Chapter 6
Water Shortage Contingency Plan

This Water Shortage Contingency Plan (WSCP) addresses the requirements in Water Code Section 10632 of the Urban Water Management Planning Act (The Act). The WSCP is incorporated into the 2020 Urban Water Management Plan (UWMP) and is used by the Carmichael Water District (District) to respond to water shortage contingencies as they may arise. The WSCP addresses possible conditions in which the water supply available to customers of the District is insufficient to meet the normally expected customer water use at a given point in time due to drought, regulatory action constraints, and natural and man-made disasters. This WSCP describes the District's strategy for allocating water during such water supply shortages, while assuring customers that at all times it will meet the minimum health and safety requirements of a drinking water purveyor.

This WSCP consists of the following required elements:

1. An analysis of water supply reliability.
2. Procedures for conducting an annual water supply and demand assessment.
3. 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.
4. Shortage response actions that align with the defined shortage levels.
5. Communication protocols and procedures.
6. Customer compliance, enforcement, appeal, and exemption procedures.
7. A description of legal authorities.
8. A description of financial consequences.
9. Monitoring and reporting requirements.
10. Reevaluation and improvement procedures.
11. Special Water Feature Distinction.
12. Plan Adoption, Submittal, and Availability.

The Act contains specific requirements for each of these elements.[42] As required by Water Code Section 10632 this WSCP is incorporated into the UWMP, yet it is also a stand-alone plan that is adopted independently from the UWMP and may be amended or refined and readopted over coming months and years as needed (see subsection 6.12 Plan Adoption, Submittal, and Availability, below).

6.1 Water Supply Reliability Analysis

The Carmichael Water District is located in Sacramento County and serves primarily residential and commercial customers in the unincorporated community of Carmichael. The District is located about ten miles east of downtown Sacramento along the north side of the American River and has a long history of providing water for irrigation, municipal, and commercial purposes. It was formed in 1916 to supply irrigation water for farming, but as the community of Carmichael became more urbanized, the District became predominantly an urban water supplier. The District covers an area of approximately eight square miles and serves approximately 11,700 municipal connections.

The District's water supply and reliability are analyzed fully in Chapter 5 of the UWMP. In summary, the District's water supply comes predominately from direct water diversions off of the American River. Water diversions are conveyed to the Bajamont Water Treatment Plant (WTP) for treatment and delivery throughout the District's potable water system. The District also maintains four active groundwater wells as part of its balanced supply strategy. Groundwater is mostly used to manage surface supply shortfalls and handle system peaking needs. The District relies on surface water to meet about 70 to 85 percent of its total annual supply and groundwater provides about 15 to 30 percent of total annual supply. These values will vary depending on time of year, American River flow conditions, maintenance requirements, water shortage conditions, or other factors.

The District has six interconnections with the four adjacent water agencies. There are four interties with Sacramento Suburban Water District, one with Citrus Heights Water District, one with Fair Oaks Water District, and one with Golden State Water Company – Cordova System. These interconnections can be used by either agency to provide emergency supplies in the event of short-term outages.

The District's service area is mostly built out with only infill development projects expected in the coming years. The District has experienced less than 0.2 percent annual growth over the last 10 years, and 10 percent total growth projected by 2045. The 2045 demand projection for the District is estimated at 9,280 acre-feet per year.

Carmichael Water District works closely with neighboring water suppliers and other stakeholders as part of three regional planning efforts to cooperatively manage surface and groundwater resources in the Sacramento area. These efforts include the Water Forum Agreement (WFA), The Regional Water Authority (RWA), and the Sacramento Groundwater Authority (SGA). Despite certain water supply

[42] California Water Code Section 10632, available at: (https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT&sectionNum=10632)

constraints posed by legal agreements, the District retains secure rights to water supplies sufficient to meet projected annual water demands through the planning horizon.

Carmichael Water District may face potential water supply challenges in some months of critically dry years, but the UWMP uses the measures identified in this Water Shortage Contingency Plan to demonstrate that the District has reliable water supplies to meet demands in normal, single dry and five consecutive dry years through 2045 as noted in Chapter 5. Despite this relative water supply security, this WSCP serves as a roadmap to help the District meet the challenges that may arise from unexpected future water supply shortages, regulatory actions, and unforeseen man-made and natural disasters.

6.2 Annual Water Supply and Demand Assessment Procedures

The WSCP describes the District's procedural methodology for managing shortages and conducting its required Annual Water Supply and Demand Assessment (Annual Assessment). The Annual Assessment is to be submitted to California Department of Water Resources (DWR) by July 1 each year with the first Annual Assessment due July 1, 2022. The Annual Assessment examines the District's anticipated water reliability for the current year and one additional dry year. The Annual Assessment will be prepared at the beginning of each calendar year to evaluate near-term water supply reliability and determine what, if any, water shortages stages may be triggered during the required period. The Annual Assessment will be used by District decision-makers to prepare for and initiate implementation of any needed response actions, as well as to inform customers, the general public, interested parties, and local, regional, and state governmental entities to prepare for such required actions.

6.2.1 Analytical and Decision-making Processes

The District plans to conduct its Annual Assessment according to the following timeline and process:

February	Initial data collection and analysis
March	Preliminary Draft Annual Assessment internal review and revisions
April	Draft Annual Assessment and results briefing for District decision-makers
May	Public Notification and Release of Draft Annual Assessment
June	Approval of Annual Assessment by District Decision-makers
June	Submit Annual Assessment to DWR in advance of July 1 deadline

The District will prepare its Annual Assessment using the following key data and analytical procedures (which may be modified as needed):

- Prepare supply estimates for each water source on a monthly basis for the analysis period.
- Update unconstrained customer demand and estimate anticipated actual water use on a monthly basis for the analysis period.

