

Draft 2020
Water Shortage Contingency Plan

Prepared for the City of Millbrae

May 2021



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Executive Summary

This Water Shortage Contingency Plan (WSCP) is an update to the 2016 WSCP submitted to the Department of Water Resources in 2016. There are four sections to the Water Shortage Contingency Plan, which include an Introduction, Assessing Water Supply and Demand, Demand Reduction Program and Implementation. The following provides a brief summary of the Plan.

Introduction

This section of the WSCP provides background information about the City's water system and explains the purposes and goals of this WSCP, summarizes state regulations that pertain to water shortage contingency planning, and describes the process and principles that were used to guide the preparation of this document.

The City of Millbrae faced one of the more pronounced drought periods on record from 2012 through 2017. This WSCP incorporates lessons learned on shortage response from this drought experience. The extraordinary drought of 1976-1977, however, remains the most severe event on record.

The overarching goals of this WSCP are as follows and address water shortages of varying magnitudes:

- To conserve the water supply of the City for the greatest public benefit;
- To mitigate the effects of a water supply shortage on public health and safety, economic activity, and customer lifestyle; and
- To budget water use so that supply will be available for the most essential purposes for the entire duration of the water shortage.

Assessing Water Supply and Demand

This section describes the key hydrologic factors affecting the City's water supply and discusses the process staff uses to determine whether a water shortage is expected in the year ahead.

The City of Millbrae relies on the Hetch Hetchy Water system and its snow pack for all of its annual water supply needs. The yield of this source in any given year is directly related to the amount of snow and rainfall received during the winter season and the runoff generated after it.

The degree of shortage is normally defined as the supply deficiency in relation to normal water use over a given period of time, and expressed as a percentage. For example, a 25% shortage means the City has one-quarter less water supply available than what is normally used during the year. As a result, the customers of the City water system would need to cumulatively reduce demand by 25% to meet available supplies.

Demand Reduction Program

This section describes the six-stage approach and overall strategy for dealing with water shortages, explains how available water would be allocated among various customer categories according to priority of use, and presents the recommended menu of actions for cutting back water demand during a declared water shortage. This section also covers policies and recommendations regarding enforcement methods, exceptions, and appeals.

Table ES-1. Water shortage contingency plan demand reduction stages.

Stage	Water Shortage Magnitude	Stage Title
1	0-5%	Water Shortage Alert
2	6-15%	Water Shortage Warning
3	16-25%	Water Shortage Emergency
4	26-35%	Severe Water Shortage Emergency
5	36-50%	Critical Water Shortage Emergency
6	>50%	Water Shortage Disaster

This WSCP uses a staged approach that classifies a shortage event into one of six levels spanning a range from less than 5 percent to over 50 percent. The overall concept is that water shortages of different magnitudes require different measures to overcome the deficiency. Because there is nothing the City can do in the short-term to increase the supply of water, the focus of this WSCP is primarily on measures that reduce demand. Each stage includes a set of demand reduction measures that become progressively more stringent as the shortage condition escalates. Normally during a drought, only one of these six stages would be put into effect early in the year at the recommendation of the Public Works Director and remain in force for the entire dry season.

There is an important distinction between Stages 1 and 2, designated above in shades of yellow, and the upper three stages (3-6). The lower two stages represent a level of curtailment that is envisioned as being necessary to balance water supply and demand from time to time. Shortages of 15 percent or less, while inconvenient, do not directly threaten public safety or pose undue economic impact. The upper three stages (3-6) are characterized as emergency water shortages since they result in more widespread hardships that will impact the community, may threaten public health and welfare, and cause more economic harm.

Customer reduction goals for all but the first stage were derived by evaluating the composition of demand for each major group and dividing it into three usage priorities. These priorities are, from highest to lowest, 1) indoor, i.e., all domestic and sanitary uses; 2) business uses and; 3) irrigation and other outdoor uses.

This allocation system strives to balance available supplies in times of drought as much as possible through cutbacks in outdoor water use. At each level of shortfall, public health and sanitation usage is given the highest priority by cutting back on interior usage the least. The importance of water in protecting the City's employment base is also acknowledged through proportionately modest cutbacks to the commercial sector as compared to the overall system shortfall. Irrigation and other outdoor uses in all cases are cut back the most. The larger the water shortage, the greater the cutbacks, but this system of priorities is maintained throughout the range of potential shortages. The heavy reliance on outdoor use reductions makes sense, both from a water system perspective because it reduces peak demands, which is important to preserving storage in Hetch Hetchy Reservoir, and from a public health and welfare perspective, because irrigation and other outdoor uses are the most discretionary of all uses when drinking water is in short supply.

The remainder of this section discusses the demand reduction measures, communications, publicity, and operational activities that apply to each stage.

The primary demand reduction measures used in **Stage 1** are to restrict all landscape irrigation to certain hours of the day and to prohibit various uses deemed to be non-essential that are not required for protection of public health and safety that are not normally prohibited by definition under the City's Water Conservation Ordinance. Examples include prohibition on the use of potable water for washing sidewalks and paved surfaces, dust control, or the draining and refilling of private swimming pools. Included in this category would be the serving of water in restaurants or other places where food is served unless expressly requested by the customer.

The recommended approach to reducing water use in **Stage 2** involves expanding mandatory water restrictions and limiting landscape irrigation to specified days and times. Large landscape users would be required to adhere to strict water budgets.

At **Stage 3** the two primary measures being recommended to meet this emergency reduction goal are mandatory water shortage signage in all commercial buildings, and reduced water budgets for large landscapes.

At **Stage 4** the primary additional measures, in addition to the Stage 3 measures, is water rationing to cover all water customers including residential and business allocations. At this severe level of shortage, only minimal water is available for outdoor purposes.

Stage 5 represents an extraordinary crisis threatening health, safety, and security of the community. It would involve reduced rationing levels for all customers and a ban on all outdoor uses to cut back normal water use by up to half.

Stage 6 represents a water shortage disaster in which normal water usage would be reduced by more than half. Drastic cutbacks would need to be made to provide limited water supplies for the health, safety, and security of the community.

Table ES-2 below summarizes the demand reduction measures from the six WSCP stages.

Table ES-2. Summary of demand reduction actions and measures

Water Shortage Condition	Key Water Resources & Conservation Program Communication and Operating Actions	Customer Demand Reduction Measures
<p>Stage 1: Water Shortage Alert (0-5%)</p>	<ul style="list-style-type: none"> • Initiate public information and advertising campaign • Publicize suggestions and requirements to reduce water use • Step up enforcement of water waste • Coordinate conservation actions with other City Departments • Promote gray water use 	<ul style="list-style-type: none"> • Voluntary water conservation requested of all customers • Adhere to Water Conservation Ordinance • Landscape irrigation restricted to early morning and evening • Encourage conversion to drip, low volume irrigation • Non-essential water uses banned • Use water efficient indoor devices
<p>Stage 2: Water Shortage Warning (6-15%)</p>	<ul style="list-style-type: none"> • Intensify public information campaign • Send direct notices to all customers • Conduct workshops on large landscape requirements • Intensify system leak detection and repair; suspend flushing • Increase water waste patrol 	<ul style="list-style-type: none"> • Landscape irrigation restricted to designated watering days and times • Require large landscapes to adhere to water budgets • Prohibit exterior washing of structures • Require large users to audit premises and repair leaks • Use re-circulated water to operate decorative fountains, ponds and lakes • Use a bucket and a hand-held hose with a positive shut-off nozzle, mobile high-pressure/low-volume wash system, or at a commercial site to wash vehicles
<p>Stage 3: Emergency Water Shortage (16-25%)</p>	<ul style="list-style-type: none"> • Convene a staff Appeals Board • Expand, intensify public information campaign • Provide regular media briefings; publish weekly consumption reports • Give advance notice of possible moratorium on new connections if shortage continues 	<ul style="list-style-type: none"> • Reduce water budgets for large landscapes • Require all commercial customers to prominently display “save water” signage and develop conservation plans • Maintain restrictions on exterior washing • No operation of ornamental fountains • Leak repair within 72 hours
<p>Stage 4: Severe Water Shortage Emergency (26-35%)</p>	<ul style="list-style-type: none"> • Expand water waste enforcement to 24/7 • Develop strategy to mitigate revenue losses and plan for continuing/escalating shortage • Modify utility billing system and bill format to accommodate residential rationing, add penalty rates. 	<ul style="list-style-type: none"> • Institute water rationing for residential customers • Institute water rationing for commercial customers • Minimal water budgets for large landscape customers • Prohibit turf irrigation installation in new development • Prohibition on on-site vehicle washing • Rescind hydrant and bulk water permits • No car washing except at commercial washes • Leak repair within 48 hours
<p>Stage 5: Critical Water Shortage Emergency (36-50%)</p>	<ul style="list-style-type: none"> • Implement crisis communications plan and campaign • Activate emergency notification lists • Coordinate with CA Department of Public Health regarding water quality, public health issues and with law enforcement and other emergency response agencies to address enforcement challenges • Continue water waster enforcement 24/7 	<ul style="list-style-type: none"> • Reduce residential water allocations • Reduce commercial water allocations • Prohibit outdoor irrigation • No water for recreational purposes, close pools • Continue all measures initiated in prior stages as appropriate • Leak repair within 24 hours

Stage 6: Water Shortage Disaster (>50%)	<ul style="list-style-type: none"> • Work with crisis/emergency communications consultant to implement crisis communications plan and major publicity campaign • Continue coordination with CA Department of Public Health regarding water quality, public health issues and with law enforcement and other emergency response agencies to address enforcement challenges • Shift to EOC model of command management for overall policy guidance and coordination • Continue water waster enforcement 24/7 	<ul style="list-style-type: none"> • Reduce residential water allocations to health and safety minimum • No water for non-essential commercial uses • Continue leak repair within 24 hours • Continue all measures initiated in prior stages as appropriate
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Enforcement and Appeals

The City’s existing water shortage emergency ordinance contains several provisions for enforcing water use rules and regulations, and a process for issuing exceptions and hearing appeals. Recommendations include revised penalty fees and excess use fees, adding specified findings for authorizing exceptions, and adding an alternative enforcement approach to reduce the likely caseload of appeals.

Implementation

This section describes the essential elements of implementing the updated Water Shortage Contingency Plan, discusses the approximate lead time needed to prepare for and activate a demand reduction program, outlines the process for declaring a water shortage, and identifies areas where additional ongoing efforts are necessary to address critical gaps.

Droughts or other water shortages are usually identified in April of the water year, which is most commonly when the water supply outlook is determined for the year ahead. However, due to unforeseen circumstances, the state or local government can declare a drought or other water shortage emergency if and when they do identify a need to do so. This WSCP would be implemented shortly after a water shortage is declared, regardless of when or how it occurs.

Formal action declaring a water shortage is taken by the City Council. The legal requirements for such action are covered in Section 350 et.seq. of the California Water Code. The Code requires the following process be followed:

- That City Council hold a public hearing on the matter;
- That the public hearing be properly noticed (minimum of publishing once in newspaper at least seven days prior to the date of the hearing); and
- Upon determining and declaring the existence of a water shortage, City Council may then adopt regulations and restrictions governing the use and delivery of water.

By municipal code, rules adopted by the City Council establishing water use regulations become effective immediately after their publication in the newspaper.

Effective communication is essential to the success of any water shortage contingency plan in achieving the desired water use reductions. All customers need to be adequately informed about water supply conditions, understand the need to conserve, and know what actions they are being requested or required to take to mitigate the shortage. Even before formal declaration of a water shortage, a public information/media program should be activated to provide customers with as much advance notice as

possible. Following Council action, all residents and businesses, not just customers of record, would need to be provided notice of water shortage rules and regulations via a variety of media and communications methods, including print and television media, internet, utility bill, and other methods. Public notification and communication would also be provided for non-English speakers.

The financial impact of short-term demand reduction was estimated to range from \$246,000 in a Stage 1 water shortage alert situation to over approximately \$4.4 million in a Stage 6 critical water shortage emergency. Options to lessen or overcome the revenue shortfall include the following:

- Deferring planned capital improvements;
- Considering possible rate adjustments or surcharges.

The following implementation steps are recommended:

- Ensure the utility billing system will be able to meet the City's requirements for use in water rationing if it becomes necessary;
- As much as possible, prepare water shortage notices, announcements, materials, and mailing lists in advance, including bilingual materials for non-English speakers; and
- Continue to evaluate supply, demand, and City population to ensure recommendations in this Plan are appropriate.

1. Introduction

1.1 Background

This Water Shortage Contingency Plan (WSCP) is an update to the 2016 WSCP submitted to the Department of Water Resources in 2016. The City of Millbrae is fully dependent on imported water supplied by the San Francisco Public Utilities Commission (SFPUC). Limited storage, no available groundwater wells, and no current supplemental sources of water highlight the importance of adequate water supply planning to meet future requirements and address potential droughts and shortages.

The City of Millbrae participates in the Bay Area Water Supply & Conservation Agency (BAWSCA) that represents the 26 wholesale agencies served by the SFPUC. BAWSCA provides regional water reliability planning and conservation programming for the benefit of its 26 member agencies that purchase wholesale water supplies from the SFPUC. BAWSCA strives for high quality water and protection for member agency customers from severe water shortages.

The business relationship between SFPUC and its Wholesale Customers is largely defined by the “Water Supply Agreement (WSA) between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County” entered into in July 2009. The new WSA replaced the Settlement Agreement and Master Water Sales Contract that expired in June of 2009. The WSA addresses the ratemaking methodology used by the City in setting wholesale water rates for its Wholesale Customers in addition to addressing water supply and water shortages for the Regional Water System (RWS). The WSA has a 25-year term.

In terms of water supply, the WSA provides for a 184 million gallon per day (MGD, expressed on an annual average basis) “Supply Assurance” to the SFPUC’s Wholesale Customers. This assurance is subject to reduction, to the extent and for the period made necessary by reason of water shortage, due to drought, emergencies, or by malfunctioning or rehabilitation of the regional water system. The WSA does not guarantee that San Francisco will meet peak daily or hourly customer demands when their annual usage exceeds the Supply Assurance. The SFPUC’s Wholesale Customers have agreed to the allocation of the 184 MGD Supply Assurance among themselves, with each entity’s share of the Supply Assurance set forth in Attachment C to the WSA. The Supply Assurance survives termination or expiration of the WSA and the City’s Individual Water Sales Contract with San Francisco.

The Water Shortage Allocation Plan (WSAP) between the SFPUC and its Wholesale Customers, adopted as part of the WSA in July 2009, addresses shortages of up to 20% of system-wide use. The Tier 1 Shortage Plan allocates water from the RWS between San Francisco Retail and the Wholesale Customers during system-wide shortages of 20% or less. The WSA also included a Tier 2 Shortage Plan adopted by the Wholesale Customers that would allocate the available water from the RWS among the Wholesale Customers.

In September 2018, BAWSCA finalized the “Making Conservation a Way of Life” Strategic Plan-Phase 1 to address the long-term water use efficiency requirements set in Assembly Bill 1668 and Senate Bill 606 for urban retail water suppliers. In June 2020, BAWSCA finalized the Regional Water Demand and Conservation Projections Study (Demand Study) to forecast each member agency’s water demands and conservation savings potential through the 25-year planning horizon.

1.2 Purpose and Goals

This WSCP describes the conditions that constitute a water shortage and provides guidelines, actions, and procedures for managing water supply and demands during a declared water shortage. The focus of this WSCP is on measures that reduce customer demand for water based on drought scenarios. However, the plan also provides a framework to describe how the City would respond if faced with much

larger shortages in water supply up to over 50 percent, which could occur as a result of acute disaster or water system failure.

There are several reasons why it is necessary to consider and plan for shortfalls larger than 15%. First, the City remains vulnerable in the near term to a critical water shortage of that scale. The City is potentially at risk of experiencing a major water shortage as demonstrated by the severe statewide drought experienced from 2012 to 2017. In addition, portions of the City and the RWS were constructed in seismically active areas, making catastrophic supply interruption due to a natural disaster such as an earthquake a tangible threat. Finally, state law requires all public water suppliers to develop contingency plans for situations of up to 50 or higher percent shortage in water supply. No one can predict how the future will unfold, especially in light of the emerging science of global climate change, which some predict could bring more frequent, longer, or more intense water shortages across the state, and which compounds the uncertainty and risk going forward at the local government level.

