Alameda County Water District

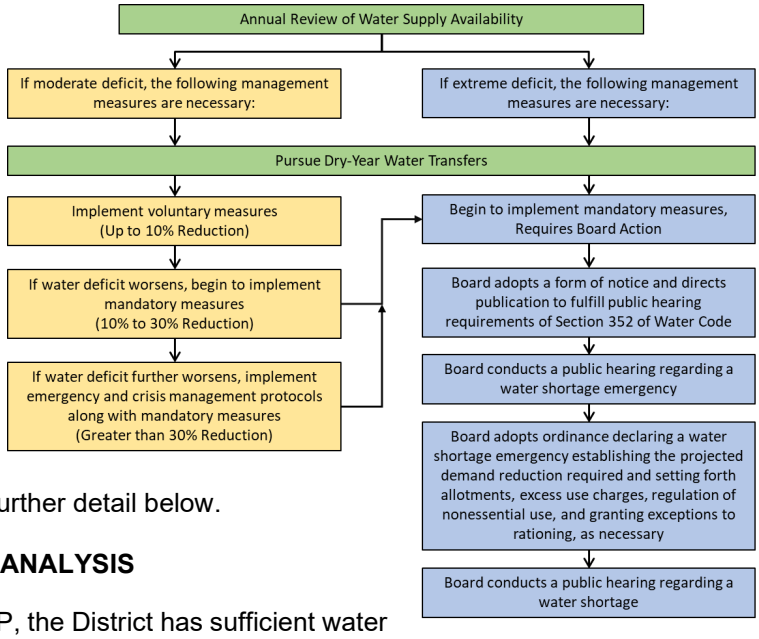
WATER SHORTAGE CONTINGENCY PLAN MAY 2021

ACWD
ALAMEDA COUNTY WATER DISTRICT

CHAPTER 10 WATER SHORTAGE CONTINGENCY PLAN

This document provides the Alameda County Water District's (the District or ACWD) Water Shortage Contingency Plan (WSCP), as required under the Urban Water Management Planning Act. Beginning in 2020, the WSCP is required to be a separately prepared and adopted Plan by the District and to be included in the 2020-2025 UWMP. While shortages and disruptions can come in many forms, the purpose of the WSCP is to detail the generalized actions that the District would take in an actual emergency under various degrees of severity. The general steps followed in such an emergency are outlined in Figure 10-1 and described in further detail below.

Figure 10-1
Water Shortage Contingency Plan



10.1 WATER SUPPLY RELIABILITY ANALYSIS

As documented in Chapter 9 of the UWMP, the District has sufficient water supplies to meet the normal year demands for both today's and tomorrow's customers, but deficiencies (shortages) can occur as a result of dry winter weather or from an extended interruption of imported supplies. The District's diverse water supply portfolio draws on supplies from multiple hydrologic regions of California and helps mitigate these impacts through optimization of integrated management centered on maintaining appropriate local storage in the Niles Cone Groundwater Basin (Niles Cone). It is anticipated that these integrated operations will experience supply shortfalls of 10% to 20% for single, critically dry or extended, multiple dry year periods on predictably recurrent intervals based on historic hydrology as well as modelled future hydrology including the near-term effects of climate change.

Under normal circumstances the Niles Cone provides the storage capacity needed to protect against short-term water supply deficiencies or disruptions. The Newark Aquifer, the upper aquifer of the Niles Cone, is subject to saltwater intrusion if inland groundwater levels drop and remain below sea-level for a prolonged period. Therefore, to protect the Niles Cone and the freshwater supplies it contains, the District manages all its water supplies every year to maintain target levels in the aquifer. This practice helps mitigate the risk of overdependence on imported supplies from the Delta, one of the most vulnerable links in the District's water supply system. It also allows the Niles Cone groundwater level to be used as the key indicator of the health of the entire water supply portfolio; any potential supply shortfall or other water supply emergencies will eventually appear in the form of lower water levels in the Newark Aquifer.

Depending on the projected groundwater levels, the District will take actions to protect local groundwater. Typical actions the District will take to maintain appropriate levels include: (1) maximizing the import of additional water for artificial recharge of the groundwater basin; (2) reducing use of local groundwater; and, (3) maximizing use of imported supplies. The ability of the District to maintain groundwater levels after these incremental actions have been taken will indicate the potential stage of water supply shortfall and correlated level of reductions the District may need to achieve, as further discussed in Section 10.3.

In addition to anticipated droughts, the potential exists for catastrophic interruptions of imported or local water supplies that could result in significantly greater shortages and the District may be required to declare a water shortage emergency. A catastrophic loss of supply or access to supply could come from any number of foreseeable or unforeseeable events. Frequently identified factors that could contribute to a severe disruption of water supply include:

- Regulatory Action that reduces or curtails delivery of water
- Extreme hydrology
- Failure of the Sacramento-San Joaquin Delta or other critical infrastructure
- Large magnitude earthquake affecting multiple sources of supply and transmission
- Malevolent event — Intentional sabotage of distribution system infrastructure
- Significant water quality impact to imported water supply impacting its suitability for the District's uses.

In such an event, the District will enact its WSCP at the appropriate level needed to address the water supply shortage in stages of up to and in-excess of 50%.

10.2 ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

Pursuant to CWC Section 10632(a)(2), the District must include in its WSCP the procedures used for conducting an annual Water Supply and Demand Assessment (WSDA, "annual assessment"). The WSDA is a determination of the near-term outlook for supplies and demands and how a perceived shortage may relate to WSCP shortage stage response actions in the current calendar year. This determination is based on information available to the District at the time of the analysis. Starting in 2022, the WSDA will be due by July 1 of every year. CWC Section 10632.1 states: "An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later." The WSDA and related reporting are to be conducted based on the supplier's procedures described in the WSCP.

Data and Methodologies for the WSDA

The WSDA determination will be based on considerations of available core water supplies, unconstrained water demand, planned water use, infrastructure conditions, and any other locally applicable factors deemed relevant by the District. The balance between projected core water supplies and anticipated unconstrained demand will be used to determine what, if any, shortage stage is expected under the WSCP framework. CWC Section10632(a)(2)(B)(ii) requires the WSDA to determine "current year available supply, considering hydrological and regulatory conditions in the current year and one dry year." The WSDA will include two separate estimations of the District's annual water supply and unconstrained demand using 1) current year conditions, and 2) assumed dry year conditions. Accordingly, the WSDA's shortage analysis will present separate sets of findings for the current year and dry year scenarios.