- Update infrastructure assessment, including estimated water supply production capability on a monthly basis for the analysis period.
- Identify and quantify any locally applicable factors that may influence or disrupt supplies during the analysis period.
- Refine the definition of "dry year" as relevant to dry conditions like water year 2015 and 2021.
- Identify any shortfall between projected supply and anticipated demand.
- Identify and incorporate any applicable constraints (infrastructure, regulatory, etc.).
- Develop, analyze, and propose water resource management strategies to address any shortfall between projected supply and anticipated demand with reference to the water shortage stages identified in this WSCP.
- Present the Annual Assessment (and resulting water shortage stage declaration, if applicable) to District decision-makers.

If the results of the Annual Assessment indicate the need for any alternative water shortage response actions which may be addition to those specified in Subsection 6.4, below, the alternative response actions will be described and submitted in the Annual Assessment, as specified in CWC 10632.2.

6.2.2 Submittal Procedure

The District will submit its Annual Assessment to the DWR via email by the end of June each year, but in no case later than July 1 each year. Prior to, but no later than, the time of DWR submittal, the District will also notify Sacramento County, the adjacent water suppliers, the public, and other stakeholders concerning the results of the Annual Assessment and where it is available for review.

6.3 Six Standard Water Shortage Stages and Triggers

New state requirements for the WSCP require water suppliers to adopt six water shortage stages, which correspond to progressively severe water shortage conditions (up to 10%, 20%, 30%, 40%, 50%, and greater than 50% percent shortage), as compared to the normal service reliability condition. The District has adopted the six standard water shortage stages. Each stage corresponds to a range of reduction in anticipated water supply availability (or reduction in treated water production capacity) in relationship to "normal" demand. Because average water use varies on a monthly, seasonal, and sometimes annual basis, the District will determine the actual water shortage stage based on the expected water production "gap" between actual available water supply and anticipated water use (water demand) at any given time. Reduction of available water supply by the indicated percentages will trigger an appropriate water shortage stage and the District will implement some or all of the response actions listed for each stage.

The District will consider water supply availability factors together in determining the trigger for the appropriate water shortage stage. These factors include:

Bajamont WTP Capacity - Available production capacity is monitored to indicate any potential decreases. Production capacity could be decreased by scheduled maintenance within the plant, mechanical failure of equipment, or if river flow is less than 500 cubic feet per second (cfs). The

Ranney collectors have also been susceptible to flood events. At high flows in the river, the collectors can either be ineffective or unusable, creating a supply shortage.

Water Forum - Folsom Reservoir Inflow - Inflow values are used by the WFA to determine hydrologic year type and subsequent supply availability. The District's surface water supply is currently not impacted by this trigger except during extreme drought. In extreme drought there may be insufficient flows in the Lower American River to meet the District's surface supply diversions.

Groundwater Well Capacity - Groundwater production capacity could be decreased by scheduled maintenance for a well, mechanical failure of equipment, power outage, or other natural disaster events. Wells can also be impacted by water quality. All wells are monitored on a regular basis for water quality standards. If water quality is decreased to below acceptable standards, a well may be placed out of service until the situation is remedied. In the case of contaminated groundwater, the well may have to be placed out-of-service indefinitely. The impact to overall supply reliability will then be reevaluated by the District.

Aerojet Plume - The contaminated groundwater plume from the Aerojet site in Rancho Cordova has been detected on the north side of the American River, in and around Ancil Hoffman Regional Park. Monitoring wells have been installed to monitor the progress of the plume. Should the plume approach current production wells, the District will determine the impact to supplies and update the supply reliability analysis and strategy.

Neighboring Water Supplier Intertie Activity - A neighboring supplier may request emergency supply through one of the existing interconnections. The District will work with the requesting agency to determine the volume and duration requested and impacts to District supplies. Based on the situation, the District may decide to implement demand reduction measures.

Regional Supply Situation - Other agencies in the region may experience supply shortages that require water shortage declarations. The District will monitor these declarations and corresponding demand reduction requirements. It is the discretion of the District's Board of Directors to determine if other agency's stage declarations are significant enough to cause a water shortage stage triggering event.

State Supply Situation - Similar to the Regional Supply Situation, other regions in the state may suffer supply shortage and need to declare water shortage stages. Depending on the extent and impact of statewide issues, the State may issue emergency production reduction goals or water rationing requirements for all water users. Additionally the State may curtail surface water rights (as was the case in 2014 and 2015). The District will monitor statewide issues and actions to determine impacts to District supplies.

At the time of a water shortage emergency, the Board of Directors will consider adopting a Water Shortage Emergency Resolution. When the Board of Directors cannot assemble to adopt the Water Shortage Emergency Resolution, the General Manager, or his/her designee in case of absence, is authorized to implement the appropriate stage of the WSCP based on the reduction in water supply. The General

Manager's determination to implement the WSCP shall remain effective until the Board of Directors meeting immediately following such determination, at which time the Board of Directors will consider adopting an Emergency Water Shortage Resolution. The Board of Directors may elect to authorize the General Manager to declare further stage reductions if conditions merit.

6.4 Shortage Response Actions

The WSCP is required to identify locally appropriate shortage response actions that align with the defined shortage stages and include demand reduction actions, supply augmentation actions, system operational changes, and mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions. For each response action the WSCP is to provide an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

Shortage response actions identified in the WSCP are intended to effectively meet the challenge, yet limit the impact to customers from reduced supply situations. Customer compliance with early water shortage stages should minimize the requirements for the severe cutbacks listed in later stages. The District created the requirements for each stage based on the following principles.

- Maintain water quality, safe operating conditions, and fire flow capability at all times;
- Provide flexibility to residential customers while also promoting the efficient use of water during decreased demand requirements;
- Preserve landscaping as much as possible, with permanent plantings such as trees and shrubs receiving more importance than replaceable plantings such as turf and annuals;
- Maintain public fields as long as possible;
- Minimize economic impact to District customers and;
- Enhance public outreach and messaging simplicity.

