This chapter describes the development, actions and implementation of the District’s water shortage contingency plan. In addition, information related to a three dry year scenario, mandatory prohibitions, penalties or charges for excessive use, revenue and expenditure impacts, mechanisms to determine reductions in water use and catastrophic interruption planning is provided. Information in this chapter is intended to satisfy the requirements related to DWR UWMP Checklist items 37 through 42.

### 6.1 Water Supply Strategy

Overall, the District manages water supplies and programs to maximize storage of wet period supplies for use during dry periods when other sources of supply are deficient. Because the groundwater basins are able to store the largest amount of local reserves, the District depends on maintaining adequate storage in the basins to get through extended dry periods.

In addition to working with retailers and cities to manage water use during shortages, the District augments supplies by investing in supplemental supply sources. The District has a long term agreement with Semitropic Water Storage District in Kern County that allows the District to store up to 350,000 AF of imported water supplies in Semitropic’s groundwater basins for District use in dry years. During prolonged dry periods, the Semitropic banking program provides a significant supplemental supply to draw upon. Other options may be available in any given year such as transfers, exchanges, spot markets, and the State Drought Bank. The decision on when and in which sequence supply will be utilized during different stages is managed by annual operations and planning and includes consideration of availability and cost.

### 6.2 Water Shortage Contingency Plan Objectives

The water shortage contingency plan stages and water use reduction targets were developed by the District consistent with water supply objective 2.1.1 “...maintain the groundwater basins for reliability” and in consideration of the following water shortage management objectives:

- Minimize economic, social, and environmental hardships to the community caused by water shortages. As water becomes more scarce and the community is faced with increasing cutbacks, the costs of shortage rise and the risk of lasting damages to residences, businesses and the environment increases. Taking this into consideration, the timing and stages of shortage actions are designed to limit and to avoid having to call for more than a 20 percent reduction in water use in any given year of an extended dry period.

- Establish water use reduction targets, manage supplies and work closely with retailers and cities in developing efficient and effective demand reduction measures that concentrate on eliminating non-essential uses first.
• Maintain and safeguard essential water supplies for public health and safety needs. The water shortage contingency plan anticipates and accounts for water supply shortages due to acute catastrophic events. The District’s water supply system is vulnerable to several disaster scenarios including a loss of imported supplies due to a Delta levee outage, an interruption of San Francisco’s regional water system deliveries to Santa Clara County, and/or a major earthquake.

6.3 Water Shortage Contingency Plan

This section describes the District’s contingency planning for actions that can be taken should water shortages occur, including up to a 50 percent reduction in water supplies. The plan provides a strategy for early water shortage detection, shortage stages, shortage response actions, and a public outreach and communication plan. A water shortage occurs when water supplies available to the District are insufficient to meet water demands. Water supply shortages can occur for a variety of reasons including droughts (hydrologic or regulatory), loss in ability to capture, divert, store, or utilize local supplies, and/or facility outages.

The purpose of contingency planning is to be prepared ahead of time and to establish actions and procedures for managing water supplies and demands during water supply reductions and water shortages. An important component of meaningful shortage response is the ability to recognize a pending shortage before it occurs, early enough so that several options remain available and before supplies that may be crucial later have not been depleted.

In any given year many factors and events can and do affect water supply availability. Staff has determined that projected end-of-year groundwater storage serves as an early warning sign and a good indicator of potential water shortages since this value also accounts for surface water supplies as these supplies either directly or indirectly contribute to total projected groundwater storage.

While the District manages the groundwater basin, groundwater in the county is pumped by others including major water retailers, private well owners, and agricultural users. The District can influence groundwater pumping through financial and management practices, but it does not directly control the amount of groundwater pumped. Therefore, to execute effective responses to a water shortage, the District works closely with groundwater users, cities, and water retailers to plan and coordinate water shortage contingency activities. A key part of developing the water shortage contingency plan was the engagement of water retailers, cities, and District advisory committees.

6.3.1 Water Shortage Actions

This section describes the five-stage approach and overall strategy for dealing with water shortages. The water shortage contingency actions are summarized in Table 6-1. When water supplies available to the District are insufficient to meet current demands, the District considers augmenting supplies based on available options. When the District Board calls for short-term water conservation, the cities and water retailers consider the implementation of their water contingency plan actions identified in their Urban Water Management Plans in order to achieve the necessary shortage response. Water shortage resolutions passed by the District Board in 2009 and 2010 are included in Appendix L. Implementation actions to achieve the desired shortage response may be different for each city/water retailer depending on service area composition (commercial, industrial, residential) and source of water supplies. However, some actions are common to several of the cities/water retailers, providing for more consistent implementation and messaging.
Reducing water consumption during a water shortage is generally achieved through increased education leading to behavioral changes (e.g., shutting off the water while brushing one’s teeth) and water use restrictions (e.g., yard irrigation only allowed two days a week). These water savings are considered short term water conservation and are distinct from long term on-going conservation programs.