Whatever magnitude of shortfall the City may experience, the overarching goals of this WSCP are as follows:

- To conserve the water supply of the City for the greatest public benefit;
- To mitigate the effects of a water supply shortage on public health and safety, economic activity, and customer lifestyle; and
- To budget water use so that supply will be available for the most essential purposes for the entire duration of the water shortage.

1.3 State Regulations and Legal Authorities

For California water agencies, there are two main provisions of the California Water Code that pertain to water shortage contingency planning.

Sections 350-359 provide the authority for the governing body of a water agency to declare a water shortage emergency. Once having done so, the local agency is afforded broad powers to implement and enforce regulations and restrictions for managing a water shortage. Water needed for domestic, sanitation and fire protection purposes is given priority and discrimination between consumers using water for the same purpose or purposes is not allowed.

This WSCP is included as required by Section 10632 of the California Water Code. This WSCP is an update of the Plan adopted in 1992, during the latter stages of the 1980's/1990's drought, and updated and adopted as part of the Urban Water Management Plan (UWMP) in the years 1997, 2000, 2005, 2010, and 2015.

To comply with Section 10632, copies of Resolution No. 92-17 and 97-6 are included in Appendix C. These Resolutions approved and adopted the 1992 and 1997 WSCP as a component of their respective UWMP. Should it become necessary to amend the contingency plan at the onset of a new drought, these Resolutions could be used as models. The full text of these two code sections is included in Appendix A.

It should be noted that this WSCP is a planning document. It is important to note that every drought will evolve differently and that it is not practical to develop a set of hard and fast rules that apply to all situations. The intent of the Plan is to provide a general framework that will require adjustment and refinement based on actual supply shortage conditions. At the onset of any subsequent drought, characteristics of use, supply allocations, etc., may have changed significantly from current conditions. It may be necessary to amend this WSCP upon re-implementation to account for specific changed conditions.

1.4 Relationship Between This Document and Other Plans

This WSCP constitutes one of several elements required in the City's UWMP, as required by State law.

Water supply interruptions and shortages may result from a variety of causes, including facility failure, such as a major pipeline break, earthquake, flood, or other natural disaster. This WSCP specifically addresses longer-term water shortages that could occur as a result of drought conditions that may extend several months or span several years in duration. For short-term emergency incidents or disasters, the City maintains a separate Emergency Operations Plan, which is subordinate to and complements the Citywide Emergency Response Plan, to guide emergency operations response and recovery for short-term water supply interruptions and outages. The WSCP also incorporates relevant information from the City's Hazard Mitigation Plan, in particular related to seismic risk assessment.

1.5 Water Conservation Program Coordination and Staffing Support

During the years of the drought in the late 1980's and early 1990's, the City had a full-time staff employee to plan and conduct the water conservation program and other water management activities. The City employs a water conservation coordinator, and has since 1991. Currently, the Environmental Programs Manager serves in this position and oversees the water conservation program and two staff members assist as a part of their many duties in the City Public Works Department. This position oversees the Water Resources & Conservation Program which includes implementing the many programs for water conservation, and complying with conservation reporting requirements. The City will continue to employ staff for these purposes in the future.

1.6 Past, Current and Projected Water Use

As of the 2010 Census, the City had an estimated population of 21,532. In 2017, the Association of Bay Area Governments (ABAG) developed population projections for the City, which are shown in Figure 1-1 below.

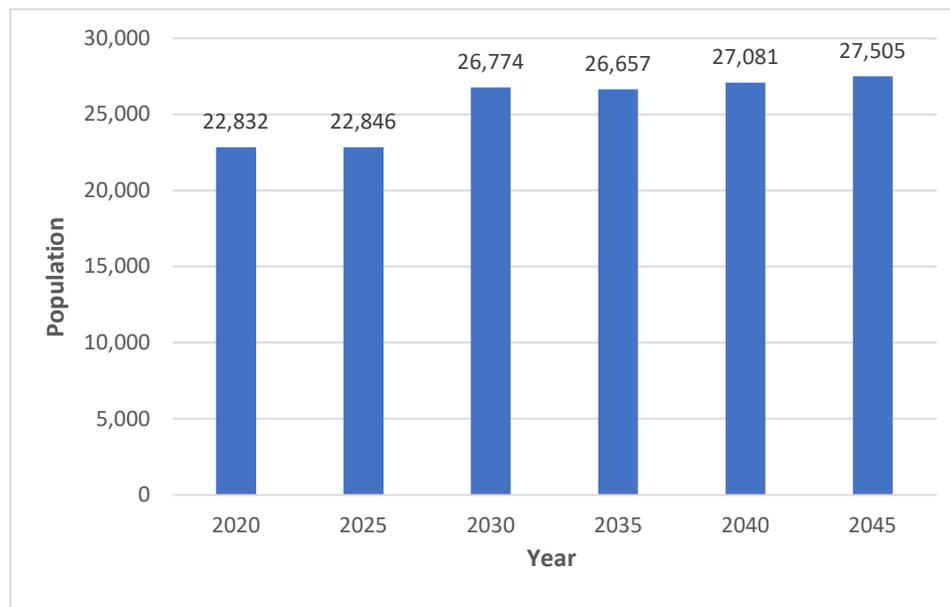


Figure 1-1. Past, current, and projected population (ABAG, 2019).

Currently (2020) Millbrae has an estimated 22,832 residents. The population projections forecast an approximately 20% increase in population by 2045.

The City's water use is primarily residential (single- and multi-family). The City also has a small commercial sector. There are large turfed areas served that include the Green Hills Country Club (golf course), Mills and Capuchino High Schools, four elementary schools, one middle school, one K-8 grade private school, City maintained athletic fields, and public parks of varying sizes throughout the City. There is no agricultural water used in the City.

The residential sector averages 65% of total system demand although this sector has approximately 92% of the total water meter connections (6,060 of 6,591 total). Residences average 2.65 persons per household (based on 2010 Census data).

The commercial/light industrial sector accounts for approximately 17% of the demand with approximately 4.5% of the connections. The irrigation sector accounts for approximately 8% of the system demand with 1.4% of the system connections. Governmental/Institutional and other sectors accounts for approximately 3.1% of the system demand with less than 1% of the system connections.

Losses in the system are estimated at 7% of the total system demand. Losses include firefighting use and system flushing through fire hydrants, water main breaks, and undetected leaks.

Table 1-1 provides an overview of water use over fiscal years 2016-2020. This table was developed using the data generated from the City’s Finance Department’s water meter billing records.

Table 1-1. 2016-2020 potable water use (CCF*)

Type of Service	Connections (2020)	2016	2017	2018	2019	2020
Residential	6,060	542,393	570,181	611,413	598,836	603,740
Commercial	294	162,215	158,303	154,123	169,181	146,136
Landscape/ Recreation	94	47,125	52,420	78,080	63,294	69,292
Institutional/ Governmental (City, schools and churches)	45	28,063	28,951	36,425	36,886	26,579
Other (Fire service and temp meters)	98	230	402	1,042	704	517
Losses	N/A	119,759	120,438	117,782	79,758	69,184
Total	6,591	899,785	930,695	992,865	949,289	915,448

*CCF =Hundred Cubic Feet
Conversion: 1 CCF = 748 gallons

The City’s contract with the SFPUC allows the City to purchase up to 1,537,100 Hundred Cubic Feet (CCF) per year. For the five-year period, 2016 through 2020, total system demand has varied from 899,785 CCF to 992,865 CCF. Average system demand for the last five years has been just under 943,159 CCF per year, almost 40% below the City’s maximum SFPUC contract amount of 1,537,100 CCF.

Based on the population projections shown in Figure 1-1 and the conservation measures the City is actively employing, BAWSCA developed in 2019 demand projections for the City from 2020 to 2040, in five-year increments. The resulting demand projections are shown below.

Table 1-2. Projected demands (CCF) for 2025-2045 (BAWSCA, 2019).

Use Type	Projected Water Use
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	2025	2030	2035	2040	2045
Single-Family	504,011	574,866	564,171	564,171	565,508
Multi-Family	171,123	191,176	184,492	183,155	183,155
Commercial	181,818	177,807	176,471	284,759	391,711
Institutional/ Governmental	42,781	50,802	50,802	50,802	52,139
Landscape	73,529	69,519	69,519	120,321	173,797
Losses	141,711	156,417	152,406	169,786	193,850
Other	1,337	1,337	1,337	1,337	2,674
TOTAL	1,116,310	1,221,924	1,199,198	1,374,331	1,562,834

The City is anticipated to experience a steady rise in demand over the next 25 years. However, even with the projected growth in demand, the City projects to be able to deliver full supply to its customers during normal years based on the current SFPUC Individual Supply Guarantee of 1,537,100 CCF (3.15 MGD).

Although expansion of Millbrae’s service area is limited due to geographical constraints, the area might experience an increase in population and business growth with the development of the Millbrae Station Area Specific Plan.

2. Assessing Water Supply and Demand

2.1 Drought vs. Water Shortage

Drought is a normal, naturally occurring but unpredictable climatic phenomenon of varying frequency, duration and severity. Droughts differ from other natural hazards in that they are not distinct weather events, like floods, hurricanes, or tornados. They may have a slow onset, persist and evolve over a period of years, affect a large spatial region, but cause little structural damage. The most difficult aspect of a drought is that no one can tell how long it will last.

Five degrees of drought intensity are recognized nationally, including abnormally dry, moderate, severe, extreme, and exceptional. Figure 2-1 below shows an example of this system for the current drought, which shows the severity as of March 2016.

The California Department of Water Resources describes drought as:

“A deficiency of precipitation over an extended period of time resulting in a water shortage for some activity, group, or environmental sector.”

A water shortage, on the other hand, occurs when a particular utility’s water supply is insufficient to meet its customer’s ordinary drinking water needs.

Besides weather conditions, there are a number of factors that affect water supply availability, including:

- Source quality
- Source yield and reliability
- Infrastructure capacity and operating constraints
- System demand characteristics

2.2 Coordinated Planning Between SFPUC and BAWSCA

As previously mentioned, the City of Millbrae is a member of the Bay Area Water Supply and Conservation Association (BAWSCA), an association of 26 member agencies that purchase water from the San Francisco Public Utilities Commission for distribution and resale to member agency customers.

The City of Millbrae is 100% dependent on imported water from the SFPUC. The City has little, if any, opportunity for supply expansion due to the impracticalities and cost of new transmission facilities, lack of ground water, environmental constraints, and political realities. This makes supporting the Tier 1 Plan developed by the SFPUC and BAWSCA and BAWSCA Agency Members essential for responding to a system wide drought. In a supply shortage, under the Tier 1 Plan, the SFPUC will determine whether voluntary or mandatory actions will be required to reduce the purchase of SFPUC water to required levels to meet water supply availability. If the SFPUC determines that voluntary actions will be sufficient to accomplish the necessary reductions in water use throughout its service area, the SFPUC and the Wholesale Customers will make good faith efforts to reduce their water purchase to stay within their annual shortage allocations and associated monthly water use budgets. The SFPUC will not impose excess use charges during periods of voluntary rationing, but may suspend the prospective accumulation of water bank credits, or impose a ceiling on further accumulation of water bank credits. If the SFPUC determines that mandatory actions will be required to accomplish the necessary reductions in water use in the SFPUC service area, the SFPUC may implement excess use charges.

U.S. Drought Monitor

September 29, 2020

(Released Thursday, Oct. 1, 2020)

Valid 8 a.m. EDT

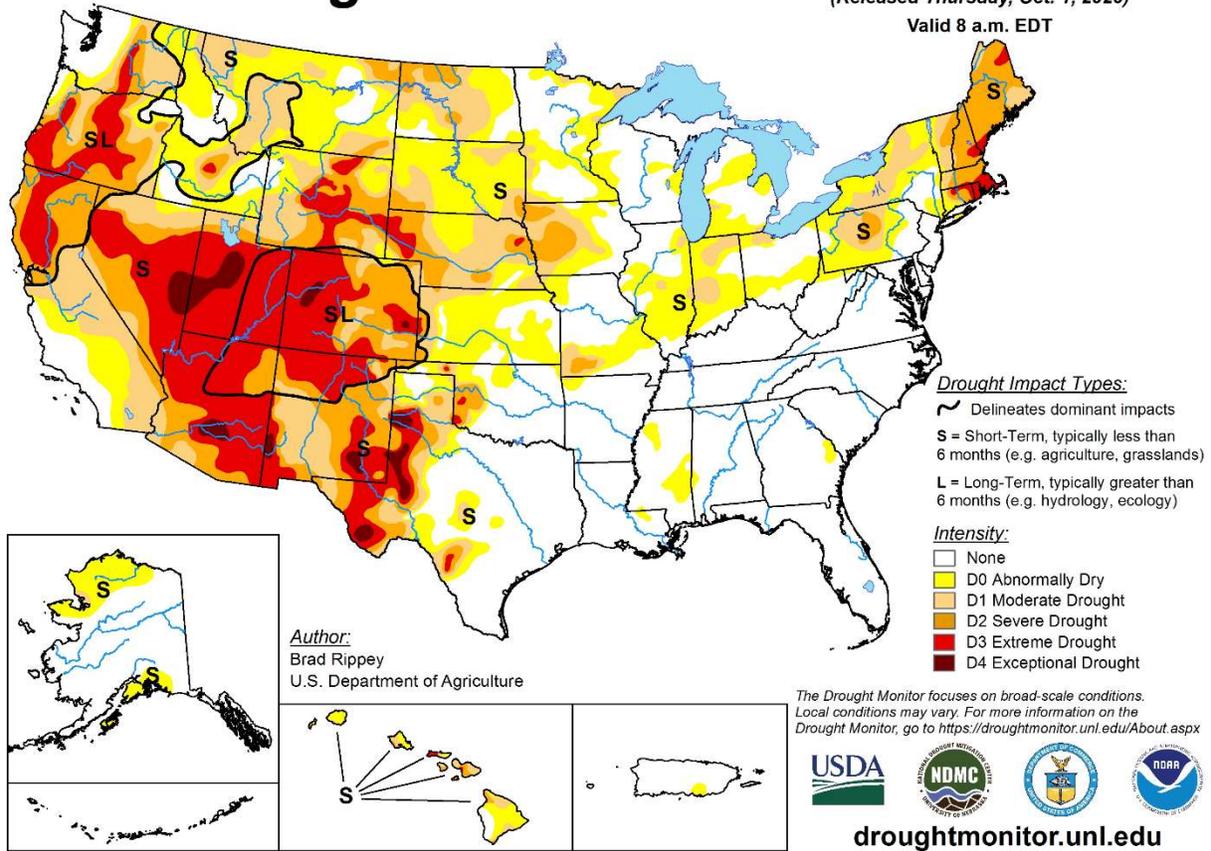


Figure 2-1. National drought map (NDMC, 2020).

The annual allocation between the SFPUC and the collective Wholesale Customers is as shown in Table 2-1.

Table 2-1. Water shortage allocations between SFPUC and Wholesale Customers.

Level of System Wide Reduction in Water Use Required	Share of Available Water	
	SFPUC Share	Wholesale Customers Share
5% or less	35.5%	64.5%
6% through 10%	36.0%	64.0%
11% through 15%	37.0%	63.0%
16% through 20%	37.5%	62.5%

This allocation only applies to shortages of 20% or less. The SFPUC and Wholesale Customers recognize the possibility of a drought occurring which could create system wide shortages greater than 20% despite actions taken by the SFPUC aimed at reducing the probability and severity of water shortages in the SFPUC service area. If the SFPUC determines that a system wide shortage greater than 20% exists, the SFPUC and the Wholesale Customers agree to meet within 10 days and discuss whether a change is required to the allocations set forth in Table 2-1 in order to mitigate undue hardships that might otherwise be experienced by individual Wholesale Customers or the City and County of San Francisco water retail users. Following these discussions, the water allocation established by the Tier 1 Plan or a modified version may be adopted by mutual written consent of the SFPUC and the Wholesale Customers. If the SFPUC and Wholesale Customers cannot agree on an appropriate allocation within 30 days of the SFPUC’s determination of water shortage greater than 20%, then the provisions of the Master

Contract will apply unless all of the Wholesale Customers direct in writing that an allocation methodology agreed to by them be used to apportion the water to be made available to the Wholesale Customers collectively, in lieu of the provisions of the Master Contract.

