the fire. Many homeowners lost their homes. One death was reported. The District lost all timber on TWSD property and to this day due to the lack of trees and plants, the Concow Reservoir receives an excessive amount of sedimentation.

In **November of 2018**, the Camp Fire started in Pulga California and burned the majority of the Town of Paradise and a considerable portion of Concow. Concow Dam itself was not impacted, but Concow reservoir was. Due to loss of vegetation, during the subsequent rain events, massive amounts of sediment and debris were carried into the lake. Additionally, burned trees have caused safety issues surrounding the lake.

The District has approximately 275 dry land acres around Concow Reservoir. This area has been susceptible to wildfires multiple times in the last 10 years. The mitigation project would consist of removal of undergrowth and hazardous trees to prevent as much impact from a wildfire as possible.

## Climate Change and Wildfire

It is likely that climate change will increase the chance of future occurrence as well as future impacts associated with wildfire. More information on future impacts to the District can be found in the Future Conditions/Future Development section of the Vulnerability Assessment below.

Warmer temperatures can exacerbate drought conditions. Drought often kills plants and trees, which serve as fuel for wildfires. Warmer temperatures could increase the number of wildfires and pest outbreaks, such as the western pine beetle. Cal-Adapt's wildfire tool predicts the potential increase in the amount of burned areas for the year 2090-2099, as compared to recent (2010) conditions. This is shown in Section 4.3.17 of the Base Plan. Based on this model, Cal-Adapt predicts that wildfire risk in Butte County will increase moderately at the end of the century. However, wildfire models can vary depending on the parameters used. Cal-Adapt does not take landscape and fuel sources into account in their model. In all likelihood, in the Butte County Planning Area, precipitation patterns, high levels of heat, topography, and fuel load will determine the frequency and intensity of future wildfire.

## Vulnerability to Wildfire

Risk and vulnerability to the District from wildfire is of concern. Wildfires that occur in the District occur from a variety of both natural and manmade causes. The District can be affected both by fires that start on or near District lands as well as those that start elsewhere and move into the District. In addition to burning large areas of land, air quality can be affected in the District by fires occurring inside the District as well as those from many miles away. As growth continues and populations increase in the District, the potential for wildfires will also increase.

The whole of the District is at some measure of vulnerability to wildfire. An assessment of a community's vulnerability to wildfire begins with an understanding of local exposure to wildfire. This is included in the Local Concerns section below. After that section, assets at risk are discussed.

### Local Concerns

The District has specific concerns and unique vulnerabilities regarding this hazard. These concerns form a portion of the basis for the mitigation strategy and mitigation actions that seek to reduce vulnerabilities to this hazard.

Although the physical damages and casualties arising from wildland urban interface fires may be severe, it is important to recognize that they also cause significant economic impacts by resulting in a loss of function of buildings and infrastructure. In some cases, the economic impact of this loss of services may be comparable to the economic impact of physical damages or, in some cases, even greater. Economic impacts of loss of transportation and utility services may include traffic delays/detours from road and bridge closures and loss of electric power, potable water, and wastewater services. Fires can also cause major damage to power plants and power lines needed to distribute electricity to operate District facilities. Power can also be shut off to the District during Public Safety Power Shutdown events.

### Wildfire Smoke and Air Quality

Smoke from wildfires is made up of gas and particulate matter, which can be easily observed in the air. Air quality standards have been established to protect human health with the pollutant referred to as PM2.5 which consists of particles 2.5 microns or less in diameter. These smaller sizes of particles are responsible for adverse health effects because of their ability to reach the lower regions of the respiratory tract.

Wildfire smoke can have negative effects to those who live in or near a fire burn area. Smoke and air pollution from wildfires can be a severe health hazard. Significant wildfires occurring in both the County and nearby northern California communities since the 2019 LHMP Update have created significant air pollution affecting area residents. This was the case during the 2020 North Complex Fire, as well as others that affected the nearby areas.

### Assets at Risk

Assets at risk from wildfire include people and populations served; structures and critical facilities; community lifelines; natural, historic, and cultural resources; economic assets; and community activities of value. These are discussed in the following sections.

#### *People and Populations Served*

All populations are at some vulnerability to wildfire. Certain vulnerable populations are at greater risk to the effects of wildfire as well as smoke and air quality issues that wildfires bring. Vulnerable populations include:

- Unhoused
- Infants and children under age five and their caregivers
- Elderly (65 and older)
- Individuals with disabilities
- Individuals' dependent on medical equipment
- Individuals who exercise or recreate outdoors
- Individuals who work outdoors
- Individuals with impaired mobility

#### *Structures and Critical Facilities*

All structures in the District have some risk to wildfire. Wildfire presents a threat to critical facilities and infrastructure. The following assets in Table S-9 were identified by the District as being at risk to wildfire.