**Stage 1**
In Stage 1, the District continues ongoing outreach strategies aimed toward achieving long-term water conservation goals. Messages at this stage focus on services and rebate programs the District provides to facilitate water use efficiency for residents, agricultural operations and businesses. While the other stages are more urgent, the need for successful outcomes in Stage 1 is vital to achieving long-term water use reduction goals.

**Stage 2**
Communication tactics that are employed in Stage 1 may be augmented with additional funding to reach more people with an increased frequency and urgency. Additional communication tools can be employed to further broaden awareness and promote immediate behavioral changes. Specific implementation plans will be developed when a worsening of the water shortage condition has occurred. Supplemental funding may be identified to augment budgeted efforts, which normally will be set based on an assumption that the county is in Stage 1. Based on historical hydrology and management and operations of District supplies, it is estimated that groundwater storage would be in Stage 2 one out of every ten years.

**Stage 3**
As the severity of a water shortage increases, the intensity of communications efforts may also increase. Messages are modified to reflect the more dire circumstances. The messages conveyed change to correspond to the call for immediate actions to save water. Based on historical hydrology and management and operations of District supplies, it is estimated that in one out of every 15 years groundwater storage would be in Stage 3.

**Stage 4**
In this stage retailers and cities would be encouraged to enforce their water shortage plans which could include fines for repeated violations. Stage 4 strengthens and expands the Stage 3 activities including further expansion of outreach efforts and opening a drought information center.

**Stage 5**
Stage 5 of the water shortage contingency plan designates and reserves up to 150,000 AF in surface and groundwater storage for emergency conditions to ensure availability of water to meet essential public health safety requirements.
Table 6-1 Water Shortage Contingency Plan

<table>
<thead>
<tr>
<th>Stage</th>
<th>Stage Title</th>
<th>Projected GW Reserves</th>
<th>Response</th>
<th>Suggested Reduction in Water Use&lt;sup&gt;(1)&lt;/sup&gt;</th>
<th>Communication and outreach effort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Normal</td>
<td>Above 300,000 AF</td>
<td>Continue regular outreach activities in this stage to promote ongoing implementation of conservation and implementation of BMPs.</td>
<td>• Maintain public information and outreach focused on long-term, ongoing conservation actions (e.g., water saving appliances, repairing leaks, and low-water use landscaping).</td>
<td></td>
</tr>
<tr>
<td>Stage 2</td>
<td>Alert</td>
<td>250,000 to 300,000 AF</td>
<td>This stage is meant to warn customers that current water use is tapping into groundwater reserves – a signal that groundwater levels are dropping to meet demands. Communications are needed to set the tone for the onset of shortages. Request water users to reduce water use by as much as 10%. Coordinate ordinances with cities and warn and prepare for a stage 3 situation.</td>
<td>0-10% demand reduction</td>
<td>• Expand on Stage 1 efforts • Intensify public information and advertising campaign • Focus messages on shortage situation and immediate behavioral changes</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Severe</td>
<td>200,000 to 250,000 AF</td>
<td>Shortage conditions are worsening, requiring close coordination with retailers and cities to enact ordinances and water use restrictions. Requires significant effort and behavioral change by water users. Increase outreach campaign to save water.</td>
<td>10-20% demand reduction</td>
<td>• Expand and intensify Stage 2 activities • Further expand outreach efforts • Modify messages to reflect more severe shortage condition and need for immediate behavioral changes</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Critical</td>
<td>150,000 to 200,000 AF</td>
<td>This is the most severe stage in a multiyear drought. Encourage retailers and cities to enforce their plans which could include fines for repeated violations.</td>
<td>20-40% demand reduction</td>
<td>• Strengthen and expand Stage 3 activities • Further expand outreach efforts • Open drought information center</td>
</tr>
<tr>
<td>Stage 5</td>
<td>Emergency</td>
<td>Below 150,000 AF</td>
<td>This last stage is meant to address a more immediate crisis such as a major infrastructure failure. Water supply would be available only to meet health and safety needs.</td>
<td>Up to 50% demand reduction</td>
<td>• Daily updates on water shortage emergency (media briefings, web update, social media outlets) • Activate EOC</td>
</tr>
</tbody>
</table>

Notes:

<sup>(1)</sup> When the District Board calls for short-term water conservation, the cities and water retailers will consider the implementation of water contingency plan actions identified in their Urban Water Management Plans in order to achieve the necessary shortage response. The District works with the water retailers and cities to help coordinate these activities.
6.4 Three Dry Years Scenario

This section presents an estimate of the water supply available during each of the next three years (2011 – 2013), assuming a repeat of the driest three-year historical hydrologic sequence. Minimum total available supplies (including both local and imported supplies) for a consecutive three year sequence occurred in the years 1988 through 1990. Table 6-2 summarizes the water supply that could be expected in a repeat of those three years.

