



June 2021

2020 Water Shortage Contingency Plan for Tuolumne Utilities District

Final Report



Appendix N

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2020 Water Shortage Contingency Plan

28 June 2021



Tuolumne Utilities District

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Section 1: Introduction

Section 10632 of the Act details the requirements of the water shortage contingency analysis. The Act states the following:

CWC 10632

(a) Every urban water supplier shall prepare and adopt a water shortage contingency plan as part of its urban water management plan that consists of each of the following elements

(1) The analysis of water supply reliability conducted pursuant to Section 10635.

The Water Shortage Contingency Plan is based in part on Regulation No. 12. The full text of this regulation can be found in Appendix L of the 2020 UWMP.

The purpose of the Water Shortage Contingency Plan is to provide a plan of action to be followed during the various stages of a water shortage. The plan includes the following elements: water supply reliability analysis, annual water supply and demand assessment procedures, water shortage stages, water shortage response actions, communication protocols, penalties/charges/other enforcement of prohibitions, legal authorities, financial consequences, monitoring and reporting, plan refinement procedures, special water feature distinction, resolution or ordinance and references.

In general, TUD's annual combined water supplies of surface water, groundwater and recycled water can meet demand projections through 2045 under the normal, single dry-year and multi dry-year scenarios. This reliability is a result of the historic reliability and availability of the South Fork of the Stanislaus River, groundwater supply, and recycled water for agricultural irrigation. The reliability and vulnerability of the water supply to TUD are discussed in Section 6 of the 2020 Urban Water Master Plan. The annual assessment and safe yield determined for this system demonstrates that water supply is met each year, however an assessment of a potential water shortage that occurs at the end of the year is assessed on an annual basis and is discussed below. Table 1-0 shows the District's near-term water supply reliability assuming 5-year drought.

Table 1-0: Five-Year Drought Risk Assessment

	2021	2022	2023	2024	2025
Gross Water Use (AF)	17,394	17,597	17,801	18,005	18,058
Total Water Supplies (AF)	23,166	23,175	23,185	23,195	23,205
Surplus/Shortfall w/o WSCP Action (AF)	5,771	5,578	5,384	5,190	5,147
Planned WSCP Action (Use Reduction and Supply Augmentation)					
WSCP - Supply Augmentation benefit	0	0	0	0	0
WSCP - use reduction savings benefit	0	0	0	0	0
Revised Surplus/Shortfall (AF)	5,771	5,578	5,384	5,190	5,147
Resulting % Use Reduction from WSCP action	0%	0%	0%	0%	0%

Section 2: Annual Water Supply and Demand Assessment Procedures

CWC 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 and demand assessment.*

(v) *A description and quantification of each source of water supply.*

CWC 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 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 on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later.

2.1 Timeline for Conducting the Annual Assessment

Table 2-1 provides targets for performing the Annual Assessment. The table outlines actions for the current year and one year of drought. By starting to plan in October, TUD will get a snapshot of conditions and can start lining up the resources to mitigate supply and start outreach to customers to manage demand. Major actions are proposed in February, when an initial estimate of supply is made and compared to demand. A final annual assessment is proposed in May.

Table 2-1: Calendar for Performing Annual Assessment

Target Date	Action
Oct-Jan	<ol style="list-style-type: none"> 1. Monitor supply sources. 2. Monitor demand trends. 3. Coordinate with PG&E for reservoir operations.
Jan-May	<ol style="list-style-type: none"> 4. Confirm anticipated weather (e.g., National Weather Service Climate Prediction Center, US Drought Seasonal Outlook, PG&E weather forecasts). 5. Prepare initial assessment of supplies using Supply Table 2 Water Supply Assessment January- May. 6. Make initial assessment of demand using Demand Table 1 with climate and new construction adjustments. 7. Make an initial estimate of shortage using Reliability Table 1. 8. If shortage is anticipated, form Water Shortage Task Force. 9. Inform District Board of conditions-begin public outreach. 10. If necessary, declare water shortage and prepare and submit notices of public hearing on water shortage. 11. Monitor supply sources. 12. Monitor demand trends. 13. Maintain coordination with PG&E operations. 14. Monitor customer response to water shortage messaging and other actions.
April	<ol style="list-style-type: none"> 15. Complete Draft Annual Assessment.
May	<ol style="list-style-type: none"> 16. Present Draft Annual Water Assessment to District Board and update with District Board's input. 17. Finalize Annual Water Assessment and submit to DWR.
June-Sept	<ol style="list-style-type: none"> 18. Continue public outreach. 19. If necessary, declare water shortage and implement supply mitigations and demand reduction actions. 20. Monitor customer response to water shortage messaging and other actions.

2.2 Factors Affecting Demand and Supply

The driest year on record for nearly 100 years (1977) provided enough precipitation and flow in the SFSR to fill Lyons Reservoir and Pinecrest Lake. Once the reservoirs are full, the District's demand can be met for the year, as described in Chapter 3 and 6 of the Urban Water Management Plan. However, a minimum amount of precipitation needs to occur in each year and PG&E needs to leave a minimum storage volume in each year to ensure this happens. These precipitation patterns and storage levels are assessed beginning late in each calendar year. The water supply cycle is considered to start around December when both Lyons Reservoir and Pinecrest Lake are drawn down to low storage levels. Precipitation normally begins sometime between late October and early December. By the turn of the calendar year, precipitation patterns become active. By February 1st, the first snow surveys are published by the State. On that date the district can evaluate early supply forecasts. First the District can

evaluate if the reservoirs will fill. Second, the District considers if any demand reduction would be required for the year. Water shortages could occur during this period if weather patterns have not been established by January and may result in water use reduction early due to low reservoir levels before the reservoir fill cycle starts. The process is outlined below. Additionally, TUD may experience water shortages in the summer due to regulatory conditions that may be placed on the Phoenix Hydrologic Project reducing the volume of storage in Lyons Reservoir available to TUD under the FERC relicensing process taking place in 2021. TUD may update this potential affect depending on the outcome of the relicensing efforts process as the writing of this document.

TUD monitors weather forecast information provided from publicly available information sources including National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service publications starting in October of each year. TUD also monitors the Department of Water Resources (DWR) Bulletin 120 reports providing an estimate of water year runoff as early as February 15th of each year.

TUD monitors daily storage readings provided by PG&E for both Lyons Reservoir and Pinecrest Lake. In particular, the drawdown of Pinecrest Lake storage during the October-December period for planning and mitigating potentially dry conditions through the turn of the calendar year. In addition, TUD carefully monitors the drawdown of Lyons Reservoir storage during the summer months prior to Labor Day due to potential restrictions of Pinecrest Lake storage to TUD.