In July 2009, in connection with the Water Supply Agreement, the BAWSCA Wholesale Customers and San Francisco adopted a WSAP to allocate water from the regional water system to Retail and Wholesale Customers during system-wide shortages of 20% or less, which is called the Tier 1 Plan. The Tier 1 Plan replaced the prior Interim Water Shortage Allocation Plan, adopted in 2000, which also allocated water for shortages up to 20%. The Tier 1 Plan, which allocates water between San Francisco and the Wholesale Customers collectively, distributes water based on the level of shortage. As amended in 2018, the Tier One Plan requires Retail Customers to conserve a minimum of 5% during droughts. If Retail Customer demands are lower than the Retail Customer allocation (resulting in a “positive allocation” to Retail) then the excess percentage would be re-allocated to the Wholesale Customers’ share. The additional water conserved by Retail Customers up to the minimum 5% level is deemed to remain in storage for allocation in future successive dry years.

All of BAWSCA’s Wholesale Customers, including the City of Millbrae, have also negotiated and adopted the Tier 2 Plan in the spring of 2011. The Tier 2 Plan is the second component of the WSAP, which allocates the collective Wholesale Customer share among each of the 26 Wholesale Customers. The Tier 2 allocation is based on a formula that takes multiple factors for each Wholesale Customer into account, including Individual Supply Guarantees, seasonal use of all available water supplies and residential per capita use. The Tier 2 Plan requires that the allocation factors be calculated by BAWSCA each year in preparation for a potential water shortage emergency.

The Tier 1 and Tier 2 Drought Allocation Plans apply only during times of water shortages caused by drought. During these times, the water supply available to the City is based on the WSAP described above. Separate from a declaration of a water emergency, the SFPUC may opt to request voluntary cutbacks from its Retail and Wholesale Customers to achieve necessary water use reductions during drought periods.

Per WSA Section 3.11, the Tier One and Tier Two Plans will be used to allocate water from the Regional Water System between Retail and Wholesale Customers during system-wide shortages of 20% or less. For Regional Water System shortages in excess of 20%, San Francisco shall (a) follow the Tier 1 Shortage Plan allocations up to the 20% reduction, (b) meet and discuss how to implement incremental reductions above 20% with the Wholesale Customers, and (c) make a final determination of allocations above the 20% reduction. After the SFPUC has made the final allocation decision, the Wholesale Customers shall be free to challenge the allocation on any applicable legal or equitable basis. For purposes of the 2020 UWMPs, for San Francisco Regional Water System (RWS) shortages in excess of 20%, the allocations among the Wholesale Customers is assumed to be equivalent among them and to equal the drought cutback to Wholesale Customer by the SFPUC. BAWSCA recognizes that this is not an ideal method and that in the event of actual RWS shortages greater than 20 percent, the Wholesale Customers would have the opportunity to develop and agree upon a more nuanced and equitable approach. Such an approach would likely consider basic health and safety needs such as a per capita minimum, critical institutions such as hospitals, and minimizing economic impacts on individual communities and the region.

Table 2-2 below shows the lowest projected available supply over a three-year period, based on the WSAP. Included in the table for context is the average actual water usage over the past five years, and the maximum use over the past five years (2018).

Table 2-2. Supply sources and worst case supply projections (CCF)

Source	Annual Contractual Amount	Highest Year Purchase 2018	Average Use Base Year (2016-2020)	Projected Worst Case Year 1	Projected Worst Case Year 2	Projected Worst Case Year 3
Local Surface	0	0	0	0	0	0
Groundwater	0	0	0	0	0	0
Imported	1,537,100	993,316	850,267	951,872	986,631	558,824
Reclaimed	0	0	0	0	0	0
Total	1,537,100	993,315.508	850,267	951,872	986,631	558,824
Base Year Supply Shortage				0%	0%	34%

Based on current usage, the City’s water use is sufficiently low to meet the available supply during the first and second years of a drought declared by the SFPUC. Of course, this is in part based upon the fact that over the past five years the City has implemented many demand management measures and programs as a result of the last drought. If the SFPUC were to experience year three of a multiple dry year period, and subsequently enact the allocations in the WSAP, the City would likely have to implement measures to reduce usage even further than they have been over the past five year period.

2.3 Annual Water Supply and Demand Assessment Procedures

In accordance with CWC Section 10632.1, the City will conduct an annual water supply and demand assessment and report it to the California Department of Water Resources (DWR). The City will review projected demands and adjust projected water supply to associated type of water year.

3. Shortage Response Actions

This section describes how the City will respond to future water shortages and discusses the various actions it would take to reduce water demand under different shortage scenarios.

3.1 Staged Demand Reduction Approach

This WSCP uses a staged approach that classifies a water shortage event into one of six levels spanning a range from less than 5% up to over 50%. Each stage has been given a specific title to describe and convey the severity of the water shortage to the public. The City of Millbrae’s water utility is a distribution system only, with little control over available water supply. However, the City is committed and has legal responsibility to provide for the minimum health and safety needs of its customers. The following water shortage contingency stages were established to ensure the City’s water delivery goals.

Table 3-1. Water shortage contingency plan reduction stages.

Stage	Water Shortage Magnitude	Stage Title
1	0-5%	Water Shortage Alert
2	6-15%	Water Shortage Warning
3	16-25%	Water Shortage Emergency
4	26-35%	Severe Water Shortage Emergency
5	36-50%	Critical Water Shortage Emergency
6	>50%	Water Shortage Disaster

The stages in Table 3-1 above are based on a water shortage magnitude, which is presented as the percent reduction in normal water supply. The shortage magnitude could be prescribed through a number of methods, including:

- Projections from the SFPUC on water supply availability;
- Projections based on acute water system failure or other natural disaster; or
- Regulations from the State for water demand reduction goals.

The City elected to retain the shortage levels from the 2016 WSCP and add on the additional required sixth stage to set actions required for water shortages over 50 percent. Table 3-2 demonstrates how the original five stages with the addition of the sixth stage align with DWR’s six standard levels.

Table 3-2 DWR Shortage Level Alignment

Stage	Water Shortage Magnitude	Stage Title		2020 WSCP Level	Shortage Level
1	0-5%	Water Shortage Alert	→	1	<10%
2	6-15%	Water Shortage Warning	↗	2	10-20%
3	16-25%	Water Shortage Emergency	↘	3	20-30%
4	26-35%	Severe Water Shortage Emergency	↗	4	30-40%
5	36-50%	Critical Water Shortage Emergency	↘	5	40-50%
6	>50%	Water Shortage Disaster	→	6	>50%

Normally during drought induced water shortages, only one of these six stages would be put into effect early in the year at the recommendation of the Public Works Director. The stage would remain in force for the entire dry season, or until the water shortage condition is alleviated. Which stage is enacted would depend on the water supply outlook at the beginning of the dry season, however, conditions and circumstances will vary with each shortage event. Although it would not be desirable to do so for sake of consistency, the City might be forced to transition to the next higher stage mid-season if the reduction efforts at the initial stage do not achieve the necessary results.

In the case of water shortage due to system failure or disaster, the stage would be put into effect at the time of need. The stage would remain in effect until the cause of water shortage is determined to be alleviated. Similar to drought-based water shortages, in this case it could be recommended to change water shortage stages depending on how the specific water shortage emergency changes or progresses.

These shortage magnitudes can also be thought of as demand reduction targets, as the overall supply shortfall is what would have to be overcome through a reduction in total water demand. Reductions in use for the various stages of the program cannot be applied unilaterally to all classes of users (residential, commercial/industrial, etc.). For example, the majority of commercial services have a minimal number of plumbing fixtures, which is based on anticipated use, convenience, and building codes. In this case, water is used to meet basic health and sanitation needs and reductions above the initial 5% could be an extreme hardship. Also, hotels are within the Commercial category. While the City's Water Conservation Program encourages the placement of drought advisory information in rooms, restrooms and on-site restaurants, mandatory reductions in use could result in the necessity to close blocks of rooms resulting in adverse impacts on the hotel, their employees and the City's revenue.

As subsequently discussed, Stages 2 through 6 impose the heaviest impacts on residential customers and irrigation users. This is to be expected as currently these two uses account for 76% of system demand and 93% of total connections.

There is an important distinction between the lower two stages (1 and 2), designated above in shades of yellow, and the upper four stages (3, 4, 5, and 6) designated in shades of red, with the break point occurring at the 15 percent shortage level. The lower two stages (1 and 2) represent the anticipated curtailment that is envisioned as being necessary to balance water supply and demand from time to time. Shortages of 15 percent or less, while inconvenient, do not directly threaten public safety or pose undue economic impact.

The upper four stages (3, 4, 5, and 6), conversely, are all characterized as emergency water shortages since they result in more widespread hardships throughout the community, which may threaten public health and welfare, and could cause considerable economic harm. As a public water supplier, the City must prepare and plan for the possibility of experiencing such large deficits under state law.

Throughout the various Stages, and particularly in Stages 4, 5, and 6, it is anticipated that appeals related to additional needs for occupancy changes, health considerations, licensed residential day care and home health care facilities, and special commercial needs or extraordinary needs to avoid undue economic loss would be heard and decided on a case by case basis. A Water Appeals Board would be established and appointed by the City Council for this purpose.

3.2 Overview of Shortage Response Actions

The City's strategy for dealing with water shortages of all levels involves the following four interrelated components:

- An allocation system to establish reduction goals for different customer groups
- Demand reduction measures
- Publicity and communications
- Operating actions

These four components are summarized in the sections below.

3.2.1 Allocation System

A fundamental issue any water supplier faces in managing a water shortage involves the allocation of water and how to distribute the available supply among customer categories when supplies fall short. In the process of updating this Plan, various options and alternatives were selected on a priority-based system. This allocation system produces specific demand reduction goals for each major customer category at various levels of shortfall based on the unique usage characteristics of each customer category. It is one of the key mechanisms to ensure that the overarching goals of: 1) conserving the water supply of the City for the greatest public benefit; and 2) mitigating the effects of a water shortage on public health, safety, and economic activity, are achieved. It also provides the means for determining whether demand reduction goals are being met or, if not, making needed adjustments. The allocation system is described in more detail in Section 3.3.

3.2.2 Demand Reduction Measures

There are a variety of demand reduction techniques that could be used to curtail customer water use during a supply shortfall. These techniques fall into the following general categories.

Voluntary Water Use Reductions

This approach would include issuing guidelines and suggestions to conserve water, encouraging installation or distribution of conservation devices, stepping up financial incentives for fixtures and appliances that reduce per capita water use, discouraging installation of new landscape, or encouraging replanting with low water use plants and materials.

Prohibitions on Certain Uses

This technique includes banning non-essential uses not required for protection of public health and safety that are not normally prohibited by definition under the City's Water Conservation Ordinance. Examples include prohibition on the use of potable water for washing sidewalks and paved surfaces, washing vehicles on-site or the draining and refilling of private swimming pools.

Limits on Certain Uses

This approach involves placing mandatory restrictions such as watering only between certain hours or on specific days, watering of landscape only by certain methods (sprinkler ban), or restricting the manner in which vehicles or buildings may be washed.

Mandatory Requirements

This technique includes adopting regulations mandating that certain measures be taken by selected customers ranging from the posting of signage in various establishments to save water to requiring the preparation and filing of site-specific conservation plan or requiring an audit of company water use demonstrating conservation efforts.

Rationing

This approach involves establishing a fixed volume or allocation for individual customers or for groups of customers that is intended to reduce water use to a certain level commensurate with the seriousness of the situation. Possible methods that can be used to assign customer allotments include setting a uniform or flat amount, applying a percentage reduction from past use (or other benchmark), establishing a ration on a unit basis (per capita, per dwelling unit, per connection) or using a hybrid approach that is based on a combination of factors.

In updating this Plan, staff identified and reviewed available options for application to various customer groups and inclusion at different stages, and took into consideration the following factors:

- Water savings;
- Seasonality;
- Time frame and procedural requirements to implement the measure;
- Administrative burden;
- Applicable sector (residential, commercial, irrigation); and
- Measures used by other water agencies.

3.2.3 Publicity and Communications

Effective communication is essential to the success of any WSCP in achieving the desired water use reductions. All customers need to be adequately informed about water supply conditions, understand the need to conserve, and know what actions they are being requested or required to take to mitigate the shortage. The Public Works Department naturally assumes a central role in publicizing the extent of the

water shortage problem and in advising and assisting customers on how to conserve. The more severe the shortage, the more vigorous the public information campaign will need to be. This information will be coordinated with the City's Public Information Officer/City Clerk. No matter what the situation, any public communications strategy undertaken in connection with water shortage ideally should contain the following fundamental attributes:

- **Timely** – Information should be disseminated well in advance of voluntary and mandatory actions that are to take effect, repeated often, and updated at regular intervals.
- **Credible** – Public information efforts should strive to be clear, professional, consistent, straightforward, reasoned, and honest to build trust and community support.
- **Multimodal** – Information should be made available to the public using a variety of methods, including the internet, newsletters and newspapers, television, special events, visual displays, public meetings, speaking engagements, and other techniques that maximize outreach.
- **Open** – The Program would actively listen to, engage, and involve its customers, solicit feedback, address identified concerns, and respond to public input in a manner that is respectful, appreciative, welcome to creative solutions, and acknowledges each individual's sacrifice, inconvenience, and contribution to the situation.
- **Coordinated** – The Program should collaborate with other City departments, affected public agencies and organizations, its own employees, interest groups, and the news media to ensure that everyone has the same understanding and are working together.
- **Action Oriented** – Information should always contain positive action steps people can take to help foster a spirit of cooperation and create an overall atmosphere that encourages the public to save water for the common good.

There are a number of key groups to whom water shortage communications will need to be aimed. These include, but are not limited to the following:

City Council and Countywide officials: The Council authorizes the use of emergency powers and funds, adopts water shortage regulations, and makes appointments to a special Appeals Board. As the City's governing body, it will have to deal with frequent inquiries from the media and constituents. It will need to know about possible impacts on citizens and the City's own municipal water use. The City Council will be provided in-depth information for its decision-making. City Council meetings are the primary forum where policy issues are discussed and the public is able to make its voice heard. BAWSCA and the County Board of Supervisors will also need to be kept informed.

City Departments and other governmental bodies: All City departments, including Parks, Fire, Police, and Public Works, as well as other public institutions, will be asked to provide leadership and present a good example to the community by reducing their own water demand.

News media: The media has a key role to play in helping communicate timely and accurate information to the public, especially when water restrictions or regulations are initially announced. The City Clerk serves as the official spokesperson for the media. Because the news media is such a powerful force, care always must be given to deliver accurate and consistent messages to maintain good relationships with the media. Feature reporters and editors can also be instrumental in writing about personal interest stories and alternative approaches to help people deal with water shortage in a positive way.

Large water users and groups most affected by water shortage: The local landscaping and hospitality industries, along with other high water using businesses such as retirement centers will need additional information about water shortage restrictions or regulations that will affect their business or clients.

City water customers/general public: All City water users, regardless of whether they are the customer of record, will need to be properly notified so that everyone understands the reasons for voluntary or mandatory cutbacks, what is expected in terms of usage restrictions, and the consequences of failing to abide by any adopted regulations. The Water Resources and Conservation Program will need to step-up distribution of conservation tips and water saving ideas and respond to an increasing number of individual customer contacts. Special efforts also will need to be made to translate copies of all public notices, regulations, and outreach materials into the appropriate languages for non-English speakers.

There are various methods the Program could employ to carry out added communications and public outreach responsibilities that become necessary in a water shortage situation. The menu of possible techniques is listed in Table 3-3.

Table 3-3. Communications and public outreach methods

Methods	
<ul style="list-style-type: none"> • Press releases • Press conferences • Opinion page coverage • Paid print advertising • Community television • Radio interviews • Public service announcements • Internet • Utility bill messages • Revisions to utility bill layout • Direct mail • Printed material (posters, banners, signage) • E-newsletter & e-mails • Garbage bill newsletter 	<ul style="list-style-type: none"> • Public meetings, forums • Publish figures and charts of actual water supply and demand on graph, comparing system use against daily, weekly, or monthly water budgets • Presentations at neighborhood, homeowner’s associations, service, and community meetings • Telephone hotline • Fliers at schools, churches, libraries, grocery markets, and other social gathering places • Outdoor signs for visitors • Conservation events, contests, booths • Lead or participate in regional drought awareness media campaigns

3.2.4 Operating Actions

When a water shortage occurs, Public Works staff will need to be flexible and adaptable to realigning its work priorities. The added responsibilities change what must be done in both field and office operations on a daily basis compared to usual duties under normal water supply conditions. This may result in increased costs to the Department for additional personnel, services, and supplies.