Evaluation Criteria for the WSDA

The District will rely on its existing water supply modeling and reporting processes to complete the annual WSDA requirements. All WSDA evaluation criteria will be based on the current year anticipated water supply shortage determination from the WSDA. If a shortage is identified for the current year conditions, then the procedures outlined in the District's WSCP for that level of shortage will be followed. Otherwise, no actions will be triggered.

Water Supply for the WSDA

The District's sources of supply include water from the State Water Project (SWP), the San Francisco Public Utilities Commission (SFPUC), the local Niles Cone Groundwater Basin, inflow to Lake Del Valle (LDV) under the District's water right, water deliveries from the Semitropic Water Storage District (SWSD) pursuant to the District's water storage banking agreements, as well as other temporary purchase agreements such as the Dry Year Transfer Program available through the State Water Contractors (SWC). For the current year, allocation of each supply will be determined based upon existing contractual quantities and up-to-date allocations as of the month of WSDA preparation. For the subsequent year, allocation quantities for each supply will reference the single critical dry year water supply as reported in the most current UWMP, as these water supply availabilities represent the single driest year of record.

Unconstrained Customer Demand for the WSDA

For the current year, the District's WSDA modeling will use the most recent reported production demands for the months preceding the month of WSDA preparation. For the remainder of the current year as well as for the subsequent dry year, the District will rely on its most recent two-year Demand Projection, which incorporates the previous three calendar years of reported production data and makes additional projection adjustments for recent demand factors such as weather, growth, water use efficiency, and drought rebound (as applicable), as well as any other influencing factors, such as the Alameda County Shelter-in-Place Orders in response to the COVID-19 pandemic, as needed. The District's demand projection methodology will use sound engineering judgement in the development of future Demand Projections, and the specifics will likely vary from year-to-year depending on current conditions and trends in historical data.

Planned Water Use for Current Year and Subsequent Dry Year for the WSDA

For planned water use data for the current year, the WSDA modeling input will use the most recent data of reported water deliveries prior to the month of WSDA preparation, as well as the most up-to-date projections of contractually available water supplies for the remainder of the current year. For the subsequent dry year, the WSDA modeling will rely on data for the single critical dry year from the most current UWMP for single dry year water supply, as these conditions represent the single driest year of record.

Infrastructure Considerations for the WSDA

The District's WSDA modeling will use a model that implicitly considers infrastructure, distribution, and storage system constraints to determine overall water supply utilization and production at each water production facility based on specified demand levels. The output from the WSDA modeling will include 1) optimal monthly production schedules for a two-year forecasting period, and 2) anticipated monthly groundwater levels for a two-year forecasting period.

Decision-Making Process for the WSDA

During or before the month of May, the District's staff will present a completed WSDA for approval by District's Board of Directors or by the Board's authorized designee with expressly delegated authority for approval of WSDA determinations. This presentation to the decision-making body will include a request that the approval of the WSDA determination also appropriately triggers any recommended specific shortage response actions resulting from the assessment. Upon approval, the District's staff will then formally submit the WSDA to the California Department of Water Resources by July 1.

10.3 SIX STANDARD WATER SHORTAGE LEVELS

As required under Water Code Section 10632(a)(3) the District's WSCP conforms to 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. These shortage levels also apply to catastrophic interruption of water supplies, including, but not limited to, a regional power outage, an earthquake, or other potential emergencies.

In the event of a water supply shortfall, the first priority is given to assuring public health and safety needs are able to be met. Once those goals are established, the District first looks toward reductions in outdoor use, followed by residential indoor use, and finally commercial indoor use. Table 10-1 shows a typical sensitivity analysis for demand reduction by 'end-use' category and by drought stage, reflecting the estimated billed water consumption under projected CY 2040 demand.

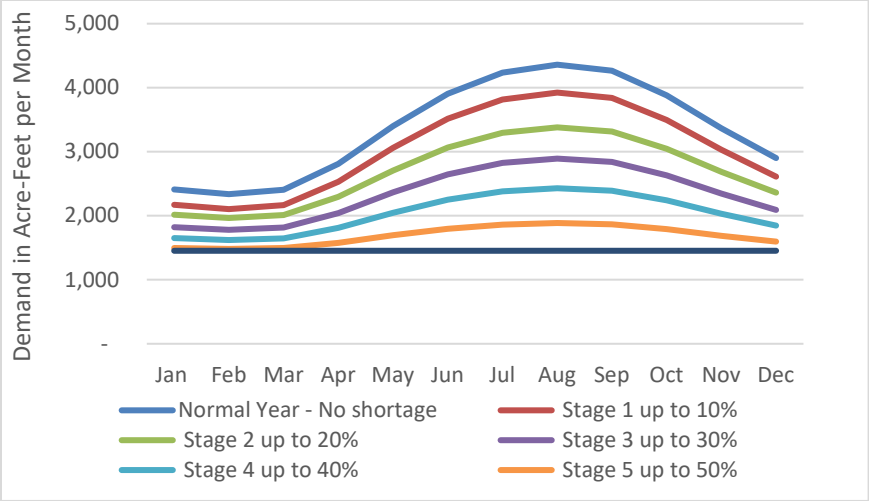
Table 10-1
Example Application of WSCP Drought Stage for 2040 Demands