*Table S-9 TWSD – Facilities at Risk from Wildfire*

| Name of Asset | Facility Type | Replacement Value |
|---|---|---|
| Concow Reservoir & Dam | 97' High arch cement dam | $30,000,000 |
| Water Treatment plant | Micro Membrane system | $7,320,000 |
| Office and maintenance yard | Office and equipment storage & repair | $1,100,000 |
| Four deep water wells | Three wells are centrifugal 1submersable | $3,000,000 |
| Clearwell Storage | Water Storage tank | $770,000 |
| 2.5 MG Storage | Water Storage Reservoir | $1,500,000 |
| 59 Mile Distribution Pipe system | 2" to 30" pipe for water Delivery | $38,940,000 |
| 34.7 Miles of sewer Collector system | 6" to 18" pipe for sewer collection | $27,482,400 |
| Sewer Lift Station | Pump station | $110,000 |

| Name of Asset | Facility Type | Replacement Value |
|---|---|---|
| **Total** | | **$110,222,400** |

Source: TWSD

### *Community Lifelines*

Wildfire presents a threat to life and property, including to community lifelines in the District. Depending on the severity of the fire, some community lifelines may be overwhelmed. Many of the District's community lifelines are the same as or similar to Butte County's. These were discussed in greater detail in Section 4.3.17 of the Base Plan.

### *Natural, Historic, and Cultural Resources*

Natural, historic, and cultural resources located within areas at risk to wildfire would be vulnerable. Should a wildfire occur in the District, the impacts to natural, historic and cultural resources could be extensive and include air pollution, contamination from water runoff containing toxic products, and other environmental discharges or releases from burned materials affecting soils, habitat areas, wildlife, and aquatic resources. Historic and cultural resources can be affected and are often more vulnerable due to their older age, construction type, and lack of fire prevention infrastructure such as sprinklers.

### *Economic Assets and Community Activities of Value*

Economic assets and community activities of value for the District are similar or the same as those for the County as a whole. Those assets and activities were discussed in greater detail in Section 4.3.17 of the Base Plan.

## Impacts from Wildfire

Potential impacts from wildfire include loss of life and injuries; damage to structures (commercial, industrial, and residential) and other improvements, natural and cultural resources, croplands, and timber; and loss of recreational opportunities. Wildfires can cause short-term and long-term disruption to the District. Fires can have devastating effects on watersheds through loss of vegetation and soil erosion, which may impact the District by changing runoff patterns, increasing sedimentation, reducing natural and reservoir water storage capacity, and degrading water quality. Fires can also affect air quality in the District; smoke and air pollution from wildfires can be a severe health hazard. Smoke impacts may come from wildfires outside the District, as well as from within.

Although the physical damages and casualties arising from wildland-urban interface fires may be severe, it is important to recognize that they also cause significant economic impacts by resulting in a loss of function of buildings and infrastructure. Economic impacts of loss of transportation and utility services may include traffic delays/detours from road and bridge closures and loss of electric power, potable water, and wastewater services. Schools and businesses can be forced to close for extended periods of time. Recently, the threat of wildfire, combined with the potential for high winds, heat, and low humidity, has caused PG&E to initiate a PSPS/EPSS which can also significantly impact a community through loss of services, business closures, and other impacts associated with loss of power for an extended period. In addition, catastrophic

wildfire can create favorable conditions for other hazards such as flooding, landslides, and erosion during the rainy season.

The impacts of a fire are felt long after the fire is extinguished. In addition to the loss of property in fires, the loss in vegetation and changes in surface soils alters the environment. When supporting vegetation is burned, hillsides become destabilized and prone to erosion. The burnt surface soils are harder and absorb less water. When winter rains come, this leads to increased runoff, erosion, and landslides in hilly areas.

Impacts that are not quantified, but can be anticipated in large future events, include:

- Injury and loss of life;
- Commercial and residential structural and property damage;
- Disruption of and damage to public infrastructure, utilities, and services;
- Damage to roads/bridges resulting in loss of mobility;
- Significant economic impact (jobs, sales, tax revenue) to the community; and
- Negative impact on commercial and residential property values

Impacts to identified assets at risk to this hazard and the overall vulnerability of the District may be affected in the future by climate change. It is likely that climate change will increase the chance of future occurrence as well as future impacts associated with wildfire. Changes in population patterns (migration, density, or the makeup of socially vulnerable populations) and changes in land use and development, and the extent to which they affect this hazard, are discussed in the Future Conditions/Future Development discussion below.

### Future Conditions/Future Development

Future conditions may be affected by climate change, changes in population patterns (migration, density, or the makeup of socially vulnerable populations), and changes in land use and development. Findings on this for the District include the following:

- As discussed in the hazard profile section, climate change is anticipated to exacerbate this hazard over time.
- While population projections for the area served by the District show additional expected growth, these anticipated future changes in population are expected to be relatively small, which limits additional impacts to the District. The District noted it has no control over population changes, it merely reacts to them by providing additional (or reduced) services.
- It is unknown how changes in land use and development will affect wildfire in the District's service territory. Building that occurs in the moderate or higher FHSZ may increase risk to additional lands. Building codes are in effect to reduce this risk and should be updated as necessary to continue to address future wildfire conditions.

