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Public Draft
Twentynine Palms
Water District
2025 Water Shortage
Contingency Plan

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Prepared for
Twentynine Palms Water District
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- A Twentynine Palms Draft Water Shortage Contingency Ordinance
- B Twentynine Palms Water District Adoption Resolution of the Water Shortage Contingency Plan (to be provided with the Final WSCP)
- C Twentynine Palms Local Hazard Mitigation Plan

List of Acronyms

Act	Urban Water Management Planning Act
AF	Acre-Feet
AFY	Acre-Feet per Year
AMI	Advanced Metering Infrastructure
AMR	Automated Meter Reading
AWWA	American Waterworks Association
BMP	Best Management Practice
Board	Board of Directors
Cal OES	California Office of Emergency Services
CCR	Consumer Confidence Report
CII	commercial, industrial, and institutional
DDW	California Division of Drinking Water
District	Twentynine Palms Water District
DMM	Demand Management Measure
DWR	California Department of Water Resources
ENSO	El Niño Southern Oscillation
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
ET	evapotranspiration
GPCD	gallons per capita per day
HAO	homeowners association
LHMP	Local Hazard Mitigation Plan
NIMS	National Incident Management System
TPWD	Twentynine Palms Water District
RRA	Risk Resilience Assessment
SBC	San Bernardino County (SBC)
SEMS	Standard Emergency Management System
SWRCB	State Water Resources Control Board
SWP	State Water Project
US	United States
UWMP	Urban Water Management Plan
WSCP	Water Shortage Contingency Plan
%	percent

DWR Checklist Table for WSCP

Water Code Section	Summary as Applies to UWMP	2025 WSCP Location
Subject: Water Shortage Contingency Planning 2025 UWMP Guidebook Location: Chapter 8		
10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Full Document
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.	Section 2.5
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.	Chapter 2
10632(a)(3)(A)	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent 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.	Section 4.1
10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Section 4.1
10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Section 5.2
10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Section 5.3
10632(a)(4)(C)	Specify locally appropriate operational changes.	Section 5.4
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.	Section 5.5.4
10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Table 5-2, 5-5
10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Section 5.5.1, 6.1
10632(a)(5)(B) 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.	Chapter 6
10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Section 4.2
10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Section 2.4
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.	Section 1.3
10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Section 9.1
10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Section 9.2
10632(a)(8)(C)	Describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought.	Section 9.3
10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Chapter 7
10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Section 1.4
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.	Section 5.3

Chapter 1: Introduction

Water supplies may be interrupted or reduced significantly in several ways, such as a drought that limits supplies, an earthquake that damages water delivery or storage facilities, a regional power outage, or a toxic spill that affects water quality. As required in the California Water Code Section 10632, every urban water supplier shall prepare and adopt a Water Shortage Contingency Plan (WSCP) as part of its Urban Water Management Plan (UWMP). This WSCP serves as a guide for the intended actions of the Twentynine Palms Water District (TPWD, District) during water shortage conditions, improving preparedness for droughts and other impacts on water supplies by describing the process used to address varying degrees of water shortages.

This WSCP describes the actions TPWD will take to identify and respond to water shortages. Ultimately, this WSCP reflects TPWD's commitment to long-term water sustainability, regulatory compliance, and community stewardship. It ensures that even in times of scarcity, water resources are managed responsibly and transparently for the benefit of all users.

1.1 Declaration of Purpose of WSCP

The WSCP adopts regulations and restrictions on outdoor water use across six (6) standard water shortage stages: residential, commercial/institutional/industrial, landscape, parks, golf courses, and agriculture. These regulations are effective immediately and shall remain in effect until the District Board of Directors finds that the water shortage no longer exists. The overall principle of the District's WSCP is to reliably meet water demands during droughts, supply reductions, and other emergencies.

The purpose of the WSCP is to:

- Monitor and compare anticipated supplies and demands consistently with Water Code Section 10632(a)(2).
- Keep water use within supply and delivery capability.
- Define procedures to be used when supply cannot meet demand or continuing pumping will result in harm to the supply source.
- Familiarize all TPWD customers (residential, business, industrial, institutional/governmental, and others) with procedures to be implemented when voluntary or mandatory water restrictions are in effect.

TPWD developed a Draft Water Shortage Contingency Ordinance (included in Appendix A) that provides a framework for action in the event of a water shortage emergency. The ordinance includes voluntary and mandatory stages to address a reduction in water supply, at various levels, as noted in Table 4-1, to reduce demand by up to 50 percent. Prohibitions, penalties, and financial impacts of shortages have been developed by TPWD and are summarized in Chapter 7.

1.2 Reduced Water Use During Water Shortage Events

This WSCP establishes changes that may be imposed on water users during water shortage events. Such events may include a prolonged drought that has reduced groundwater supplies,

the sudden appearance of an unforeseen contaminant that may require shutting down the main groundwater pumping system, or an emergency condition caused by an earthquake, fire, or other interruption in water delivery to the system. These actions are discussed in later sections of this WSCP.

1.3 Coordination with Cities and Counties

TPWD will coordinate with the City of Twentynine Palms and San Bernardino County for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code, and to ensure that City/County facilities are operated in a water-efficient manner. Coordination will also include other agencies within the TPWD service area, such as schools, parks, and others.

1.4 Plan Preparation, Adoption, Submittal, and Availability

TPWD began preparation for this WSCP in October 2025. The public hearing for the WSCP was noticed in the local newspapers (The Desert Trail and The Hi-Desert Star), as prescribed by Government Code 6066, which included the time and place of the hearing (May 27, 2026, at the TPWD office located at 72401 Hatch Rd in Twentynine Palms), as well as the location where the plan was available for public inspection. Interested parties, including other local agencies, were notified of the public hearing. The 2025 UWMP, which includes the 2025 WSCP as an appendix, was made available on the TPWD website for public inspection prior to the public hearing, so that comments could be received and discussed by the TPWD Board of Directors before adoption of both plans.

The final draft of the WSCP was adopted by the Board of Directors by Resolution No. XX (provided in Appendix B) and was submitted to the California Department of Water Resources (DWR) within 30 days of approval. Additionally, the adopted plan will be made available in accordance with the Water Code.

1.5 Relationship with the Urban Water Management Plan

Water Code Section 10632(a) requires that every urban water supplier prepare and adopt a WSCP as part of its UWMP. While the WSCP is a stand-alone document, it is updated and adopted in concert with the UWMP. Content of the WSCP is informed by the analysis of water supply reliability conducted under Water Code Section 10635 (contained in Section 6 of the UWMP). The reliability analysis of the UWMP is considered “normal”, “single-dry”, and a “five (5)-year drought”.

Factors impacting TPWD water reliability include infrastructure (e.g., aging wells, need for new wells) and drought. While it is necessary for TPWD to implement planned water supply projects and WSCP actions, total supplies are anticipated to exceed projected gross water use, as shown in Table 1-1.

Table 1-1: Near-Term Water Supply Reliability Assuming Five (5)-Year Drought

Parameter	2026	2027	2028	2029	2030
Gross Water Use	2,300	2,310	2,320	2,330	2,360
Total Supplies	6,995	6,995	6,995	6,995	6,995
Surplus/Shortfall w/o WSCP Action	4,700	4,690	4,680	4,670	4,640
WSCP - supply augmentation benefit	N/A	N/A	N/A	N/A	N/A
WSCP - use reduction savings benefit	N/A	N/A	N/A	N/A	N/A
Revised Surplus/(shortfall)	N/A	N/A	N/A	N/A	N/A
Resulting % Use Reduction from WSCP action	N/A	N/A	N/A	N/A	N/A

Note: Reformatted from UWMP Guidebook, Table 7-5 Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b).