	Base Demand	**Stage 1**		**Stage 2**		**Stage 3**		**Stage 4**		**Stage 5**		**Stage 6**	
Level of Supply Shortage	none	Up to 10%		Up to 20%		Up to 30%		Up to 40%		Up to 50%		Greater than 50%	
Required conservation by end use	N/A	%	Acre Feet	%	Acre Feet	%	Acre Feet	%	Acre Feet	%	Acre Feet	%	Acre Feet
Residential[1]	19,600	10%	1,960	15%	2,940	25%	4,820	25%	4,820	28%	5,490	35%	6,860
Business & Industrial[1]	6,400	10%	640	15%	960	18%	1,150	18%	1,150	18%	1,150	20%	1,280
Institutional[1]	400	10%	40	15%	60	18%	70	18%	70	18%	70	20%	80
Outdoor	15,900	10%	1,590	30%	4,690	40%	6,420	70%	11,050	90%	14,310	100%	15,900
Total Demand (AF)	*42,300*	*38,100*		*33,700*		*29,800*		*25,200*		*21,300*		*18,200*	
Required net reduction	*N/A*	4,200		8,600		12,500		17,100		21,000		24,100	
Net Reduction	*0%*	*10%*		*20%*		*30%*		*40%*		*50%*		*57%*	
Equivalent Demand in gpcd[2]	*107*	*96*		*85*		*75*		*64*		*54*		*46*	
Equivalent Residential Demand in gpcd[2]	*50*	*45*		*42*		*37*		*37*		*36*		*32*	

Notes:
All customer 2040 projected water use rounded to nearest 100 AF for sums; all end use subcategories rounded to the nearest 10 AF.
(1) Estimated Indoor use, does not include water use for seasonal outdoor
(2) Includes 9.7% unaccounted for water loss.

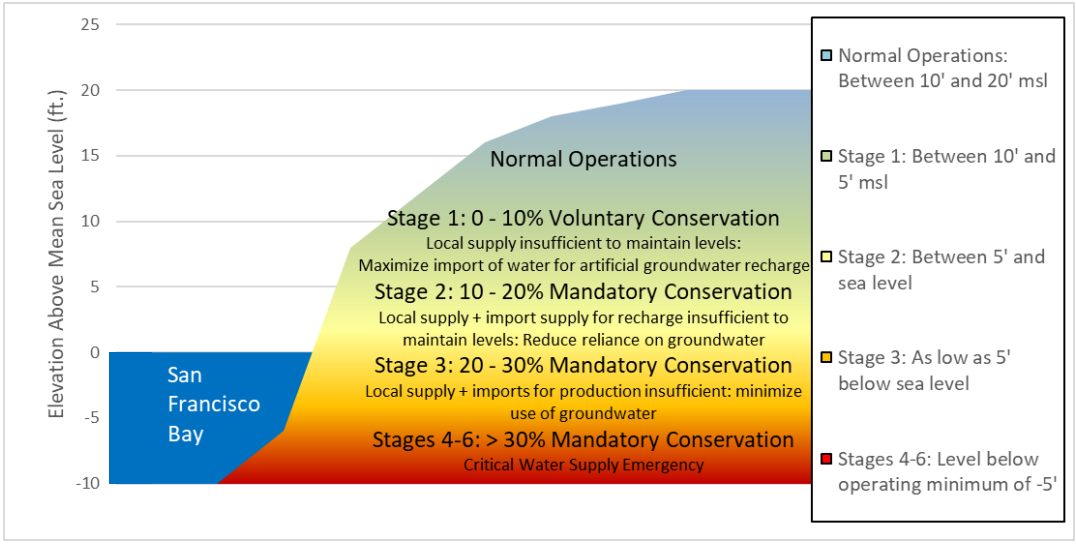
The result of these six stages is a gradual 'flattening' of the seasonal demand for water as illustrated in Figure 10-2. In normal years, seasonal water use has a bell-shaped curve associated with it, increasing in the summer or "peak irrigation" season. As the stages increase from one to six, the water use pattern "flattens" as outdoor use becomes further restricted. What remains is the essential water use.

Figure 10-2
Example Application of WSCP Drought Stage for 2040 Demands



The Water Code requires the District to define these shortage levels based on water supply and groundwater conditions. As discussed in Section 10.1, the Niles Cone is typically used as the indicator of health for the entire integrated system. Under anticipated drought-induced shortages, the level of shortage corresponds loosely to groundwater levels in the Niles Cone. Figure 10-3 summarizes the water supply conditions associated with groundwater levels as well as the approximate stage of water shortage and associated management measures taken. However, due to the complexity of the District's integrated water supply system and the interdependence of many operations, local groundwater conditions may not be the only indicator of a healthy water supply. Accordingly, groundwater levels do not necessarily indicate the need to trigger the WSCP as may be the case for a solely groundwater-dependent agency. Similarly, a catastrophic event that impacts imported supplies could result in declaration of a water shortage emergency even if local groundwater levels are robust.

Figure 10-3
Water Shortage Response Based on Local Groundwater Levels



10.4 SHORTAGE RESPONSE ACTIONS

The following is a discussion of options that the District can utilize to offset the impacts of water supply shortages.

Supply Augmentation

As described in Section 10.1 Water Supply Reliability Analysis, the District attempts to manage all of its water supplies to maintain target levels in the Niles Cone. Locally appropriate groundwater supply augmentation and operational changes to achieve this includes the following: maximizing imported supply for treatment and delivery, maximizing imported supply to supplement recharge of the Niles Cone, and the recovery of offsite banked water. These actions are all aspects of normal water supply management during shortages as discussed in Chapter 9.

In a severe water shortage emergency, the District may consider temporary additional drawdown of the Niles Cone to even lower than 5 feet below mean sea level to meet short-term demands. Any drawdown past 5 feet below mean sea level would constitute supply augmentation as this water supply is not considered normal water supply management during shortages.

In addition to these actions the District also pursues supplemental water through dry-year water transfers but does not rely on them as a means of meeting reliability thresholds.

Demand reduction

In the event of a water shortage emergency, the District will first determine the amount of demand reduction necessary to responsibly manage the water supply under current and foreseeable conditions. The District will then enact a program that will include actions required by each customer group. The Water Shortage Contingency Plan for each stage of shortage, illustrated in Table 10-1, are described in Tables 10-2a through 10-2f.