Additional growth and development within moderate or higher fire hazard severity zones in the District would place additional values at risk to wildfire. District building codes are in effect and should continue to be updated as appropriate to reduce this risk.

## S.5 Capability Assessment

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment is divided into five sections: regulatory mitigation capabilities, administrative and technical mitigation capabilities, fiscal mitigation capabilities, mitigation education, outreach, and partnerships, and other mitigation efforts.

### S.5.1. Regulatory Mitigation Capabilities

Table S-10 lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in the TWSD. Note: The District does not have the authority to regulate land use and development within its jurisdiction. Authority for promulgating and enforcing zoning, land use, and development requirements falls to counties and incorporated communities. As such development within the District's jurisdictional boundaries will conform to the zoning and land use development ordinances and building codes of the county or incorporated community in which the District is located.

***Table S-10 TWSD's Regulatory Mitigation Capabilities***

| Plans | In Place Y/N | Does the plan address hazards? Can the plan be used to carry out mitigation actions? When was it last updated?? |
|---|---|---|
| Capital Improvements Plan | Y | Y |
| Climate Change Adaptation Plan | | |
| Community Wildfire Protection Plan | N | |
| Comprehensive/Master Plan | N | |
| Continuity of Operations Plan | N | |
| Economic Development Plan | N | |
| Land Use Plan | | |
| Local Emergency Operations Plan | Y | Y -2021 Emergency Response Plan |
| Stormwater Management Plan | N | |
| Transportation Plan | N | |
| Other (describe) | Y | Overflow Emergency Response Plan |
| **Land Use Planning and Ordinances** | **Y/N** | **Is the ordinance an effective way to reduce hazard impacts?<br>Is the ordinance adequately administered and enforced?** |
| Acquisition of land for open space and public recreation use | N | |
| Building code | Y | Y |
| Flood insurance rate maps | N | |
| Floodplain ordinance | N | |
| Natural hazard-specific ordinance (stormwater, steep slope, wildfire) | N | |

| | | |
|---|---|---|
| Subdivision ordinance | N | |
| Zoning ordinance | N | |
| Other | Y | Site Plan Review Requirements |
| **How can these capabilities be expanded and improved to reduce risk?** | | |
| Ensuring proper drainage capacity will prevent street flooding which can inundate the sewer system with storm water | | |

Source: TWSD

## S.5.2. Administrative/Technical Mitigation Capabilities

Table S-11 identifies the District department(s) responsible for activities related to mitigation and loss prevention in TWSD.

***Table S-11 TWSD's Administrative and Technical Mitigation Capabilities***

| **Administration** | **In Place Y/N** | **Describe capability Is coordination effective?** |
|---|---|---|
| **Staff** | | **Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?** |
| Chief Building Official | N | |
| Civil Engineer, including dam and levee safety | Y | Y |
| Community Planner | N | |
| Emergency Manager | Y | Y |
| Floodplain Administrator | N | |
| GIS Coordinator | N | |
| Planning Commission | | |
| Other | | |
| **Technical** | **Y/N** | **Has capability been used to assess/mitigate risk in the past?** |
| Grant writing | N | |
| Hazard data and information | N | |
| GIS analysis | | |
| Mutual aid agreements | Y | |
| Other | Y | Alarms and telemetry |
| **How can these capabilities be expanded and improved to reduce risk?** | | |
| In regards to this table, there is very little the District can do. The District will continue to seek other mutual aid agreements, and to enhance the knowledge base of the emergency manager. | | |

Source: TWSD

## S.5.3. Fiscal Mitigation Capabilities

Table S-12 identifies financial tools or resources that the District could potentially use to help fund mitigation activities.

***Table S-12 TWSD's Fiscal Mitigation Capabilities***

| Funding Resource | In Place Y/N | Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions? |
|---|---|---|
| Capital improvements project funding | Y | N, Y |
| Community Development Block Grant | | |
| Federal funding programs (non-FEMA) | | |
| Fees for water, sewer, gas, or electric services | Y | N, Y |
| Impact fees for new development | Y | Y, Y |
| State funding programs | | |
| Stormwater utility fee | N | |
| Other | | |
| **How can these capabilities be expanded and improved to reduce risk?** | | |
| Current funding levels are adequate to mitigate risk. The District will seek all available additional financial resources to add to District capabilities. | | |

Source: TWSD

## S.5.4. Mitigation Education, Outreach, and Partnerships

Table S-13 identifies education and outreach programs and methods already in place that could be/or are used to implement mitigation activities and communicate hazard-related information.

***Table S-13 TWSD's Mitigation Education, Outreach, and Partnerships***

| Program/Organization | In Place Y/N | How widespread are each of these in your community? |
|---|---|---|
| Community newsletters | N | |
| Hazard awareness campaigns (such as Firewise, Storm Ready, Severe Weather Awareness Week, school programs, public events) | N | |
| Local news | N | |
| Organizations that interact with underserved and vulnerable communities | N | |
| Social media | N | |
| Other | | |

| Program/Organization | In Place Y/N | How widespread are each of these in your community? |
|---|---|---|
| **How can these capabilities be expanded and improved to reduce risk?** | | |
| In-house education and planning to mitigate risk is on-going. Education of the public is limited to awareness of water conservation and to call if issues arise within the service area. | | |

Source: TWSD

### S.5.5. Other Mitigation Efforts

The District has many other completed or ongoing mitigation projects/efforts that include the following:

There are also multiple action plans that address possible hazards to the District. These are power outage, flood, winter storms, hurricane/tropical storms, and earthquake.