Year-to-year decision making is accomplished through annual operations planning activities, which include evaluating annual transfer opportunities, allocating imported water deliveries, setting carryover storage targets, and scheduling facilities maintenance decisions. Developing a resource strategy that balances both cost and risk requires a combination of core and flexible supplies. Examples of flexible supplies include water transfers, banking, and storage.

As Table 6-2 shows, the District would need to draw down carryover storage by approximately 194,900 AF in order to meet full demands over the next three years assuming the next three years were a repeat of the driest three-year historical hydrologic sequence. Based on current groundwater conditions at the start of 2011, a 10% demand reductions for each of the next three years would be recommended.

Table 6-2 Water Supply Estimates for the Driest Three-Year Sequence (acre-feet)

<table>
<thead>
<tr>
<th>Water Supply Sources</th>
<th>Year 1 Hydrologic Year 1988</th>
<th>Year 2 Hydrologic Year 1989</th>
<th>Year 3 Hydrologic Year 1990</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Imported Water</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWP¹</td>
<td>47,400</td>
<td>58,800</td>
<td>26,300</td>
</tr>
<tr>
<td>CVP¹</td>
<td>69,000</td>
<td>105,900</td>
<td>76,100</td>
</tr>
<tr>
<td>Semitropic take &amp; transfers</td>
<td>39,700</td>
<td>34,000</td>
<td>39,700</td>
</tr>
<tr>
<td>SFPUC to common retailers²</td>
<td>52,600</td>
<td>52,600</td>
<td>45,700</td>
</tr>
<tr>
<td><strong>Subtotal:</strong></td>
<td>208,700</td>
<td>251,300</td>
<td>187,800</td>
</tr>
<tr>
<td><strong>Local Supplies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural groundwater yield</td>
<td>44,100</td>
<td>45,500</td>
<td>51,000</td>
</tr>
<tr>
<td>Surface supplies</td>
<td>29,000</td>
<td>21,600</td>
<td>19,400</td>
</tr>
<tr>
<td>Other local</td>
<td>3,400</td>
<td>6,900</td>
<td>4,400</td>
</tr>
<tr>
<td>Recycled water</td>
<td>15,000</td>
<td>16,500</td>
<td>18,000</td>
</tr>
<tr>
<td><strong>Subtotal:</strong></td>
<td>91,500</td>
<td>90,500</td>
<td>92,800</td>
</tr>
<tr>
<td><strong>Total Supply:</strong></td>
<td>300,200</td>
<td>341,800</td>
<td>280,600</td>
</tr>
<tr>
<td>Estimated demand</td>
<td>370,000</td>
<td>372,500</td>
<td>375,000</td>
</tr>
<tr>
<td>Annual decrease in carryover storage³</td>
<td>69,800</td>
<td>30,700</td>
<td>94,400</td>
</tr>
<tr>
<td><strong>Total decrease in carryover storage:</strong></td>
<td></td>
<td></td>
<td>194,900</td>
</tr>
</tbody>
</table>

Notes:
1. Includes supply allocation transfer/exchange, rescheduled and carry-over storage
2. Based on “Procedure for Pro-Rata Reduction of Wholesale Customers’ Individual Supply Guarantees” under 2010 demand conditions and Tier Two Allocations calculation spreadsheet provided by BAWSCA.
3. Initial conditions set to end of calendar year 2010
6.5 Mandatory Prohibitions and Penalties for Excessive Use

As an on-going practice, the District collaborates with cities, the county, retail water suppliers and stakeholders in developing and implementing water management programs to conserve and prevent waste.

The District Board of Directors has the authority to adopt resolutions and ordinances as formal procedures to take action on matters of significance. For instance, the District may take action to prevent the waste of water as part of the overall effort to protect and manage water resources for beneficial uses. It is a misdemeanor for any person to violate any District ordinances. Violations are punishable by fine or imprisonment or both.

6.6 Revenue and Expenditure Impacts

Under a water shortage scenario, District expenses are anticipated to increase as a result of actions to augment water supply and reduce use. Revenue would decrease as a result of reduction in water sales. The District maintains supplemental funds in its financial reserves to help pay for increased expenditures to remedy shortages. These funds need to be replenished in subsequent years however, through groundwater production charges and treated water charges. The FY 2011 budget for the supplemental waters supply reserve is $7.7M and is projected to grow to roughly $11.7M by FY 2021. The minimum for this reserve is 20 percent of the annual water purchase budget. The District may decide to impose or adjust its adopted groundwater production charges mid-way through the fiscal year. This allows the District to react to unanticipated changes in expenditures or revenue in a timely fashion.