Snow depth readings are posted to the California Data Exchange Center (CDEC) for two snow monitoring stations located in and near the watershed to Pinecrest Lake. These readings are posted daily under the California Data Exchange Center (CDEC) web site. These snow depth readings provide a measure of the estimated SFSR runoff and are used to establish water availability to fill the reservoirs and thus water supply for the year.

US Drought Information Seasonal Outlook. The National Weather Service Climate Prediction Center provides information geographically on drought conditions and categorizes geographies as “Drought Persists,” “Drought Remains but Improves,” “Drought Removal Likely,” and “Drought Development Likely.”

2.3 Assessing Supply in Current Year and One Dry Year

The District will evaluate the local water sources available and the District’s infrastructure status. Table 2-2 summarizes the factors to be considered.

Using Table 2-1 as a guide, TUD will develop a summary of the surface water source available in the upcoming year assuming the subsequent year will be a dry year. TUD will develop Supply Tables 1 and 2 (Table 2-3 and Table 2-4), in which a quantified summary of the surface water source for the months of January- May and the upcoming year assuming the subsequent year is a dry year. Anticipated water supply will be forecasted using past supply patterns.

Table 2-2: Annual Assessment of Supply		
Source/Supply Infrastructure	Factors to be Evaluated in Current Year	Establishing Supply in Assumed Subsequent Dry Year
South Fork Stanislaus River, Snow and Reservoir Storage	<p>Will the reservoirs fill?</p> <p>Will there be an early end of spill?</p> <p>Any constraints on supply due to infrastructure or water quality. If Lyons drops too low</p> <p>Coordinate with PG&E operations to limit diversions to the MFSR to safeguard supply if pending drought conditions.</p>	<p>The estimated demand is relatively stable. The required flow in the main canal on a daily or monthly basis each year is relatively predictable but can vary with relatively hot temperatures. The demand is otherwise known within a range of approximately 10%. A demand assessment is assumed slightly higher than the average of the previous 5 years anticipating unforeseen spikes in demand.</p> <p>Any constraints on supply due to infrastructure or water quality.</p>
Groundwater	<p>Regulatory limitations per Federal, State and Local Agencies.</p> <p>Past prolonged drought resulted in over 150 well failures in Tuolumne County and may impact TUD wells.</p> <p>Consider if supply would be managed differently if it is known subsequent year will be dry year.</p>	<p>Regulatory limitations per Federal, State and Local Agencies.</p> <p>Any constraints on supply due to infrastructure or water quality per Federal, State and Local Agencies.</p>
Recycled water	<p>What is current annual recycled water production capability?</p> <p>What is current annual demand + new (12 months) demand?</p>	<p>What is current annual recycled water production capability?</p> <p>What is current annual demand + new (24 months) demand?</p>

Table 2-3 depicts the annual Water Supply Availability in the following five years for the surface water, ground water and recycled water. Based on the safe yield of the surface water and using 50% availability of the ground water supply in a dry year. The following water supply is anticipated to be available in the next five years.

Table 2-3: Annual Water Supply Capacity (Supply Table 1)

Source	2021	2022	2023	2024	2025
Water from PG&E	20,100	20,100	20,100	20,100	20,100
Groundwater	733	733	733	733	733
Recycled water	1,600	1,610	1,620	1,630	1,640
Total	22,433	22,443	22,453	22,463	22,473

Table 2-4 provides a framework to compare the current surface water storage availability for the combined Lyons Reservoir and Pinecrest Lake storage and estimated volume of runoff from the known snow accumulation for the first four months of the calendar year which could be a “pinch point” in the water supply. To manage this, TUD meets with PG&E in the period between October- December to ensure that deliveries of supplemental supply are fulfilled to Lyons Reservoir and that Pinecrest Lake drawdown storage levels are not depleted too far if dry conditions persist through the November December period.

Supply Table 2 Water Supply Assessment January- May

Table 2-4: Water Supply Assessment January-May (Supply Table 2)

Total Water Available by Month (acre-feet)	Lyons Reservoir Storage (acre-feet)	Pinecrest Lake Storage (acre-feet)	Estimated runoff from snow measurements (SWE) (acre-feet)	Total (acre-Feet)
Jan				
Feb				
Mar				
Apr				
May				

Notes:

1. PG&E provides daily readings to TUD for Lyons Reservoir and Pinecrest Lake.
2. Also available from data obtained from United States Geological Survey (USGS) National Water Information System: Web Interface, USGS Water Resources. <https://waterdata.usgs.gov/>

2.4 Water Demand Assessment

DWR guidance for the Annual Assessment is to consider the expected water use in the upcoming year, based on recent water use, and before any projected response actions a Supplier may trigger under its Water Shortage Contingency Plan.

2.4.1 Land Use

To evaluate water demand, the District will examine current and projected land uses. The County and the City of Sonora are the only two land use planning agencies that have such responsibilities within TUD's Treated Water Service Area. A summarized total of the existing land use within the District service area through the end of the recent water year will be developed. All construction plans for properties within District boundaries require District review and approval as discussed in section 1.2.1 Relationship to Other Planning by Water Agency.

2.4.2 Current Demand

The District will create Demand Table 1 (Table 2-5) that will summarize the total monthly demand for the most recent complete water year by: treated water production, raw water deliveries, and other uses and losses in the conveyance system. Based on the District's historic water demand data, a <x%> of water demand increase is anticipated assuming the subsequent year will be a dry year. The estimated subsequent year demand is estimated at <xxxx> acre-feet as presented in Demand Table 1.

Additionally, any anticipated additional annual demands from "Under Construction and Approved Projects" will be included in Demand Table 1. The calculations for the new demand will use the most recently developed demand factors inclusive of water loss and including a contingency to account for annual demand variations that are likely to occur.

Additionally, the near-term water demands are shown as the sum of the demands reflected for the current year demands adjusted for climate and adjusted for any anticipated additional annual demand from "Under Construction and Approved Projects" and shown in Demand Table 1.

Table 2-5: District's Annual Demand (Demand Table 1 with climate and new construction adjustments)

	Treated Water Production (acre-feet)	Raw Water (acre-feet)	Supply Water Conveyance: Est. Uses & Losses (acre-feet)	Total (acre-feet)
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				
		<YEAR>	Current Demand Total	
Climate Adjustment	<YEAR>		Hot Weather Factor	<x%>
			Hot Weather Demand Total	
Pending New Connections Adjustment	<YEAR>		Projection Factor	<x%>
			Pending Add. Demand Total	
Total Demand w/ Adjustments		<YEAR +1>	Near-Term Demands Total	

2.5 Assessing Water Supply Reliability

DWR 2020 UWMP Guidebook

While the first Annual Assessment is not required to be submitted to DWR until July 1, 2022, Suppliers are encouraged to use the procedures documented in its WSCP to prepare and include the outcome of an Annual Assessment for 2021, and to present the results in their UWMP as an example.