- Water:
  - ✓ Ongoing leak detection efforts, water sampling/testing, replacement of aged infrastructure
  - ✓ Maintenance of vehicles/equipment
  - ✓ Hazardous chemical spill containment procedures/plans

- Sewer:
  - ✓ Flushing/cleaning of lines
  - ✓ Pump/equipment maintenance
  - ✓ Sanitary Sewer Overflow training and readiness

- Concow:
  - ✓ Facility maintenance
  - ✓ Sediment/debris removal

## S.6 Mitigation Strategy

### S.6.1. Mitigation Goals and Objectives

The TWSD adopts the hazard mitigation goals and objectives developed by the HMPC and described in Chapter 5 Mitigation Strategy.

### S.6.2. NFIP Strategy

While the District is not an eligible NFIP community and does not participate in the NFIP, some of the mitigation actions and projects below may contain measures to promote effective floodplain management throughout the Butte County Planning Area. Even though it does not participate in the NFIP, the District will support the NFIP actions of the County (and the cities) to the fullest extent possible.

### S.6.3. Mitigation Actions

The planning team for the TWSD identified and prioritized the following mitigation actions based on the risk assessment. Background information and information on how each action will be implemented and

administered, such as ideas for implementation, responsible office, potential funding, estimated cost, and timeline are also included. The following hazards were considered a priority for purposes of mitigation action planning:

- Dam Failure
- Earthquake
- Landslide, Mudslide, and Debris Flow
- Wildfire

It should be noted that many of the projects submitted by each jurisdiction in Table 5-4 in the Base Plan benefit all jurisdictions whether or not they are the lead agency. Further, many of these mitigation efforts are collaborative efforts among multiple local, state, and federal agencies. In addition, the countywide public outreach action, as well as many of the emergency services actions, apply to all hazards regardless of hazard priority. Collectively, this multi-jurisdictional mitigation strategy includes only those actions and projects which reflect the actual priorities and capacity of each jurisdiction to implement over the next 5-years covered by this plan. It should further be noted, that although a jurisdiction may not have specific projects identified for each priority hazard for the five year coverage of this planning process, each jurisdiction has focused on identifying those projects which are realistic and reasonable for them to implement and would like to preserve their hazard priorities should future projects be identified where the implementing jurisdiction has the future capacity to implement.

## *Mitigation Actions*

### *Action 1. Concow Dam Structural Assessment & Rehabilitation*

**Hazards Addressed**: Dam Failure

**Goals Addressed**: 1, 2, 3, 5, 6, 8, 9

**Issue/Background**: Concow dam was completed in 1921. The dam has not required any significant repairs since its construction. The dam was recently reclassified as High priority and the District would like to do a structural analysis of the dam and complete any rehabilitation efforts needed.

**Project Description**: The project would consist of analyzing the existing dam, identifying any deficiencies and correcting them.

**Other Alternatives**: None

**Existing Planning Mechanism(s) through which Action will be implemented**: None

**Responsible Office/Partners**: Thermalito Water & Sewer District, Division of Safety of Dams

**Benefits (Losses Avoided)**: Continued use of the Dam

**Potential Funding**: FEMA (BRIC, HMGP, PDM, and FMA), DoSD, Cal OES

**Timeline**: In the next 5 years.

**Project Priority (H, M, L)**: High

### *Action 2. Vulnerable Main Replacement*

**Hazards Addressed**: Earthquake

**Goals Addressed**: 1, 2, 3, 5, 6, 9

**Issue/Background**: The District has water mains which were installed in the 50s. These old steel mains are vulnerable to earthquakes and are in the process of being replaced.

**Project Description**: The project would consist of removing and replacing the aged infrastructure.

**Other Alternatives**: None

**Existing Planning Mechanism(s) through which Action will be implemented**: Capital Improvement Plans

**Responsible Office/Partners**: Thermalito Water & Sewer District

**Benefits (Losses Avoided)**: Mitigate potential water main breaks

**Potential Funding**: FEMA (BRIC, HMGP, PDM, and FMA), Cal OES, DWR

**Timeline**: In the next 5 years.

**Project Priority (H, M, L)**: Medium

### *Action 3. Sediment Removal/Catchment*

**Hazards Addressed**: Landslide, Mudslide, and Debris Flow

**Goals Addressed**: 1, 2, 3, 5, 6

**Issue/Background**: The District has contended with sediment intrusion into the inlets of Concow Reservoir for some time. Sediment deposition increased significantly following the Camp Fire. Approximately 80% of the reservoirs watershed burned.

**Project Description**: The project would consist of removing the deposited sediment and creating a barrier for future sedimentation.