1.6 Water Shortage Event Contingency Plan Refinement Procedures

TPWD will convene the following departmental staff as needed to refine the WSCP:

- Treatment Plant Staff
- Administrative Staff
- Operational Staff

The WSCP will be updated and refined as needed following significant changes to the TPWD groundwater supply and quality, but no less than every five (5) years. The updated WSCP also incorporates the most recent and relevant resolutions by TPWD pertaining to water use, as follows:

- Resolution 14-12, August 2014
- Resolution 15-07, May 2015
- Resolution 19-04, adopted March 2019
- Resolution 21-07, adopted June 2021
- Resolution 22-08, adopted June 2022

Chapter 2: Annual Water Supply and Demand Assessment Procedures

California Water Code Division 1, Section 350, states:

“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.”

New provisions in Water Code Section 10632.1 require that an urban water supplier, such as TPWD, conduct an annual water supply and demand assessment (“Annual Assessment”) on or before July 1 of each year and submit it to DWR. The requirement to perform the Annual Assessment began in July 2022, and TPWD submitted reports to DWR in 2023, 2024, and 2025. The Annual Assessment procedures described herein are one tool for determining whether to declare a water shortage.

Droughts occur with unpredictable frequency, intensity, and duration. Developing and maintaining a healthy groundwater supply to serve its customers has always been an ongoing priority for TPWD, and TPWD wants to be prepared for drought and water shortages. TPWD regularly monitors its water supplies and demand and produces an annual Consumer Confidence Report (CCR).

Water supply projections and hydrologic conditions are significant components in deciding when a drought response is needed. The amount of water supply shortage contributes to the severity of the drought declared and the necessary level of response from TPWD and customers. This section of the WSCP provides the written procedure for TPWD’s Annual Assessment.

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 (1) year of drought. By starting to plan in December of 2025, TPWD will get a snapshot of conditions and can begin lining up resources to mitigate supply and start outreach to customers to manage demand. Major actions are proposed in spring 2026, when an initial supply estimate is made and compared with demand. A final annual assessment is due to DWR by July 1, 2026.

Table 2-1: Calendar for Performing Annual Assessment

Target Date	Action
Oct-Jan	<ul style="list-style-type: none"> • Monitor groundwater supply • Monitor demand trends
Feb	<ul style="list-style-type: none"> • Confirm anticipated weather (e.g., National Weather Service Climate Prediction Center, La Niña, US Drought Seasonal Outlook) • Contact City of Twentynine Palms for land use information • Prepare initial assessment of supplies • Make initial assessment of unconstrained demand • Make initial estimate of shortage • If shortage anticipated, form Water Shortage Task Force
Mar	<ul style="list-style-type: none"> • Prepare informational item to the Board of Directors confirming assessment of supplies and identify any additional supply mitigations
Apr	<ul style="list-style-type: none"> • Start public outreach • Identify supplier efficiency actions • Complete Draft Annual Assessment and present to the Board of Directors
May	<ul style="list-style-type: none"> • Continue public outreach • Finalize Annual Water Assessment and submit to DWR • If necessary, prepare notices of public hearing on water shortage
Jun-Sept	<ul style="list-style-type: none"> • Continue public outreach • If necessary, declare water shortage and implement supply mitigations and demand reduction actions • Monitor customer response to water shortage messaging and other actions

2.2 Factors Affecting Demand and Supply

Weather affects the groundwater supply of TPWD in multiple ways. Due to drought conditions, the area has recently received far less than the historical average of approximately five (5) inches of annual rainfall. There is negligible infiltration of direct precipitation in areas where alluvial deposits are thick, and a substantial amount of available runoff is lost to evaporation after flowing into the basin. Even without population changes, water demand could increase. Precipitation and temperature influence water demand for outdoor landscaping and irrigated agriculture. Evaporative coolers and outdoor water use are major components of water demand in the TPWD service area.

2.2.1 Weather Outlook

Lower spring rainfall increases the need for irrigation. Further, warmer temperatures increase crop evapotranspiration, which increases water demand. While no long-term study or correlation between weather parameters and the local groundwater supply has been conducted, there are general “rules of thumb” to consider when evaluating the groundwater supply.

Potential for La Niña – ENSO (El Niño Southern Oscillation) refers to the warming and cooling of ocean water along the Equator in the Eastern Pacific Ocean near South America. The warm

phase is called El Niño, and the cold phase is called La Niña. When the Eastern Pacific Ocean is 0.5 degrees Celsius above normal for five (5) consecutive three (3)-month average periods, an El Niño is declared. When the Eastern Pacific Ocean is 0.5 degrees Celsius below normal for five (5) consecutive three (3)-month average periods, a La Niña is declared. El Niño and La Niña are classified as Weak, Moderate, or Strong based on how far from normal the ocean temperatures are. When the temperature is above 1.5 degrees Celsius, it is declared as strong. When the temperature is above 1.0 degrees Celsius, it is declared as Moderate. When the temperature is above 0.5 degrees Celsius, it is declared as Weak. The effect on TPWD trends is wetter during El Niños and drier during La Niñas. The National Weather Service Climate Prediction Center provides information on the potential for La Niña conditions.

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”.

Climate change – While groundwater is often considered a drought-resistant water resource, warmer temperatures, changing precipitation patterns, and more extreme drought conditions can affect rainfall and streamflow and, in turn, groundwater recharge. Climate change data developed by DWR for the California Water Commission’s Water Storage Investment Program, focusing on regional hydrology, estimates that streamflow may decrease groundwater recharge by eight (8) percent by 2070 (Woodard and Curran 2023).

2.3 Current Year Unconstrained Demand

DWR guidance for the Annual Assessment is to consider the expected water use in the upcoming year, based on recent water use, before any projected response actions an urban water supplier may trigger under its WSCP.

2.3.1 Land Use

Water demand for the TPWD service area was estimated from historical and current demands, population projection data, and land-use data. Land use was calculated from San Bernardino County (SBC) parcel data and from the California General Plan. Land use was calculated and classified for both the developed and undeveloped areas within the service area. Chapters 1 and 2 of the UWMP describe the methods for quantifying current and projected land use.

2.3.2 Current Demand

The Annual Assessment (provided in Appendix E) includes a table that summarizes total water consumption (potable and untreated) for each land use category within the TPWD service area, using the most recent 10-year average, by month. Based on anticipated weather, TPWD may adjust the assessment to account for an increase in current demand. The Annual Assessment estimates existing demand in the current calendar year and demand in the subsequent calendar year. For the purposes of the analysis, the subsequent year will be assumed to be a drought year.

2.3.3 Potential Demand

The Assessment identifies anticipated water use, forecasted by month. The calculations in the assessment will use the most recently developed demand factors, including water loss and a contingency to account for annual demand variations.

2.3.4 Total Near-Term Demands

Near-term demand will be the sum of baseline demand conditions and anticipated demand in the current calendar year and subsequent years. The evaluation of near-term demand may consider multiple baseline demand conditions (e.g., 1-year, 3-year, 5-year, and 10-year averages).