Further, although the Annual Assessment must be submitted to DWR on or before July 1 of every year, an early Annual Assessment allows Suppliers and customers to identify uncertainties and prepare financially and logistically for any anticipated water supply constraints in the coming months. Therefore, Suppliers are encouraged to develop procedures, including decision-making processes, that facilitate early analysis and adoption.

The District will first, compare Supply Table 2 with the demands shown in Demand Table 1 for January – March and determine if a supply shortage is anticipated during the “Pinch Point”, the level of shortage, and prepare if necessary to implement its Water Shortage Contingency Plan.

The District will second, compare Supply Table 1 and Demand Table 1 as shown in Reliability Table 1 (Table 2-6) and determine if a supply shortage is anticipated for the year, the level of shortage, and prepare, if necessary, to implement its Water Shortage Contingency Plan.

Table 2-6: District Water Reliability (Reliability Table 1)			
	Demand (acre-feet)	Supply (acre-feet)	Supply/Deficit (acre-feet)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Total			

2.6 Coordination with Cities and Counties

Should a water shortage be declared, TUD will coordinate with any agencies within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

Section 3: Six Standard Water Shortage Stages

CWC 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 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.

3.1 Definitions/Criteria Establishing Shortage

TUD has grouped the actions to be taken during a water shortage into six phases that are based on the water supply conditions in each year. This six-phase rationing plan includes both voluntary and mandatory rationing, depending on the causes, severity, and anticipated durations of the water supply shortage (i.e., customer conservation target). Table 3-1 describes the water supply shortage phases and conditions. The phases will be implemented during water supply shortages according to shortage level, ranging from normal conditions in Phase I (forecasted water runoff into Lyons Reservoir to be greater than 50 percent of normal) to emergency conditions in Phase IV (immediate water shortage or outage). The specific actions to be undertaken during each water shortage supply phase are listed in Regulation No. 12 included in Appendix L of the 2020 UWMP.

Table 3-1: Water Shortage Contingency Plan and TUD Regulation No. 12 Shortage Levels

Water Shortage Contingency Plan			TUD Regulation No. 12
Shortage Level	Percent Shortage Range	Shortage Response Actions	Shortage Phase
1	Up to 10%	Greater than 50% of normal forecasted flow of the Bulletin 120 for the Stanislaus River	Phase 1 (Ongoing Water Education and Management) and Phase 2 (Conservation Measures)
2	Up to 20%	Less than 50% of normal forecasted flow of the Bulletin 120 for the Stanislaus River	Phase 2 (Conservation Measures)
3	Up to 30%	Less than 30% of normal forecasted flow of the Bulletin 120 for the Stanislaus River	Phase 2 (Conservation Measures)

Table 3-1: Water Shortage Contingency Plan and TUD Regulation No. 12 Shortage Levels			
Water Shortage Contingency Plan			TUD Regulation No. 12
Shortage Level	Percent Shortage Range	Shortage Response Actions	Shortage Phase
4	Up to 40%	Less than 10% of normal forecasted flow of the Bulletin 120 for the Stanislaus River	Phase 2 (Conservation Measures)
5	Up to 50%	Emergency-Catastrophic water Restriction	Phase 3 (Critical Water Years)
6	>50%	Emergency-Catastrophic water Restriction	Phase 4 (Emergency Water Restriction)
NOTES: 1. DWR Stages correspond with TUD Regulation 12 Phases. 2. Per Regulation 12, TUD may implement Phase III “whenever it determines that the amount of available water supply may be less than the projected water system demand.”			

Under emergency water conditions resulting from sudden catastrophic events, TUD will activate the Phase IV Emergency Water Restrictions outlined in Regulation No. 12 of the TUD Rules and Regulations in parallel with WSCP Water Shortage Stages. However, under slowly developing drought or climate changing conditions, the planning effort occurs much differently and is assessed on a sliding scale of changing conditions. The phase determination and declaration during a water supply shortage will be made by the District Board of Directors in accordance with Regulation No. 12.

3.2 Determining Water Shortage Reductions

TUD utilized available water meters to analyze actual water use reduction. Currently TUD’s service area is 100% percent metered consisting of approximately 40 percent metered with 60 percent of meters fitted with AMR technology allowing for scheduled and/or special reading capabilities. TUD can use customer meters to determine customer consumption data for a specific user based on hourly, daily and/or monthly water consumption depending on the type of meter installed. TUD can monitor long-term water use through Bi-monthly meter readings, which provide TUD the ability to identify exceptionally high usage for verification of water loss or abuse. In addition, TUD can use production meters to determine water losses within a distribution based on hourly, daily and/or monthly readings.

During a water shortage, the procedure that TUD would use to determine actual reductions of water is as follows:

1. Comparison of treated water supply production for each distribution system on a daily basis to determine if the usage is reduced accordingly.
2. If conservation reductions are not met based on the supply production analysis, then a reading of water meters on that distribution system would be initiated to find the violators and to begin notifications, restrictions, penalties, etc.

3. Field employees will be deployed to provide reports of any observed water use that is restricted by Regulation No. 12.
4. Distribution systems will be field inspected for theft or other uncontrolled system losses if the production flow meters that serve them do not show the expected reduction of water use.

3.3 Actions to Prepare for Catastrophic Interruption

The Act requires documentation of actions to be undertaken by the water supplier to prepare for and implement during a catastrophic interruption of water supplies which are further described below. A catastrophic interruption constitutes a proclamation of a water shortage and could result from an event (either natural or man-made) that causes a water shortage severe enough to classify as a Phase VI WSCP water supply shortage condition.

3.3.1 Emergency Response Plan

In the event of a water shortage catastrophe, the TUD Board of Directors would call for a State of Emergency which would implement actions as outlined in the Emergency Response Plan (ERP) and Regulation No. 12:

1. Immediately notify appropriate media outlets, and post local road signage notifying the public of the current water use restrictions.
2. Hold a public hearing, as soon as feasible, during which customers shall have the opportunity to present their comments to the Board.
3. Following a public hearing the Board of Directors may implement Phase VI WSCP/ Phase IV Regulation No. 12 measures whenever water supply has been disrupted either for individual water system(s) or for the District's system as a whole. Specific water reduction goals will be set by Board resolution.

The District shall proclaim through resolution that a state of emergency exists and shall remain in effect until the water supply has been restored.