**Other Alternatives**: None

**Existing Planning Mechanism(s) through which Action will be implemented**: None

**Responsible Office/Partners**: Thermalito Water & Sewer District

**Benefits (Losses Avoided)**: Increase water storage in Concow Reservoir and alleviate negative impacts to Hoffman Crossing in Concow.

**Potential Funding**: FEMA (BRIC, HMGP, PDM, and FMA), Cal OES, DWR, SWRCB

**Timeline**: In the next 5 years.

**Project Priority (H, M, L)**: Medium

### *Action 4. Wildfire Fuel Reduction*

**Hazards Addressed**: Wildfire

**Goals Addressed**: 1, 2, 3, 5, 6, 7

**Issue/Background**: The District has approximately 275 dry land acres around Concow Reservoir. This area has been susceptible to wildfires multiple times in the last 10 years.

**Project Description**: The project would consist of removal of undergrowth and hazardous trees to prevent as much impact from a wildfire as possible.

**Other Alternatives**: None

**Existing Planning Mechanism(s) through which Action will be implemented**: None

**Responsible Office/Partners**: Thermalito Water & Sewer District

**Benefits (Losses Avoided)**: Reduce the risk of wildfire around Concow Reservoir.

**Potential Funding**: FEMA (BRIC, HMGP, PDM, and FMA), Cal OES, DWR, SWRCB, CAL FIRE

**Timeline**: In the next 5 years.

**Project Priority (H, M, L)**: High

# Appendix D: UWMP 2025 Checklist

| Retail (x = required) | Wholesale (x = required) | Order | 2025 Guidebook Location | Water Code Section | Summary as Applies to UWMP | Subject | Relevant Submittal Table | 2025 UWMP Location |
|---|---|---|---|---|---|---|---|---|
| x | x | 1 | Chapter 1 | 10615 | A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. | Introduction and overview | n/a | |
| x | x | 1 | Chapter 1 | 10630.5 | Each plan shall include a simple description of the Supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a Supplier may also choose to include a simple description at the beginning of each chapter. | Plan preparation | n/a | |
| x | x | 2.1 | Section 2.1 | 10620(b) | Every person that becomes a Supplier shall adopt UWMP within one year after it has become a Supplier. | Plan preparation | n/a | |
| x | n/a | 2.5 | Section 2.5 | 10644 | Supplier shall report the Public Water Systems number, volume of delivered water, and number of connections that are included in this UWMP. | Plan preparation | 2-1 | |
| x | x | 2.5 | Section 2.5 | 10644 | Supplier shall report if this UWMP is an individual UWMP and whether the Supplier belongs to a regional UWMP or regional alliance. | Plan preparation | 2-2 | |
| x | x | 2.5 | Section 2.5 | 10644 | Supplier shall report whether the data is in fiscal or calendar years and the units of measure used for reporting water volumes. | Plan preparation | 2-3 | |
| x | x | 2.4 | Section 2.4 | 10642 | Provide supporting documentation that the Supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan. | Plan preparation | n/a | |
| x | x | 2.4 | Section 2.4.2 | 10620(d)(3) | Coordinate the preparation of its plan with other appropriate agencies in the area, including other Suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable. | Plan preparation | n/a | |
| x | n/a | 2.4 | Section 2.4.1 | 10631(h) | Retail Suppliers will include documentation that they have provided their Wholesale Supplier(s)—if any—with water use projections from that source. | Plan preparation | 2-4 R | |
| n/a | x | 2.4 | Section 2.4.1 | 10631(h) | Wholesale Suppliers will provide their Suppliers with identification and quantification of the existing and planned sources of water available from the Wholesale Supplier to the Supplier during various water year types. | Plan preparation | 2-4 W | |
| x | x | 3 | Chapter 3.0 | 10631(a) | Describe the Supplier service area. | System description | n/a | |
| x | x | 3.3 | Section 3.3 | 10631(a) | Describe the climate of the Supplier's service area. | System description | n/a | |
| x | x | 3.4 | Section 3.4.1 | 10631(a) | Provide the current and projected service area populations for 2030, 2035, 2040, 2045 and optionally 2050. | System description | 3-1 | |
| x | x | 3.4 | Section 3.4.2 | 10631(a) | Describe other social, economic, and demographic factors affecting the Supplier's water management planning. | System description | n/a | |
| x | x | 3.5 | Section 3.5 | 10631(a) | Describe the land uses within the service area… include the current and projected land uses within the existing or anticipated service area affecting the Supplier's water management planning. Describe the land uses within the service area. | System description and baselines | n/a | |
| x | Optional | 4.2 | Sections 4.2.3 and 4.2.4 | 10631(d)(1) | Quantify past, current, and projected water use, identifying the uses among water use sectors. | System water use | 4-1 and 4-2 | |
| x | Optional | 4.3 | Section 4.3.1 | 10631(d)(3)(A) | Report the distribution system water loss for each of the five years preceding the plan update. | System water use | 4-5 | |
| x | n/a | 4.3 | Section 4.3.2 | 10631(d)(3)(C) | Retail Suppliers shall provide data to show the distribution loss standards were met. | System water use | 4-6 | |
| x | n/a | 4.2 | Section 4.2.5.4 | 10631.1(a) | Include projected water use needed for lower income housing projected in the service area of the Supplier. | System water use | 4-3 | |
| x | n/a | 4.2 | Section 4.2.5.3 | 10631(d)(4)(A) | In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws. | System water use | 4-3 | |
| x | n/a | 4.2 | Section 4.2.5.3 | 10631(d)(4)(B) | Provide citations of codes, standards, ordinances, or plans used to make water use projections. | System water use | 4-3 | |
| x | n/a | 4.2 | Section 4.2.5.3 | 10631(d)(4)(B)(ii) | To the extent that a Supplier reports the information described in subparagraph (A), an urban water Supplier shall… 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. | System water use | 4-3 | |