6.4.1 Stages of Shortage Response Actions

The District has identified shortage response actions to be implemented during each of the six sequential stages and corresponding water shortage conditions. These actions are based on specific hydrological and regulatory conditions and the fundamental need to meet water service requirements within the District's service area. Moreover, the shortage response actions provide the District with some flexibility to address dynamic water shortage conditions while protecting the District against extreme conditions where supplies are drastically reduced beyond 50%. The following is an overview of the staged response actions the District could follow during a given water shortage condition based on shortage severity, relative supply conditions for each stage, and percent shortage reduction levels.

The region's water agencies coordinate closely with water supply planning issues, implementing conjunctive use strategies, and potential supply shortages. The stages described below are used by all water agencies, but each agency will declare its own drought stage based on its specific supply and demand scenario.

The shortage response actions that may be implemented in each stage include, but are not limited to, the following:

Stage 1 (up to 10 percent shortage) "Water Alert" – If water supplies are threatened with constraint, the Plan calls for an introductory Stage 1 drought response, during which customers are informed of possible shortages and asked to voluntarily conserve 10 percent, or directed to mandatorily conserve 10 percent. In addition, customers are prohibited from wasting water or unreasonably using water for beneficial purposes. For example, prohibited water uses under this stage include allowing water to run off unused into a gutter, ditch, or drain; failing to repair a controllable leak; washing sidewalks, driveways, parking areas, tennis courts, patios, or other paved or areas; utilizing a hand-held hose without an automatic shut-off nozzle; and irrigating during a precipitation event. Additional prohibitions will apply to new developments such as prohibiting single pass-through cooling water systems; commercial car washes and laundries without recirculating water systems; and decorative fountains without recirculating water systems.

This stage includes performing public outreach and education about the shortage and methods individuals can implement to reduce their water use. The District will inform the public and neighboring governmental bodies of the potential shortage condition and will coordinate with customers to implement the actions consistent with this Stage.

Stage 2 (11 - 20 percent shortage) "Water Warning" – In the event Stage 2 is implemented the District will continue to encourage community-oriented voluntary conservation measures, enforce conservation measures, and implement mandatory water use reduction measures to decrease demand by up to 20 percent. Stage 2 activities include a continuation of activities described under Stage 1, as well as greater conservation and water use restrictions. These additional restrictions include beyond those identified in Stage 1, limiting outdoor irrigation to 3 days per week. High water user customer accounts will be monitored to identify high water users such that high water users and suspect water wasters will be investigated to determine possible high water use and verify WSCP compliance measures are followed. After water a use investigation, the identified accounts demonstrating excess use above the shortage percentage are subject to financial penalties as described in Subsection 6.8, below.

The District will also continue to engage in public outreach and education as it applies to the water shortage conditions and the actions necessary to achieve up to 20% reduction in use.

Stage 3 (21 - 30 percent shortage) "Severe Shortage" – Stage 3 includes all response actions taken in Stages 1 and 2 and is focused on continuing to encourage customers to voluntarily reduce water use regarding turf watering, fillings pools, etc., mandatory-watering restrictions will be implemented following additional shortage actions described in Stage 2. Increased monitoring related to prescribed water conservation actions will occur under this stage. High water use customers will be monitored and addressed with excess use above the shortage percentage subject to financial penalties as descried in Subsection 6.8, below.

The District will also continue to engage in public outreach and education as it applies to the water shortage conditions and the actions necessary to achieve up to 30% reduction in use.

Stage 4 (31 - 40 percent shortage) "Critical Shortage" – Stage 4 includes all response actions taken in prior stages regarding mandatory conservation and intensifies their implementation and enforcement. Stage 4 restrictions will be implemented if the Stage 3 demand reduction and other response actions are

deemed insufficient to achieve reductions due to water supply shortages. All Stage 3 response actions will be intensified, and water production will be monitored daily by the District for compliance with necessary reductions. Customer baseline water use will be monitored and addressed with excess use above the shortage percentage subject to financial penalties as descried in Subsection 6.8, below.

The District will also continue to engage in public outreach and education as it applies to the water shortage conditions and the actions necessary to achieve up to 40% reduction in use.

Stage 5 (41 - 50 percent shortage) "Water Crisis" – Stage 5 includes all response actions taken in prior stages regarding mandatory conservation. The primary focus of Stage 5 is to ensure the protection of the water supply for all public health and safety purposes. This Stage will require reductions in water demand by up to 50 percent and will follow all voluntary and mandatory actions described in Stages 1-4. Customer baseline water use will be monitored and addressed with excess use above the shortage percentage subject to financial penalties as descried in Subsection 6.8, below.

The District will also continue to engage in public outreach and education as it applies to the water shortage conditions and the actions necessary to achieve up to 50% reduction in use.

Stage 6 (greater than 50 percent shortage) "Water Emergency" – Stage 6 includes all response actions taken in prior stages focused on reducing water demands by more than a fifty percent in response to greater than 50 percent water shortages. This stage requires only use of water for human health and safety purposes. No additional water uses are permitted, including any outdoor irrigation. Waivers will be considered on a case by case basis. Customer baseline water use will be monitored and addressed with excess use above the shortage percentage subject to financial penalties as descried in Subsection 6.8, below.

The District will also continue to engage in public outreach and education as it applies to the water shortage conditions and the actions necessary to achieve greater than 50% reduction in use.

Tables 6-1 through 6-6 summarize staged response actions to reduce customer use and identify their estimated effectiveness (in parenthesis).