TUD is authorized under the California Emergency Services Act (Chapter 7, Article 9.5. California Government Code) to conduct emergency operations. In April 2019, the District updated the previously adopted ERP which includes standardized responses to a variety of natural and human caused incidents. The District's ERP is consistent with the standardized emergency management system (SEMS) adopted by the State and was developed pursuant to an agreement entitled "Tuolumne County Operational Area Agreement" dated 16 January 1996 between the County, City of Sonora, TUD and seven (7) other special districts within the County which established standards for emergency response plans. The statewide SEMS substantially meets the objectives of the Federal National Incident Management System.

TUD maintains the District's ERP that documents actions to be undertaken to prepare for and implement during a catastrophic interruption of water supply including those caused by power outages and natural disasters. The ERP is discussed below in terms of the details required for UWMPs.

TUD has developed an ERP designed to assist TUD in its response and management of a wide variety of emergencies or disasters including power outages and earthquake or other disasters. ERP is maintained and reviewed annually and is described below in more detail.

From a utility's perspective, in an emergency or disaster situation there are a series of steps that should be taken to effectively respond and minimize any adverse consequences (from AWWA, *Emergency Planning for Water Utilities*, 2001 ed).

These steps are as follows:

- Analyze the type and severity of the emergency.
- Provide emergency assistance to save lives.
- Reduce the probability of additional injuries or damage.
- Perform emergency repairs based on priority demand.
- Return system to normal levels (recovery).
- Evaluate response and the effectiveness of the emergency response plan.
- Revise plan as necessary.

A Standardized Emergency Management System (SEMS) for use by all emergency response agencies is specifically established by Section 8607, et seq. of the Act. Tuolumne Utilities District (District) entered into an agreement entitled “Tuolumne County Operational Area Agreement” with the County of Tuolumne, City of Sonora and seven other special Districts on January 16, 1996, which standardized emergency response plans and provided the basis for the SEMS response.

In February 2005, the President G. W. Bush authorized the Secretary of the Department of Homeland Security to develop and administer a National Incident Management System (NIMS), which would provide a consistent nationwide approach for federal, state, local, and tribal governments to work together more effectively and efficiently to prevent, prepare for, respond to, and recover from disasters, regardless of cause, size, or complexity. In 1993, California, through its Office of Emergency Services, was the first state to adopt a statewide SEMS for use by every emergency response organization. The California SEMS substantially meets the objectives of the Federal NIMS. In April 2019, the District updated the previously adopted the TUD Emergency Response Plan (ERP) which includes standardized responses to a variety of natural and human caused incidents. The District ERP is consistent with SEMS adopted by the State of California.

The District also therefore has implemented the NIMS as well as SEMS outlines for emergency response and implements this Emergency Response Plan to enhance its NIMS and SEMS response and to protect the public when an emergency occurs or a disaster strikes--the goal being to remedy any adverse impacts as efficiently as possible and return to normal operating procedures.

This Plan is designed to meet EPA requirements for ERP certification as specified by Amendments to the Safe Drinking Water Act, titled “The Public Health Security and Bioterrorism Preparedness and Response Act of 2002” (PL 107-188, referred to as the Bioterrorism Act). The Bioterrorism Act amends the Safe Drinking Water Act (SDWA) by adding, among other requirements, section 1433. Section 1433(b) requires community water systems (CWS) serving

populations greater than 3,300 to either prepare or revise an ERP that incorporates the results of its Vulnerability Assessment (VA).

The ERP must include “plans, procedures, and identification of equipment” that can be implemented or utilized in the event of a terrorist or other intentional attack” on the CWS. The ERP also must include “actions, procedures, and identification of equipment” which can obviate or significantly lessen the impact of terrorist attacks or other intentional actions on the public health and the safety and supply of drinking water provided to communities and individuals.”

TUD has completed classified Security Vulnerability Assessments on its four systems that fall under the above category. Said Assessments were reviewed by the TUD Board of Directors in a closed session and forwarded to the EPA in June 2004. This Plan incorporates the results of those assessments in the response plans outlined in the following chapters. In December 2010, the District completed its Vulnerability Assessment Certification.

TUD has updated the Local Hazard Mitigation Plan (LHM Plan) that addresses natural hazards that may affect the critical components to its system. The LHM Plan was adopted by the District Board of Directors in December 2017.

Table 3-2 describes the possible catastrophic situations and associated actions. Descriptions of each situation are provided in the subsections below.

Table 3-2: Possible Catastrophic Situations and Actions	
Possible Catastrophic Situation	Type and Quality of Data Expected
Regional Power Outage	<p>Command chain is defined that dispatches District crews to operate generators and monitor operations.</p> <p>Criteria and procedures are provided to return system to normal operations. A plan contains contact information for responsible parties and supportive services.</p> <p>Applicable provisions of District water shortage contingency plan are instituted as required to address supply interruptions.</p>
Raw Water Conveyance System Disruption	<p>Command chain is defined that dispatches District crews to operate generators and monitor operations.</p> <p>Operations response crews assigned to monitor system operations and modify as necessary.</p> <p>Communication command chain is defined to coordinate with other local water agencies and emergency response officials as necessary.</p> <p>Applicable provisions of District water shortage contingency plan are instituted as required to address supply interruptions.</p>

Table 3-2: Possible Catastrophic Situations and Actions	
Possible Catastrophic Situation	Type and Quality of Data Expected
Main Tuolumne Canal Interruption	<p>Applicable provisions of District water shortage contingency plan are instituted as required to address supply interruptions.</p> <p>Regional groundwater sources are activated as available to offset surface water shortages.</p>

3.3.1.1 Regional Power Outage

In the event of a power-outage, the District implements those sections of the ERP according to what level of outage the area is experiencing. In particular, critical water and wastewater infrastructure can be served by stand-by power. The District maintains automatic backup generators at their headquarters (which is also designated as an official Emergency Command Center) at all wastewater pump stations, the RWWTP, most WTPs, and other selected operational facilities. In addition to the static standby generators, mobile generators are available and can be dispatched to facilities to provide stand-by electric power where required. During power outages, the TUD generates power from these sources to maintain system operations. The District's main supply of water is delivered from a higher elevation which is gravity fed to areas of consumption. Thus, power outages do not interrupt the source of raw water to the District's surface WTPs.

3.3.1.2 Raw Water Conveyance System Damage

The open ditch/flume raw water conveyance system from Lyons Reservoir to distributions points within the TUD Treated Water System could be subject to vulnerability due to wildfires, and storm conditions including heavy rain, heavy snow, flood, erosion, landslide, as well as other natural disasters. Flume structures are especially vulnerable due to boulders and other debris that could potentially dislodge upslope of the conveyance facilities and damage one or more of these flume structures below it. Damage to the flume structure that would then implement the emergency measures as documented in the ERP.