Table 10-2a
Stage 1 (Voluntary) Water Shortage Contingency Plan
Minimal Shortage (Up to 10%)

Stage Description
Begin voluntary conservation request for all customers, indoor, and outdoor use**.** **Estimated Residential Indoor GPCD: 45**
District Actions
• Request voluntary water conservation. • Initiate public information campaign regarding water supply shortages; explain other water shortage stages and forecast potential future action. • Engage and inform local governments, community groups, and other stakeholders. • Develop a "Drought Resource Center" on the District's website. • Prepare and disseminate educational brochures, bill inserts/messages, newsletters, and other drought outreach materials. • Send technical information to specific customer types regarding ways to save water. • Attend community events/meetings to provide information. • Evaluate need for implementation of Stage Rates; initiate a Proposition 218 process, if needed. • Add additional actions, as needed, to coordinate with any State regulations/requirements.
Customer Actions **All Customers** • Implement voluntary water use reductions (water use efficiency improvements and behavior changes). • Utilize the District's AMI customer portal to track usage. • Identify and prevent any wasteful uses of water. • Identify additional water use efficiency opportunities. **Residential** • Participate in the District's water use efficiency programs to increase efficiency of homes. **Business/Industrial, Cities/Schools** • Educate employees to reduce water use at work. • Participate in the District's water use efficiency programs to increase efficiency of facilities. • Research water use efficiency improvements and potential reuse options. • Improve industrial process efficiencies (e.g., cooling towers, etc.).
Enforcement • Educational letters, mailers, calls, and emails. • Accelerate water waste tracking, monitoring and enforcement using existing water waste ordinance (Appendix D of the 2020 UWMP). • Use AMI to track overall usage trends to ensure reductions are occurring and accelerate high use and leak notifications and alerts.

Table 10-2b
Stage 2 (Mandatory) Water Shortage Contingency Plan
Moderate Shortage (Up to 20%)

Stage Description

Begin mandatory conservation request and enforcement; focus enforcement on outdoor use and eliminating water waste; encourage adoption of water efficient landscaping.

Estimated Residential Indoor GPCD 42

District Actions

Implement all actions in Stage 1 plus some or all of the following, as necessary to meet the District's reduction target:

- Adopt and enforce a Water Shortage Emergency Ordinance (WSE Ordinance) banning wasteful uses of water and limiting other uses. Prohibitions and restrictions will include existing prohibitions such as:
  - prohibiting excessive run-off from irrigation and other activities,
  - prohibiting the use of a hose without a shut-off nozzle,
  - requiring that leaks are fixed as soon as practicable,
- plus additional prohibitions and restrictions (depending on the conservation reduction target) such as:
  - prohibiting hosing down paved surfaces,
  - prohibiting the use of non-recirculating water features[1],
  - prohibiting draining and then refilling pools,
  - restricting landscape water use (e.g., limiting the number of days per week customers can irrigate, and/or time of day, and/or only allowing irrigation on specific days).
- Consider setting allocations/budgets and/or restrictions by customer type and/or water use type (e.g., landscape meters).
- Request consumer water use reductions at prescribed levels.
- Initiate Proposition 218 process if not done previously and consider implementation of the applicable Stage Rate.
- Consider additional fines or surcharges for excessive water users.
- Accelerate the public information campaign.
- Coordinate drought actions and programs with service area cities.
- Encourage the use of a drought budget (based on ET) for landscape watering.
- Cross-train District staff to interact with and inform the public, especially on leak detection and irrigation issues.
- Conduct water audit program to increase the efficiency of District operations to ensure adequate supply and minimize losses.
- Minimize hydrant flushing.
- Expand outdoor water use efficiency programs – use AMI to target appropriate customers for these programs: water-efficient landscape rebates (to remove lawns), weather-based irrigation controllers, encouraging the application of mulch and compost in landscapes.
- Add additional actions, as needed, to comply with State regulations/requirements.

Customer Actions

Implement all actions in Stage 1 plus:

All Customers

- Adhere to WSE Ordinance, allocations/budgets, or other use reduction requests; request an exception if hardship or a health and safety issue arises.
- Implement all practical water use efficiency changes at home and at work – for example: replace old inefficient fixtures and devices.
- Do not drain and refill pools except where a health and safety issue exists.
- Implement the use of water recapture/rain catchment systems, if feasible.

Commercial/Industrial, Cities/Schools

- Utilize a drought budget (based on ET) for landscape watering.

Enforcement

All actions in Stage 1 plus:

- Educational letters, mailers, calls, and emails; site visits if necessary, with warnings.
- Use AMI to identify excessive users that may be in violation of WSE Ordinance restrictions/prohibitions.
- Possible termination of water service and/or fines if not in compliance with WSE Ordinance.
- If water shut-off, pay reconnection fee and other fines to reinstate service.

[1] See Section 10.11 SPECIAL WATER FEATURE DISTINCTION

Table 10-2c
Stage 3 (Mandatory) Water Shortage Contingency Plan
Severe Shortage (Up to 30%)

Stage Description

Intensify mandatory conservation. Most reductions will be from irrigation limits and other outdoor use limits, some additional reduction for indoor residential, less impact on businesses. Really push customers to adopt water efficient landscaping. Well maintained lawns are stressed/look brown but can survive until winter rains, water efficient landscapes and trees should remain healthy.

Estimated Residential Indoor GPCD: 37

District Actions

Implement all actions in Stages 1 and 2 plus some or all of the following, as necessary to meet the District's reduction target:

- Adopt Base Consumption Allowance for each customer class and establish excessive use/overage charges, fines and/or penalties.
- Advise area planning staffs of possible short-term (temporary) inability to supply new developments/annexations due to shortages to existing customers and/or require new developments to implement extreme (but proven) water use efficiency measures.
- Expand the District's water audit and leak detection program.
- Only essential outdoor water use at District facilities.
- Flush mains in emergency situations only.
- Fire hydrant flow testing in critical situations only.
- Intensify outreach for outdoor water use efficiency programs targeting lawns and other high water use plants in favor of water efficient landscapes.
- Add additional actions, as needed, to comply with State regulations/requirements.

Customer Actions

Implement all actions in Stages 1 and 2 plus:

All Customers

- Make additional behavior changes to further reduce indoor use (shorten or skip showers, flush toilets sparingly "let it mellow").
- Further limit landscape watering, only irrigate with drip or low flow/efficient systems, no overspray type irrigation allowed, except where an exception has been granted; encourage hand watering only.
- Turn off all water features.
- Cover all pools.

Commercial/Industrial, Cities/Schools

- Conduct an internal audit of all water use and provide a summary of findings that identifies non-efficient uses/equipment, opportunities for on-site water reuse, and demonstrates efforts to improve efficiencies.
- For restaurants/food service facilities, serve water on request only.
- For hotels/hospitality businesses, provide guests the option to not have their linens laundered.