| x | x | 4.2 | Section 4.2.5.6 | 10635(b) | Demands under climate change considerations must be included as part of the drought risk assessment. | System water use | n/a | |
| n/a | x | 5.1 | Section 5.1 | 10608.36 | Wholesale Suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their Retail Suppliers achieve targeted water use reductions. | Baselines and targets | n/a | |
| x | n/a | 5.2 | Section 5.2 | 10608.4 | Retail Suppliers shall report on their compliance in meeting their water use targets. Reporting requirements will vary depending on whether the Supplier:<br>- Was considered an urban retail water supplier in 2020,<br>- Met its 2020 target in 2020, or<br>- Was part of a merger or consolidation since 2020.<br>Chapter 5 Subsections 5.2.1, 5.2.2, and 5.2.3 address each of these situations. | Baselines and targets | 5-1 | |
| x | x | 6.1 | Section 6.1 | 10631(b)(2) | When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies. | System supplies | n/a | |
| x | x | 6.1 | Sections 6.1 and 6.2 | 10631(b)(1) | Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, including changes in supply due to climate change. | System supplies | n/a | |
| x | x | 6.2 | Section 6.2.2 | 10631(b)(4)(C) | Indicate whether groundwater is an existing or planned source of water available to the Supplier. If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years. | Water supplies and recycled water | 6-1 | |
| x | x | 6.2 | Section 6.2.2 | 10631(b)(4)(A) | Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the Supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization. | System supplies | n/a | |
| x | x | 6.2 | Section 6.2.2 | 10631(b)(4)(B) | Describe the groundwater basin. | System supplies | n/a | |
| x | x | 6.2 | Section 6.2.2 | 10631(b)(4)(B) | Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the Supplier has the legal right to pump. | System supplies | n/a | |
| x | x | 6.2 | Section 6.2.2 | 10631(b)(4)(B) | For unadjudicated basins… (include) information as to whether DWR has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin. | Water supplies and recycled water | n/a | |
| x | x | 6.2 | Section 6.2.2 | 10631(b)(4)(B) | For unadjudicated basins… describe efforts by the Supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions. | Water supplies and recycled water | n/a | |
| x | x | 6.2 | Section 6.2.2. | 10631(b)(4)(C) | If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years. | System supplies | n/a | |
| x | x | 6.2 | Section 6.2.2 | 10631(b)(4)(D) | Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped. | System supplies | 6-9 | |
| x | x | 6.1 | Section 6.1 | 10631(b) | Identify and quantify the existing and planned sources of water available for 2025, 2030, 2035, 2040, 2045 and optionally 2050. | System supplies | 6-8 and 6-9 | |
| x | x | 6.2 | Section 6.2.7 | 10631(c) | Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis. | System supplies | n/a | |
| x | n/a | 6.2 | Section 6.2.5 | 10633(a) | Describe the wastewater collection and treatment systems in the Supplier's service area with quantified amount of collection and treatment and the disposal methods. | System supplies (recycled water) | 6-2 | |
| x | x | 6.2 | Section 6.2.5 | 10633(b) | Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project. | System supplies (recycled water) | 6-3 | |
| x | x | 6.2 | Section 6.2.5 | 10633(c) | Describe the recycled water currently being used in the Supplier's service area. | System supplies (recycled water) | 6-4 | |
| x | x | 6.2 | Section 6.2.5 | 10633(d) | Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses. | System supplies (recycled water) | 6-4 | |
| x | x | 6.2 | Section 6.2.5 | 10633(e) | Describe the projected use of recycled water within the Supplier's service area at the end of 5, 10, 15, and 20 years, and describe the actual use of recycled water in comparison to uses previously projected. | System supplies (recycled water) | 6-4 and 6-5 | |
| x | x | 6.2 | Section 6.2.5 | 10633(f) | Describe the actions that 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. | System supplies (recycled water) | 6-6 | |
| x | x | 6.2 | Section 6.2.5 | 10633(g) | Provide a plan for optimizing the use of recycled water in the Supplier's service area. | System supplies (recycled water) | n/a | |
| x | x | 6.2 | Section 6.2.6 | 10631(g) | Describe desalinated water project opportunities for long-term supply. | System supplies | 6-7 | |
| x | x | 6.2 | Section 6.2.10 | 10631(f) | Describe the expected future water supply projects and programs that may be undertaken by the water Supplier to address water supply reliability in average, single-dry, and for a period of drought lasting five consecutive water years. | System supplies | 6-7 | |
| x | x | 6.3 | Section 6.3 and Appendix O | 10631.2(a) | The UWMP must include energy information, as stated in the code, that a Supplier can readily obtain. | System suppliers, energy intensity | O-1A, O-1B, O-1C, and O-2 | |
| x | | 7.1 | Section 7.1 | 10634 | Provide information on the quality of existing sources of water available to the Supplier and the manner in which water quality affects water management strategies and supply reliability. | Water supply reliability assessment | n/a | |
| x | x | 7.2 | Section 7.2 | 10635(a) | Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the Supplier with the total projected water use over the next 20 years. | Water supply reliability assessment | 7-2, 7-3, and 7-4 | |
| x | x | 7.2 | Section 7.2.3 | 10620(f) | Describe water management tools and options to maximize resources and minimize the need to import water from other regions. | Water supply reliability assessment | n/a | |
| x | x | 7.3 | Section 7.3 | 10635(b) | Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects. | Water supply reliability assessment | n/a | |