Table 6-1: WSCP Actions to Reduce Customer Use - Stage 1[43]

Stage 1 Water Alert: Savings up to 10%
1. Waste and Unreasonable Use of Water Prohibited and Voluntary conservation encouraged (up to 10%) 2. Situation and possible subsequent water shortage stages explained to the public and governmental bodies (up to 10%) 3. Focus on customers with high per capita water usage to achieve proportionally greater reduction than those with low use 4. Actions include, but not limited to: Public information campaign consisting of distribution of literature, speaking engagements, website updates, bill inserts, and conservation messages printed in local newspapers Educational programs in area schools Water Conservation Kits; Conservation Hotline (combined up to 10%) 5. Consumption Reduction Methods, including: • Encourage customers to fix leaks or faulty sprinklers promptly (*0-1%*). • Decorative water features (water fountains, etc.) to recirculate water and be leak proof (*0-1%*) • All landscapes shall be watered during cooler morning and evening hours to reduce evaporation and minimize landscape runoff. No watering allowed between the hours of 10 a.m. and 7 p.m. (*0-5%*). • Landscape watering shall be confined to a user's property and shall not runoff onto adjacent properties, roadsides or gutters (*0-5%*). • No irrigating turf or ornamental landscapes during and 48 hours following measurable precipitation (*0-5%*). • Free flowing hoses are prohibited for any use, all hoses must have an automatic shut-off control nozzle capable of completely shutting off the flow of water (*0-1%*). • Washing down impervious surfaces such as driveways and sidewalks is prohibited unless for public health and safety purposes (*0-1%*). • Unauthorized use of hydrants is prohibited. Authorization for use must be obtained from the District (*0-1%*). • Commercial, industrial, institutional equipment must be properly maintained and in full working order (*0-1%*). • Encourage customers to wash only full loads when washing dishes or clothes (*0-1%*). • Encourage customers to use pool covers to minimize evaporation (*0-1%*). • Encourage restaurants to only serve water to customers on request (*0-1%*).

[43] Potential reduction estimates were based on best professional judgement. Estimates in *italic* provided by the Regional Water Authority in the WSCP Template 2020 UWMP Water Savings spreadsheet.

Table 6-2: WSCP Actions to Reduce Customer Use - Stage 2

Stage 2 Moderate Shortage: Savings up to 20%
1. All measures implemented in Stage 1 2. Voluntary conservation usage reductions (up to 20%) 3. Mandatory Conservation Rules and Restrictions and Prohibitions on End Uses (10-20%) 4. All Consumption Reduction Methods from Stage I and intensified as needed; additionally: o Use prohibitions o Outdoor irrigation restrictions including limiting number of watering to 3 days per week, and time when irrigation can occur (e.g., between 7:00 pm and 10:00 am). Plant containers, trees, shrubs and vegetable gardens may be watered additional days using only drip irrigation or hand watering. Watering schedule to be developed specifying days and times allowed (5-10%). o Fix leaks or faulty sprinklers within 7 days (0-1%). 5. Encourage new landscape installations be limited to drought-tolerant plants and natives. 6. 5% water shortage surcharge may be implemented.

Table 6-3: WSCP Actions to Reduce Customer Use - Stage 3

Stage 3 Severe Shortage: Savings up to 30%
1. All measures implemented in Stages 1 and 2 2. Some or all of the following: o Adherence to customer actual water use reductions against 3-year average use baseline, water allocations and mandatory conservation rules o Water usage goals established by the Board or designated CWD employee. o High use customers water usage to be monitored and recorded, and accounts exhibiting potential excessive use will be reviewed o Water use prohibitions will continue to include restrictions of days and daytime hours for watering, excessive watering resulting in gutter flooding, using a hose without an automatic shut-off control nozzle, use of decorative fountains with non-recirculating pumps, washing down sidewalks or patios, not repairing leaks in a timely manner, etc. (up to 30%) 3. All activities are intensified and production is monitored daily for compliance with necessary reductions. (up to 30%) 4. All Consumption Reduction Methods from Stage 2 and intensified as needed; additionally: o Fix leaks or faulty sprinklers within 3 days (*0-1%*). o Decorative water features that use potable water must be drained and kept dry (*0-1%*). o Car washing is only permitted using a commercial carwash that recirculates water or by high pressure/low volume wash systems (*0-1%*). o Require a construction water use plan be submitted to the District that addresses how impacts to existing water users will be mitigated (such as dust control) (*0-1%*). o Limit the installation of new landscaping to drought tolerant trees, shrubs and groundcover. Prohibit installation of new turf or hydroseed. Customers may apply for a waiver to irrigate during an establishment period for the installation of new turf or hydroseed. (*0-1%*) o Outdoor watering restricted to two (2) days per week according to odd/even schedule. Plant containers, trees, shrubs and vegetable gardens may be watered additional days using only drip irrigation or hand watering (10-30%).. a. Watering schedule to be developed specifying days and times allowed. b. Restrictions may be reevaluated during cool/wet season. (*1-5%*). o Mandatory rationing (up to 30%) 5. 15% water shortage surcharge may be implemented

Table 6-4: WSCP Actions to Reduce Customer Use - Stage 4

Stage 4 Critical Shortage: Savings up to 40%
1. All measures implemented in Stages 1-3 2. All activities are intensified and production is monitored daily for compliance with necessary reductions. (up to 40%) 3. All Consumption Reduction Methods from Stage 3 and intensified as needed; additionally: o Fix leaks or faulty sprinklers within 1 day (*0-1%*). o Existing pools shall not be emptied and refilled using potable water unless required for public health and safety purposes and in such cases will require a pre-approved permit issued by the District(*0-1%*). o Water use for new landscape installations or renovations is not authorized (*0-1%*). o Outdoor irrigation. Outdoor irrigation only allowed one (1) day per week according to odd/even schedule. Plant containers, trees, shrubs and vegetable gardens may be watered additional days using only drip irrigation or hand watering. (*10-30%*). a. Watering schedule to be developed specifying days and times allowed. b. Restrictions may be reevaluated during cool/wet season. (1-5%). 4. 20% water shortage surcharge may be implemented 5. Catastrophic Event (Supply reduction up to 40%): Implement Applicable Actions for Catastrophic Events