Enforcement

- All actions in Stages 1 and 2 plus:
- Use of AMI to monitor allocations and compliance with the Base Consumption Allowances.
- Send warnings to customers over their allowance and bill for overages.

Table 10-2d
Stage 4 (Mandatory) Water Shortage Contingency Plan
Critical Shortage (Up to 40%)

Stage Description
Severely dry conditions, no lawn irrigation allowed but minimal irrigation for trees and native plants is allowed to keep them alive. **Estimated Residential Indoor GPCD: 37**
District Actions Implement all actions in Stage 1, 2, and 3 plus some or all of the following, as necessary to meet the District's reduction target: Intensify all District actions. • Net zero water demand increase by new developments during the water shortage. • Revisit WSE Ordinance, allowances, etc. for modification to meet reduction targets. • Add additional actions, as needed, to comply with State regulations/requirements.
Customer Actions Implement all actions in Stage 1, 2, and 3 plus: **All Customers** • Severely limit landscape watering to no more than one day per week in the hottest part of the summer using drip only or hand watering, to preserve trees and native plants. Encourage irrigation from water reuse/rain catchment systems only. • No car washing unless water is from a reuse or rain catchment system. • Monitor water meters for spikes in use to avoid fines and penalties for excessive use. • Pools covered and refilled with tank truck services only if health and safety concerns. • No use of potable water for street cleaning. • Intensify water reuse
Enforcement All actions in Stage 1, 2, and 3 plus: • Intensify use of AMI for monitoring excessive use. • Augment water waste and excessive use monitoring with water waste patrols.

Table 10-2e
Stage 5 (Mandatory) Water Shortage Contingency Plan
Critical Shortage (Up to 50%)

Stage Description
No irrigation. All outdoor use is for health and safety only. Moratorium on development. Additional quality of life adjustments for extreme conditions. **Estimated Residential Indoor GPCD: 36**
District Actions Implement all actions in Stage 1, 2, 3, and 4 plus some or all of the following, as necessary to meet the District's reduction target: • Intensify all District actions. • By Ordinance, no potable water can be used by landscape meters. • No new developments, new water service connections or expanded services unless health and safety issue. • Revisit WSE Ordinance, allowances, etc. for modification to meet reduction targets. • Add additional actions, as needed, to comply with State regulations/requirements.
Customer Actions Implement all actions in Stage 1, 2, 3, and 4 plus: **All Customers** • No landscape watering. • No car washing. • Water reuse / rain catchment for flushing toilets only.
Enforcement • Continue and intensify all actions in Stage 1, 2, 3, and 4.

Table 10-2f
Stage 6 (Mandatory) Water Shortage Contingency Plan
Critical Shortage (Greater than 50%)

Stage Description
Severe emergency – only essential use allowed. Many connections are compromised. District will likely need to repair and fix mains. All customers extremely impacted - some are without any water, or water is limited in duration/time available, and may need to be delivered in trucks. This stage impacts businesses the most. **Estimated Residential Indoor GPCD: 32**
District Actions Implement all actions in Stage 1, 2 3, 4, and 5 plus some or all of the following, as necessary to meet the District's reduction target: Intensify all District actions. • Consider water service shut offs and rolling "dry" periods (limited service). • Revisit WSE Ordinance, allowances, etc. for modification to meet reduction targets. • Add additional actions, as needed, to comply with State regulations/requirements.
Customer Actions Implement all actions in Stage 1, 2, 3, 4, and 5 plus: **All Customers** • Only essential uses of water for health and safety.
Enforcement • Continue and intensify all actions in Stage 1, 2, 3, 4, and 5, if needed. • In extreme emergency operations mode so some enforcement actions may not be relevant at this point.

Operational changes

The District may intentionally operate the Niles Cone at lower elevations during a drought in order to reduce the subsurface outflow of water to the San Francisco Bay aquifer.

A blending facility which blends softer San Francisco Regional Water System supplies with harder groundwater has been in operation since 1992. This facility helps the District achieve its hardness goals by creating an equalized level of taste and hardness for all District customers. However, under severe drought or emergency situations when sufficient San Francisco supplies are not available, the hardness criteria may be relaxed and additional, higher hardness groundwater may be utilized.

In a severe drought or water shortage emergency, as documented in the District's Integrated Resources Planning Study, the District may allow the Niles Cone's groundwater elevation to be temporarily drawn down more than 5 feet below mean sea level.

Additional Mandatory Restrictions

As included in Tables 10-2a to 10-2f, all stages of the WSCP include mandatory restrictions on certain non-essential or wasteful uses of water.

Emergency Response Plan

Drought is an expected condition in the State of California, and the District anticipates shortages of up to 20% based on historic hydrology as well as modelled future hydrology including the near-term effects of climate change. Shortfalls above 20% are considered to be those associated with a catastrophic loss of supply or access to supply stemming from any number of foreseen emergencies, though most commonly assumed a maximum probability earthquake on any number of critical faults crossing the District's water supply sources or system. In the event of a catastrophe, the District will enact the appropriate measures

from its Emergency Response Plan (Jacobs and ELWELL Consulting Group, 2020) to address the specific occurrence.

Seismic Risk Assessment and Mitigation Plan

The Hayward Fault runs through the District service area, and seismologists say there is a 31 percent chance of an earthquake of at least magnitude 6.7 along the fault in the next 30 years. The Calaveras and San Andreas faults, as well as other known and suspected fault systems, are also nearby and could cause damaging quakes in the District service area. Damage from an earthquake has the potential to rupture water lines and cut off electrical power, in turn creating the possibility of water service disruption and water contamination.