3.3.1.3 Main Tuolumne Canal Interruption

The Main Canal system is owned, operated, and maintained by PG&E. Other than communicating with customers regarding conservation in the event of an outage, the District does not have the authority to respond to outages. TUD is currently assessing options to mitigate a water shortage resulting from the loss of Main Canal conveyance, including:

- Development of a hazard evaluation and reduction plan,
- Implementing a framework for a cooperative agreement with PG&E for emergency response plans to address a Main Tuolumne Canal failure,

- Investigating alternatives to prepare or safeguard against such failures, and
- Reviewing security and operations of other agencies with similar water conveyance infrastructure issues.

3.4 Seismic Risk Analysis

CWC 10632.5

- (a) In addition to the requirements of paragraph (3) of subdivision (a) of Section 10632, beginning January 1, 2020, the plan shall include a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various facilities of a water system and mitigate those vulnerabilities.*
- (b) An urban water supplier shall update the seismic risk assessment and mitigation plan when updating its urban water management plan as required by Section 10621.*
- (c) An urban water supplier may comply with this section by submitting, pursuant to Section 10644, a copy of the most recent adopted local hazard mitigation plan or multihazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390) if the local hazard mitigation plan or multihazard mitigation plan addresses seismic risk.*

TUD updated the water elements of the Tuolumne County Local Hazard Mitigation Plan (LHMP) which was adopted by the County Board of Supervisors December 2017. TUD adopted a resolution March 13, 2019, approving the water elements and the LHMP. The LHMP can be found at the link provided in Appendix P of the 2020 UWMP. Sections of the LHMP address natural hazards including geologic hazards in Tuolumne County associated with potential seismic activity along the Foothills fault zone and associated ground shaking. The report further represents those peak accelerations in the developed portions of the County do not exceed 20 percent gravity which puts the County in the lowest potential for the entire state representing a minimal risk to TUD.

TUD has performed and completed the Risk and Resiliency Assessments (RRA) on all TUD assets in accordance with the Guidance for Small Community Water Systems on Risk and Resilience Assessment under America Water Infrastructure Act including an assessment related to seismic activity that could potentially impact TUD facilities. The assessment certification statements for each TUD system were submitted electronically to the EPA in March 2021.

TUD maintains an Emergency Response Plan Updated in 2020 that addresses natural disasters including earthquakes and the potential damage to TUD facilities due to seismic activity and the response to such events. The RRA will be incorporated in the ERP and is scheduled to be certified in June of 2021.

A Seismic Assessment Report was prepared as part of the comprehensive study completed in 2012 that assessed the vulnerability of the PG&E owned and operated Main Tuolumne Canal, including an assessment of mitigation alternatives. As a result of this study, the TUD ERP includes an Emergency Response Guide to address mitigations related to a Main Tuolumne Canal failure.

Water supply is met each year from storage provided by Lyons Dam as part of the Federal Energy Regulatory Commission Phoenix Hydroelectric Project #1061 and Strawberry Dam as part of the FERC Spring Gap Stanislaus Hydroelectric Project #2130. FERC requires that the owner/operators of these dams prepare and update the FERC Part 12D Safety Inspection Reports for these hydroelectric facilities every five years. The latest update to these reports is dated November 2017. The inspections consist of a comprehensive analysis of all elements of the dam and includes a significant assessment of seismicity related to the dam and facilities. The reports are confidential and kept on file with FERC and the Department of Water Resources, Division of Dam Safety (DSOD).

Although there are many elements of the District's infrastructure in need of replacement or rehabilitation, the critical elements are included in the District's 5 year or current year CIP. All the District's new construction and rehabilitation projects will be following the latest codes and standards to maintain the low seismic risk throughout the system.

Section 4: Water Shortage Response Actions (by Shortage Stage)

CWC 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 actions.
- (B) Locally appropriate demand reduction actions 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.

Stages of Action to Respond to Water Shortages

4.1 Supply Augmentation Actions

Any water shortage event should trigger a review of potential sources for supplemental water supply. Potential sources for supplemental water include increasing use of ground water and securing water transfer via New Melones from a willing seller.

The water shortage contingency plan establishes the period during which supply augmentation will likely be in effect, as needed. Table 4-1 summarizes the planned supply augmentation actions that the District could apply during different stages of shortage.

Table 4-1: Supply Augmentation and Other Actions

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap? <i>Include volume units used.</i>	Additional Explanation or Reference <i>(optional)</i>
I	Other Action	0%	No Supply Augmentation
II	Other Action	0%	No Supply Augmentation
III	Other Action	0%	No Supply Augmentation
IV	Transfers	10%	Emergency Purchase of water from local seller
V	Transfers	20%	Emergency Purchase of water from local seller
VI	Transfers	30%	Emergency Purchase of water from local seller
NOTES:			

4.2 Demand Reduction Actions

Regulation No. 12 Water conservation Phase I-IV details the various prohibitions and sets forth water use violation fines, charges for removal of flow restrictors, as well as establishes the period during which mandatory conservation and rationing measures will be in effect. The prohibition on various wasteful water uses, include, but are not limited to, hose washing of sidewalks and driveways using potable water and cleaning or filling decorative fountains.

Table 4-2 summarizes the voluntary and mandatory water use conservation, restrictions, and prohibitions for each WSCP Stage I-VI. Table 3-2 also lists the estimated percent reduction associated with each Demand Reduction Action. During actual implementation of each Demand Reduction Action, the District would track the actual reduction in water treatment plant production to monitor effectiveness.

Table 4-2: Demand Reduction Actions				
Shortage Level	Demand Reduction Actions	Estimated Reduction of Shortage Gap	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement
I	Expand Public Information Campaign	7%	Voluntary water use reduction and public notices	No
I	Landscape - Restrict or prohibit runoff from landscape irrigation	2%	N/A	No
I	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	1%	N/A	No
II	Expand Public Information Campaign	3%	Voluntary water use reduction and public notices	No
II	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	1%	Send notices to high water users.	No
II	Landscape - Restrict or prohibit runoff from landscape irrigation	2%	N/A	No
II	Landscape - Limit landscape irrigation to specific times	2%	N/A	No
II	Reduce System Water Loss	1%	N/A	No
II	Other	1%	Review accuracy of water meters	No
III	Expand Public Information Campaign	1%	Water use reduction and public notices	No