2.4 Assessing Supply in Current Year and Single Dry Year

The assessment will evaluate the local groundwater supply using the factors identified in Table 2-2. TPWD will evaluate the groundwater supply available by groundwater subbasin in the upcoming year, assuming the subsequent year will be a dry year. The assessment will develop a quantified summary for the upcoming year, assuming the subsequent year is a dry year. Anticipated water supply will be forecasted by month using past supply patterns.

TPWD has the power and authority to implement and enforce its shortage response actions, including mandatory water conservation measures within its boundaries, per Division 11 of the California Water Code. TPWD will declare the appropriate stage of a water shortage emergency in accordance with Chapter 3, commencing with Section 350, of Division 1 of the California Water Code. Should a water shortage be declared, TPWD may coordinate with the City of Twentynine Palms and the County of San Bernardino for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

Table 2-2: Annual Assessment of Supply

Source	Factors to be Evaluated in Current Year	Establishing Supply in Assumed Subsequent Dry Year
Local Groundwater	<ul style="list-style-type: none"> Regulatory limitations Annual extractions past 10 years Any constraints on supply due to infrastructure or water quality Consider if supply would be managed differently if it is known subsequent year will be a dry year 	<ul style="list-style-type: none"> Regulatory limitations Annual extractions past 10 years Any constraints on supply due to infrastructure or water quality

2.5 Assessing Water Supply Reliability

TPWD will compare supply and demand in the Annual Assessment (Appendix E) to determine whether a supply shortage is anticipated and the level of the shortage, and to prepare to implement its WSCP.

Chapter 3: Water Supply Interruptions

Water supply interruptions pose a risk to the water reliability of TPWD. These interruptions may result from natural disasters such as earthquakes or wildfires, infrastructure failures, power outages, or contamination events. This chapter outlines TPWD's preparedness strategies and response protocols for managing catastrophic events that disrupt water delivery. It includes an overview of the conservation reserves, emergency planning efforts, and coordination with regional partners. By establishing clear actions and resilience assessments, TPWD ensures that essential water services can be maintained during emergencies while minimizing impacts on public health and safety.

3.1 Actions to Prepare for Catastrophic Interruption

The distribution infrastructure within the groundwater basins from which TPWD relies is the limiting factor in groundwater production; however, the distribution infrastructure is expected to continue to produce reliable supplies even in a catastrophe with the management action items identified herein and in the TPWD Emergency Response Plan (ERP). Water stored in the TPWD distribution system storage tanks is monitored and managed to prevent the reservoir volumes from dropping to very low levels. Standard practice is to maintain, at a minimum, the required emergency and fire flows in all tanks at all times. In an emergency, these stored water volumes are available for distribution or truck delivery as necessary.

3.1.1 Emergency Response Plan

To prepare for catastrophic events, TPWD has established an ERP in accordance with other state and federal regulations. The purpose of this plan is to design actions to minimize the impacts of supply interruptions caused by catastrophic events. The ERP includes the TPWD standardized response and recovery procedures to prevent, minimize, and mitigate injury and damage resulting from emergencies or disasters of man-made or natural origin, such as earthquakes, regional power outages, fires, biological or chemical contamination, and floods.

The ERP considers the various aspects of the TPWD Water System Protection Program pertaining to potential malevolent threats or actual terrorism. The information contained in the ERP is intended to guide staff and inform other emergency response agencies, including response team plans and procedures. The ERP is included in Appendix C.

3.1.2 Local Hazard Mitigation Plan and Seismic Risk Assessment

As part of the 2024 Twentynine Palms Water District Local Hazard Mitigation Plan (LHMP), an update to the 2018 LHMP, TPWD evaluated seismic risk, assessed potential impacts to water facilities, and identified mitigation measures to lessen the risk. This LHMP meets the requirements of the federal Disaster Mitigation Act of 2000 (Public Law 106-390) as well as the requirements of Water Code Section 10644. A copy of the 2024 TPWD LHMP will be submitted to DWR with the adopted UWMP/WSCP. The LHMP is provided in Appendix D.

TPWD has identified hazards in the community, assessed the most significant risks, and identified projects to help reduce or eliminate them. After the hazards were identified, mitigation goals were set. TPWD derived its mitigation strategy from an in-depth review of the existing vulnerabilities and capabilities outlined in LHMP.

Overall, the primary objective is to protect lives and prevent damage to infrastructure that disrupts water services. Global measures that apply across all hazards include:

- Continually improve the community's understanding of potential impacts due to hazards and the measures needed to protect lives and critical infrastructure.
- TPWD communications should provide public outreach to inform the public of the hazards identified to the drinking water system in emergencies, such as how to conserve water in the event of a disaster and obtain drinking water when water is unavailable.
- Continually provide State and Local Agencies with updated information about hazards, vulnerabilities, and mitigation measures at TPWD.
- Review and verify that the infrastructure owned and operated by TPWD meets the minimum standards for safety.
- Review the TPWD facilities and developments in high-risk areas to verify that these areas are appropriately protected from potential hazards.
- Identify and mitigate imminent threats to life safety and facility damage.
- The high-profile hazards for TPWD are earthquakes, climate change-induced drought, flooding, and cybersecurity. While other hazards were profiled in previous sections, the priority and focus of TPWD for the mitigation projects will be on these high-profile hazards.

Specifically, TPWD identified mitigation projects to address earthquake hazards. The activities identified are the following:

- Bolt down water reservoir facilities.
- Seismic shut-off valves on all reservoirs.
- Protect critical facilities and infrastructures by tying down equipment, strengthening buildings, and training on following the emergency response plan.
- Conduct annual employee training on responding to an earthquake. This includes tabletop exercises, boots-on-the-ground exercises, and training on the Standard Emergency Management System (SEMS)/National Incident Management System (NIMS).

Chapter 4: Water Shortage Stages

TPWD will implement water supply shortage stages that are increasingly restrictive and promote conservation, as needed, during periods of low supply. TPWD will determine which water supply shortages may be triggered when evaluating supply and demand conditions, indicating the potential for shortage. The following sections define the water shortage stages and outline actions to prepare for and respond to reductions in water supply, including catastrophic service interruptions.

4.1 Six Standard Shortage Stages

As required by California Water Code Section 10632(a)(3)(A), this WSCP is structured around six (6) standard water shortage stages, which correspond to progressively increasing ranges of percent supply reductions from zero (0) to more than 50 percent. Table 4-1 presents a description of the six (6) water supply shortage stages, defined as stages I to VI. Each stage may be triggered by a declaration from federal or state authorities, or from TPWD, in response to events that result in a water shortage. The stages and applicable triggers are summarized in Table 4-2.