The District has taken, and continues to take, actions to minimize the impacts of a large earthquake on its system in accordance with its 2008 Seismic Vulnerability Assessment and related studies and planning. Such actions include:

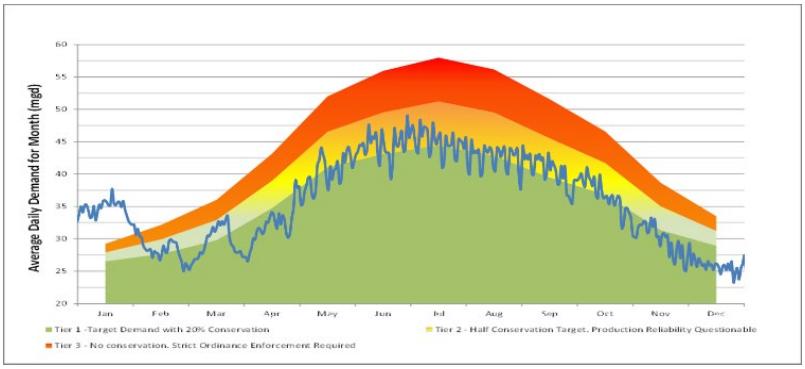
- Maintaining water supply, production, and storage facilities on both sides of the Hayward Fault.
- Strengthening water mains that cross the Hayward Fault to withstand a major earthquake.
- Installing special valves and flexible tubing at fault crossings to create emergency bypass functionality in the event of a rupture.
- Installing isolation valves in case of a water main failure or water contamination
- Seismic retrofitting of storage tanks and reservoirs as well as connections piping.
- Invested in mobile and stationary generators that can produce enough electricity to continue 75% of average water production during an extended power outage.
- Establishing emergency reliability partnerships and linked piping to our neighboring water systems.
- Investing millions in funding annually in the renewal, replacement, and seismic improvements to, aging and vulnerable water mains and water storage facilities in accordance with its Main Renewal and Seismic Upgrades Program.

Additional information on the District's preparation ahead of an emergency can be found in the "Union City/Newark Multi-Jurisdiction Hazard Mitigation Plan" (Tetra Tech, 2017) as provided on the City of Newark's website at https://www.newark.org/departments/community-development/specific-plans-master-plans/hazard-mitigation-plan.

Shortage Response Action Effectiveness

The efficacy of a WSCP is unknown until it is enacted as only then can monitoring be completed to confirm whether the target reductions have been achieved. Monitoring (as described in Section 10.9) was conducted continuously during the District's most recent water shortage emergency, 2014-2016, and proved that the District's Stage 2 shortage ordinance was highly successful in providing direction for customers on how to conserve as well as achieving the target 20% reduction in the specific

Figure 10-4: Daily Demand Monitoring during 2014 Stage 2 Declaration



After declaration of a water shortage emergency in March 2014, daily water demand (blue) was monitored to ensure that target 20% conservation goal was being achieved appropriately during each season of the year.

end-use categories. Figure 10-4 provides a summary of the daily demand monitoring that occurred during the 2014 Stage 2 declaration.

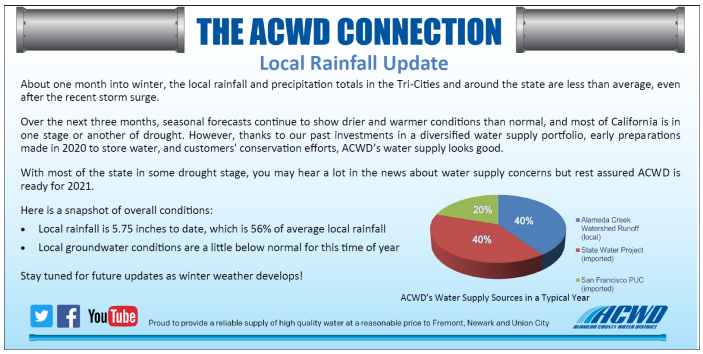
Larger level shortages, such as Stages 4, 5, and 6, are indicative of more severe conditions where compliance will have far greater significance. The District's planned AMI program will provide vastly expanded near real-time monitoring and enforcement capability and build off of the techniques proven successful in 2014. AMI will enable staff to evaluate and propose modifications to water-use restrictions and prohibitions quickly, further ensuring the protection of water supplies and therefore, the public's health and safety.

As indicated under section 10.4.1 Supply Augmentation, the District does not rely on additional supply augmentation measures to reduce the gap between supply and demand beyond the normal management actions designed for shortages, described in Chapter 9. In the event of an extreme shortage, the District can access supplies in the Niles Cone at greater depths than five feet below mean sea level. Analyses during the 2014 – 2016 drought suggest that under an extreme emergency, the District can safely count on 5,000 AF of additional supply. This action has an associated risk of modest salt intrusion to the Niles Cone from the Bay Aquifer and is balanced by reliable access to banked surpluses in the Central Valley groundwater bank that can be retrieved and used to replenish the Niles cone after the emergency.

10.5 COMMUNICATION PROTOCOLS

Communication with the District's customers is a critical component of responsible water management in all years, and the District utilizes a wide variety of media platforms and communication tools to achieve these goals. During normal years, when no water shortage is anticipated, the minimum communications include the following:

Stage 0: Normal years



- Beginning mid-winter, monthly updates are provided to the Board committee on projected demand and water supply availability for the coming year during public meetings and are published in monthly Board Reports.
- Regular water supply updates are published in the ACWD Aqueduct newsletter, the local newspaper, and on the District's website and social media sites.
- The District will complete and submit its annual water supply and demand assessment (WSDA) reporting to DWR by July 1.
- The District publishes its WSDA as part of the San Francisco Bay Area Regional Reliability Partners webpage on water supply conditions for the region. (https://bayareareliability.com/supply_conditions)

Stage 1: <10%

- All normal year communications, enhanced to include a call for 10% voluntary conservation
- Evaluate need for implementation of Stage Rates; initiate a Proposition 218 process if needed

Stages 2 and 3: 10% – 30%

- All normal year communications
- Initiate Proposition 218 process if not done previously and consider implementation of the applicable Stage Rate
- Outreach to city managers, Parks and Recreation, Public Works departments, Tri-City school districts
- Presentations and briefings with key stakeholders, chambers of commerce, civic, community, senior and faith-based organizations, and local, regional, and state government elected officials and entities.
- Public Meeting – Declaration of Water Shortage Emergency and Adoption of Ordinance
- Separate public meeting to enact Stage Rates, if not already in place.
- Enhanced public outreach to support emergency conservation and education needs of drought Stage plans. Enhanced public outreach may include:
    - Postcard mailers, bill messages, bill inserts, fact sheets, news releases, and District-hosted community meetings
    - Coordinated regional messaging on radio, print, social media, and television working with San Francisco Bay Area Regional Reliability Partners, Bay Area Water Supply and Conservation Agency members, and area partners

Stages 4, 5, and 6: > 30%

Shortages of this magnitude fall well outside of anticipated shortages and are only anticipated to occur as a result of a local or regional crisis.