The Public Works Director will need to mobilize the necessary personnel, resources, and equipment to undertake the various activities that are critical to implementing an effective response. These initial actions may include, among other things:

- Coordinating with other city departments and affected public agencies;
- Establishing a public communications program to publicize use restrictions and to engage and involve the community and key water-using sectors in curtailing their demand;
- Ensuring adequate staff and training to effectively respond to customer inquiries and enforce water shortage regulations;
- Adapting utility billing format and database capabilities;
- Expanding water conservation assistance, outreach, and education;
- Instituting a system for processing exception requests and appeals;

- Addressing policy issues and updating status with decision makers; and
- Implementing monitoring mechanisms to track actual usage and measure performance.

These and other operating actions are described further below and in Section 4, Implementation.

3.2.5 Seismic Risk Assessment and Mitigation Plan

The City's Hazard Mitigation Plan is contained within the County of San Mateo Hazard Mitigation Plan (Section 2, Chapter 12). The City and portions of the RWS are located in seismically active areas, making catastrophic supply interruption due to a natural disaster such as an earthquake a tangible threat and the natural hazard that poses the highest risk to the City. Other hazards of concern include severe weather, flood, and landslides. Past natural hazard events within the City have included landslides and earthquakes.

The County Hazard Mitigation Plan identifies several specific vulnerabilities for the City, including:

- City water storage tanks are not up to current seismic codes. Tanks have been in service since 1970 and have passed their useful life. The City of Millbrae recently completed the Water Storage Tanks Master Plan and is actively seeking funding to implement the projects recommended in the Master Plan.
- Aging water distribution system. The majority of the 75 miles of water distribution system are also over 60 years old and in urgent need of replacement and retrofit.

The County Hazard Mitigation Plan also includes an action plan for mitigation of the identified vulnerabilities. Specific actions for the water system include:

- Water system intertie with the San Francisco Airport
- Water storage tanks seismic upgrades, retrofits and replacement
- Actively participate in the plan maintenance protocols

Relevant sections of the County Hazard Mitigation Plan are included in [Appendix D](#).

3.2.6 Demand Reduction Strategy Summary

Together, the four demand reduction strategy components presented above represent a system whose parts function together to accomplish change. The changes targeted through the implementation of this strategy include:

- Changes in customer understanding and awareness;
- Changes in their behavior and actions, and
- Changes in how much water residents, businesses, and visitors use in times of water shortage.

As illustrated in Figure 3-1, these components are interrelated and provide the standards and feedback mechanism to ensure that water consumption is reduced to the level that the system can safely support. These steps are also continuous, and during the implementation of the demand reduction strategy each component should be continually evaluated to ensure the best possible outcomes are achieved.

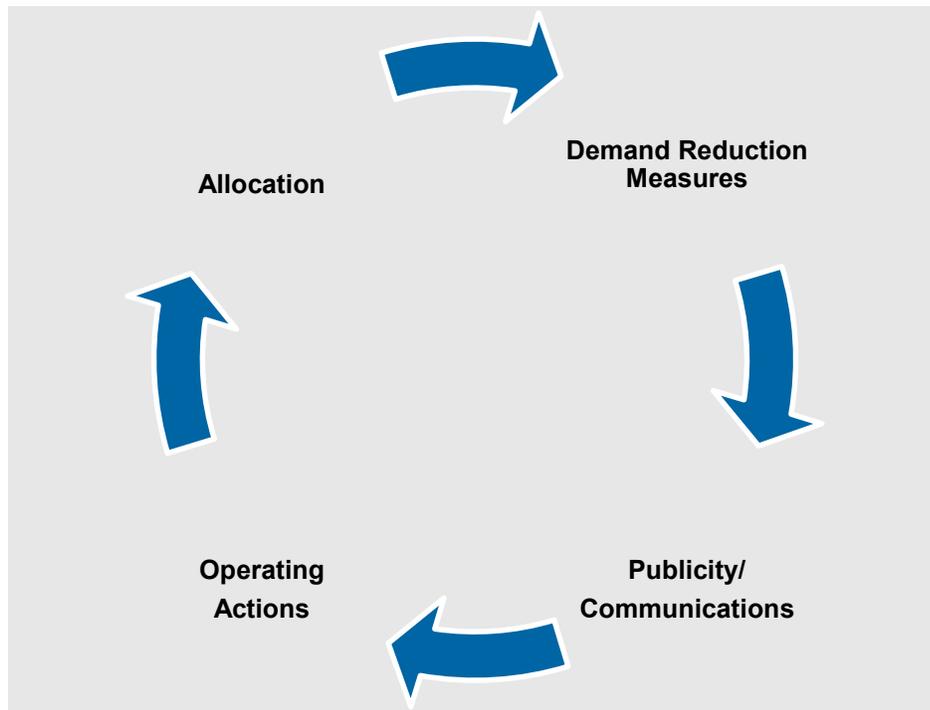


Figure 3-1. Demand reduction strategy.

3.3 Priority-Based Water Shortage Allocation

The recommended allocation system is based on the premise that, when water is in short supply, certain end uses should have a higher priority than others. Using a priority-based approach, the normal water demands of each major customer category are first classified into three basic priorities (Figure 3-2):

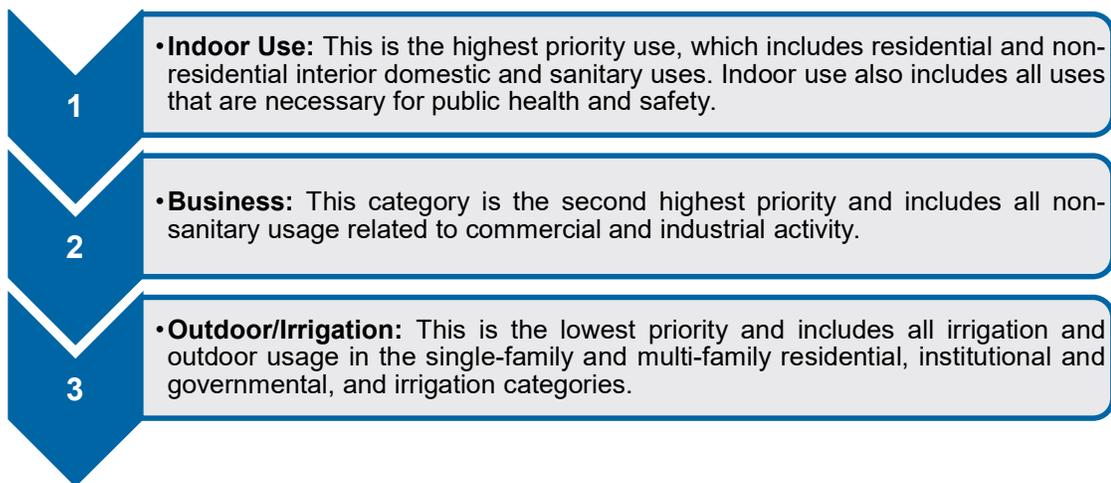


Figure 3-2. City water usage priorities.

Table 3-4 shows the average water use from the years 2016 through 2020 for each of the City’s major customer groups during the April to October peak water-use season. The uses are subdivided into the three use priorities presented above (indoor, business, outdoor) based on indoor/outdoor use separations previously developed for the region (URS, 2004).

Table 3-4. Peak season water use by meter type and use priority (CCF, April-October).

Customer Class:	Usage Priority:			Total	Percent of Total
	1	2	3		
	Indoor	Business	Outdoor/Irrigation		
Single-Family Residential	234,586	-	110,393	344,979	54.3%
Multi-Family Residential	89,084	-	13,311	102,395	16.1%
Commercial	-	94,559	-	94,559	14.9%
Institutional/Governmental	19,331	-	12,359	31,691	5.0%
Landscape	-	-	61,220	61,220	9.6%
Other	-	-	429	429	0.1%
SUBTOTAL	343,001	94,559	197,713	635,273	100%
Percent of Total	54.0%	14.9%	31.1%	100%	-

Metered water use by all customers during this 7-month period averages 635,273 CCF over the past five years. In terms of the breakdown by usage priority, water used for indoor purposes is estimated to be 343,001 CCF, or just over half (54%) of the total demand during the peak season. Water used for business-related purposes is estimated at 95,559 CCF (14.9%), and the volume of water used for outdoor/irrigation purposes is estimated at 197,713 CCF (31.1%). To arrive at demand reduction goals for each customer group, the average demands for the past five years shown in Table 3-4 are scaled back by usage priority in accordance with the schedule shown in Table 3-5.

Table 3-5. Percent of normal water deliveries by usage priority.

Stage	Water Shortage Magnitude	Percent of Normal Deliveries		
		Indoor	Business	Outdoor/Irrigation
2	15%	95%	95%	63%
3	25%	95%	90%	33%
4	35%	90%	85%	12%
5	50%	75%	60%	0%
6	>50%	<75%	<60%	0%

In essence, this allocation system strives to balance available supplies in times of drought as much as possible through cutbacks in outdoor water use. At each level of shortfall, public health and sanitation, represented by indoor water use, is afforded the highest priority by cutting back on interior usage the least. The importance of water in protecting the City’s employment base is also acknowledged through proportionately modest cutbacks to the commercial sector as compared to the overall system shortfall. Irrigation and other outdoor uses in all cases is cut back the most. The larger the water shortage, the greater the cutbacks, but this system of priorities is maintained throughout the range of potential shortages. The heavy reliance on outdoor use reductions makes sense, both from a water system

perspective because it reduces peak demands, which is important to preserving storage in Hetch Hetchy, and from a public health and welfare perspective, because irrigation and other outdoor use are the most discretionary of all uses when drinking water is in short supply.

Under this system, a system wide water shortage of 15% could be addressed through modest cutbacks in both indoor and business water uses, combined with an approximately one-third reduction in outdoor water use. Emergency water shortages would involve far deeper cutbacks. A 25% system wide shortage requires slightly greater reduction in business water use combined with a harsher two-thirds reduction in outdoor watering. A 35% system wide shortage requires reducing indoor and business uses somewhat more, combined with drastic reductions in outdoor water use. To achieve a 50% reduction would take nothing less than a significant reduction in both indoor and business usage, combined with the elimination of all outdoor water use.

This allocation system is recommended after consideration of several options, and is based on current patterns and composition of water consumption. As demand level changes over time, it should be reviewed and revised as necessary. In addition, alternative allocations may always be considered at the time a given stage is implemented.

A prime concern of any WSCP is maintaining sufficient water for public health and sanitation. Table 3-6 below presents the indoor water use allocation for residential customers in terms of gallons per person per day under the four deficit conditions. The passage of AB 1668 set the standard indoor allocation to 55 gpcd, lowering to 52.5 gpcd after January 1, 2025. In WSCP stages 2-4, there is enough water to meet essential health and safety needs, which is considered to be between 45 and 50 gallons per person per day for single-family homes. During stage 5, where a maximum reduction of 50% may be necessary, the available per capita indoor water use falls just short of the health and safety range. In stage 6, indoor allocations would need to be further reduced to meet the shortage reductions required and could fall well below health and safety range.

Table 3-6. Health and safety indoor residential use

Deficiency Condition	Indoor Allocation	Combined Residential Use (gpcd)
No deficiency	100%	55
15%, 25%	95%	49
35%	90%	41
50%	75%	33
>50%	<75%	30

Another point of interest is to consider the available combined residential per capita use during times of drought against indoor water fixture plumbing standards. For example, based on California plumbing standards from 1992 (CONSOL, 2010) and usage frequencies from the Pacific Institute (2014), Table 3-7 below estimates the required daily per capita water necessary for regular indoor water usage.

Table 3-7. Total per capita indoor water use for 1992 plumbing standards.

Fixture	Usage Frequency	Units	Flow Rate/ Volume	Units	Total Demand (gpcd)
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Toilets	4.8	flushes/day	1.6	gallons per flush	7.7
Clothes Washer	2.3	loads/week	30	gallons/load	11.8
Shower	40.9	minutes/week	2.5	gallons per minute	14.6
Bath	2.24	baths/week	18	gallons/bath	5.8
Faucets	10.1	minutes/day	2.5	gallons per minute	25.3
Dishwasher	0.85	loads/week	3.5	gallons/load	0.43
Total Per Capita Water Budget (Based on 1992 Standards)					65.6

As shown, the anticipated indoor water use with older plumbing codes would require approximately 66 gpcd. Over the past five years, the estimated indoor water use is below this value, suggesting the City’s residents have already voluntarily modified use behavior, replaced older plumbing fixtures, or some combination of both. As new developments are built and older plumbing fixtures are continuing to be replaced, the result would be a decrease in required daily per capita water in order to satisfy the same usage patterns. Table 3-8 below shows the same usage frequencies as reported in Table 3-7, but updates the fixture flow rates and volumes with current CALGreen (2019) building code standards.

Table 3-8. Total per capita indoor water use for CALGreen plumbing standards.

Fixture	Usage Frequency	Units	Flow Rate/ Volume	Units	Total Demand (gpcd)
Toilets	4.8	flushes/day	1.28	gallons per flush	6.1
Clothes Washer	2.3	loads/week	14.4	gallons/load	4.7
Shower	40.9	minutes/week	1.8	gallons per minute	10.5
Bath	2.24	baths/week	18	gallons/bath	5.8
Faucets	10.1	minutes/day	1.5 ¹	gallons per minute	15.2
Dishwasher	0.85	loads/week	3.5	gallons/load	0.43
Total Per Capita Water Budget (Based on CALGreen Standards)					42.7

¹Average of kitchen and faucet flow rate efficiency standards.

Under current standards, the anticipated daily per capita volume necessary for indoor water use decreases to approximately 43 gpcd. Under these standards, habit or water use frequency changes would be required in the most extreme stages of the water use reductions shown in Table 3-5. In addition to the demand using the CALGreen standards shown above, a study performed by the Pacific Institute determined that under the same usage frequencies, indoor water use could be reduced even further, to approximately 32 gpcd, using the highest efficiency indoor fixtures currently available.

It should be noted; however, that as the population of the City continues to grow and water demand increases, per capita water usage would by necessity need to decrease in order to match available supplies. As such, all values reported in this section should be periodically updated and evaluated to

include current population, usage, and plumbing code standards. This plan is a living document, and as such will need to remain as relevant as possible in order to allow the City to plan for and achieve the best results when faced with a water shortage.

3.4 Water Shortage Response Actions

The allocation system described above serves to establish demand reduction goals for each of the City's major customer groups. The challenge in crafting this contingency plan is to select the most appropriate set of measures that logically correlate with these targets for each sector and stage of shortfall, acknowledging the inherent uncertainties involved and difficulty in predicting their effectiveness in advance.

The recommended list of actions to cut water use is presented below starting with Stage 1- Water Shortage Alert. This list meant primarily to help inform the public and decision-makers about the types of measures that would be taken under various water shortage scenarios. Specific circumstances will vary with each shortage and decisions about the most appropriate response should be based on the water supply and demand conditions at the time, and the collective judgment of staff and City Council, with ample public input.

It is also important to recognize that flexibility in selecting the most appropriate stage may be needed. In the case of a borderline situation, for instance, where there is reasonable likelihood that system demand could be curtailed sufficiently with the lesser restrictions, it may be advantageous to initially choose the lower stage, conditioned with a well-publicized caveat that, if water use exceeds targets, the more restrictive regulations would kick in.

Each section that follows includes:

- An overview of the response;
- A discussion of any key issues involved in that stage;
- The prepared public message; and
- A list of the recommended demand reduction measures, communications actions, and operating actions applicable to that stage

3.4.1 Stage 1 – Water Shortage Alert

Stage 1 applies to relatively minor water shortages that can be accommodated with a combination of voluntary conservation measures and minimal usage restrictions, combined with enhanced enforcement of the City's ongoing ordinance prohibiting water waste. Except for a few instances, all demand reduction measures apply uniformly to nearly all customers, therefore no specific allocation is proposed during this stage.

A Stage 1 response may also be appropriate in other situations. It may be prudent as a precautionary measure during an unusually dry year in advance of a declared water shortage or during the winter season following an actual shortage event if needed to maintain a continuing level of awareness among customers until normal water conditions are restored.