Table 4-1: Rationing and Reduction Goals

Deficiency or State Mandated Reduction	Stage	Demand Reduction Goal	Type of Program	Water Shortage Condition
1-10%	I	10% reduction	Voluntary	Minor Shortage
11-20%	II	20% reduction	Voluntary/Mandatory	Moderate Shortage
21-30%	III	30% reduction	Mandatory	Severe Shortage
31-40%	IV	40% reduction	Mandatory	Critical Shortage
41-50%	V	50% reduction	Mandatory	Emergency Shortage
>50%	VI	>50% reduction	Mandatory	Catastrophic Failure

Table 4-2: Stages of TPWD Water Shortage Contingency Plan

Stage	Percent Supply Reduction	Triggers
I	Up to 10%	<ul style="list-style-type: none"> • Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • State declaration due to drought or system maintenance • Unplanned TPWD water system maintenance
II	Up to 20%	<ul style="list-style-type: none"> • Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • State declaration due to drought or system maintenance • Unplanned TPWD water system maintenance requiring more time to repair
III	Up to 30%	<ul style="list-style-type: none"> • Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • State determination due to drought or significant system failure • State outdoor irrigation restriction • Unplanned TPWD water system failure or emergency
IV	Up to 40%	<ul style="list-style-type: none"> • Federal, state, or local disaster declaration that may impact water supplies • State determination due to drought or significant system failure. • State outdoor irrigation restriction • Unplanned TPWD water system failure or emergency
V	Up to 50%	<ul style="list-style-type: none"> • Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • State determination due to drought or significant system failure • State outdoor irrigation restriction • Advanced TPWD water system failure or emergency
VI	50% or higher	<ul style="list-style-type: none"> • Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • State determination due to drought or significant system failure. • Natural or human-caused catastrophe disrupting the delivery of water to, or within, the service area • Severe TPWD water system failure

4.1.1 Procedures for Water Shortage Level Determination

The results of the Annual Assessment will be used to determine the water shortage level. In the event of an emergency, the Board may call a special meeting with no less than 24 hours' notice and without an agenda to address service disruptions. If an emergency arises that would ordinarily be brought to the attention of the Board, but for which insufficient time exists, the General Manager has administrative authority to act as deemed appropriate and reasonable.

4.2 Legal Authorities

TPWD's enabling legislation provides the legal authority for the TPWD Water Conservation Program, which aims to reduce water consumption through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and

maximize the efficient use of water within the TPWD service area to avoid and minimize the effect and hardship of water shortage to the greatest extent possible.

Chapter 5: Water Shortage Response Actions

This chapter outlines the suite of actions TPWD will implement to respond to water shortages, ranging from mild supply reductions to catastrophic interruptions. These response actions are designed to reduce demand, augment supply, and adjust operations to protect public health, sustain essential services, and support long-term water reliability. The strategies include both voluntary and mandatory measures, tailored to each shortage stage, and are supported by enforcement mechanisms and public outreach efforts. By quantifying the anticipated benefits of each action, TPWD ensures that its response is both effective and equitable across its service area.

5.1 Water Shortage Response Actions

Once a shortage stage is declared, TPWD may implement shortage response actions required by the customer and, through operational changes, as listed in Table 5-1. These actions will be supported by communication protocols (discussed in Chapter 4), enforcement actions (discussed in Chapter 6), and monitoring and reporting efforts (discussed in Chapter 5), with activities appropriate to each shortage stage level.

Table 5-1: Customer and TPWD Water Shortage Actions

Stage	District Actions	Customer Actions
I	<ul style="list-style-type: none"> Initiate public information campaign Increase awareness of conservation measures Commence enforcement of conservation measures Promote methods to reduce water use Conduct focused outreach to large water users Publish Water shortage Event Contingency Plan stages and actions per stage 	<ul style="list-style-type: none"> Voluntary water conservation Adhere to conservation measures Consider conversion to more efficient irrigation methods Consider turf removal and conversion to California-friendly landscaping Patronize local carwashes that recycle their water
II	<ul style="list-style-type: none"> Expand public information campaign Step up enforcement of conservation measures Continue previous actions 	<ul style="list-style-type: none"> Comply with mandatory conservation regulations Continue previous actions
III	<ul style="list-style-type: none"> Continue previous actions Intensify public information campaign Expand enforcement of conservation measures Provide incentives to single metered multi-family units to install individual meters or sub-meters Send direct notices to all customers Provide regular media, city council and County briefings Activate emergency connections with mutual aid agencies Suspend issuance of potable construction meters. Evaluate size of monetary fines for water waste Begin water waste patrols 	<ul style="list-style-type: none"> Continue previous actions Limit washing of sidewalks, driveways, walkways, parking lots, or any other hard-surfaced area by hose or flooding unless otherwise necessary Comply with prohibited outdoor irrigation of ornamental landscape or turf with potable water through an irrigation system between 9:00 am and 6:00 pm and limit system use to two days a week
IV	<ul style="list-style-type: none"> Continue previous actions Implement customer allocations, enforce mandatory water consumption goals and allocations 	<ul style="list-style-type: none"> Continue previous actions Obligation to fix leaks, breaks, or malfunctions within 48 hours
V	<ul style="list-style-type: none"> Continue previous actions Enforce mandatory water consumption goals and allocations for all customers and users 	<ul style="list-style-type: none"> Prohibit all outdoor irrigation with potable water Continue previous actions
VI	<ul style="list-style-type: none"> Continue previous actions Implement crisis communication plan Activate Emergency Operations Center Coordinate actions with regulatory agencies Coordinate actions with public safety agencies to address enforcement and fire protection issues Recall all temporary meters and activate water fill stations Suspend issuance of new development approvals and new water connections other than those required to be processed by state law 	<ul style="list-style-type: none"> Continue previous actions Terminate outdoor water use for irrigation, pools and fountains Water may only be used outdoors for public health and safety purposes Be on alert for Boil Water Orders if they become necessary

5.2 Supply Augmentation Actions

Any water shortage event should trigger a review of potential supplemental water sources. Any supplemental water supply project or improvement to existing facilities to enhance water supply should be a priority for consideration in immediate capital projects if a shortage (e.g., demand exceeding supply) greater than 10 percent is anticipated, or if a Stage III Water Shortage Event continues for more than 18 months. While groundwater basins in the TPWD area are expected to continue providing reliable supplies even in an emergency, the limiting factor is groundwater production capacity. To respond to future disasters, TPWD is considering emergency intertie connections with neighboring water agencies to allow for the receipt of imported water or additional groundwater. Supply augmentation in the near term is presented in Table 5-2 below.

Table 5-2: Supply Augmentation Actions

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier (based on DWR's WUE database categories)	How much is this going to reduce the shortage gap?^(a)	Additional Explanation or Reference
III	Groundwater	780 AF	Pump Additional Groundwater
IV	Groundwater	1,050 AF	Pump Additional Groundwater
V	Groundwater	1,310 AF	Pump Additional Groundwater
VI	Groundwater	1,570 AF	Pump Additional Groundwater

Note: Modified from DWR Table 8-2 R.

(a) Percent shortage applied to the projected 2050 value from UWMP Table 2-6.

5.3 Demand Reduction Actions

The water conservation measures, restrictions in this WSCP and the Draft Water Shortage Ordinance (Appendix B) and below in Table 5-3 enable TPWD to control water use and plan and implement water measures and restrictions in a fair and orderly manner for the benefit of the public.