- All previous stage communication
- Emergency communications protocol as appropriate

10.6 COMPLIANCE AND ENFORCEMENT

Prior to adoption of a Water Shortage Emergency (WSE) Ordinance, the District will send out letters/mailers, contact customers via phone, email, and social media channels, as well as or through the AMI customer portal, once that is active for all customers, to notify customers about the water supply shortage. Customer service will be trained to address customer inquiries about the water shortage and District actions, including potential escalation of actions if the water supply shortage becomes more severe. The District may also initiate water waste patrols or use AMI to identify potential water waste situations, such as high-water use and leaks alerts.

Once a stage is triggered that requires adoption of a WSE Ordinance, compliance and enforcement of prohibitions and restrictions in the Ordinance will include the following:

- Written Warnings: If the District determines that a customer is using water in violation of its WSE Ordinance, the District will send a written warning to the customer that identifies the wasteful use of water that violates the mandatory restrictions on water use, requests that the customer stop such wasteful use, informs the customer about the process for applying for an exception from the requirements of the WSE Ordinance, and informs the customer that failure to comply with its WSE Ordinance may result in the termination of service.
- On-site Notifications: The District may, after issuing a written warning, and if the customer does not request an exception, conduct a follow-up visit in order to ascertain whether wasteful use of water is still occurring. In the event that continued waste of water that violates the mandatory

restrictions on water use is observed, and no exception has been granted, the District will make reasonable efforts to notify an adult residing at the property if a residential account or an adult working on the property if a non-residential account, and will issue a second written warning by onsite notification of wasteful water use and the customer will be charged the field service visit charge established in the District's Rate and Fee Schedule.

- Termination of Water Service: In the event that District personnel observe continued waste of water that violates the mandatory restrictions on water use occurring at a customer's premises more than 48 hours after the on-site notification, it shall be deemed to be a willful violation of the mandatory restrictions on water use, and the General Manager may authorize termination of water service.
- Restoring Water Service: The reconnection charge established in the District's Rate and Fee Schedule must be paid before the District will restore service. In addition, the customer must have stopped the wasteful use of water and have paid all charges owed to the District under its WSE Ordinance and all other rates and fees owed, before the District will restore water service.

Additional fines and/or penalties may be established for violation of the mandatory restrictions on water use. These additional fines/penalties could be based on duration of the violation, volume of water wasted or used in violation of the WSE Ordinance, or other means to establish the level of the fines and/or penalties.

A violation of the WSE Ordinance will be considered a misdemeanor, per California Water Code Section 31029, which states that "after the publication or posting of any ordinance as provided in Section 31027 [as provided on the California Water Boards State Water Resources Control Board's website at https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT&sectionNum=31027], it is a misdemeanor for any person to use or apply water received from the District contrary to or in violation of the restriction or prohibition, until the ordinance has been repealed or the emergency or threatened emergency has ceased, and, upon conviction thereof, that person shall be punished by imprisonment in the county jail for not more than 30 days or by fine of not more than six hundred dollars ($600), or by both the fine and imprisonment."

Consideration of written applications for exceptions regarding the mandatory restrictions on water use set forth in the District's WSE Ordinance may include the following steps:

- A customer may submit a written application for an exception to the mandatory restrictions on water use to the District's Drought Management Coordinator or designee. The application must include a description of the proposed water use and estimated duration and quantity of water use (e.g., gallons per day), and a description of the reason an exception is requested.
- The Drought Management Coordinator or designee will consider each application for an exception to the mandatory restrictions on water use based on the criteria established for residential and non-residential customers. If the criteria are satisfied, the Drought Management Coordinator or designee may grant exceptions for reasons that may include health and safety, benefits and/or needs of water to be used, potential adverse economic impacts, implementation complexities/issues, and mitigation measures/offsets.
- A customer may appeal a denial of an application by submitting a written appeal to the General Manager on the District's form and include the reasons why the customer disagrees with the denial.

The District is currently at the beginning of a 5-year project to convert 100% of meters to AMI. Once full AMI is enabled, staff will have new monitoring and enforcement tools at its disposal. This section maybe updated accordingly.

10.7 LEGAL AUTHORITIES

Pursuant to Water Code Section 10632 (a)(7), the District Board shall declare a water shortage emergency condition to prevail whenever it is determined that the ordinary demands and requirements of our customers cannot be satisfied without depleting the water supply to the extent that there would be insufficient water for human consumption, sanitation, and fire protection. As part of the communication protocols outlined in the WSCP, the District shall coordinate with all cities within the Service District for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

The District has the legal authority to implement and enforce a water shortage emergency and response as described in Water Code sections 31026-31029 and Water Code sections 350 et seq. In the event of a water shortage emergency that requires a mandatory level of conservation, the District will enact an ordinance declaring an emergency including the appropriate stage shortage and adopt water use restrictions, prohibitions, and exclusions deemed necessary to achieve the level of conservation required by the emergency. The District last took this action in March 2014 when the District's Board enacted Ordinance No. 2014-01 as provided in Attachment 1 to this WSCP.

10.8 FINANCIAL CONSEQUENCES OF WSCP

Water shortages can have significant impacts on the District's financial stability. Water revenues represent about 74% of overall District revenue, and approximately 66% water revenues are from consumption charges. The remaining 34% of water revenues are from meter service charges and are considered fixed revenues. Meanwhile, about 74% of the District's costs are fixed. In addition to lower water sales volume, a prolonged drought could also result in increases in water supply, water use efficiency programming, customer outreach, and enforcement costs.