Table 4-2: Demand Reduction Actions

Shortage Level	Demand Reduction Actions	Estimated Reduction of Shortage Gap	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement
III	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	1%	Send notices to high water users	No
III	Decrease Line Flushing	1%	N/A	No
III	Landscape - Restrict or prohibit runoff from landscape irrigation	1%	Send notices to high water users	Yes
III	Landscape - Limit landscape irrigation to specific times	1%	Send notices to high water users	Yes
III	Landscape - Limit landscape irrigation to specific days	1%	N/A	Yes
III	Landscape - Restrict or prohibit runoff from landscape irrigation	1%	N/A	Yes
III	Water Features - Restrict water use for decorative water features, such as fountains	1%	N/A	Yes
III	Reduce System Water Loss	1%	N/A	No
III	Pools and Spas - Require covers for pools and spas	1%	N/A	No
IV	Other - Require automatic shut of hoses	1%	N/A	No
IV	Landscape - Limit landscape irrigation to specific days	1%	Send notices to high water users	Yes
IV	Landscape - Prohibit certain types of landscape irrigation	1%	Send notices to high water users	Yes
IV	Other - water feature or swimming pool restrictions	1%	Send notices to high water users	Yes
IV	Other - Prohibit use of potable water for construction and dust control	1%	Send notices to high water users	Yes
IV	Other - Prohibit use of potable water for washing hard surfaces	1%	Send notices to high water users	Yes
IV	Other - Prohibit vehicle washing except at	1%	Send notices to high water users	Yes

Table 4-2: Demand Reduction Actions

Shortage Level	Demand Reduction Actions	Estimated Reduction of Shortage Gap	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement
	facilities using recycled or recirculating water			
IV	CII - Lodging establishment must offer opt out of linen service	1%	Send notices to high water users	Yes
IV	CII - Restaurants may only serve water upon request	1%	Send notices to high water users	Yes
IV	CII - Commercial kitchens required to use pre-rinse spray valves	1%	Send notices to high water users	Yes
V	Increase Water Waste Patrols	1%	N/A	No
V	Landscape - Other landscape restriction or prohibition	7%	Send notices to high water users	Yes
V	CII - Other CII restriction or prohibition	2%	Send notices to high water users	Yes
VI	Landscape - Prohibit all landscape irrigation	10%	Send notices to high water users	Yes

NOTES:

1. TUD's Rules and Regulations states the enforcement of violations shall result in the following penalties:
 - a. First violation, customer would receive a phone call or written warning about excessive water use from the District that a further violation will result in possible water restrictions and imposing of fines;
 - b. Second violation, after initial contact regarding the first violation, is a second violation is recorded a restrictor may be installed and an \$80 charge will be billed to the customer's account. The customer will need to show proof that they have reduced their water use before the restrictor is removed;
 - c. Third violation, a \$500 penalty may be charged to a customer upon a third violation of not reducing to the mandatory water reduction. The customer continues to violate water restrictions they may have their water discontinued for excessive water use.

During Stages I and II, water use conservation is voluntary, and the District conducts public outreach and education. Beginning with the activation of a Stage III water shortage condition, water use conservation is mandatory and water use would be restricted. Runoff of landscape irrigation will be restricted, and pool will be required to remain covered when not in use. Stage IV, swimming pools will be placed under restriction, landscape watering will only be permitted during specific days and times. Industrial, commercial, and raw water users would be restricted to minimal sustainable operations as the flow in the open conveyance ditch system will be strictly reduced to minimize the open ditch and flume system losses. Second time (and above) violators face imposition of flow restriction devices and penalties as listed in the Enforcement section of Regulation No. 12 (paragraph 12.04). The following sections provide additional detail on water use prohibitions for landscape irrigation; commercial, industrial, and institutional water use; and water features and swimming pools.

4.2.1 Landscape Irrigation

Stage I Restrictions and Prohibitions are based on beneficial uses and water use reductions to meet SBX7-7 Compliance Water Use. Stage II Restrictions and Prohibitions are voluntary and limit landscape watering.

Stage III/IV Restrictions and Prohibitions are mandatory and restrict landscape watering and are subject to fines upon violation. Limited outdoor irrigation is requested with the use of buckets or properly maintained irrigation drip systems. Outdoor watering will be limited to 10 minutes per cycle for spray systems and no longer than 30 minutes per cycle for drip systems. Property addresses ending in an even number shall confine their outside usage to Tuesday, Thursday and Saturday, those with an odd number shall confine their outside usage to Wednesday, Friday and Sunday. All irrigation shall occur between the hours of 7 p.m. and 10 a.m. No watering on Mondays.

Stage V/VI Restrictions and Prohibitions are mandatory and eliminate all lawn watering and limit landscape water and are subject to fines upon violation without justification. Landscape/outdoor watering by hose or by use of water directly from faucets or outlets connected to the public water supply shall be prohibited.

4.2.2 Commercial, Industrial, and Institutional (CII)

All Restrictions and Prohibitions for Landscape Irrigation apply to the CII classification as well.

Stage I Restrictions and Prohibitions are based on beneficial uses and water use reductions outlined in the demand management measures. Stage II Restrictions and Prohibitions are voluntary and do not restrict landscape watering.

Stage III/IV Restrictions and Prohibitions are mandatory and restrict landscape watering and are subject to fines upon violation. The District will send notices to high water use customers and require all possible water conservation measures such as use of pre-rinse spray valves for commercial kitchens to be put into action in order meet the system wide reduction goal and initiates a water usage audit.

Stage IV/VI Restrictions and Prohibitions are mandatory and eliminate all lawn watering and limit landscape water, subject to fines upon violation without justification. Customers shall reduce consumption to the lowest possible amount which would allow continued operation. Conservation measures to be taken shall be established on an individual basis by the District.

4.2.3 Water Features and Swimming Pools

Water use in decorative water features, such as fountains, and recreational features, such as ponds and swimming pools, are considered non-essential water use except for that needed to preserve aquatic life.

Stage III will require swimming pools to remain covered when not in use to eliminate water evaporation. Stage III will restrict water use for decorative water features, such as fountains.

During Stages IV, the District does not specifically restrict water use for maintenance swimming pools but restricts filling new pools during Stage V.

During Stage IV and V, the District will restrict use of water in decorative fountains, recreational ponds and the like shall be limited to the minimum necessary to preserve aquatic life if present.

4.3 Operational Changes

To maintain a safe and proper operating system the District performs all necessary maintenance and line flushing during the wet months of the year. Typically, this takes place between January through April. During Stage III the District will reduce unnecessary line flushing.

The District will implement monthly water use analysis and track excessive customer water use. The analysis will be based on historical water use per customer per month. Those customers with excessive water use will be notified of their excessive use and asked to repair any leaks or limit their water use in accordance with Regulation No. 12.

Water waste patrols will take effect under Stage V conditions. Violators will have penalties placed on their accounts and will be advised to repair all sources of water waste.