Table 6-5: WSCP Actions to Reduce Customer Use - Stage 5

Stage 5 Shortage Crisis: Savings up to 50%
1. All measures implemented in Stages 1-4 2. Source of supply for the System is severely curtailed to the level that requires each customer to restrict their water use for only human health and safety purposes (up to 50%) 3. All activities are intensified and production is monitored daily for compliance with necessary reductions (up to 50%) 4. All Consumption Reduction Methods from previous stages and intensified as needed 5. 25% water shortage surcharge 6. Update current water shortage condition response measures based on Board approvals and direction, state policy directives, emergency conditions, or to improve customer response 7. Catastrophic Event (Supply reduction up to 50%): Implement Applicable Actions for Catastrophic Events (such as boil water order)

Table 6-6: WSCP Actions to Reduce Customer Use - Stage 6

Stage 6 Emergency Shortage: Savings greater than 50%
1. All measures implemented in Stages 1-5 2. Source of supply for the System is severely curtailed to the level that requires each customer to restrict their water use for only human health and safety purposes. Customer rationing may be implemented. (>50%) 3. All activities are intensified and production is monitored continually for compliance with necessary reductions (up to >50%) 4. All Consumption Reduction Methods from previous stages and intensified as needed 5. 30% water shortage surcharge 6. Update current water shortage condition response measures based on Board approvals and direction, state policy directives, emergency conditions, or to improve customer response 7. Catastrophic Event (Supply reduction greater than 50%): Implement Applicable Actions for Catastrophic Events.

6.4.2 Demand Reduction Actions

The District has identified a range of available and feasible customer demand reduction actions that can be used adaptively and implemented with progressively greater intensity to meet the supply shortage challenges faced under each water shortage condition. These demand reduction actions are identified by the associated water shortage stage in which they may be implemented. Tables 6-1 through 6-6 summarize the District demand reduction actions associated with each water shortage stage and shortage level. An estimate of the action's effectiveness as related to that stage is indicated parenthetically.

Achieving demand reductions during water supply shortages will rely on maintaining a continuous proactive demand management strategy. The District's water efficiency program, leak detection program, and rate program provide the tools to manage demands. Maintaining these programs and efforts will greatly improve supply and demand management scenarios during water shortages.

Other response actions not specified in this Plan may also be identified by the District to implement the essential purposes of this Plan or the UWMP (see CWC 10632.2).

6.4.3 Supply Augmentation Actions

The following water supply augmentation mechanisms that could be used to support water system reliability have been described in UWMP Chapter 3. The following supply augmentation mechanisms may be used as response actions under a given water shortage condition, as determined by the District.

- Activate Emergency Intertie(s) with adjacent water suppliers
- Initiate water acquisitions per transfers and exchanges identified in alternative supplies in Chapter 3 including supplies that could be made available from San Juan Water District, Sacramento

Suburban Water District, Fair Oaks Water District, Sacramento County Water Agency, and Golden State Water Company.

6.4.4 Operational Changes

The following water system operational change may be used as response actions under a given water shortage condition, as determined by the District. Consider additional groundwater usage, as well as additional water transfers, increased pressure monitoring, and increasing leak detection and leak repair efforts.

6.4.5 Mandatory Prohibitions

This section is required to identify any mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions. The District maintains at all times the following restrictions to prevent wasteful water use practices, including intentional or unintentional water waste and unreasonable uses of water. These restrictions are also listed among the demand reduction actions on Tables 6-1 through 6-6.

Restrictions

1. Unnecessary and wasteful uses of water are prohibited.
2. No water runoff from property allowed.
3. All water plumbing, fixtures, or heating or cooling devices must not be allowed to leak or discharge. All known leaks must be repaired within seven (7) days or less depending on the severity of the leak.
4. Free flowing hoses are prohibited for any use, all hoses must have an automatic shut-off control nozzle capable of completely shutting off the flow of water.
5. Car washing must use a bucket and hose with an automatic shut-off control nozzle.
6. All pools, spas, decorative or ornamental fountains, ponds and water features must be equipped with a recirculation pump and maintained leak free. Internal and external water leaks must be repaired within seven (7) days or less depending on the severity of the leak.
7. All landscapes must be watered during cooler morning or evening hours to reduce evaporation and minimize landscape runoff. No watering allowed between the hours of 10 a.m. and 7 p.m.
8. No irrigating turf or ornamental landscapes during and 48 hours following measurable precipitation.

Recommendations

1. Pool covers should be used to minimize evaporation.
2. During summer, outdoor watering three days a week is usually sufficient for typical landscape.
3. Use high efficiency plumbing fixtures and washing full loads of laundry and dishes.
4. No serving of drinking water other than upon request in food and beverage establishments.

6.4.6 Emergency Operations Plan for Catastrophic Water Shortages

This section identifies actions to be undertaken by the District to prepare for, and implement during, a catastrophic interruption of water supplies. In addition to climate, other events that can cause water supply shortages are earthquakes, chemical spills, flooding, dam failures, waterline ruptures, and energy outages at treatment and pumping facilities, which could cause a water shortage severe enough to trigger a Stage 1-6 water supply shortage condition.

The District has an adopted an Emergency Operations Plan, which provides procedures and guidance to District personnel in responding to emergency situations including catastrophic events, both natural and manmade. The plan provides procedures for preparing, mobilizing, and employing District resources and coordinating outside resources during an emergency. The District provides periodic training, including simulated events and responses to keep personnel fully trained on implementation of emergency procedures. Mobilization is consistent with Standardized Emergency Management and the Incident Command System.