In 2019, the Board adopted Water Shortage Emergency Stage Rates ("stage rates") to ensure the District receives sufficient revenues to cover its cost of providing water service when consumption decreases due to a water shortage emergency, such as a drought. Stage rates would be applied to the water consumption charge. Stage rates are not intended to increase a customer's water bill. Instead, under stage rates, customers would see roughly the same water bill if they reduce their water consumption by the requested amount during the water shortage emergency. The District has not implemented stage rates because there has not been a water shortage emergency since adoption in 2019. Should the Board declare an emergency due to a water shortage, the District could implement the stage rate at the designated level/stage to mitigate the expected revenue shortfall due the lower water demands at that stage. Stage rates will need to be readopted in subsequent water rates processes.

The District also maintains two cash reserves that can be utilized to fund unexpected fluctuations in revenues and expenditures to further mitigate potential financial impacts of a water shortage emergency. One of the reserves is the Rate Stabilization Reserve, which has been established to tie more specifically to the revenue losses. This designated reserve is maintained at an amount equal to six months of variable water sales – defined as the difference in revenue that would result from using the lowest water usage year versus the most recent or typical year based on current commodity rates. The purpose of this reserve is to moderate the need for rate increases from lower water demand and the reserve fund may be designated to address revenue shortfalls until either the stage rates are implemented, or the District can complete a rates process. The second cash reserve is a $10 million Emergency Reserve to cover expenses, if needed. Specifically, the $10 million level was calculated as the additional amount of funds needed to purchase water in a year of adverse water conditions. The potential negative impacts on revenues from a water shortage emergency may cause the District to take certain measures to manage costs, as it did during the

last drought period, such as reducing operating expenses, delaying payment toward unfunded liabilities, and deferring capital projects.

10.9 MONITORING AND REPORTING

The District monitors water use in two ways: total water production at each of the District's production facilities is monitored daily and monthly by the Operations Department, and billed consumption is monitored monthly through the Finance Department. Detailed end water use analyses are conducted monthly by the Water Resources Department. The District reads each customer's water meter and provides a water bill (with consumption information) on a bi-monthly basis. In 2021, the District will start replacing all customer meters with AMI meters. The project is expected to be completed by the end of 2023. Upon completion, the District will have the ability to monitor near real-time water usage and will have a variety of tools that can be used to enforce WSE Ordinance requirements. The AMI system includes software that will allow the District to set allocations for its customers and receive notifications / alerts when customers are over their allocation.

10.10 WSCP REFINEMENT PROCEDURES

As discussed in Section 10.4.7, the efficacy of a WSCP is unknown until it is enacted as only then can monitoring be completed to confirm whether the target reductions have been achieved. The District's emergency ordinance was tested and validated as a viable plan to address a Stage 2 water shortage emergency in 2014-2016 during a drought; however, larger, catastrophic level shortages remain untested and will be far more critical. One of the benefits of the District's planned AMI program is the capability to conduct near real-time monitoring and enforcement which will enable staff to evaluate and propose modifications to water-use restrictions and prohibitions quickly, further ensuring the protection of water supplies and as a direct result, the public's health and safety. The WSCP is a dynamic tool that is subject to refinement as needed to address water shortage emergencies and to allow the District to continue to provide water service in a manner consistent with applicable laws.

10.11 SPECIAL WATER FEATURE DISTINCTION

For the purposes of the District's Water Shortage Contingency Plan, the term "water features" shall be defined as any ponds, lakes, waterfalls, and fountains that are artificially supplied with water and do not provide a utilitarian service. The term "water features" shall not include swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

10.12 PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

Section 10642 of the Urban Water Management Planning Act requires urban water suppliers to make the Plan and the Water Shortage Contingency Plan (WSCP) available for public review and hold a public hearing prior to adopting the Plan and WSCP. The Plan also includes an appendix that meets the requirements of the Delta Plan Policy WR P1, "Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance" ("Reduce Reliance on the Delta"; California Code of Regulations, Title 23, section 5003); this appendix is also a new appendix to the 2015-2020 Plan. The Reduce Reliance on the Delta appendix is addended to the 2015-2020 Plan. The Draft Plan, WSCP, and the Reduce Reliance on the Delta addended appendix to the 2015-2020 Plan were made available for public review and comment beginning on April 23, 2021. In order to encourage the active involvement of diverse social, cultural, and economic elements of the population within the District's service area, including both residential and non-residential customers, the District made copies of the Draft Plan available on the District's website. Comments were received through May 13, 2021. A public hearing for the Plan, SBX7-7 compliance, WSCP, and the Reduce Reliance on the Delta addended appendix to the 2015-2020 Plan was held on May

13, 2021. Notice of the public hearing was provided to the County of Alameda, the County of Santa Clara; the Cities of Fremont, Newark, Union City, Hayward, Milpitas, and San Jose; the California Department of Water Resources; SWC; BAWSCA; Zone 7 Water Agency; Santa Clara Valley Water District; East Bay Regional Park District; USD; SFPUC; and Semitropic Water Storage District on April 28, 2021. The notice of the public hearing was sent to East Bay Municipal Utility District on April 29, 2021. Two notices of the public hearing were also published in the local newspapers (The Argus and The Tri-City Voice) at least once a week for two successive weeks prior to the public hearing. The Plan, SBX7-7 compliance, the WSCP, and the Reduce Reliance on the Delta addended appendix to the 2015-2020 Plan were adopted on May 13, 2021 by the District's Board of Directors Resolution No. 21-021 (reference Appendix F of the 2020 UWMP).

As per the requirements in Water Code sections 10644(a), 10645(a), and 10645(b), a copy of the District's Plan, WSCP, and the Reduce Reliance on the Delta addended appendix to the 2015-2020 Plan will be provided to the following entities: the California Department of Water Resources, the California State Library, Alameda County, and the Cities of Fremont, Newark, Union City, and Hayward on or before July 1, 2021, which is within 30 days of the Plan's adoption. The District's Plan, including the tables presented in Appendix G of the 2020 UWMP, will be provided to the California Department of Water Resources in electronic format. The District will make the Plan, WSCP, and Reduce Reliance on the Delta addended appendix to the 2015-2020 Plan available online at https://www.acwd.org. Due to the current COVID-19 pandemic, the District will not make a physical hard copy available at its headquarters for public review as per best management practices during non-pandemic years.

The District will periodically review its UWMP and WSCP to ensure that it accurately reflects the District's water management activities. Changes will be adopted and incorporated into the plan via amendments or other appropriate means as set forth in the Water Code.