| x | x | 7.3 | Section 7.3 | 10635(b)(1) | Include 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 years. | Water supply reliability assessment | n/a | |
| x | x | 7.3 | Section 7.3 | 10635(b)(2) | Include a determination of the reliability of each source of supply under a variety of water shortage conditions. | Water supply reliability assessment | n/a | |
| x | x | 7.3 | Section 7.3 | 10635(b)(3) | Include a comparison of the total water supply sources available to the Supplier with the total projected water use for the drought period. | Water supply reliability assessment | 7-5 | |
| x | x | 7.3 | Section 7.3 | 10635(b)(4) | Include 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. | Water supply reliability assessment | n/a | |
| x | x | 8 | Chapter 8 | 10632(a) | Provide a water shortage contingency plan (WSCP) with specified elements below. | Water shortage contingency planning | n/a | |
| x | x | 8 | Chapter 8 | 10632(a)(1) | Provide an analysis of water supply reliability (from Guidebook Chapter 7) in the WSCP. | Water shortage contingency planning | n/a | |
| x | x | 8.2 | Section 8.2 | 10632(a)(2)(A) | Provide the written decision-making process and other methods that the Supplier will use each year to determine its water reliability. | Water shortage contingency planning | n/a | |
| x | x | 8.2 | Section 8.2 | 10632(a)(2)(B) | Provide data and methodology to evaluate the Supplier's water reliability for the current year and one dry year pursuant to factors in the code. | Water shortage contingency planning | n/a | |
| x | x | 8.3 | Section 8.3 | 10632(a)(3)(A) | Define six standard water shortage levels of 10%, 20%, 30%, 40%, 50% shortage, and greater than 50% shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply. | Water shortage contingency planning | n/a | |
| x | x | 8.3 | Section 8.3 | 10632(a)(3)(B) | Suppliers with an existing WSCP that uses different water shortage levels must cross reference their categories with the six standard categories. | Water shortage contingency planning | 8-1 | |
| x | x | 8.4 | Section 8.4 | 10632(a)(4)(A) | Suppliers with WSCPs that align with the defined shortage levels must specify locally appropriate supply augmentation actions. | Water shortage contingency planning | 8-2 | |
| x | x | 8.4 | Section 8.4 | 10632(a)(4)(B) | Specify locally appropriate demand reduction actions to adequately respond to shortages. | Water shortage contingency planning | 8-3 | |
| x | x | 8.4 | Section 8.4 | 10632(a)(4)(C) | Specify locally appropriate operational changes. | Water shortage contingency planning | 8-2 | |
| x | x | 8.4 | Section 8.4 | 10632(a)(4)(D) | Specify additional mandatory prohibitions against specific water use practices that are in addition to State-mandated prohibitions are appropriate to local conditions. | Water shortage contingency planning | Table 8-3 | |
| x | x | 8.4 | Section 8.4 | 10632(a)(4)(E) | Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action. | Water shortage contingency planning | 8-2 and 8-3 | |
| x | x | 8.4 | Section 8.4.6 | 10632.5 | The UWMP shall include a seismic risk assessment and mitigation plan. | Water shortage contingency plan | n/a | |
| x | x | 8.5 | Section 8.5 | 10632(a)(5)(A) | Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages. | Water shortage contingency planning | n/a | |
| x | x | 8.5 | Section 8.5 | 10632(a)(5)(B),<br>10632(a)(5)(C) | Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications. | Water shortage contingency planning | n/a | |
| x | n/a | 8.6 | Section 8.6 | 10632(a)(6) | Retail Supplier must describe how it will ensure compliance with and enforce provisions of the WSCP. | Water shortage contingency planning | n/a | |
| x | x | 8.7 | Section 8.7 | 10632(a)(7)(A) | Describe the legal authority that empowers the Supplier to enforce shortage response actions. | Water shortage contingency planning | n/a | |
| x | x | 8.7 | Section 8.7 | 10632(a)(7)(B) | Provide a statement that the Supplier will declare a water shortage emergency per Water Code Chapter 3, *Water Shortage Emergencies*. | Water shortage contingency planning | n/a | |
| x | x | 8.7 | Section 8.7 | 10632(a)(7)(C) | Provide a statement that the Supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency. | Water shortage contingency planning | n/a | |
| x | x | 8.8 | Section 8.8 | 10632(a)(8)(A) | Describe the potential revenue reductions and expense increases associated with activated shortage response actions. | Water shortage contingency planning | n/a | |
| x | x | 8.8 | Section 8.8 | 10632(a)(8)(B) | Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions. | Water shortage contingency planning | n/a | |
| x | n/a | 8.8 | Section 8.8 | 10632(a)(8)(C) | Retail Suppliers must describe the cost of compliance with Water Code Chapter 3.3, *Excessive Residential Water Use During Drought*. | Water shortage contingency planning | n/a | |
| x | n/a | 8.9 | Section 8.9 | 10632(a)(9) | Retail Suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data are collected, tracked, and analyzed for purposes of monitoring customer compliance. | Water shortage contingency planning | n/a | |
| x | x | 8.10 | Section 8.10 | 10632(a)(10) | Describe reevaluation and improvement procedures for monitoring and evaluation the WSCP to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented. | Water shortage contingency planning | n/a | |
| x | n/a | 8.11 | Section 8.11 | 10632(b) | Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas. | Water shortage contingency planning | n/a | |
| x | x | 8.12 | Section 8.12 | 10632(c) | Make available the WSCP to customers and any city or county where it provides water within 30 days after adoption of the plan. | Water shortage contingency planning | n/a | |
| x | n/a | 9.1 | Sections 9.1 | 10631(e)(1) | Retail Suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code. | Demand management measures | n/a | |