In addition to specific actions to be undertaken during a catastrophic event, the District performs maintenance activities, such as annual inspections for earthquake safety, and budgets for emergency items, such as auxiliary generators, to prepare for potential events.

The following is a summary of actions cross-referenced against specific catastrophes for three of the most common possible catastrophic events: regional power outage (such as Public Safety Power Shutoff or "PSPS" events), natural disasters (such as earthquake, flood or storm damage, or fire), and malevolent acts.

Table 6-7: Response Actions during Catastrophic Events

Possible Catastrophe	Summary of Potential Actions
Regional Power Outage	• Isolate areas that will take the longest to repair and/or present a public health threat. Arrange to provide emergency water. • Establish water distribution points and ration water if necessary. • If water service is restricted, attempt to provide potable water tankers or bottled water to the area. • Make arrangements to conduct bacteriological tests, in order to determine possible contamination. • Utilize backup power supply to operate pumps in conjunction with elevated storage.
Natural Disaster	• Assess the condition of the water supply system. • Complete the damage assessment checklist for reservoirs, water treatment plants, system transmission and distribution. • Coordinate with Governor's Office of Emergency Services utilities group or County to identify immediate firefighting needs. • Isolate areas that will take the longest to repair and/or present a public health threat. Arrange to provide emergency water. • Prepare report of findings, report assessed damages, advise as to materials of immediate need, and identify priorities including hospitals, schools and other emergency operation centers. • Take actions to preserve storage. • Determine any health hazard of the water supply and issue any "Boil Water Order" or "Unsafe Water Alert" notification to the customers. • Cancel the order or alert information after completing comprehensive water quality testing. • Make arrangements to conduct bacteriological tests, in order to determine possible contamination.
Malevolent acts	• Assess threat or actual intentional contamination of the water system. • Notify local law enforcement to investigate the validity of the threat. • Get notification from public health officials if potential water contamination. • Determine any health hazard of the water supply and issue any "Boil Water Order" or "Unsafe Water Alert" notification to the customers, if necessary. • Assess any structural damage from an intentional act. • Isolate areas that will take the longest to repair and or present a public health threat. • Arrange to provide emergency water.

6.4.7 Seismic Risk Assessment and Mitigation Plan

Beginning January 2020, CWC Section 10632.5 mandates urban water suppliers include in their UWMP 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. This requirement can be met by submittal of a copy of the most recent adopted local hazard mitigation plan or multi-hazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390) if the local hazard mitigation plan or multi-hazard mitigation plan addresses seismic risk.

Carmichael Water District intends to submit a copy of the Sacramento County Local Hazard Mitigation Plan (LHMP 2016), which addresses seismic risk and liquefaction potential for Sacramento County, including the District's service area. Additionally, Sacramento County is currently partnering with the Cities of Sacramento, Citrus Heights, Elk Grove, Folsom, Galt, Isleton, Rancho Cordova and several special districts to update the countywide LHMP 2016. The updated LHMP is anticipated to be finalized later in 2021, at which time the District will submit it as well.

The LHMP 2016 Hazard Identification Assessment for Sacramento County in the Carmichael Water District service area indicates that earthquake probability is "occasional" (1-10% chance of occurring next year) and liquefaction probability is "unlikely" (>1% chance of occurring next year). Both earthquake and liquefaction significance are concluded to be "low" (minimal potential impact).

6.5 Communication Protocols

The District maintains an established and effective communications program to inform its customers, neighbors, and other stakeholders of water service issues, updates, and policies. Implementation of the WSCP will utilize the existing communication program structure to inform customers and others of the declared shortage stage and respective actions and restrictions in place.

The Board of Directors meetings addressing the Annual Assessment and any potential water shortage declaration will be noticed using normal Board of Directors meeting public notification procedures. The meeting will also be announced through regular notification protocols.

Once a shortage stage as been declared by the Board of Directors, the District will notify its customers and others through a range of efforts. The stage and restrictions will typically be identified in a press release, customer billing statements, newsletters, and posted on the District's website. Specifically, the District's website will be updated to feature the shortage declaration, restrictions, and resources available to customers from the District and other entities to help meet the restrictions. Subsequent Board of Directors meetings will include a review of the shortage condition, customer response results, and discussion and recommendations for potential modifications. The District will also coordinate with Sacramento County the adjacent water suppliers, and other public agencies as necessary, to declare a local emergency with respect to anticipated water supplies and demands in the event conditions necessitate.

The District's communications protocols may include, but are not limited to, some or all of the following locally relevant actions. These communications protocols will be used at the discretion of District staff based on then-current and anticipated water shortage conditions:

- Publishing information on the District's website.
- Responding to telephone inquiries.
- Providing bill inserts and direct mailings above and beyond those legally required.
- Directly calling customers.
- Developing materials for non-English speaking customers.
- Preparing social media posts to communicate District actions.
- Advertising actions on other local audio and video media.
- Coordinating voluntary and mandatory water conservation activities with other local and regional governing bodies.

Public outreach actions will be intensified according to water shortage stage and based on customer response. These actions may include:

- Initiate public campaign through usual media content. Develop/revise message and content to reflect current water shortage stage issues and requirements.
- Utilize regional partnerships (primarily Regional Water Authority) to coordinate messaging and implementation of water shortage stages, as appropriate.
- Update District website with current demand reduction information.
- Push info to media outlets (radio, print, web, TV) with message and results to date.
- Develop and distribute water shortage information to customers.
- Update messaging to communicate water shortage reduction targets.
- Increase school presence by offering presentations and materials.
- Display signs alerting public of reduction drought stage.
- Offer presentations to all local civic groups, HOAs, and neighborhood associations. Work with groups to post District literature or links on respective websites, email lists, or meetings.
- Send special mailings to customers communicating current water shortage stage and requirements.
- Continue public outreach with local media outlets regarding water shortage conditions and requirements.