Table 5-3: Prohibitions During Different Shortage Stages

Stage	Prohibition/Requirement
In Effect at All Times	<p>Water waste is prohibited at all times. Water waste includes but is not limited to:</p> <ul style="list-style-type: none"> • Application of potable water to outdoor landscapes in a manner causing runoff • No watering of outdoor landscapes within 48 hours of measurable rainfall <p>Efficient water use is required at all times:</p> <ul style="list-style-type: none"> • Water for construction purposes, including but not limited to de-brushing of vacant land, compaction of fills and pads, trench backfill and other construction uses shall be in an efficient manner • All new construction including residential, commercial, and industrial, shall be equipped with low flow toilets and fixtures • All new model homes and commercial and industrial development, when landscaped, shall include low water use, drought tolerant or native plant material, and drip irrigation systems. Irrigation systems shall include a smart irrigation controller or equivalent technology • Dedicated (separate) landscape meters shall be installed for all irrigated landscape areas in excess of 2,500 square feet except for single family residences • Water used for cooling systems must be recycled to the extent possible • Evaporation-resistant covers required for new swimming pools and hot tubs
I	<ul style="list-style-type: none"> • Hosing of hardscape surfaces, except where health and safety needs dictate, is prohibited • Car washing and outside cleaning activities prohibited except when performed with buckets and automatic hose shutoff devices • Water leaks shall be repaired in a timely manner and sprinklers shall be adjusted to eliminate over-spray • The serving of drinking water other than upon request in eating or drinking establishments is prohibited • Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom
II	<ul style="list-style-type: none"> • All restrictions/prohibitions/initiatives from Stage I are in effect • Landscape watering between the hours of 8:00 am and 5:00 pm is prohibited • Outdoor watering is limited to three (3) days per week • New meters for land development restricted to properties owners of presently existing parcels
III	<ul style="list-style-type: none"> • All restrictions/prohibitions/initiatives from Stage I and Stage II are in effect and are mandatory • Irrigating ornamental turf on public street medians with potable water is prohibited • Outdoor watering is limited to two (2) days per week • Issuance of construction water meters will cease and meters will only be installed for new accounts where the building permit was issued prior to the declaration of water shortage • Water patrol personnel will be utilized

Stage	Prohibition/Requirement
IV	<ul style="list-style-type: none"> • All restrictions/prohibitions/initiatives from Stage I, Stage II, and Stage III are in effect and are mandatory • No meters will be installed for new accounts • Irrigation with potable water of landscapes outside of newly constructed homes and buildings is prohibited • Filling of new swimming pools, spas, hot tubs, or the draining and refilling of existing pools, etc., is prohibited. Topping off is allowed to the extent that the designated water allocation is not exceeded • Water cannot be used to maintain fountains, reflection ponds, and decorative water bodies for aesthetic or scenic purposes except where necessary to support aquatic life
V	<ul style="list-style-type: none"> • All restrictions/prohibitions/initiatives from previous Shortage Stages are in effect and are mandator • Outdoor irrigation is prohibited
VI	<ul style="list-style-type: none"> • All restrictions/prohibitions/initiatives from previous Shortage Stages are in effect and are mandatory

As described in the table above, prohibitions and restrictions on water features that are artificially supplied with water, such as ornamental lakes, ponds, and decorative fountains, are treated differently from swimming pools and spas, as defined in Section 115921 of the California Health and Safety Code.

5.3.1 Shortage Stage Allocation

In addition to prohibitions, when the shortage exceeds 30 percent, TPWD may implement allocation limits for each customer class. At the direction of the General Manager, each customer will be classified and assigned a monthly allotment in accordance with the methods described in the Draft Water Shortage Contingency Ordinance. Customers will be notified of their classification and allotment by mail before the date when allocation goes into effect. In a disaster, prior notice of allotment may not be possible. In such cases, notice may be provided by other means, such as telephone, radio, television, or newspaper. Customers may appeal the classification based on use or incorrect calculation. The appeals process is set forth in the Draft Water Shortage Contingency Ordinance and described in Chapter 8.

5.4 Operational Changes

TPWD shall comply with restrictions similar to those implemented for the public to the extent possible. Hydrant flushing shall be limited except as deemed necessary by the General Manager to enhance water quality or to conduct fire flow and large meter tests. Other actions include efficient water use practices identified in Table 5-3, such as minimizing water waste in construction, following a modified outdoor landscape watering schedule for TPWD facilities based on the shortage stage, and fixing any identified leaks in the distribution system or other related water infrastructure components. Lastly, TPWD completed the full replacement of all its customer meters with AMI smart meters in 2024, allowing TPWD to more closely monitor customer leaks. A public portal is currently being worked on and planned for implementation in the next couple of years to give customers a sense of how they can manage their leaks as well.

5.5 Benefit of Shortage Response Actions

Implementing shortage response actions under the WSCP enables TPWD to proactively manage limited water supplies while minimizing harm to the community, economy, and environment. Key benefits include:

1. Public Health and Safety Protection

- Prioritizes essential uses such as drinking water, sanitation, and fire suppression.
- Ensures that vulnerable populations retain access to safe, reliable water during shortages.

2. Environmental Stewardship

- Reduces groundwater and surface water stress, helping prevent long-term ecological degradation.

3. Regulatory Compliance

- Aligns with California Water Code §10632 and the Urban Water Management Planning Act.
- Supports TPWD's obligations under State Water Resources Control Board orders and regional drought response coordination.

4. Demand Reduction and Supply Extension

- Encourages conservation through tiered actions (e.g., voluntary reductions, irrigation limits, non-essential use bans).
- Helps stretch available supplies across all customer classes and service areas.

5. Economic Resilience

- Minimizes abrupt service disruptions that could impact tourism, agriculture, and small businesses.
- Provides clear expectations for water users, reducing uncertainty and enabling better planning.

6. Community Trust and Transparency

- Demonstrates TPWD's commitment to equitable, data-driven drought response.
- Builds public confidence through consistent communication and phased implementation.

7. Operational Readiness

- Activates pre-defined actions and enforcement mechanisms, reducing response time during emergencies.
- Supports coordination with Cal OES, local jurisdictions, and mutual aid partners.

5.5.1 Public Information

Without exception, experience has shown that a well-informed public is generally more willing to voluntarily conserve or alter water use patterns and is more likely to comply if mandatory water use restrictions become necessary. DWR (2008) estimates that public information campaigns alone have reduced demand by five (5) to 20 percent, depending on the time, money, and effort spent. Public information supports voluntary and mandatory measures by educating and convincing the public that a critical water shortage exists, how water is used, and how they can help. The DWR Drought Guidebook highlights that when the public perceives a drought as being severe, they change their behavior (such as flushing the toilet less often).

The information provided to the public should include a description of the conditions that will trigger implementation of shortage stages as well as a description of what the plan entails

(restrictions, enforcement provisions, etc.). It is also advisable to provide practical “consumer” information that will help water users comply with the plan. For example, information about lawn watering restrictions might be accompanied by guidance on proper lawn watering practices.

Based on experience, with minimal public outreach, a water savings of five (5) percent is assumed; with extensive public outreach, a water savings of seven (7) percent is assumed; with public information combined with enforcement, water savings of 22 percent are assumed.

5.5.2 Enforcement

A study examining the effectiveness of drought management programs in reducing residential water use (Virginia Polytechnic Institute 2006) found considerable variation in their impact and highlighted the importance of public information and enforcement. Results, shown in Table 5-4, indicate that overall reductions in residential water use ranged from zero (0) to seven (7) percent for voluntary restrictions and from zero (0) to 22 percent for mandatory restrictions. The observed differences were statistically attributed to information efforts for voluntary restrictions and both information and enforcement efforts for mandatory restrictions.