4.4 Additional Mandatory Prohibitions

In addition to prohibitions during water supply shortage events requiring a voluntary or mandatory program, the District initiates public outreach to all water customers advising of low water year and requesting reduction from previous year's usage if possible. TUD will make available to its customers water conservation kits containing information on conservation methods as well as advising customers of the monetary impact as required by Regulation No. 12. Additional consumption reduction methods include requiring low-flow fixtures in new developments and providing an ultra-low flow toilet rebate program.

During a Stage III water shortage condition, notices will be sent to high water users and metered domestic excessive users will be serviced water under a lifeline rate structure. Stage IV water use would be restricted to eliminate such uses as washing vehicles. During a Stage IV shortage, excessive water use results in installation of flow-restricting device on service connection, and removal upon payment of \$80.00. Landscape irrigation resulting in water runoff and filling swimming pools would be prohibited. Industrial, commercial, and raw water users would be restricted to minimal sustainable operations as the flow in the open conveyance ditch system will be strictly reduced to minimize the open ditch and flume system losses. Second time (and above) violators face imposition of flow restriction devices and penalties as listed in the Enforcement section of Regulation No. 12 (paragraph 12.04). Table 4-2 summarizes the various prohibitions and the phases during which the prohibition becomes mandatory.

Section 5: Communication Protocols

CWC 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*

5.1 Public Outreach Response

The District has a history of working with community partners during any crisis. The public can reference The Water Shortage Contingency Plan in case of drought, or another water related natural emergency. The District would alert the Tuolumne County Office of Emergency Services to the impacts that could face residents and TUD customers. Other stakeholders to be contacted include:

- Tuolumne County Board of Supervisors
- City of Sonora Council
- Local water suppliers
- Fire agencies
- Visitors Bureau
- Tuolumne County Chamber of Commerce

If a demand reduction must take place the District would hold a meeting with the stakeholders listed above to update the agencies on conservation measures the District is taking and provide answers.

The District will issue a press release to all media partners including, radio, newspaper, and post updates on the TUD website, www.TUDwater.com, and social media if a water shortage condition arises. During the 2014-15 drought years, the District partnered with the County of Tuolumne, the local Tuolumne Band of Me-Wuk Tribal Council, and Twain Harte Community Services District on newspaper and radio advertising as a community-wide public outreach effort. Public forums took place throughout the County to answer questions and provide education to the public. After a month of public outreach advertising, TUD saw a reduction in water use from customers by 32% compared to the previous year (2013).

TUD releases a printed public education bi-monthly newsletter, On Tap, inserted with the customers billing statements. A featured topic would include an update on the water shortage and how customers can practice water conservation. The water conservation topic would direct customers to the TUD website and Facebook page for water conservation advice.

Water use efficiency is promoted throughout the year by posting updated information from state agencies and other conservation programs on the TUD website, www.TUDwater.com/conservation. If a water shortage occurs, the water conservation information is linked to the website's Home page to attract more viewers. Under Regulation No. 12 in the District's Water Rules and Regulations, 12.03.1 Phase I-Ongoing Water Education and Management, this section outlines the various educational and community outreach programs.

5.2 Board of Directions Action

The Tuolumne Utilities District Board of Directors would take the following actions upon the threat of an emergency or water shortage exists:

1. A public hearing would be held to implement 12.03.3 Phase III Critical Water Years-Water Restrictions as listed in the District's Water Rules and Regulations.
2. All water customers would be requested to reduce their water use by determined reduction goals set forth by the Board of Directors by Resolution.
3. Limited watering: Outdoor irrigation is requested with the use of buckets or properly maintained irrigation drip systems. Outdoor watering will be limited to 10 minutes per cycle for spray systems and no longer than 30 minutes per cycle for drip systems. Property addresses ending in an even number shall confine their outside usage to Tuesday, Thursday and Saturday, those with an odd number shall confine their outside usage to Wednesday, Friday and Sunday. All irrigation shall occur between the hours of 7 p.m. and 10 a.m. No watering on Mondays.

If the District warrants that the water shortage is imminent. More restrictive measures would be issued. The District would immediately notify appropriate media outlets, and post local road signage notifying the public of the current water use restrictions. The Board of Directors will hold a public hearing, as soon as feasible, during which customers shall have the opportunity to present their comments to the Board. Following a public hearing the Board of Directors may implement a justifiable Phase of Regulations No.12. Specific water reduction goals will be set by Board Resolution as outlined in the WSCP and Rules and Regulations No. 12. The District shall proclaim through resolution that a state of emergency exists and shall remain in effect until the water supply has been restored.

Section 6: Penalties, Charges, Other Enforcement of Prohibitions

CWC 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.

Customer Compliance, Enforcement and Appeal and Exemption Procedures for Triggered Response Actions

In addition to prohibitions, Regulation No. 12 provides penalties and charges for excessive water use. First time violators receive a phone call or written warning. Further violations will result in possible water restrictions and imposing fines. Secondary violation will result in the installation of a flow-restricting device. Violator's water service will be placed on hold until receipt of \$80.00 payment is recorded by administrative staff. After receipt of payment flow-restricting device will be removed. If a third violation or under Phase III-VI water shortage condition, domestic customers will be charged a \$500.00 penalty and their water service may be discontinued for excessive water use. Termination of service will result after three documented warnings for excessive use and failure to comply with the Board's declaration of water shortage. The customer may also be billed a field call out charge as explained in Exhibit B of the Water Rules and Regulations.

Table 6-1: Summary of Penalties and Charges for Excessive Use

Penalties or Charges	Stage When Penalty Takes Effect
Phone/Written Notice	II-VI
Flat Fine	III-VI
Flow Restriction Device	III-VI
Termination of Service	IV-VI

Section 7: Legal Authorities

CWC 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.*

CWC Division 1, Section 350

Declaration of water shortage emergency condition. The governing body of a distributor of a public water supply, whether publicly or privately owned and including a 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.

In accordance with Water Code Section 1 Division 1 Chapter 3, the District's Board of Directors shall declare "a water shortage emergency." To impose a declaration, the Board must schedule a Public Hearing to its customers prior to adopting the measures in Regulation No.12. The Board of Directors must approve TUD's adopted WSCP prior to activating demand reduction measures. TUD is responsible for updating any Board motion regarding water shortage emergencies to WSCP.

TUD must inform regional water suppliers of the declaration of a water shortage emergency. These regional water suppliers maybe directly impacted by the decisions of the Board. Regional water suppliers are dependent on treated and raw water for the TUD conveyance system.

TUD will also coordinate with the agencies shown in Table 7-1 below for the possible proclamation of a local emergency.