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| n/a | x | 9.2 | Sections 9.2 | 10631(e)(2) | Wholesale Suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and Supplier assistance program. | Demand management measures | n/a | |
| x | n/a | 10 | Chapter 10 | 10608.26(a) | Retail Suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance). | Plan adoption, submittal, and implementation | n/a | |
| x | x | 10.2 | Section 10.2.1 | 10621(b) | Notify, at least 60 days prior to the public hearing, any city or county within which the Supplier provides water that the Supplier will be reviewing the UWMP and considering amendments or changes to the plan. | Plan adoption, submittal, and implementation | 10-1 | |
| x | x | 10.4 | Section 10.4 | 10621(f) | Each urban water Supplier shall update and submit its 2025 plan to DWR by July 1, 202 6. | Plan adoption, submittal, and implementation | n/a | |
| x | x | 10.2 | Sections 10.2.2, 10.3, and 10.5 | 10642 | Provide supporting documentation that the Supplier made the UWMP and WSCP available for public inspection, published notice of the public hearing, and held a public hearing about the UWMP and WSCP. | Plan adoption, submittal, and implementation | n/a | |
| x | x | 10.2 | Section 10.2.2 | 10642 | The Supplier is to provide the time and place of the hearing to any city or county within which the Supplier provides water. | Plan adoption, submittal, and implementation | 10-1 | |
| x | x | 10.3 | Section 10.3.2 | 10642 | Provide supporting documentation that the UWMP and WSCP has been adopted as prepared or modified. | Plan adoption, submittal, and implementation | n/a | |
| x | x | 10.4 | Section 10.4 | 10644(a) | Provide supporting documentation that the Supplier has submitted their UWMP to the California State Library. | Plan adoption, submittal, and implementation | n/a | |
| x | x | 10.4 | Section 10.4 | 10644(a)(1) | Provide supporting documentation that the Supplier has submitted their UWMP to any city or county within which the Supplier provides water no later than 30 days after adoption. | Plan adoption, submittal, and implementation | n/a | |
| x | x | 10.4 | Sections 10.4.1 and 10.4.2 | 10644(a)(2) | The UWMP, or amendments to the UWMP, submitted to DWR shall be submitted electronically. | Plan adoption, submittal, and implementation | n/a | |
| x | x | 10.7 | Section 10.7.2 | 10644(b) | If revised, submit a copy of the WSCP to DWR within 30 days of adoption. | Plan adoption, submittal, and implementation | n/a | |
| x | x | 10.5 | Section 10.5 | 10645(a) | Provide supporting documentation that, not later than 30 days after filing a copy of its UWMP with DWR, the Supplier has or will make the plan available for public review during normal business hours. | Plan adoption, submittal, and implementation | n/a | |
| x | x | 10.5 | Section 10.5 | 10645(b) | Provide supporting documentation that, not later than 30 days after filing a copy of its WSCP with DWR, the Supplier has or will make the plan available for public review during normal business hours. | Plan adoption, submittal, and implementation | n/a | |
| x | x | 10.6 | Section 10.6 | 10621(c) | If Supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings. | Plan adoption, submittal, and implementation | n/a | |

# Appendix E: Adoption Resolution