Table 5-4: Drought Program Management Variables Effect on Residential Water Use

Classification	Estimated Change in Water Use	Statistically Different than No Effect?
Voluntary Restrictions		
Little or no information disseminated	-2%	No
Moderate level of information	-2%	No
Aggressive information dissemination	-7%	Yes
Mandatory Restrictions		
Low information and low enforcement	-5%	No
Moderate information and low enforcement	-6%	Yes
Aggressive information and low enforcement	-12%	Yes
Low information and moderate enforcement	-4%	No
Moderate information and enforcement	-9%	Yes
Aggressive information and moderate enforcement	-15%	Yes
Moderate information and aggressive enforcement	-20%	Yes
Aggressive information and enforcement	-22%	Yes

Source: Virginia Polytechnic Institute, 2006

The analysis highlights the key role that public outreach and information play in the success of drought response actions. Voluntary restriction programs with little to moderate levels of information dissemination had no appreciable effect on water use. Voluntary restriction programs with active promotional efforts, however, reduced water use by an estimated seven (7) percent compared with what would have occurred without any restriction program. Thus, among voluntary restrictions, only the most intensive programs achieved even moderate success in reducing water use.

Mandatory restriction programs without a significant enforcement component broadly mirrored the outcomes achieved by the voluntary programs. Programs with mandatory restrictions that invested minimal effort in information dissemination did not appreciably reduce residential water use. Programs with no active enforcement efforts but with moderate to high levels of informational

dissemination achieved six (6) and 12 percent reductions in water use, respectively. These estimated reductions are similar to those achieved by voluntary programs with aggressive informational campaigns.

The City of Santa Cruz's experience implementing its Drought Contingency Plan and successfully achieving its reduction goals underscores the importance of a strong public information program. Analysis of the implementation program identified the key ingredient to its success was "the public's understanding, awareness, and belief that the City was confronted with a true water shortage problem. Media coverage of water problems across California reinforced the situation. Without that sense of a real and imminent problem, it's likely the level of cooperation and willingness demonstrated by the community in making changes they did might have been considerably reduced" (Santa Cruz 2010).

Delivering accurate and timely information to water users, news media, and local governments with updates on conditions, restrictions, and helpful contact information is key. With aggressive information dissemination and enforcement, TPWD is assumed to achieve 22 percent water savings.

5.5.3 Restrictions on Non-Essential Water Uses

The demand reduction strategies discussed in this WSCP largely focus on curtailing water waste and non-essential water use. Outdoor water use, including washing sidewalks and watering ornamental landscapes, is targeted. These uses are typically considered discretionary or nonessential, are highly visible, are therefore relatively easy to monitor, and often constitute a substantial component of water demand, particularly during the summer months when drought conditions are likely to be most severe.

Given the significance and visibility of lawn watering as the predominant component of seasonal use, best management practices in drought contingency plans typically prescribe time-of-use and other restrictions on lawn watering. This often involves placing water users on a schedule that allows for staggered lawn watering days, as well as restrictions on the times during the day when lawns can be watered.

The American Waterworks Association (AWWA) estimates that voluntary outdoor water use limits can result in a water savings of up to 10 percent, and mandatory outdoor water limits can achieve up to a 56 percent reduction in outdoor water use (AWWA 2008; AWWA 2011). There have been no detailed studies of outdoor water use in the TPWD service area. However, a comparison of low-water-use months, when water use is assumed to be primarily indoor (January and February), with high-water-use months, when outdoor water use is greatest, has been used to estimate the percent of outdoor water demand. Based on this comparison, it is estimated that outdoor water use may account for between 20 and 50 percent of TPWD water use. To be conservative and not to overestimate the savings that could be achieved by curtailing outdoor water use, this WSCP assumes outdoor water use is 18 percent of the TPWD demand:

- Voluntary outdoor water limits could save 10 percent of outdoor water use or about 40 AFY (about two (2) percent of total water use).
- Restricting water use to twice a week could reduce outdoor water use by 33 percent or about 130 AFY (about six (6) percent of total water use).
- Restricting water use to once a week could reduce outdoor water use by 56 percent or about 220 AFY (about 10 percent of total water use).

- Eliminating outdoor water use would reduce demand by approximately 18 percent, about 394 AFY.

5.5.4 Additional Mandatory Restrictions

In 2017, the State Water Board identified statewide water conservation emergency regulations. As of June 5, 2024, these emergency regulations have expired. Local authorities may adopt different and/or stricter water conservation measures than the statewide regulations. Further:

- For urban water suppliers, statewide Level II demand reduction actions are not required: The requirement for urban water suppliers to implement demand-reduction actions that correspond to at least Level II of their water shortage contingency plans has not been in effect since June 5, 2023.
- For commercial, institutional, and homeowners association (HOA) common areas, the decorative grass watering emergency ban has expired: The Emergency Regulation to Ban Decorative Grass Watering (non-functional turf irrigation) in commercial, industrial, and institutional areas, including HOA common areas, expired by operation of law on June 5, 2024. In October 2023, however, the California State Legislature passed Assembly Bill 1572, which permanently phases in a ban on decorative grass watering in commercial, industrial, and institutional areas.
- Emergency prohibition on wasteful water uses has expired: The Emergency Regulation to Prohibit Wasteful Water Uses (such as refilling fountains without recirculating pumps, overwatering landscapes, watering grass within 48 hours of rainfall, etc.) expired on December 21, 2023.

As directed by Executive Order B-40-17, the State Water Board is conducting a rulemaking to establish permanent prohibitions on wasteful water-use practices. This rulemaking is part of the broader legislation Making Water Conservation a California Way of Life. Chapter 2 of the UWMP describes the current water use standards, including the indoor residential water use standard, and the still-to-be-developed commercial, industrial, and institutional (CII) landscape standards. An evaluation of TPWD's trajectory toward meeting legislative standards is also provided.

Table 5-5: Effectiveness Demand Reduction and Other Actions (DWR Table 8-2)

Shortage Level	Demand Reduction Actions	Reduction in Shortage Gap	Explanation	Penalty, Charge, or Other Enforcement?
1	Expand Public Information Campaign	7%	Based on AWWA 2008 assumes savings of 7%	No
1	Voluntary outdoor water use changes	2%	Based on AWWA 2011	No
2	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
2	Implement or Modify Rate Structure	10%	Based on AWWA 2011 assumes savings of 10%	Yes
2	Landscape - Other landscape restriction or prohibition	2%	Outdoor water limited to 3 days a week. Based on AWWA 2011	Yes
3	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
3	Implement or Modify Rate Structure	10%	Based on AWWA 2011 assumes savings of 10%	Yes
4	Landscape - Other landscape restriction or prohibition	6%	Outdoor water limited to 2 days a week. Based on AWWA 2011	Yes
4	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
4	Implement or Modify Rate Structure, Allocation	15%	Based on AWWA 2011 assumes savings of 15%	Yes
5	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
5	Implement or Modify Rate Structure, Allocation	15%	Based on AWWA 2011 assumes savings of 15%	Yes
5	Landscape - Other landscape restriction or prohibition	13%	Outdoor water limited to 2 days a week. Based on AWWA 2011	Yes
6	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
6	Implement or Modify Drought Rate Structure, Allocation	15%	Based on AWWA 2011 assumes savings of 15%	Yes
6	Landscape - Other landscape restriction or prohibition	18%	Outdoor water use prohibited	Yes

Chapter 6: Communication Protocols

TPWD will periodically provide the public with information about the WSCP, including its implementation. Such information will include, but not be limited to, stages of action, restrictions on water use, water budget reductions, water-saving tips, and potential Allocation Surcharges, monetary assessment, and fines for noncompliance with prohibited activities for water conservation, water use efficiency, and failure to achieve water budget reductions redefined in the WSCP.