6.7 Mechanism to Determine Actual Reduction in Water Use

In times of shortage, staff will intensify its monitoring and evaluation of the following activities:

- Monthly and season-to-date rainfall at four rainfall stations within the county
- Reservoir storages
- Monthly recycled water deliveries
- Monthly and year-to-date water use for each major water retailer in the county
- Groundwater basin conditions
- Current retailer water use compared to a desired decrease in use

Note that not all water use data is available on a monthly basis. For example, many small well owners report their water usage on a 6 month cycle. In some cases there is a two-month time-lag from when the water is used and reported. Not all water use is metered and estimates are used in these situations. Finally, the District does not have access to individual water use account data that would enable it to determine the reductions by
customer class or by customer unit (per household, for example). This data is only available at the retailer level.

6.8 Catastrophic Interruption Planning

6.8.1 Water Infrastructure Reliability Project

In 2003, the District initiated the Water Utility Infrastructure Reliability Project (IRP) to determine the current reliability of its water supply infrastructure (pipes, pump stations, treatment plants) and to appropriately balance level of service with cost. The project measured the baseline performance of critical District facilities in emergency events and identified system vulnerabilities. The study concluded that the District’s water supply system could suffer up to a 60-day outage if a major event, such as a 7.9 magnitude earthquake on the San Andreas Fault, were to occur. Less severe hazards, such as other earthquakes, flooding and regional power outages had less of an impact on the District, with outage times ranging from one to 45 days.

The level of service goal identified for the IRP was “Potable water service at average winter flow rates available to a minimum of one turnout per retailer within seven days, with periodic one day interruptions for repairs.” In order to meet this level of service goal, the project developed seven portfolios to mitigate the identified system risks, and identified a recommended portfolio for implementation. As a result, the District has been implementing the recommended portfolio of reliability improvement projects (Portfolio 2). The cost to implement Portfolio 2 is estimated to be approximately $175 Million. Portfolio 2 is expected to reduce the post-earthquake outage period from 45-60 days to 7-14 days.

In 2007, the District created a stockpile of emergency pipeline repair materials including large diameter spare pipe, internal pipeline joint seals, valves, and appurtenances. The stockpile marks a significant increase in reliability of the District’s water supply system, as it helps to reduce outage time following a large earthquake from approximately 60 to 30 days. The District still needs to complete several other emergency planning projects to meet the goal of reducing outage time to 30 days. These include developing a post-disaster recovery plan, developing mutual aid agreements or expanding participation in CalWARN, setting up contractor, welder, and equipment rental company retainer agreements, and setting up post-earthquake pipeline inspection teams.

The addition of groundwater wells and line valves to the District’s system will further reduce outage time following a large earthquake, from 30 days down to 14 days. The wells will allow the District to convey 72 MGD of supplies from the groundwater basin to the treated water pipelines following a hazard event. 72 MGD represents the average winter demand of the treated water retailers, and is the quantity needed to meet the project’s level of service goal. The line valves will allow the District to isolate damaged portions of pipelines. The well field project is the most costly of the Portfolio 2 projects, estimated at $116 million. The District’s Board recently approved cutting the project budget to $80 million. Staff has not determined the impacts of this cut on
the program and outage time estimates.

### 6.8.2 Office of Emergency Services

Office of Emergency Services (OES) coordinates emergency response and recovery for the District. During any emergency, the District continues the primary missions of providing clean, safe water and flood protection to the people of Santa Clara County. OES ensures that critical services are maintained and emergency response is centralized. OES maintains a full-time professional emergency management staff trained and equipped to respond quickly at any time of day or night to support and coordinate more than 170 Santa Clara Valley Water District Emergency Operations Center (EOC) and field responders. Over 150 members of the water District staff have completed the specialized California Standardized Emergency Management System/National Incident Management System (SEMS/NIMS) training. More than 100 of those individuals have taken advanced EOC action planning training.

### 6.8.3 Emergency Operations Center

The Emergency Operations Center (EOC) is connected to other agencies and jurisdictions by an array of telecommunications, two-way radio, satellite telephone, and wireless messaging systems. In addition, two response vehicles with many of the same communications capabilities of the EOC enable staff to establish mobile emergency command posts just about anywhere field operations may require.

OES maintains communications with local, state and national emergency management organizations and allied disaster preparedness and response agencies.

OES partners include the following:

- County offices of emergency services including Santa Clara, Monterey, San Benito, Santa Cruz and San Mateo.
- State emergency management organizations including the Governor’s Office of Emergency Services, California Office of Safety Dams and California Department of Water Resources.