6.6 Compliance and Enforcement

Compliance is generally assured by on-going customer outreach and education. District staff has discretion to enforce the provisions of the WSCP using warnings, and by issuing citations to water customers in consideration of the specific circumstances, including the current water shortage stage. Violations may include watering on the wrong day of the week or midday, watering on the correct day of the week but wasting water into the street, using water to clean sidewalks, driveways, parking lots and other hardscapes, and not having shutoff nozzles on hoses. Financial penalties, flow restrictors, and disconnected water service are among the options available to the District to ensure compliance with the required water shortage actions. Appeals processes are also available for those that are subject to the enforcement.

Enforcement measures include, among others:

- Water patrol staff looking for properties in violation of the emergency water restrictions.
- Water patrol staff takes time-stamped photos of the property in violation of emergency water restrictions.
- A letter is sent to the party responsible for the water bill, notifying them of the violation and giving them a deadline to make the necessary adjustments to gain compliance.
- If a second or subsequent violation occurs penalties may be imposed.

The following lists the fines and fees for violation of the WSCP requirements. Violations and penalty assignment are at the discretion of the District. It is the District's intent to promote awareness and provides assistance to its customers to meet both normal and drought stage requirements. Should customer actions warrant, the District will issue violations and levy fees and fines as appropriate. Customer may appeal to the District, who will act in a timely manner to resolve the issue.

Each day that a violation occurs may be considered a separate offense. In cases of severe flooding or property damage the District may discontinue water service prior to any verbal or written communication. In such as case, fines and fees may be imposed at the District's discretion.

Penalties for failure to comply with any provisions of the WSCP are as follows:

1. First Violation: The District will provide a written or verbal warning and a copy of WSCP requirements to the account owner. It is up to the discretion of the District to also attempt to contact the resident verbally regarding the violation.
2. Second Violation: A second violation is punishable by a fine of fifty dollars ($50). Nonpayment will be subject to the same remedies as nonpayment of basic water rates.
3. Third Violation: A third violation is punishable by a fine of two hundred dollars ($200). Nonpayment will be subject to the same remedies as nonpayment of basic water rates.
4. Fourth and Subsequent Violations: A fourth and any subsequent violation is punishable by a fine not to exceed five hundred ($500). Nonpayment will be subject to the same remedies as nonpayment of basic water rates. In addition, the District may choose to install a flow restrictor or disconnect service.

Table 6-8 summarizes these penalties.

Table 6-8: Penalities and timing

Penalty	Stage When Penalty Takes Effect
Written or verbal warning	First violation
$50 Fine	Second violation
$200 Fine	Third violation
Up to $500	Fourth violation
Disconnection of service	Fourth violation (at District discretion)

Discontinuing Service: The District may disconnect a customer's water service for willful violations of mandatory restrictions in this WSCP, subject to current state regulations concerning water shutoffs. Under current District policy the customer will receive written notice of intent to disconnect service. The customer will have five business days to correct violation and pay all accrued fines and fees.

District will disconnect service after the sixth business day after receipt of notice to the customer. If service is disconnected Shut Off/Disconnection/Reconnection fees will apply based on current fiscal year fee schedule. All other applicable fines listed above shall apply.

All fines and fees must be paid in full prior to service reconnection. Nonpayment will be subject to the same remedies as nonpayment of basic water rates.

6.7 Legal Authorities

The District is authorized to implement and enforce the water shortage response actions in this WSCP by its enabling statues.[44] This includes the legal authority to implement the water shortage response actions required to meet the specific circumstances posed by the water shortage stages described in Subsection 6.3, above.

In addition, the District is able to exercise general powers granted to water distributors in CWC §§350-359. CWC §350 authorizes the governing body of a distributor of a public water supply to declare a water shortage emergency 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 there would be insufficient water for human consumption, sanitation, and fire protection. Upon a finding of such an emergency condition, the distributor can adopt such regulations and restrictions on the delivery and consumption of water as will conserve the water supply for the greatest public benefit, with particular regard to domestic use, sanitation, and fire protection (CWC §353). The regulations and restrictions remain in force and effect until the supply of water available for distribution within such area has been replenished or augmented, and restrictions may include the right to deny new service connections and discontinue service for willful violations (CWC §355 and §356). The District also coordinates with Sacramento County and the adjacent water suppliers for the possible proclamation of a "local emergency" under California Government Code, California Emergency Services Act (Article 2, Section 8558).

6.8 Financial Consequences

The Act requires an analysis of the impacts of implementation of this WSCP and likely financial consequences to the District. This section addresses aspects of revenue reduction, expense increases, and additional costs that may arise, and identifies financial response actions.

6.8.1 Revenue and Expenditure Impacts

The District has established water rates that support its on-going operation and maintenance activities, as well as the capital projects required to provide a safe and reliable water supply to its customers.

[44] California Water Code sections 20500 *et seq*., 1943 (Irrigation District Law).

Residential customers are billed per unit of water used under a tiered rate structure. Multifamily and commercial, industrial and institutional customers are billed per unit of water used under a uniform rate structure. Because water rates are tied to customers' normal water consumption activities, significant reductions in demand due to customer conservation measures associated with a water shortage condition will result in a reduction of revenue to the District. In addition to the revenue reductions, the District will also experience an increase in expenses resulting from augmented communication actions, increased enforcement activities, and the administration of water shortage management actions identified in the WSCP. At the same time, a decrease in expenses related to power costs, raw water costs, and chemicals to treat the water would also occur.