6.1 Customer Outreach

Customer participation is a key element in responding to a supply shortage. While general media coverage of a drought is likely to increase awareness, TPWD should still develop and implement a specific and comprehensive outreach program. The goals of the outreach program will be to:

- Educate customers and the public about state and local drought conditions.
- Make water shortage stages and customer responsibilities clear.
- Target specific customer groups with specialized messaging.
- Provide information to customers and the public that will assist them in reducing water demand.

Outreach activities may include press releases, updated postings on the TPWD website, social media updates and postings, water conservation forums hosted at TPWD headquarters or through virtual platforms, advertisements in local publications and cable channels, and door hangers or other leave-behind reminders. Table 6-1 describes the communication protocols and procedures TPWD will use to reach customers and reduce demand during each defined shortage stage.

Table 6-1: Communication Protocols and Procedures to Support Shortage Response Actions

Shortage Stage	Percent Supply Reduction	Communication Protocols and Procedures (<i>Outreach to customers when each Stage is declared</i>)
I	Up to 10%	<ul style="list-style-type: none"> • Declaration and notification of water supply shortage I by resolution, and adoption at a public meeting in accordance with state law • Notification of supply shortage in Public Newspaper
II	Up to 20%	<ul style="list-style-type: none"> • Declaration and notification of water supply shortage II by resolution, and adoption at a public meeting in accordance with state law • Notification of supply shortage in Public Newspaper • Advertisement in Local Public Newspaper • Commence social media updates • Notify top 5 water users in each customer class, e.g. residential, and CII
III	Up to 30%	<ul style="list-style-type: none"> • Declaration and notification of water supply shortage III by resolution, and adoption at a public meeting in accordance with state law • Notification of supply shortage in Public Newspaper • Advertisement in Local Public Newspaper and local cable channel • Schedule regular media, city council and County briefings • Continue social media updates • Targeted Messaging to customers • Notify top 10 water users in each customer class, e.g. residential, and CII
IV	Up to 40%	<ul style="list-style-type: none"> • Declaration and notification of water supply shortage IV by resolution, and adoption at a public meeting in accordance with state law • Notification of supply shortage in Public Newspaper • Advertisement in Local Public Newspaper and local cable channel • Continue regular media, city council and County briefings • Continue social media updates • Targeted Messaging to customers • Notify top 15 water users in each customer class, e.g. residential, and CII
V	Up to 50%	<ul style="list-style-type: none"> • Declaration and notification of water supply shortage V by resolution, and adoption at a public meeting in accordance with state law • Notification of supply shortage in Public Newspaper • Advertisement in Local Public Newspaper and local cable channel • Continue regular media, city council and County briefings • Continue social media updates • Targeted Messaging to customers • Notify top 20 water users in each customer class, e.g. residential, and CII
VI	50% of More	<ul style="list-style-type: none"> • Declaration and notification of water supply shortage VI by resolution, and adoption at a public meeting in accordance with state law • Notification of supply shortage in Public Newspaper • Advertisement in Local Public Newspaper and local cable channel • Continue regular media, city council and County briefings • Continue social media updates • Targeted Messaging to customers • Notify top 25 water users in each customer class, e.g. residential, and CII

Chapter 7: Monitoring and Reporting

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 measured directly from water bills. In these cases, targeted results must be met, and even reluctant customers will, overall, meet the goals. Specific methods to evaluate the effectiveness of water conservation programs to be employed by TPWD are:

Monitoring of Metered Water Usage – This will determine how much has been used. Compiling statistics to track customer group usage and determine trends is currently 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.

Monitoring Production Quantities – In normal water-supply conditions, TPWD records production figures daily. The totals are incorporated into the monthly water supply report to the State by TPWD.

To verify that conservation reduction goals are being met, production and metered usage reports will be evaluated during each stage of the conservation period. Water production figures will be compared with the previous year for the same period to determine whether conservation goals are being met.

To reduce labor costs to manually read the water meters, provide early leak detection that will ultimately provide cost saving to the customer and provide water conservation, the District investigated the use of AMI and/or Automated Meter Reading (AMR) systems to reduce labor costs associated with manually reading water meters, provide early leak detection with potential customer cost savings, and encourage water conservation. The Board of Directors adopted Resolution 19-04 on March 12, 2019, to secure funding to convert all meters within TPWD to AMI/AMR. In June 2020, TPWD completed installing 8,000 small- to medium-sized water meters.

The AMI system provides TPWD a tool to assist with water conservation, leak audits, and real-time data collection. AMI generates a continuous leak report that alerts TPWD weekly on meters that are not shutting off. Customers, in turn, are being made aware of potential leaks before they escalate in their next billing cycle and are making the necessary repairs, helping conserve water. Another advantage of AMI is its assistance with leak audits. This involves helping customers with high water demands, usage issues, and billing issues on their properties. Collecting real-time hourly data is another important tool for the AMI system. Currently, the AMI system reads every meter in the district once an hour, and the data is being captured by the collectors and repeaters. Real-time data and water-use trends are very important for water conservation and for identifying unknown leaks on a customer's property.

In late 2023 and early 2024, TPWD staff completed the final phase of the larger water meter replacement project. TPWD is currently reading all meters through the AMI system, except for a select few customers who have opted out of the AMI program and fire line services. The AMI system has proven instrumental in detecting water leaks, ultimately saving customers hundreds of dollars and conserving hundreds of gallons of water. TPWD is still dedicated to installing a

customer portal that would allow customers to access their water consumption, leak alerts, and real-time data via the web. This is a priority for TPWD, which has a goal to begin implementation of the portal in 2025/2026.

Chapter 8: Enforcement

TPWD has the power and authority to implement and enforce its shortage response actions, including mandatory water conservation measures, within its boundaries. During a declared water shortage emergency (Stage IV, V, or VI), a customer who exceeds the established allotment will pay a surcharge of two (2) times the highest rate tier per cubic foot of water for excess water delivered during the first and second billing period, and a surcharge of four (4) times the highest rate tier per cubic foot for excess water delivered during the third and subsequent consecutive billing periods.

If a customer exceeds the allotment usage for three (3) consecutive billing periods, TPWD will install a flow restrictor at the service meter with a capacity of two (2) gallons per minute for meters up to 1.5 inches in size (and comparably sized restrictors for larger meters). The customer must pay a flow restrictor installation and removal charge before normal service will be restored.

8.1 Appeals Procedure

1. Any person who wishes to appeal their customer classification or allotment must do so in writing, using forms provided by TPWD.
2. Appeals will be reviewed by TPWD staff; site visits will be scheduled if required.
3. One of the conditions of approval will be that all applicable plumbing fixtures or irrigation systems be replaced or modified for maximum water conservation.
4. Increased allotments may be approved for the following:
 - a. Substantial medical requirements.
 - b. Residential connections with three (3) or more residents in a household. These connections can receive additional allotments based upon the same calculations used for the standards applied in Stages V and VI, per additional person. A census may be conducted to determine the actual number of residents per dwelling unit. Additional water will be approved for permanent residents only; permanent residents are defined as people who live in the specific residence for a minimum of five (5) days per week, nine (9) months per year.
 - c. Commercial/Industrial/Intitutional customers for which water supply reductions will result in unemployment or decreased production; a TPWD water auditor must first confirm that the customer has instituted all applicable water efficiency improvements.
 - d. Non-agricultural customers can appeal for an additional allotment of 12 cubic feet per year per horse, cow, or other large animal, and six (6) cubic feet per year for each efficiently irrigated mature fruit tree.
 - e. Government agencies (parks, schools, county, etc.) may have separate account allotments combined into one agency allotment.