The Stage 1 public message is as follows:

“Due to abnormally dry conditions this winter, we’re asking all customers to voluntarily cut back water use this summer by 5% to stretch the available water supply. City water users should stop using water for non-essential purposes and conserve where possible in case the dry period experienced this past winter

continues into next year. If everyone cooperates, we may avoid imposing more stringent watering restrictions. As always, wasting water is prohibited by law”

Table 3-9. Stage 1 water shortage contingency measures.

Water Shortage Magnitude/System-wide Demand Reduction Goal: 0-5%
<p>Demand Reduction Measures:</p> <ul style="list-style-type: none"> • Request voluntary water conservation by all customers • Step up enforcement of water waste • Restrict the time of landscape irrigation to early morning and evening • Prohibit non-essential water use: <ul style="list-style-type: none"> – serving drinking water by restaurant or food service establishments except upon request – use of potable water for washing driveways, patios, parking lots or other paved surfaces – require hotel, motel, and other commercial lodging establishments to offer option of not laundering towels and linen daily – draining and refilling of swimming pools • Encourage use of drip and other low volume irrigation systems • Encourage appropriate use of *gray water use • Require the use of water efficient indoor devices <p>Publicity/Communications</p> <ul style="list-style-type: none"> • Send out a Public Notice to announce water conditions, request cooperation • Initiate public information campaign through media, utility bill and newsletter, website • Develop regular advertising campaign to remind consumers of the need to conserve water • Prepare and disseminate suggestions/requirements to reduce water use • Inform large landscape/property managers of irrigation restrictions • Continue to promote meter reading and regular leak detection by all customers • Include water saving measures and reductions on website <p>Operating Actions</p> <ul style="list-style-type: none"> • Coordinate water conservation actions with other City Departments and public agencies • Eliminate system water uses deemed non-essential

Water Shortage Magnitude/System-wide Demand Reduction Goal: 0-5%

- Delegate water waste patrol duties to appropriate personnel
- Institute regular monitoring and reporting of water production and consumption
- Undertake contingency planning for continuing/escalating shortage

* Gray water use includes drain water from showers, bathtubs, bathroom sinks, and clothes washers. It does not include water that has come in contact with toilet waste, water from kitchen sinks and dishwashers, or laundry water used for washing diapers. There are no restrictions on the use of gray water if it is carried in a bucket. Plumbed gray water systems could also be built to convey drain water and provide subsurface irrigation to trees and shrubs.

3.4.2 Stage 2 – Water Shortage Warning

Stage 2 applies to moderate water shortages. This condition requires more vigorous public information and outreach and an expansion of mandatory water restrictions and prohibitions, particularly on outdoor water uses. The primary methods to meet target consumption levels are to limit irrigation to specified days of the week and to institute water budgets for large landscapes and parks.

The recommended approach to reducing outdoor water use in this stage would be to restrict watering of all lawns and established landscapes to twice weekly during specified hours and to disallow any watering with automatic sprinkler systems on certain days to maximize reduction.

Other measures that would be imposed under Stage 2 would include mandatory leak inspection and repair for large customers and to expand restrictions on exterior washing to dwellings, buildings, and structures.

The Stage 2 public message is as follows:

“It is necessary to impose mandatory restrictions on water use to ensure that throughout the duration of this water shortage an adequate supply of water is maintained for public health and safety purposes. Our overall goal is to reduce water use by 15%, the majority of which can be achieved if everyone cuts back their outdoor watering by one-third the normal amount.”

Table 3-10. Stage 2 water shortage warning response measures.

Water Shortage Magnitude/System-wide Demand Reduction Goal: 6-15%

Demand Reduction Measures:

- Continue all measures initiated at Stage 1
- Restrict landscape irrigation to designated watering days and times¹
- Require the use of re-circulated water to operate decorative fountains, ponds and lakes
- Require the use of a bucket and a hand-held hose with a positive shut-off nozzle, mobile high-pressure/low-volume wash system, or at a commercial site to wash vehicles
- Require large landscapes to adhere to water budgets
- Prohibit exterior washing of dwellings, buildings, or structures (with exceptions for window washing or in preparation for painting)
- Reduce time allowed to resolve water waste
- Require large users to audit premises and repair leaks
- Continue to promote meter reading and regular leak detection by all customers

Publicity/Communications

- Intensify public information campaign with regular media updates, direct notices to all customers, paid advertising, billing messages.
- Generate publicity about individuals and businesses demonstrating leadership to save water
- Consult with major customers to develop conservation plans
- Publish monthly consumption graph on website

Water Shortage Magnitude/System-wide Demand Reduction Goal: 6-15%

- Inform large landscape/property managers of additional irrigation restrictions
- Conduct workshops on large landscape requirements for property owners, contractors, maintenance personnel

Operating Actions

- Coordinate with all City Departments and public agencies to reduce water use
- Suspend main flushing except as required for emergency and essential operations
- Intensify distribution system leak detection and repair
- Continue regular monitoring and reporting of water production and consumption
- Undertake contingency planning for continuing/escalating shortage
- Develop strategy to mitigate revenue losses

¹Considerations may be provided for weather-based smart irrigation controllers and drip systems.

3.4.3 Stage 3 – Water Shortage Emergency

This level of water shortage constitutes an emergency situation requiring significant actions by the public to achieve up to a 25% reduction. The two primary measures being recommended to meet this emergency reduction goal are:

- Required water shortage signage in all non-residential establishments; and
- Reduced landscape water budgets for large landscapes.

Commercial customers would be expected to meet their collective reduction goal by adhering to continuing water restrictions, and by being required to prominently post “**SAVE WATER – REPORT LEAKS AND WATER WASTE**” signs at the entrance and in every bathroom of commercial, industrial and institutional buildings, including:

- Hotels, motels, and lodging;
- Restaurants, cafeterias, cafes, and all food service establishments;
- Offices and government buildings;
- Health care and retirement centers; and
- Schools.

Large landscape customers would be held to water budgets as described in Stage 2, reduced in accordance with the allocation for irrigation customers in Stage 3.

One charged policy issue that often arises in connection with a water shortage emergency is the question of whether or not to continue allowing new connections on the system. In the past, it has been the City’s policy to continue allowing new connections mainly because the demand they add in any one year is negligible. The water that would be made available to existing customers by banning new water connections, therefore, would not make any real difference in terms of increasing the existing customers’ allocation. This issue is typically driven by customers who are called on to make sacrifices and feel that water agencies should concentrate on fulfilling present obligations rather than accepting new customers. A number of agencies, however, do have provisions for a temporary ban or place a low priority on new connections in later stages of their drought plans.

Staff recommends giving the public a one-year advance notice, beginning in Stage 3, stating that a temporary water service connection ban would be strongly considered if the shortage emergency

continues or escalates into the following year. This notice would allow those people with plans and projects already underway time to complete work or make arrangements, and those considering future construction projects to make timely decisions about proceeding with the knowledge that they risk not being able to secure a water service connection until the shortage is over.

The Stage 3 public message is as follows:

“The City faces a serious water shortage emergency due to prolonged drought. Our goal is to reduce system water demand by 25%. We are relying on the cooperation and support of all water users to abide by all restrictions to reach this goal. Otherwise, the shortage could lead to a more serious emergency that requires rationing household water use to avoid depleting the available water supply.”

Table 3-11. Stage 3 water shortage emergency response measures.

Water Shortage Magnitude/System-wide Reduction Goal: 16-25%
<p>Demand Reduction Measures:</p> <ul style="list-style-type: none"> • Continue measures from all previous stages • Continue landscape irrigation restrictions to designated watering days and times • Require large landscapes to adhere to reduced water budgets • Prohibit operation of ornamental fountains • Require all commercial customers to prominently display “save water” signage with specified language at specified locations • Maintain restrictions on exterior washing of surfaces and structures • Require leak repair within 72 hours • Continue to promote meter reading and regular leak detection by all customers <p>Publicity/Communications</p> <ul style="list-style-type: none"> • Expand, intensify public information campaign focused on 2/3 reduction in outdoor use • Provide regular media briefings, manage media coverage • Provide regular information reports to City Council and other agencies • Consult with major customers to develop conservation plans • Publish monthly consumption graph on website • Enlist support of the Chamber and other business groups • Inform large landscape/property managers of reduced allocations • Conduct workshops on large landscape requirements for property owners, contractors, maintenance personnel • Prepare public notice regarding possible future service connection moratorium

Water Shortage Magnitude/System-wide Reduction Goal: 16-25%

- Promote appropriate use of gray water for reuse

Operating Actions

- Expand size and coverage of water waste patrol
- Expand, strengthen water conservation education, activities, and program
- Continue all operating actions listed under Stage 2
- Increase frequency of monitoring and reporting of water production and consumption
- Undertake contingency planning for continuing/escalating shortage
- Develop strategy to mitigate revenue losses

3.4.4 Stage 4 – Severe Water Shortage Emergency

The water supply conditions that would trigger Stage 4 parallel the difficult situation the City experienced in the drought of late 1970's. Under this scenario, virtually all available water must be reserved either for health and safety purposes or to sustain local business. Achieving a 35% system wide reduction would require water rationing to cover all water customers, including businesses.

Unfortunately, there is no practical way to assign a commercial water budget based on variables like the number of employees, square footage, etc. given the variety of usage characteristics in this sector. Every business (or group of businesses sharing a single water account, as is often the case in shopping centers) is unique. They include laundries, restaurants, retirement centers, retail outlets, hotels, car washes, and office buildings. At this point, there is no choice other than to ration business customers individually based on a percent of prior use in a normal year that is consistent with the overall allocation for Stage 4. Where essential water use at a business establishment involves a public health service, including doctor's offices, medical laboratories, and skilled nursing facilities, or where a business can demonstrate it has already achieved maximum practical water conservation, provision for additional water could be made on a case by case basis through an exceptions process.

The basic concept of water rationing is that each utility customer is given a certain allocation of water, expressed in billing units, to use in a billing period. If they use the amount they are allocated or less, charges for water are calculated at the normal rate. If they exceed their allocation, the portion in excess of their allocation is charged a penalty rate. The penalty rate may be broken into multiple tiers so the more the excess usage, the higher the penalty price per CCF, or 748 gallons, used. The purpose is not to generate revenue but rather to use water pricing as a way to motivate the customer to modify their usage to stay within their allocation and avoid being penalized, which most customers do. Those that don't reduce would be charged for their overuse at the penalty rates.

The method to allocate water when rationing is instituted varies according to customer type. It may be based on the number of people in a home, the number of dwelling units in a multifamily complex, or set as a percentage of past use during some prior year.

For single family residential customers, the per capita approach is probably the fairest practical method, easiest to communicate, would be best understood and accepted by the general public, and is effective in achieving cutbacks where they are needed most, in outdoor water use.

Staff recommends using a modified per capita rationing system developed by the Goleta Water District located in Southern California. Under this system, all households are given a default allocation sufficient for a family of four persons. Households that have more than four persons would be required to contact

the Water Billing Office and verify household size in order to be granted an increased allocation, which would depend on the actual number of persons living at the residence.

2010 Census data for the City of Millbrae indicates that only 27% of all occupied households within the City have four or more persons per household. Establishing a default allocation for a family of four would more than satisfy the 73% majority of households that have three or fewer persons per household. This method is similar to that last used by the City to ration water in 1991, which provided a baseline allocation for households of two or less, except that a census was undertaken then to survey the actual number of persons living at each household.

The Goleta rationing model is considered to be preferable because it eliminates the significant work associated with carrying out an occupancy census and alleviates concerns about potential for inaccurate responses. For current planning purposes, the Goleta model will be the one initially employed during a corresponding water shortage of Stage 4 or greater. The principle drawback is the problem of equity, since there will be less “cushion” in the allocation for households with four residents than there is for homes with fewer number of residents, and an increased possibility of exceeding their allocation. Allocation disagreements should be expected and procedures need to be put in place to handle valid appeals and exceptions (Section 3.5).

Table 3.12 below shows a typical rationing calculation for a single family residence in Stage 4. Recommended rationing allotments for single-family residential accounts are presented in Appendix B.

Table 3-12. Water rationing schedule: single-family residential accounts.

	<u>CCF */month</u>	<u>Gallons per day:</u>
Up to four persons:	8	193
Each additional person:	2	50
<i>Example monthly allocation for a 6-person household:</i>		
Base allocation:	8 CCF	
2 additional persons x 2 CCF per person	<u>+ 4 CCF</u>	
Monthly Allocation	= 12 CCF	= 290 or 48 GPCD

*CCF =748 gallons.

What makes multifamily customers more challenging for developing a water rationing system are the large differences in housing types, the presence or absence of irrigation meters at a complex, and the fact that many larger accounts are handled by an independent property management firm on behalf of the owner or homeowner’s association. These companies typically do not track how many people reside in each unit or in the complex as a whole.

The standard method for rationing method for multiple-residential accounts will be based on the number of dwelling units associated with the water service account. The number of dwelling units is the best starting point since that data is available on the utility billing system and, in the absence of information about the

number of people living on the property; it is the next best driver for indoor water demand. However, further rationing options for multiple-residential accounts will be allowed to reflect the heterogeneous nature of building types on multifamily properties and the fact that some of these properties have separate irrigation accounts while others do not. These wide differences in user characteristics cause inequities in allocation based solely on the number of dwelling units. Offering alternatives allows the customer to choose for themselves the option that works best in their particular case. These options include:

- An allocation based on the number of persons residing at the property;
- An allocation based partly on the number of persons residing at the property and partly on landscape water needs at the property that reflect the same cutback to irrigation that other customers would experience (for properties without irrigation accounts);
- The same allocation per dwelling unit as single-family accounts would receive for certain properties that resemble single family lots in terms of lot coverage

A summary of the preferred and alternate rationing options for multiple residential accounts is presented in Appendix B.

As noted previously, rationing businesses is more difficult due to the heterogeneity of business types. Therefore, during Stage 4 businesses will be rationed based on reducing their average metered usage for the prior year by the percentage presented in Table 3-5.

It should be reiterated that water rationing is a situation that the City is seeking to avoid through long-term conservation efforts.

Other actions/restrictions that likely would be necessary in a severe water shortage emergency, in addition to those previously described, include the following:

- Prohibition on lawn/turf irrigation and on installation of new landscaping in new development;
- Prohibition on using potable water in fountains and ornamental water features;
- Prohibition on on-site vehicle washing, including dealer lots, company fleets;
- Rescinding hydrant and bulk water permits, i.e. temporary water meters;
- Suspending water main replacement projects

The Stage 4 public message is as follows:

“Due to continuing deterioration in storage and overall scarcity of available water supplies, all customers, residential and business alike, are now unavoidably subject to water rationing. The current water shortage is among the most severe faced in modern times. We must all continue to conserve water to the maximum extent possible and strive to maintain water use within our established rationing limits as long as the drought endures in order to avert a water crisis. All customers are urgently asked to make every effort to conserve water and/or face reductions in water allotments.”

Table 3-13. Stage 4 severe water shortage emergency response measures

Water Shortage Magnitude/System-wide Reduction Goal: 26-35%

Water Shortage Magnitude/System-wide Reduction Goal: 26-35%

Demand Reduction Measures:

- Continue measures from all previous stages
- Institute water rationing for residential customers
- Institute water rationing for commercial customers
- Minimize water use by large landscape customers – only for the most valuable plant and tree survival
- Prohibition on lawn/turf irrigation and on installation of new landscaping in new developments
- Prohibition on car washing except at commercial car washes
- Prohibition on on-site vehicle washing, including dealer lots, company fleets
- Rescind hydrant and bulk water permits, prohibit use except by special permission
- Require leak repair within 48 hours

Publicity/Communications

- Continue to provide regular media briefings, manage media coverage
- Provide regular information reports to City Council and other agencies
- Publish monthly consumption graph on the website
- Prepare public notice regarding possible service connection moratorium
- Publish information on ways to minimize most valuable landscape damage and loss

Operating Actions

- Modify utility billing system and bill format to compare actual use with customer allocation
- Adopt penalty rates
- Expand home water survey program
- Increase customer service training to address high bills, irate customers
- Convene the staff Appeals Board to process requests for exceptions and appeals of penalties
- Expand water waste enforcement to 24/7
- Delegate field staff to assist in enforcement (shut offs, flow restrictors)
- Continue all applicable operating actions listed under Stage 3
- Increase frequency of monitoring and reporting of water production and consumption
- Undertake contingency planning for continuing/escalating shortage
- Revise Department operating budget to address revenue shortfall
- Defer portions of capital improvement program
- Consider surcharges, rate changes

3.4.5 Stage 5 – Critical Water Shortage Emergency

Stage 5 represents an imminent and extraordinary crisis threatening health, safety, and security of the entire community. Under this dire situation, extreme measures are necessary to cut back water use by up to 50%. Not enough water would exist even to meet the community's full health and safety needs, the top priority. All water should be reserved for human consumption, sanitation, and fire protection purposes and any remaining amount allocated to minimize economic harm. A shortage of this severity could be expected to generate stress, confusion, and chaos much the same as any major emergency and at some point could transform into a full blown natural disaster that can no longer be governed by local ordinance and may need to be managed by the same basic principles and command structure under the state Standardized Emergency Management System that other natural disasters are. The City has experienced water shortages in the past but never one of such large proportion.