The Carmichael Water District 2020 Business Plan and Capital Facilities Fee Study (Study) includes an estimate of the financial impact to the District under each water shortage stage for the following:

- Reduced Water Sales Revenue
- Reduced Power and Chemical Costs
- Increased Conservation Program Costs
- Increased Water Purchase Costs

The Study proposes a multi-pronged corrective strategy which includes:

- Reduction in Capital Spending
- Increase in Revenue from Surcharges (described in the following section)

Additionally, the District maintains a minimum of four (4) months operating reserves and approximately two (2) million dollars in reserves that can be used as an emergency fund for water in the event of water shortages. However, if the District experienced a significant water shortage and reduced water demand over the longer-term, the rate structure or drought surcharges would be reevaluated as required.

6.8.2 Drought Rate Structures and Surcharges

The District has adopted water shortage surcharges that are applied as a percentage increase to the water usage rates in effect if and when a water shortage is declared by the District's Board of Directors. The fixed bimonthly service charges are not affected by the rate surcharges. Any implementation of a water shortage surcharge would be temporary, lasting only during the period of water shortage. Under the water shortage surcharges, customers achieving required water use reduction goals may have lower water bills than they would have with normal water rates and normal water usage. Customers that do not meet water use reduction goals may see higher water bills. The water shortage surcharge is expected to mitigate the financial consequences of water shortages, but also is expected to serve as a pricing signal and provide an additional incentive for customers to reduce water use as appropriate.

Table 6-9 presents the adopted water shortage rate surcharge percentages and illustrates how they would apply to the proposed water usage rate for January 2021.[45] The same surcharge percentages would apply to any water usage rates as they may be adopted in subsequent years for normal supply conditions.

Table 6-9: CWD 2021 Rate Schedule

	Normal Supply Conditions	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Use Reduction Goals	None	0%-10%	10%-20%	20%-30%	30%-40%	40%-50%	>50%
Assumed Use Reduction	None	5%	15%	25%	35%	45%	55%
Water Shortage Surcharge (1)	N/A	N/A	5%	15%	20%	25%	30%
Example Usage Rate (2)	$1.65	$1.65	$1.73	$1.90	$1.98	$2.06	$2.15
Bimonthly Service Charge	(no changes would apply to Service Charges)						

(1) Water shortage charges are an incremental increase in the water usage rates. Bimonthly Service Charges are not affected

(2) Due to changes in costs and loss of water sales

6.9 Monitoring and Reporting

The District will conduct regular monitoring and reporting to ensure WSCP implementation is effective and responsive to conditions as they unfold. The District will then use this information to restore and maintain the water supply and demand balance. Similar to the supply and demand projections used to establish a shortage condition, the District will monitor the same data to determine effectiveness and efficacy.

Monitoring activity will include, but is not limited to:

- Gathering monthly or bi-weekly customer water use data.
- Preparing technical assessments of customer water use and identifying deficiencies.
- Analyzing trends in water supply availability, including meteorological events, regional water supply coordination actions, and statewide regulatory trends.
- Assessing water conservation activities and the effectiveness of enforcement actions as applicable to achieving conservation objectives.

Data reporting will include preparation of written reports and presentations, as necessary, for District management meetings and other public meetings summarizing key information and data, including but not limited to:

- Actual water demands compared to projected demands by customer class and in total.
- Actual supply availability and utilized compared to projected availability for each supply source.
- Projected supply availability for next 12 months for each supply source.

[45] Carmichael Water District Water Rate Schedule – Effective January 1, 2021 (January 19, 2021).

- Monthly reporting of water production and conservation, as required by the State Water Resources Control Board.

These and other data will be regularly evaluated by staff to assess the effectiveness of response measures and to identify the need for any changes or modifications to the declared water shortage stage or actions based on the results. District staff will report to the Board of Directors on a monthly basis, or as needed, on water supply and demand conditions. With regard to monitoring and reporting, staff may determine the need for additional monitoring and reporting measures, or the need to develop or amend ordinances, or update the WSCP as a whole. Any WSCP update or modification will be conducted through the Board of Directors public meeting process, unless specific conditions require otherwise.

6.10 Re-evaluation and Improvement Procedures

The District will continually review and assess its procedures for implementing the WSCP. Specifically, the District will use the monitoring and reporting protocols identified above as a quality assurance and quality control measure to understand the effectiveness of water conservation activities. These re-evaluation and improvement procedures will include developing reports, memoranda, and presentations that assess the effectiveness of water conservation actions and the WSCP. These materials will be provided to the Districts customers and decision-makers for consideration. Public comments on the published materials and management considerations should be incorporated into the development and implementation of future actions. These protocols will be continually assessed and updated by District management staff.

6.11 Special Water Feature Distinction

For purposes of water shortage contingency planning and implementation, the District considers "special water features" those that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains. Such special water features are considered distinct from swimming pools and spas (as defined in subdivision (a) of Section 115921 of the Health and Safety Code).

The District has determined that special water features are a relatively small discretionary use but may be restricted under all identified water shortage conditions. Water shortage response actions will focus on health and safety issues and balancing continuation of these uses with the severity of the water shortage condition. The relative total water use from these sources is a consideration for how special water features and swimming pool uses could be curtailed during specific water shortage conditions. For instance, when swimming pool filling and refilling would exceed a customer's use allocation under the various drought stages, then these actions are prohibited and can be subject to enforcement actions.

6.12 Plan Adoption, Submittal, and Availability

The WSCP has been adopted, submitted, and is available as required by the Urban Water Management Planning Act. As a stand-alone document, the WSCP is also subject to the following separate adoption, submittal, and availability processes, and whenever it is separately amended or revised in the future. The District may refine or amend this WSCP as necessary and in compliance with the normal public notice and adoption. The District has followed all applicable law in adopting the WSCP. The current adopted WSCP

shall be available to District customers and to Sacramento County and the adjacent water suppliers within 30 days of its adoption. A copy of the current WSCP is available for public inspection during business hours at the District's office (subject to current COVID 19 restrictions). The current WSCP is posted and available for download at https://carmichaelwd.org/about-us/water-shortage-contingency-plan/.