5. If an appeal for an additional allotment is requested for irrigation of trees or vegetation in residential categories or for any agricultural use, TPWD staff may use the services of a qualified consultant in determining the validity of the request.
 1. TPWD staff will approve or deny appeals and report all appeals to the TPWD Board of Directors monthly.
 2. If TPWD staff and the applicant are unable to reach an agreement, the appeal will then be heard by the TPWD General Manager, who will make the final determination.
 3. All appeals will be reported monthly to the TPWD Board of Directors.

If a Stage V or Stage VI water shortage occurs, in addition to prohibitions, the TPWD will establish mandatory annual allotments for each connection. The General Manager or designee will classify each customer and calculate each customer's allotment.

During a Stage V shortage, allocations will be calculated based on the following formula:

1. Each residential connection will receive no more than 51 cubic feet per year (47 gallons per capita per day minimum water requirement x 2.2 persons per household x 365 days = 37,741 gallons = 51 cubic feet) plus 15 percent of the average annual usage of the past three (3) years, more than 51 cubic feet.
2. Each commercial, industrial, and governmental connection will receive no more than 70 percent of the average annual usage of the past three (3) years.
3. Each landscaping connection will receive 20 percent of the average annual usage of the past three (3) years, unless the specific account has been determined by TPWD staff to meet the TPWD guidelines for Xeriscaping, irrigation, and maintenance, in which case it will receive 70 percent of the average annual usage of the past three (3) years.

During a Stage VI Shortage, allocations shall be based on the following formula:

1. Each residential connection will receive no more than 51 cubic feet per year (47 gallons per capita per day minimum water requirement x 2.2 persons per household x 365 days = 37,741 gallons = 51 cubic feet) plus 15 percent of the average annual usage of the past three (3) years, more than 51 cubic feet.
2. Each commercial, industrial, and governmental connection will receive no more than 65 percent of the average annual usage of the past three (3) years.
3. Each landscaping connection will receive 10 percent of the average annual usage of the past three (3) years, unless the specific account has been determined by TPWD staff to meet the TPWD guidelines for Xeriscaping, irrigation, and maintenance, in which case it will receive 65 percent of the average annual usage of the past three (3) years.

Chapter 9: Financial Consequences of Actions during Shortages

Water providers face significant financial challenges during droughts. During periods of reduced consumption, revenue from water sales declines while expenses remain relatively constant. A reduction in construction activities can also reduce the amount of water service connection fees collected. At the same time, as consumption decreases, some expenditures are expected to increase, including staff costs for community education, enforcement of ordinances, monitoring and evaluation of water use, and drought planning. Operations and maintenance costs may also increase because of the need to identify and quickly repair all water losses.

9.1 Revenue Impacts of Reduced Sales and Increased Costs

Potential fiscal impacts may include additional expenses for implementing and enforcing water conservation measures, as well as a loss of revenue from reduced water sales. Based on the Adopted Budget for 2025/2026, TPWD had total annual water-based revenues \$7.1M, of which approximately 66 percent is derived from water sales. As a result, water conservation efforts can significantly impact revenues and the ability to cover fixed, non-variable costs. Reductions in potable water use could result in an operating shortfall. While operating expenses decline with lower sales, fixed costs cannot be fully recovered when sales fall significantly, resulting in a net operating loss.

In the case of future water-use reductions resulting from the implementation of the WSCP, TPWD would likely experience impacts on operating revenue and would draw from reserves as necessary and as possible. Depending on the level of mandatory water reductions, TPWD could experience a decrease in revenue between seven (7) percent and 34 percent, based on water use reductions of 10 percent to 50 percent, respectively. Future or continued reductions in consumption would ultimately require a rate structure adjustment, or TPWD may consider implementing a drought surcharge to generate sufficient revenue to fund operations without drawing on reserves. According to the December 2025 Water Rate Study, the proposed rate schedule accounts for a seven (7) percent increase in total rate revenue. Table 9-1 below presents revenue impacts due to demand reduction, based on recent data.

Table 9-1: Revenue Impacts of Reduced Water Demand

Demand Reduction	Annual Revenue Reduction (\$)	Ancillary Costs (\$) ^a	Net Cost of Compliance (\$) ^b
10%	~471,000	60,000	~530,000
20%	~941,000	60,000	~1,001,000
30%	~1,411,000	60,000	~1,471,000
40%	~1,881,000	60,000	~1,941,000
50%	~2,351,000	60,000	~2,411,000

Notes:

- Reduction in non-fixed water service revenues based on fiscal year 2025/2026 water sales (volumetric) revenues and assuming additional staff time of \$60,000 to implement and enforce water use restrictions.
- Calculated sum of annual revenue reduction plus ancillary costs.

9.2 Mitigation Actions to Address Revenue Reductions

A reduction in water revenue could be mitigated by using the established reserve fund, deferring or avoiding capital expenditures, using less costly water supplies (if possible), and implementing drought surcharge rates. This would meet short-term cash flow needs, but it should be considered only temporary. A summary of measures to overcome revenue and expenditure impacts is provided in Table 9-2.

Table 9-2: Measures to Overcome Revenue Impacts During Shortage

Measure	Summary of Effects
Use of Reserve Funds	Use of reserves may provide short-term rate stabilization but would require delays in capital expenditures and rebuilding of reserves after the water shortage. Given TPWD's aging infrastructure and the resulting increase in facility needs, TPWD's existing reserve policy must be updated to raise minimum reserve levels to address potential risks. The reserve is set at a minimum of 180 days of budgeted Operating and Maintenance expenses.
Re-evaluate Capital Expenditure Plans	Delay major construction projects for facilities, as well as upgrades and replacements.

9.3 Financial Consequences of Limiting Excessive Water Use

Per the California Water Code Section 365 et al., retail water suppliers are required to prohibit or discourage excessive water use. Reporting this is not a required part of the UWMP; however, Water Code Section 10632(a)(8)(C) requires the financial consequences of these actions to be reported as part of the UWMP.

Water Code Section 367 states that there are three (3) types of drought emergencies:

- Declared statewide drought emergency
- When a supplier implements its mandatory reductions per their WSCP
- A declared local drought emergency

Water Code Section 366 states that a retail water supplier must prohibit excessive use through one of two strategies:

- Rate structure, specifically, a rate structure that includes block tiers, water budgets, or rate surcharges over and above base rates for excessive water use by a residential water customer.
- An excessive water use ordinance, specifically an ordinance that includes a procedure to identify and address excessive water use by metered single-family residential customers and customers in multiunit housing complexes in which each unit is individually metered or sub metered and may include a process to issue written warnings to a customer and perform a site audit of customer water usage prior to deeming the customer in violation.

Chapter 10: References

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Water Resources Economics, LLC. 2025 Water Rate Study. December.

Appendix A: Twentynine Palms Draft Water Shortage Contingency Ordinance

Appendix B: Twentynine Palms Water District Adoption Resolution of the Water Shortage Contingency Plan and the Draft Water Shortage Ordinance

[To be provided with the Final UWMP and WSCP]

Appendix C: Twentynine Palms Local Hazard Mitigation Plan