This fifth stage would involve nothing less than rationing all customer groups and instituting a prohibition on residential outdoor water use for any reason (e.g., garden, car-washing, cleaning, maintenance, etc.). It may also require shutting down or severely restricting use at certain public facilities, like local parks and school play fields. Some businesses may be forced or required to either partially or completely close.

The planned response for a shortage of this magnitude would involve reducing rationing allocations for residential customers to minimal levels (Appendix B) and reducing commercial rationing amounts in accordance based on their previous usage and the reduction percentages shown in Table 3-5. All outdoor irrigation would be prohibited (other than by hand-held container and what has been captured or collected from another non-prohibited use). No water would be available for public showers or private, community, or public pools and hot tubs. These facilities likely would be forced to close.

A shortage of this magnitude could affect other local water suppliers as people tend to substitute normal activities, such as laundry, showers, etc. from their home to other locations not as affected. The City’s response would therefore involve greater coordination at a regional and perhaps even statewide level.

The Stage 5 public message is as follows:

“The City of Millbrae is confronted with a critical water shortage emergency of unprecedented proportions. At this time, there exists barely enough drinking water for the most essential human health, sanitation, and safety needs. As a result, all outdoor watering is now prohibited. We understand the hardship this extraordinary condition poses to every resident and business in the City and appreciate the sacrifices people are making to ensure that the water system does not run dry. Everyone is urgently requested to do whatever is necessary to maintain water use within or below their allotted amount.”

Table 3-14. Stage 5 critical water shortage emergency response measures.

Water Shortage Magnitude/System-wide Reduction Goal: 50%
<p>Demand Reduction Measures:</p> <ul style="list-style-type: none"> • Continue measures from all previous stages • Further reduce residential water allocations • Reduce commercial water allocation • Prohibit all outdoor irrigation • Require leak repair within 24 hours • No water for outdoor washing or recreational purposes; close pools, public showers • Continue all measures initiated in prior stages as appropriate <p>Publicity/Communications</p> <ul style="list-style-type: none"> • Contract with crisis/emergency communications consultant to develop crisis communications plan and major publicity campaign • Assign Public Information Officer to communicate with media • Set up emergency notification lists for medical/dental facilities, public facilities, large users, food and beverage facilities, and critical businesses <p>Operating Actions</p> <ul style="list-style-type: none"> • Consider shifting to EOC model of command management for overall policy guidance and coordination • Coordinate with CA Dept of Public Health, District Engineer and other emergency response agencies regarding water quality, public health issues • Coordinate with law enforcement agencies to address enforcement challenges • Continue water waste enforcement 24/7 • Delegate field staff to assist in enforcement (shut offs, flow restrictors) • Continue all applicable operating actions listed under Stage 4 • Coordinate with the Waste Water Treatment Plant Superintendent and the Utilities and Operations Superintendent for treatment plant processes regarding sewer line maintenance • Continue close monitoring and reporting of water production and consumption • Procure resources to utilize dead storage, if needed

- Undertake emergency planning for continuing/escalating shortage

3.4.6 Stage 6- Extreme Water Shortage Emergency

Stage 6 represents a water shortage disaster, in which water reduction would need to exceed 50%. Under such conditions, only enough water to cover minimum health and safety water allocations would be available. Shifting to an Emergency Operations Center model of command management will be necessary at this stage to quickly communicate and respond to new developments. It is likely also necessary to either contract with a crisis/emergency consultant or continue to work with the previously contracted consultant to guide communications plan and quickly distribute information to the public. An unprecedented shortage to this degree would require close coordination with the California Department of Public Health and other emergency response agencies to define appropriate actions and supplements that can help protect the health and safety of the community.

In addition to the reductions from previous stages, water for non-essential commercial uses will need to be cut completely. This would result in the closure of even more public facilities and commercial businesses.

The Stage 6 public message is as follows:

“The City of Millbrae is now in the midst of a water shortage disaster.. At this time, there exists only enough drinking water to meet human health, sanitation, and safety minimums. No water will be allocated for non-essential commercial uses to ensure that we are able to meet the health and safety minimums, We understand the hardship this extraordinary condition poses to every resident and business in the City and appreciate the sacrifices people are making to ensure that the water system does not run dry. Everyone is urgently requested to continue to do whatever is necessary to maintain water use within or below their allotted amount.”

Table 3-15 Stage 6 Water Shortage Disaster response measures

Water Shortage Magnitude/System-wide Reduction Goal: >50%
<p>Demand Reduction Measures:</p> <ul style="list-style-type: none"> • Continue measures from all previous stages • Further reduce residential water allocations to health and safety minimum • No water allocated for non-essential commercial uses <p>Publicity/Communications</p> <ul style="list-style-type: none"> • Continue to work with crisis/emergency communications consultant to develop crisis communications plan and major publicity campaign <p>Operating Actions</p> <ul style="list-style-type: none"> • Shift to EOC model of command management for overall policy guidance and coordination • Continue coordination with CA Dept of Public Health, District Engineer and other emergency response agencies regarding water quality, public health issues • Coordinate with law enforcement agencies to address enforcement challenges • Continue water waste enforcement 24/7 • Delegate field staff to assist in enforcement (shut offs, flow restrictors) • Continue all applicable operating actions listed under Stage 5 • Coordinate with the Waste Water Treatment Plant Superintendent and the Utilities and Operations Superintendent for treatment plant processes regarding sewer line maintenance • Continue close monitoring and reporting of water production and consumption • Procure resources to utilize dead storage

- Undertake emergency planning for continuing/escalating shortage

3.5 Enforcement, Exceptions, and Appeals

An important part of a water shortage plan is to have the appropriate authority and a combination of methods to enforce mandatory measures such as water restrictions or rationing in order to protect public health and safety. General authority and powers of the City to enforce ordinances are contained in Title 1, Chapter 1 of the Millbrae Municipal Code. In addition, the City’s water conservation ordinance contains specific language regarding enforcement of water use rules and regulations and includes provisions for issuing exceptions and hearing appeals.

3.5.1 Water Rates and Charges for Excessive Use

The City’s current rate structure, which includes a monthly service charge, is shown in Table 3.14.

Table 3-16. Water rate structure covering 2020.

Meter Size	Monthly Service Charge
3/4"	\$25.00
1"	\$31.25
1-1 1/2 "	\$62.50
2"	\$100.00
3"	\$187.50
4"	\$312.50
6"	\$625.00
8"	\$1,000.00
10"	\$1,437.50

In addition to the service charge, a usage charge of \$10.40 per hundred cubic feet (CCF or 748 gallons) is assessed based on meter readings. The proposed excess use schedule which would be used during a water shortage is shown in Table 3.15.

Table 3-17. Proposed excess water use charge schedule.

% Over Allocation	Excess Use Charge Per CCF
0-10%	\$5.00
10.1% - 20%	\$13.00
20.1% - greater	\$25.00

$$\text{Monthly Bill} = (\text{Monthly Service Charge}) + (\text{CCF used}) (\$10.40) + \text{Excess Use Charge}$$

Excess use fees Excess use fees are the primary method for enforcing water rationing and are imposed on customers whose water use exceeds their allocation when rationing is in effect. The purpose of the excess use fee is to make the consequences of exceeding one’s rationing allocation so severe that the customer is induced to keep their water use within their allocation and avoid being fined. Like water rates,

there are two components to setting excess use fees: 1) the way they are structured; and 2) the dollar amount.

It is, however, recommended that the penalty amount be increased to bring it more in line with current rates, as shown below:

For example, in Table 3.15 above, a 4-person household is provided an allocation of 8 CCF per month in Stage 4. At 2020 rates, the normal water charges for a customer using 8 CCF would total \$108.20, including the \$25.00 monthly service charge for a 3/4" meter. Under water rationing, if that same customer used 16 CCF, their normal water charges would amount to \$191.40, and excess use fees would cost \$168 (1 CCF @ \$5, 1 CCF @ \$13 and 6 CCF @ \$25), for a total of \$359.40.

The purpose of a three-tier excess use structure is to avoid very large penalties for households that make a good faith effort to stay within their allocation but wind up going over a little. If a customer's water use exceeds one's allocation by a large amount, though, the penalty should be very steep.

Flow restriction: Some customers will continue to exceed their allotment regardless of the amount of their water bill. In such instances, the Public Works Department is authorized to install a flow restricting device to provide minimal water flow, just enough for health and safety purposes. In these cases the customer is charged a fee to cover the staff time needed to install the flow restrictor and another fee for its removal. Staff would not use this method where fire suppression sprinklers are on the same supply line as domestic water.

Disconnection/reconnection fees: Water suppliers have the legal authority to enforce water shortage regulations by terminating service for egregious violations. In such cases, the customer would be charged for both disconnection and reconnection.

Citation: Finally, the City's water conservation ordinance authorizes staff to issue administrative citations that would have to be paid or challenged in court. This method could be used in cases like a multi-family property where terminating service or restricting flow to all households may not be an option.

3.5.2 Enforcement Methods

Enforcement is carried out in a number of ways during a water shortage. In cases such as a report of water waste, the first step is to communicate with the customer by telephone, letter, door tag, or by making personal contact in the field to educate them about regulations. Many times this contact is all that is required to get the problem resolved. If not, enforcement progresses to a written notice of violation. Beyond this, there are several methods in the City's existing water conservation and water shortage ordinances that can be used to enforce water restrictions and rationing regulations. These methods are described below.

Penalty fees: This method would apply in situations involving violation of water restrictions, if, after multiple warnings had been given, a violation continued to occur at an account. The fee would be added to a customer's utility bill along with a written notice sent to the customer in advance. The penalty fee would increase with subsequent violations, as follows:

- 1st violation \$100
- 2nd violation \$200
- 3rd violation \$500 (and each additional violation)

The City could consider higher penalty fees for large users that willfully violate water restrictions.

3.5.3 Exceptions

No water shortage plan can account for all situations. The exception procedure allows the Public Works Department to provide for special or exceptional circumstances that otherwise would create undue hardship for an individual customer or class of customers. An exception allows a customer to be relieved of a particular regulation or receive an increased allocation for the duration of the shortage. Therefore, it should be granted only when justified on specific grounds that warrant allocating more water than other similarly situated customers and when consistent with the intent of the water shortage regulations, while providing equal treatment of all customers.

Exception Measures

Following is a list of the City's exception measures:

- Under water restrictions, an exception application is not accepted unless the customer puts desired exception in writing.
- Under water rationing, an exception application should not be accepted unless an excess use fee has been assessed.
- Leaks would not qualify for an exception.
- It allows a resident who is not an account holder to force the customer of record to appeal.
- The process is administered by the Public Works Director.

The policy is to have the customer first demonstrate the demand reduction efforts taken to meet the restriction or allocation, and places responsibility for managing and monitoring water use on the customer. It also serves to minimize the number of exception applications from those merely seeking more water without having gone to the effort to try to live within their given allocation.

The policy would include a process that requires the Director of Public Works to make formal findings to authorize an exception. This is proposed to better articulate the standard that must be met in order to receive relief. The suggested language for such findings is as follows:

- Failure to do so would cause a condition affecting the health, sanitation, fire protection, or safety of the applicant or the public.
- Strict application of the allotment provisions imposes a severe or undue hardship on a particular business, or render it infeasible for a business or class of business to remain in operation.
- Alternative restrictions which achieve the same level of demand reduction as the restrictions from which an exception is being sought are available and are binding and enforceable.
- The customer has demonstrated to the Director's satisfaction that circumstances have changed warranting a change in the customer's allocation.
- Health care and retirement facilities using industry best management practices are eligible for an exception.
- Demonstration by a business of actions already taken to increase environmental sustainability that have reduced water consumption to the maximum extent feasible, as determined by the Public Works Director.

Additional recommendations regarding the exception process are as follows:

- That the denial of an exception may be appealed to an Appeals Board.

- The policy would adopt administrative procedures similar to those used by other cities for including appropriate information on an exception application, including the requirement that the applicant must demonstrate maximum practical reduction in water consumption.
- That the policy allow the Director to impose conditions requiring long-term water efficiency changes from customers as part of the exception process.

3.5.4 Appeals

The City's Municipal Code allows any water service customer who considers an enforcement action to have been erroneously undertaken to appeal their case to the City. The Public Works Director may consider the evidence presented by the customer and decide whether to uphold the enforcement action or to provide relief.

The difference between an exception and an appeal is that an appeal gives an individual the opportunity to challenge an official decision about an enforcement action. It is not the primary means to secure a larger allocation or get an exception to a water use regulation. However, as mentioned above, customers should be able to appeal a denial by the Public Works Director of such an exception request to an Appeals Board.

The most common reason for filing an appeal would be expected to contest large excess use fees that were levied while under water rationing, often due to a leak in the customers' plumbing fixture or system. The Finance Department may provide administrative relief, including forgiveness of excess use fees, for certain types of leaks that are considered to be beyond the customer's control, such as a leak that develops in an underground pipeline serving a property. Common maintenance items, such as a leaking toilet or failing automatic irrigation valve, that are considered to be customer's responsibility to control, would not be eligible for such forgiveness.

Recommendations Regarding Appeals

A new process could be added to allow a customer to request to use a portion of the excess use fee, on a one-time only basis, toward the installation of water conservation equipment in lieu of paying all of it to the City. If the customer already has water conserving fixtures such as high efficiency toilets, a high efficiency washing machine and indoor water saving fixtures installed then the City could provide a one-time forgiveness of excess use charges while under water rationing. To be considered for such forgiveness, the customer would be required to submit a completed survey and the City would provide them with educational information and water saving devices.

3.6 Water Shortage Recovery and Plan Termination

A water shortage ends when local rainfall, runoff, and reservoir storage levels improve to the point where the water system is once again capable of supporting unrestricted water demand. Any water use rules and regulations in effect at the time are officially rescinded by City Council and public notice is given that the water shortage is over. The Public Works Director would then oversee any remaining termination and plan review activities. These activities could include:

- Publicize gratitude for the community's cooperation;
- Restore water utility operations, organization, and services to pre-event levels;
- Document the event and response and compile applicable records for future reference;
- Continue to maintain liaison as needed with external agencies;

- Collect cost accounting information, assess revenue losses and financial impact, and review deferred projects or programs;
- Debrief staff to review effectiveness of actions, to identify the lessons learned, and to enhance response and recovery efforts in the future;
- Complete a detailed evaluation of affected facilities and services to prepare an “after action” report; and
- Update the Water Shortage Contingency Plan as needed.

4. Implementation

This section describes the essential elements of implementing the WSCP and discusses the approximate lead time needed to prepare for and activate a demand reduction program. The elements discussed below differ in the amount of staff time, effort, priority, and funding that is required for implementation; some steps can be taken relatively quickly and inexpensively while others will require substantial ongoing work and expense before they are able to be set up and applied as shortage management tools. The primary purpose of this section is to map out the major tasks and timelines required to implement the demand reduction program and to identify where additional ongoing efforts are necessary to address critical gaps.

4.1 Timeline for Declaring a Water Shortage

Planning for a water shortage may begin earlier in winter, and should commence early if winter conditions are unusually dry or are preceded by a dry year, but it is not usually until the end of April that the water supply outlook for the year ahead becomes certain. This leaves very little lead-time to prepare for implementing the water shortage contingency plan.

Long-range weather forecasting has not yet advanced to the point where it is possible to know in advance with certainty whether the City will experience a water shortage. Therefore, it is not practical to plan more than one season at a time, other than to prepare possible scenarios using multiple dry years for modeling purposes.