Table 7-1: Regional Water Suppliers	
Treated Water Agencies	Raw Water Agencies
<ol style="list-style-type: none"> 1. Sonora Water Company 2. Sonora Meadows Mutual Water Company 3. Muller Mutual Water Company 4. Leisure Pines Mutual Water Company 5. Tamarron Mobile Home Park 	<ol style="list-style-type: none"> 1. THCSD 2. TH Valley 3. Cedar Rock Water 4. Peppermint Creek 5. Mi Wuk Village 6. Oneto Esta Water 7. Sawmill Flat Water 8. Lastchance Water

Section 8: Financial Consequences of Actions during Shortages

CWC 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) of Division 1.

Section 10632(g) of the Act requires an analysis of the impacts of each of the actions taken on conservation and water restriction on the revenues and expenditures of the water supplier. During a water shortage as determined by Regulation No. 12, under a Phase III water shortage condition or higher, it is expected that there will be a reduction of revenues due to a significant drop in water sales and that there will be an increase in expenditures due to the need to provide some additional staff to monitor water waste.

The cost of compliance for a Phase III water shortage or regulatory limitations involves shifting the priorities of existing employees to spend time performing additional tasks by postponing existing normal operations to monitor customer water use. The accounting staff will notify those customers with high water use and issue a warning of penalties if water use is not reduced. Existing TUD field staff will postpone other work and mobilize to read suspected and known high water user meters more often to confirm water use reduction and issue penalties if warranted. Existing Field Staff will postpone other work tasks to mobilize and install water user restrictors for customers that do not comply with water use reduction standards after having exhausted all previous remedies. Although there is additional work, it is being performed by the same staff and additional staff is expected to be limited.

There will be financial impacts due to reduced water sales, however, in late 2015, TUD established a new rebalanced rate structure to establish more revenues from the base rate and provide less reliance on consumption. New rates were prepared and adopted by the TUD Board of Directors in late 2015 and became effective in January 2016. The current rate structure is designed to be less sensitive to reductions in water use by drought. There are no provisions for drought triggered surcharges.

For example, the actual treated revenue FY20 is approximately 75% fixed and 25% usage, or \$10.5 million and \$3.5 million, respectively, totaling \$14 million. If Drought required 20% reduction in water usage, then the financial affect would be estimated at \$700,000. Expenses increase as TUD increases public outreach, engages other agencies, monitors ditch operations more closely, and responds to customer complaints of potential water waste.

A Phase IV or emergency level water shortage that involves activation of emergency level water supply supplements including such actions as defined in the emergency Action Plan would involve a much higher level of fiscal impact.

TUD expects that, to overcome the revenue loss and increase in expenditures, the District will have to utilize fiscal reserves, defer existing non-essential operations and projects, obtain loans, and/or develop rate increases.

Section 9: Monitoring and Reporting

CWC 10632(a)(9)

For an urban retail water supplier, monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance and to meet state reporting requirements.

Certain aspects of water conservation can be readily monitored and evaluated, such as metered water use and production quantities. Other aspects such as public education are more difficult to measure in terms of effectiveness. Additionally, weather patterns make it more difficult to compare one year's water demand and conservation results with another year's usage.

When severe shortages occur and some degree of mandatory reduction is required, a program's effectiveness can be judged directly by water billings. In these cases, targeted results must be met, including reluctant customers, for the District to meet its goals. Specific methods to evaluate effectiveness of water conservation programs to be employed by TUD are:

1. Monitoring of Metered Water Usage – This will determine how much has been used. Compiling statistics to track usage of customer groups to determine trends is currently being done through the water billing computer system. Meter readings/billings can be compared and analyzed to determine the effectiveness of conservation for all customer classes.
2. Monitoring Production Quantities – In normal water supply conditions, production figures are recorded daily by the District's automated system. The Water Production Supervisor and the Production Lead monitor the accuracy of the monthly production totals. The totals are incorporated into the monthly water supply report to the State by the Water Treatment Supervisor.

To verify that conservation reduction goals are being met, production and metered usage reports will be provided to the District Engineer during each stage of the conservation period. Water production figures will be compared to previous year production figures for the same period to ascertain if conservation goals are being reached. Results will be posted on the TUD website.

Section 10: Refinement Procedures

CWC 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 is adequate and appropriate water shortage mitigation strategies are implemented as needed.

TUD will convene the following departmental staff as needed to refine the Water Shortage Event Contingency Plan:

- Engineering Staff
- Administrative Staff
- Operational Staff

The Water Shortage Contingency Plan will be updated and refined as appropriate and needed following significant changes to TUD's supply portfolio or significant changes to the water allocation plans of its supply agencies, but no less than every 5 years.

Section 11: Plan Adoption Resolution or Ordinance

CWC 10632 (a)(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.

The Draft Resolution for adoption of the Urban Water Management Plan and Water Shortage Contingency Plan is provided in Appendix E of the UWMP.

TUD conducted a public hearing prior to the Board of Directors adoption of the UWMP and the WSCP. The District took all necessary steps to notify the public of the hearing and making the WSCP document available for review. The District must make the final adopted plan available to the public, cities, and counties no later than 30 days from the date of adoption. It is the District's responsibility to submit UWMP and WSCP to DWR within 30 calendar days from the date of adoption. The District is also responsible for providing the City of Sonora, Tuolumne County, and state library with a copy of the adopted UWMP within 30 days of adoption. Appendix C 2020 UWMP contains the following:

- Copy of the public hearing notice from the local newspaper
- Notifications and follow-up correspondence provided to the City of Sonora and Tuolumne County

11.1 Public Hearing

TUD conducted a public meeting on June 8, 2021, to receive public comments on the 2020 UWMP and WSCP prior to adopting. The purpose of this hearing was to present an overview of the 2020 UWMP and WSCP and to allow the community to voice their concerns prior to the District implementing the plan. The community was given the opportunity to review and consider the environmental and economic impact the UWMP may have on the community. Copies of the UWMP and WSCP were made available to the public at www.TUDwater.com. The District took into consideration of the public comments prior to publishing the final 2020 WSCP and submitting it to the Board for a motion to adopt at the June 22, 2021, Board meeting. A copy of the Board resolution adopting the 2020 WSCP can be referenced in Appendix E of the 2020 UWMP.

11.2 Plan Submittal and Public Availability

The adopted final copy of TUD's 2020 WSCP was submitted to DWR on July 1, 2021. A copy of the adopted plan was sent to the California State Library located at 914 Capitol Mall, Sacramento, CA 95814 on July 1, 2021. A hard copy of the plan is made available to the public at the TUD Administration Building located at provided the public a digital copy of the plan that can be found at www.TUDwater.com/about-us/. This plan includes all information necessary to

meet the applicable requirements of the CWC. Appendix C of the 2020 UWMP includes copies of the transmittals included with the adopted plan as supporting documentation.

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