4.2 Process for Declaring a Water Shortage

Once the water shortage condition has been defined (as soon as reasonably certain), recommendations regarding water shortage rules and regulations consistent with this contingency plan are discussed with staff. Following consideration by staff, formal action declaring a water shortage is taken by City Council. The legal requirements for such action are covered in Section 350 et.seq. of the California Water Code. The code requires the following process be followed:

- That the City Council hold a public hearing on the matter;
- That the public hearing be properly noticed (minimum of publishing once in newspaper at least seven days prior to the date of the hearing); and
- Upon determining and declaring the existence of a water shortage, City Council may then adopt regulations and restrictions governing the use and delivery of water.

In accordance with Municipal Code section 8.45.030, rules adopted by the City Council establishing water use regulations become effective immediately after their publication in a newspaper of general circulation in the City.

4.3 Public Notification and Coordination

Even before formal declaration of a water shortage, a public information/media program should be activated to provide customers with as much advance notice as possible. Following Council action, all residents and businesses, not just customers of record, would need to be provided notice of water shortage rules and regulations via a variety of media and communications methods, including print and television media, internet, and other methods. The timeline for getting information out to the public on television, radio, and through newspaper articles is very short. Additional notification would occur through the City's residential newsletter and utility billings, which both require a longer lead time. It is also recommended that a separate website page be designed in advance if rationing becomes necessary to provide basic information about the program, conservation information, forms related to the program, contact information, etc., which then can be modified and expanded as necessary. Large water users and those businesses that are most likely to be seriously affected should be contacted directly in writing. Public notification will be provided for non-English speakers.

Coordination with other City departments and other public agencies can begin prior to formal declaration of a water shortage and can be accomplished through regular meetings, e-mail group updates, and presentations.

Getting the public involved and keeping them informed will require a significant expansion of existing water conservation public information and outreach efforts. There is printed information already available on how to conserve water and additional material can be developed to tailor to various types of water customers.

4.4 Personnel, Office Space and Equipment

Staffing for different levels of a drought will vary and would include staff from the Public Works Department including from the Water Resources & Conservation Program, Utilities and Operations Division, and from the Finance Department. Additional staffing may be needed.

The role of the administrative and office assistants would be to help with the processing of customer appeal and exception requests, administration of the Appeals Board meetings, and related correspondence. The Utilities and Operations Division Water Distribution staff would be responsible for patrolling the service area for violations of watering rules and restrictions and public contact, while Public Works and Finance staff would deal with the greatly increased customer contact (in person and by telephone) and would help with utility billing issues. The meter reader's role would be to support the additional customer service workload related to verifying meter reads, data-logging, and other field activities. Water conservation staff's role would assist customers with on-site water audits, provide conservation education, and conduct publicity. Water staff would provide leak detection and repair advise and instruction. Assistance may also be needed from the utility bill system programmers to provide utility billing system software services when water rationing is in effect.

Existing staff and any new hires would need to be quickly integrated into the organization with basic training in the following areas:

- Public Works Water Program functions, organization, facilities, and service area boundary;
- Customer service standards, City policies, and safety responsibilities;
- Computer equipment and the utility billing system;
- Water rates and charges and meter reading; and
- Water shortage regulations and enforcement processes.

In addition, all existing Public Works Department and Finance Department staff would need to understand water shortage rules and regulations in effect at the time to be able to respond to customer questions.

4.5 Effect of Water Shortages on Revenue

One of the negative consequences of using demand reduction to deal with water shortages is the corresponding reduction in revenue that occurs to the City's Water Enterprise Fund as a result of reduced water sales. To better understand the magnitude of revenue losses that the Water Enterprise Fund might experience, a table was developed based on 2020 fiscal year revenues, the most recent year for which complete revenue data is available. The table assumes the "ready-to-serve" or fixed monthly service charge that is based on meter size would remain unaffected while the volumetric portion of the Water Fund's revenue derived from water sales would vary by customer class in accordance with the allocation presented in Table 3.6 over the annual period in which water shortage regulations are likely to be in effect. Results are summarized in Table 4-1.

Table 4-1. Revenue losses associated with various water shortages.

Customer Category	FY 2020 Revenue			Revenue Losses Due to Reduced Water Sales					
	From Water Service Charges	From Water Sales	Total	Stage 1 (5%)	Stage 2 (15%)	Stage 3 (25%)	Stage 4 (35%)	Stage 5 (50%)	Stage 6 (>50%)
Single Family Residential	\$1,734,000	\$4,624,454	\$6,358,454	\$231,223	\$693,668	\$1,156,113	\$1,618,559	\$2,312,227	\$2,312,227+
Multi-Family Residential	\$84,000	\$1,654,442	\$1,738,442	\$82,722	\$248,166	\$413,611	\$579,055	\$827,221	\$827,221+
Business	\$88,200	\$1,519,814	\$1,608,014	\$75,991	\$227,972	\$379,954	\$531,935	\$759,907	\$759,907+
Municipal	\$13,500	\$276,422	\$289,922	\$13,821	\$41,463	\$69,105	\$96,748	\$138,211	\$138,211+
Irrigation	\$28,200	\$720,637	\$748,837	\$36,032	\$108,096	\$180,159	\$252,223	\$360,318	\$360,318+
Other	\$29,400	\$5,377	\$34,777	\$269	\$807	\$1,344	\$1,882	\$2,688	\$2,688+
Totals	\$1,977,300	\$8,801,146	\$10,778,446	\$440,057	\$1,320,172	\$2,200,286	\$3,080,401	\$4,400,573	\$4,400,573+
Estimated Net Revenue				\$10,338,389	\$9,458,274	\$8,578,160	\$7,698,045	\$6,377,873	>\$6,377,873

Table 4-1 shows revenue losses ranging from just over \$440,000 in a 5% water shortage situation to just over \$4.4 million in a water shortage disaster over 50%. Compared to the 2020 revenues of approximately \$10.8 million, the City's net revenue would be reduced to approximately \$10.3 million in Stage 1 and to approximately \$6.4 million in Stage 6. These revenue loss projections are the best estimates at this time and may underestimate the problem. There are other factors that could affect revenue during times of mandatory demand reduction that are more difficult to quantify, which include the following reasons:

- It is unlikely that system water use would immediately recover to normal levels in the months following a period of curtailment as modelled, thereby further depressing income;
- The table above does not include added operating costs of staff, equipment, and materials related to the water shortage response;
- The table above does not include potential penalties or excess use charges; and
- There would be relatively minor cost savings associated with reduced power and chemical usage at the WPCP.

Whatever the situation, one element of implementing this WSCP involves examining the Water Enterprise Fund budget for the coming year and recommending action(s) to reduce expenditures to lessen or overcome the revenue shortfall. Options include the following:

- Deferring planned capital improvements; and
- Considering possible rate adjustments or surcharges.

Another implementation issue associated with pricing is the Proposition 218 procedure for increasing water rates, fees, and charges. It is assumed that the proposed changes to both penalty fees and excess use fees discussed in Section 4 would require written notice to all customers, a public hearing, and consideration of written protests and comments before implementing the new fees. Given the minimum 45 day protest period, the entire Proposition 218 process can take several months to complete.

4.6 Household Survey

To implement water rationing for single residential customers in Stages 4 and 5, it is recommended that the City use the system developed by Goleta Water District in lieu of performing a household census or survey. The advantages are that it is simpler, easy to understand, more likely to be feasible with the utility billing system, avoids having to perform a household survey or census, allows adjustments for larger households, and achieves the fundamental goal of reducing peak season water use, particularly outdoor use. The Goleta system also requires that, for households larger than four, certain efficiency steps be taken before authorizing a larger allocation.

For the majority of households that have fewer than four residents, little opposition to this approach is expected. However, the one downside to this approach is that it does afford somewhat unequal amounts of water on a per person basis to households of different sizes, and so some may object to the City adopting this system. If, based on public input, a true per capita rationing system becomes the preferred approach to ration water instead of the Goleta model, the following describes the work involved to update the number of people residing at each account on the billing system. In the past this survey has been done by mail and is based fundamentally on the honor system. There are currently 6,060 accounts classified as single family residential customers on the water system. This task would involve data processing personnel to prepare data files for mailing, a mailing service vendor to provide printing and mailing services and to provide return envelopes, and additional temporary staff to handle data input. The task would also involve maintaining census data on a daily basis as household sizes change and new

utility accounts are established. The lead time necessary to conduct the survey and enter data is approximately 3 months.

The other major work item involved in a census-based approach to rationing involves configuring the utility billing system to calculate allotments based on household size, discussed below.

4.7 Utility Billing/Data Processing Capabilities

Implementing this WSCP will require utility billing system software that provides the necessary capabilities and flexibility to quickly shift from normal billing practices to water rationing mode. The billing system would need to be capable of, at a minimum, the following:

- Integrate penalty fees into the utility bill;
- Calculate rationing allocations, whether determined by per capita, per dwelling unit, or percentage of past use method;
- Maintain long-term water usage history;
- Calculate excess use fees;
- Address special needs customers (overwrite default allocation to handle rationing exceptions);
- Include notes and messages on customer bills;
- Handle special cases, such as multiple meters serving a single property; and
- Calculate seasonally varying landscape water budgets.

4.8 Customer Exceptions and Appeals

One of the actions that is triggered when City Council adopts the Water Shortage Contingency Plan is the establishment of an Appeals Board. Part of implementing this WSCP involves providing administrative support to the Appeals Board, including processing requests, preparing recommendations, posting agendas, attending meetings, preparing meeting minutes, and handling correspondence. After the Board's membership has been established and approved by City Council, the Appeals Board function can be implemented quickly, but depending on the stage of water shortage and number of appeals filed, may require substantial staff time over the course of the water shortage to address the resulting caseload.

4.9 Large Landscape Water Budgets

The City's Water Resources & Conservation Program offers a large landscape water budget program for the largest commercial customers. The program consists of developing water budgets for approximately 34 large landscape sites served by dedicated irrigation meters, offering water audits, and education. The project is designed so that water budgets can be quickly adapted for use as a water shortage management tool in Stages 3-5.

4.10 Monitoring Water Supply and Demand

Metered water consumption is reported on a bi-monthly basis through automated sales reports generated by the utility billing system.

Consumption by large users would be monitored on a more frequent basis, as determined feasible and practical by the Public Works Director. During severe supply shortages, water use status reports would be supplied to the Public Work Director. If the trend in consumption is such that the rate of drawdown at Hetch Hetchy is greater than anticipated, the City Manager and City Council are notified so that corrective

action (such as increased publicity and enforcement or consideration of declaring the next higher stage) can be taken.

4.11 Ongoing Implementation Steps

The final tasks in updating the Plan include the following steps:

- Preparing an updated water shortage ordinance;
- Preparing a proposed Proposition 218 notice that would be used in emergency planning to specify penalty and excess use fees.

The following implementation steps are recommended:

- Ensure the utility billing system database is able to meet the City's requirements for use in water rationing if it becomes necessary;
- Continue to evaluate supply, demand, and City population to ensure recommendations in this Plan are appropriate.
- As much as possible, prepare water shortage notices, announcements, materials, and mailing lists in advance, including materials for non-English speakers.
- Conduct monthly review of actual water use compared to projected use in the shortage stage for the given month to enable timely adjustments if anticipated shortage response is not obtained.

4.12 Plan Refinement/Re-Evaluation Process

The Water Shortage Contingency Plan is a living document and will need to be responsive to the effectiveness of conservation measures in the midst of a water shortage. The City will analyze monthly monitoring data, consult with all City Departments, and convene the Water Appeals Board to determine if adaptive measures need to be taken to achieve the necessary shortage reduction levels. In the case that the measures are not working as desired, the City will add new actions or refine current actions to achieve greater savings. Measures from a higher stage can be adopted into the current stage, such as requiring leak repairs within 24 hours rather than 72 hours in Stage 3. When updates are needed, the City will coordinate amongst all City Departments to refine the plan and provide updated information and measures to the City Council for approval.

References

Association of Bay Area Governments. (2019). Population Projections.

BAWSCA. (2020). *Regional Water Demand and Conservation Projections*. June 2020.

California Building Standards Commission. (2019). *California Green Building Standards Code: CALGreen*. California Code of Regulations Title 24, Part 11.

CONSOL. (2010). *Water Use in the California Residential Home*. California Homebuilding Foundation. January 26, 2010.

National Drought Mitigation Center. (2020). *U.S. Drought Monitor*. Accessed October 2020 from <http://droughtmonitor.unl.edu/>.

Pacific Institute. (2014). *Urban Water Conservation and Efficiency Potential in California*.

URS. (2004). *SFPUC Wholesale Customer Water Demand Projections Technical Report*.

Appendices

Appendix A – California Water Code, Sections 350
and 10632

Appendix A California Water Code Sections 350-359 and 10632 Water Code Section 350-359

350. The governing body of a distributor of a public water supply, whether publicly or privately owned and including a mutual water company, may declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.

351. Excepting in event of a breakage or failure of a dam, pump, pipe line or conduit causing an immediate emergency, the declaration shall be made only after a public hearing at which consumers of such water supply shall have an opportunity to be heard to protest against the declaration and to present their respective needs to said governing board.

352. Notice of the time and place of hearing shall be published pursuant to Section 6061 of the Government Code at least seven days prior to the date of hearing in a newspaper printed, published, and circulated within the area in which the water supply is distributed, or if there is no such newspaper, in any newspaper printed, published, and circulated in the county in which the area is located.

353. When the governing body has so determined and declared the existence of an emergency condition of water shortage within its service area, it shall thereupon adopt such regulations and restrictions on the delivery of water and the consumption within said area of water supplied for public use as will in the sound discretion of such governing body conserve the water supply for the greatest public benefit with particular regard to domestic use, sanitation, and fire protection.

354. After allocating and setting aside the amount of water which in the opinion of the governing body will be necessary to supply water needed for domestic use, sanitation, and fire protection, the regulations may establish priorities in the use of water for other purposes and provide for the allocation, distribution, and delivery of water for such other purposes, without discrimination between consumers using water for the same purpose or purposes.

355. The regulations and restrictions shall thereafter be and remain in full force and effect during the period of the emergency and until the supply of water available for distribution within such area has been replenished or augmented.

356. The regulations and restrictions may include the right to deny applications for new or additional service connections, and provision for their enforcement by discontinuing service to consumers willfully violating the regulations and restrictions.

357. If the regulations and restrictions on delivery and consumption of water adopted pursuant to this chapter conflict with any law establishing the rights of individual consumers to receive either specific or proportionate amounts of the water supply available for distribution within such service area, the regulations and restrictions adopted pursuant to this chapter shall prevail over the provisions of such laws relating to water rights for the duration of the period of emergency; provided, however, that any distributor of water which is subject to regulation by the State Public Utilities Commission shall before making such regulations and restrictions effective secure the approval thereof by the Public Utilities Commission.

358. Nothing in this chapter shall be construed to prohibit or prevent review by any court of competent jurisdiction of any finding or determination by a governing board of the existence of an emergency or of regulations or restrictions adopted by such board, pursuant to this chapter, on the ground that any such action is fraudulent, arbitrary, or capricious.

359. (a) Notwithstanding any other provision of law that requires an election for the purpose of authorizing a contract with the United States, or for incurring the obligation to repay loans from the United States, and except as otherwise limited or prohibited by the California Constitution, a public water agency, as an alternative procedure to submitting the proposal to an election, upon affirmative vote of four-fifths of the members of the governing body thereof, may apply for, accept, provide for the repayment together with interest thereon, and use funds made available by the federal government pursuant to Public Law 95-18, pursuant to any other federal act subsequently enacted during 1977 that specifically provides emergency drought relief financing, or pursuant to existing federal relief programs receiving budget augmentations in 1977 for drought assistance, and may enter into contracts that are required to obtain those federal funds pursuant to the provisions of those federal acts if the following conditions exist:

- (1) The project is undertaken by a state, regional, or local governmental agency.
- (2) As a result of the severe drought now existing in many parts of the state, the agency has insufficient water supply needed to meet necessary agricultural, domestic, industrial, recreational, and fish and wildlife needs within the service area or area of jurisdiction of the agency.
- (3) The project will develop or conserve water before October 31, 1978, and will assist in mitigating the impacts of the drought.
- (4) The agency affirms that it will comply, if applicable, with Sections 1602, 1603, and 1605 of the Fish and Game Code
- (5) The project will be completed on or before the completion date, if any, required under the federal act providing the funding, but not later than March 1, 1978.

(b) Any obligation to repay loans shall be expressly limited to revenues of the system improved by the proceeds of the contract.

(c) No application for federal funds pursuant to this section shall be made on or after March 1, 1978.

(d) Notwithstanding the provisions of this section, a public agency shall not be exempt from any provision of law that requires the submission of a proposal to an election if a petition requesting such an election signed by 10 percent of the registered voters within the public agency is presented to the governing board within 30 days following the submission of an application for federal funds.

(e) Notwithstanding the provisions of this section, a public water agency that applied for federal funds for a project before January 1, 1978, may make application to the Director of the Drought Emergency Task Force for extension of the required completion date specified in paragraph (5) of subdivision (b). Following receipt of an application for extension, the Director of the Drought Emergency Task Force may extend the required completion date specified in paragraph (5) of subdivision (b) to a date not later than September 30, 1978, if the director finds that the project has been delayed by factors not controllable by the public water agency. If the Drought Emergency Task Force is dissolved, the Director of Water

Resources shall exercise the authority vested in the Director of the Drought Emergency Task Force pursuant to this section.

(f) For the purposes of this section, "public water agency" means a city, district, agency, authority, or any other political subdivision of the state, except the state, that distributes water to the inhabitants thereof, is otherwise authorized by law to enter into contracts or agreements with the federal government for a water supply or for financing facilities for a water supply, and is otherwise required by law to submit those agreements or contracts or any other project involving long-term debt to an election within that public water agency.

Water Code Section 10632

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(f) Penalties or charges for excessive use, where applicable.

(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

(h) A draft water shortage contingency resolution or ordinance.

(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

Appendix B – Residential Water Rationing Allotments

Residential Water Rationing Allotments

(Monthly allotment, in CCF or 748 gallons/billing units)

	Stage 4 26-35% Deficiency	Stage 5 36-50% Deficiency
<p>Single Residential Accounts Up to 4 persons: Each Additional person:</p>	8 2	6.5 2
<p>Multiple Residential Accounts Allotment is <u>per dwelling unit</u> based on number of dwelling units on account:</p> <p style="text-align: right;">2-4: 5-20: Over 20:</p>	Separate irrigation meter serving property? No Yes	
	7 6 5	6 5 4
<p>Multiple Residential Accounts Alternative A Allotment is in gallons per person per day (gpcd) based on the number of permanent residents at the account:</p>	47 gpcd	45 gpcd
<p>Multiple Residential Accounts Alternative B (not applicable to 2-unit accounts) Where lot coverage, by dwelling units, is <35% of entire property</p>	Same allotment as single residential accounts	

Appendix C – Ordinance No 593 and Resolutions No
92-17 and No. 97-6

ORDINANCE NO. 593

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF MILLBRAE
AMENDING AND RESTATING IN ITS ENTIRETY CHAPTER 9,
"WATER CONSERVATION" OF TITLE 8 OF THE MILLBRAE MUNICIPAL CODE

The City Council of the City of Millbrae does hereby ordain
as follows:

**SECTION 1: AMENDMENT OF CHAPTER 9 OF TITLE 8 ON "WATER
CONSERVATION**

Sections 8-9.01 through 8-9.14, inclusive, of Chapter 9,
"Water Conservation" of Title 8 of the Millbrae Municipal Code
hereby are repealed and in their place the following Sections 8-
9.01 through 8-9.09, inclusive, are enacted:

Chapter 9

WATER CONSERVATION

Sections:

- 8-9.01 FINDINGS AND DETERMINATIONS.
- 8-9.02 DEFINITIONS.
- 8-9.03 REGULATIONS, PROHIBITIONS AND WATER
USE/CONSERVATION PRACTICES FOR ALL CUSTOMERS.
- 8-9.04 LANDSCAPING.
- 8-9.05 ALLOCATIONS USED AS WATER CONSERVATION GOALS.
- 8-9.06 CONSERVATION PLANNING AND PROGRAMS.
- 8-9.07 ENFORCEMENT.
- 8-9.08 WATER SHORTAGE EMERGENCY.
- 8-9.09 SEVERABILITY.

SECTION 8-9.01. FINDINGS AND DETERMINATIONS

The City Council of the City of Millbrae hereby finds and
determines that:

- A. The City obtains all of its water from the San
Francisco Water Department and is entirely dependent on the San

Francisco Water Department supply source for its water and that supply is limited and subject to ever increasing demands.

B. The continuation of Millbrae's economic prosperity is dependent on an adequate supply of water being available for current and future use.

C. It is the policy of the City to promote the conservation and efficient use of water and to prevent the waste of this valuable resource.

D. Landscapes are essential to the quality of life by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost to development.

E. Landscape design, installation, and maintenance can and should be water efficient.

F. Water use and conservation goals are set out in and can be achieved by appropriate implementation of the City's Urban Water Management, Water Shortage Contingency Plan and the Memorandum of Understanding Regarding Urban Water Conservation in California to which the City is a signatory.

G. Pursuant to the Water Conservation in Landscaping Act, Government Code Sections 65590, et seq., the "model" water efficient landscape ordinance adopted by the Department of Water Resources is binding upon and enforceable in the City of Millbrae (hereafter referred to as the "Model Water Efficient Landscape Ordinance").

H. This Ordinance is enacted to carry out certain statutory responsibilities of the City as a water purveyor to achieve the maximum beneficial use of available water resources and to prevent the waste, unreasonable use or unreasonable method of use of water.

I. The adoption of this Ordinance is categorically exempt from the California Environmental Quality Act pursuant to Section 15307 of Title 14 of the California Code of Regulations because this constitutes an action authorized by State law to ensure the maintenance, restoration, or enhancement of a natural resource where the regulatory process involves procedures for the protection of the environment.

SECTION 8-9.02. DEFINITIONS

For the purpose of this Ordinance, the following terms, phrases, words and their derivations shall have the meaning given herein and the definitions contained in the Model Water Efficient Landscape Ordinance are also incorporated herein. When not inconsistent with the context, words used in the present tense include the future, words in the plural number include the singular number and words in the singular number include the plural number. The word "shall" is always mandatory and not merely directory.

A. "Customer" is any person using water supplied by the Millbrae Water Division.

B. "Director" is the Director of Public Works/City Engineer of the City of Millbrae.

C. "Person" is any person, firm partnership, corporation, company or organization of any kind.

D. "Unit of Water" is 100 cubic feet of water or 748 gallons.

E. "Water" is water furnished and distributed to customers by the Water Division.

F. "Water Division" is the Millbrae Municipal Water Division.

SECTION 8-9.03. REGULATIONS, PROHIBITIONS, AND WATER USE/CONSERVATION PRACTICES FOR ALL CUSTOMERS

A. The regulations, prohibitions, and restrictions on the use of water set forth below shall apply to all customers.

1. Each customer shall promptly repair broken or defective plumbing, sprinkler, watering or irrigation systems which permit the escape or leakage of water. Use of water through any meter is prohibited when the customer has been given ten (10) days notice to repair broken or defective plumbing, sprinklers, water or irrigation systems and has failed to effect such repairs.

2. Hoses used for any purposes shall have positive shut-off valves.

3. No use of water shall be allowed which results in flooding or runoff in gutters, driveways or streets.

4. Service connections for new construction will be granted only if water saving devices or fixtures are incorporated into the plumbing system, such as low flow shower heads with shutoffs, and low flow water closets and all other conditions of this Ordinance and the Municipal Code are met.

5. Use of potable water for consolidation of backfill, dust control, soil compaction or other non-essential construction purposes should be limited to those situations where no other source of water can be used or is available. The use of groundwater and/or reclaimed water for such purposes is permitted when approved pursuant to applicable restrictions and regulations.

6. No water shall be taken or used from any fire hydrant or any unmetered City water system outlet/fitting/fixture unless specifically authorized by permit from the Director, except by legally constituted fire protection agencies for fire suppression purposes.

7. Covers shall be required for all new swimming pools and encouraged to be installed for existing pools.

8. Except for fire protection service lines, a pressure-reducing valve or valves that will limit the static water pressure to each floor of the structure to fifty pounds per square inch gauge shall be installed in all new or remodeled residential structures.

9. All new or remodeled residential, commercial, or industrial structures shall have insulation of hot water pipes

where such piping is located in attics, garages, crawl spaces or unheated spaces other than between floors or in interior walls to provide a maximum heat loss of fifty British thermal units per hour per linear foot for piping up to and including two inches in diameter, and one hundred British thermal units per hour per linear foot for all sizes greater than two inches in diameter.

10. In all new or remodeled commercial or industrial structures, a pressure reducing valve or valves to limit the static water pressure to eighty pounds per square inch gauge to the upper floor of the structure, shall be installed only if no supplemental internal pumping is anticipated. The intent of this section is to limit available water pressure to the structure consistent with uses of water on the premises.

11. Water used for all cooling purposes and for commercial car washes shall be recycled. Self service car washes may be excepted from this recycling requirement by the Director provided the Director finds that water pressure, application rate and time of operation limit the amount of water used to an acceptable quantity.

12. No single use of water shall be permitted where recirculation of water is economically and technically feasible. An economically feasible recirculation installation is defined as, over the useful life of the equipment to be installed, a system where the present worth of the cost of the water saved is more than the present worth of both the capital and annual operation and maintenance costs of the system. Such economic and

technical feasibility shall be determined by the user and reviewed by the Director. In the event there is a disagreement between the user and the Director, a review and final determination shall be made by the City Council.

13. All water service connections to the City water system shall be metered with City approved meters.

14. Homeowner-provided new irrigation systems and the expansion of existing irrigation systems for single and multiple family residences shall be low water use systems.

15. All new landscaping in homeowner-provided single and multi-family residences shall be drought resistant and/or designed for low water use to conserve irrigation water.

B. All customers are encouraged to comply with the water use/conservation practices set forth below.

1. Irrigation of lawns or ground cover in any area, including residential, commercial, industrial, or recreational/golf courses is recommended to be done only between the hours of 6:00 p.m. and 10:00 a.m.

2. Sidewalks, walkways, plazas, houses, businesses, driveways, patios, parking lots, tennis courts, buildings, awnings, or other hard surfaced areas should not be cleaned using water from hoses or by use of water directly from faucets or other outlets.

3. Restaurants, meeting rooms, banquet facilities, hotels and dining facilities should serve water to customers only upon the individual request of the person consuming the water.

4. Water used to fill or maintain decorative fountains or pools should be recycled.

SECTION 8-9.04. LANDSCAPING

New or rehabilitated landscaping shall be installed pursuant to all applicable provisions of the Model Water Efficient Landscape Ordinance, in Division 2, Title 23, California Code of Regulations Chapter 2.7, as it may be amended, and this Ordinance. Consistent with said model ordinance, landscaping of any open space, park, playground, golf course, or other open area shall be planned to conserve water through choice of plants, landscape design, and irrigation techniques. The development and use of the following water saving techniques shall be encouraged subject to relevant legal and economic constraints:

- (a) Use of native or drought resistant plants;
- (b) Use of water application systems that are controlled to supply water efficiently to meet the needs of the given plants in each situation, as for example: drip irrigation systems and low delivery sprinkler nozzles;
- (c) Use of grey water and sewage effluent for irrigation when water quality, environmental, public health, and economic conditions permit such use;
- (d) Collection and reuse of run-off water where possible; and
- (e) Scheduling of irrigations according to plant requirements.

SECTION 8-9.05. ALLOCATIONS USED AS WATER CONSERVATION GOALS

This Ordinance establishes a voluntary conservation program based on 1987 water usage and the allocation methodology that was in effect during the City's rationing program from the spring of 1991 through March of 1993. The Director shall maintain and update said allocation system and provide allocation information to all customers. The City may establish a system of incentives to recognize or reward customers who maintain water use within the allocation goals. The maintenance and use of this allocation methodology and information shall in no way establish a precedent for or constitute an a priori basis for future allocations in the event that mandatory rationing or more stringent conservation measures are reinstated.

The methodology for establishing allocation water conservation goals is described below for each category of accounts.

A. Allocation Goals for Residential Accounts

1. Summer Allocation Goals. During the "summer" months of April through November, bi-monthly accounts will be allocated 65% of the amount of water used during the corresponding months or billing periods in 1987.

2. Winter Allocation Goals. During the "winter" months of December, January, February and March, bi-monthly accounts will be allocated 85% of the amount of water used during the corresponding months or billing period in 1987.

3. Minimum Allocation Goals. The minimum amount of water for single-family residences and duplexes is set at 6 units

(4,488 gallons) per month. The minimum amount of water for multiple-family dwellings such as apartments, condominiums, triplexes and others is set at 5 units (3,740 gallons) per month. No allocation will be established at less than these amounts.

4. Maximum Allocation Goals. Initially, no single-family or duplex unit allocation will be greater than thirty-two (32) units per bi-monthly billing period for "summer" months or twenty-two (22) units per bi-monthly billing period for "winter" months.

B. Allocation Goals for Commercial/Industrial Accounts

Commercial, industrial and other non-residential bi-monthly accounts will be allocated 85% of the amount of water used during the corresponding months or billing periods in 1987 with the following exceptions:

Allocations for connections that serve both inside and outside/irrigation uses shall be adjusted to allocate only 40% of the estimated amount of water used for outside/irrigation uses in 1987 during the "summer" months of April through November. Outside/irrigation use is defined as the difference between the monthly consumption for the months of April through November and the average monthly consumption for the four months of January, February, March and December, all for 1987.

C. Allocation Goals for Irrigation Service Accounts

Accounts classified for irrigation will be 40% of the actual consumption for the same period in 1987. Where 1987 actual consumption data are not available, the Director shall establish

an appropriate allocation using relevant parameters and reflecting the equivalent of a 60% reduction from normal irrigation.

D. Allocation Goals for New Accounts

Initial allocations for new single-family residences and duplex accounts will be established at 12 units per billing cycle. Initial allocations for new multiple-family accounts such as apartments, condominiums, triplexes and others will be established at 10 units per billing cycle. Final allocations for single-family residence accounts will be calculated on the number of documented residents within a household. Allocations for the first two residents for single-family residence accounts will be established at 75 gallons per day each and 55 gallons per day for each subsequent resident. Final allocations for multiple-family residences will be established at 55 gallons per day for each documented resident. In the case of commercial or industrial customers, business data supplied to the Director will be the basis for establishing the allocation.

E. Allocation Goals Where No Past History Exists

When water records for calendar year 1987 are not available, do not exist for all or various portions of the year, or do not allow or provide the basis for establishment of equitable allocations, earlier records, records of customers with similar water uses or other parameters determined by the Director may be used to set or adjust individual allocations.

SECTION 8-9.06. CONSERVATION PLANNING AND PROGRAMS

The City's Urban Water Management Plan and the Memorandum of Understanding Regarding Urban Water Conservation in California set forth the requirements and goals for conservation plans and programs. These documents shall guide the City and the Director in the planning and execution of conservation programs. It is the policy of the City to provide conservation incentives and support services to customers, including conservation services, materials and supplies, and rebates, where appropriate, to the extent of available resources and in accordance with procedures established by the Director.

SECTION 8-9.06. ENFORCEMENT

It is unlawful for any person or entity to violate or to fail to comply with any of the requirements of this Ordinance. Unless otherwise provided in this Ordinance or the Millbrae Municipal Code, each such person or entity is guilty of a separate offense for each and every day during any portion of which any violation of any provision of this Ordinance is continued or permitted to be continued and shall be punished as herein provided.

Any violation of or failure to comply with the requirements in this Ordinance shall be an infraction subject to the penalties set forth in Section 1-1.01 of the Millbrae Municipal Code (Ordinance No. 564). Any willful and knowing violation of a requirement of the Ordinance may also constitute a misdemeanor

subject to the penalties set forth in Section 1-1.02 of the Millbrae Municipal Code (Ordinance No. 564).

Persons designated to issue citations hereunder and to enforce the rules and regulations of this Ordinance pursuant to the authority provided in Penal Code Section 836.5 are the Director of Public Works, Public Works Superintendent, Public Works Supervisor, Public Works Foreman, and the Water Resources and Conservation staff. The issuance of citations will normally follow the continued failure or impracticality of other warning enforcement measures.

SECTION 8-9.08. WATER SHORTAGE EMERGENCY

Notwithstanding the foregoing relating to conservation of water supplies, in times of a declared water shortage emergency pursuant to Section 350 et seq. of the California Water Code, certain additional mandatory water conservation practices will be necessary. The Water Shortage Contingency Plan adopted January 28, 1992 amending the Urban Water Management Plan shall provide the basis for such additional practices.

SECTION 8-9.09. SEVERABILITY

Should any provision of this Ordinance be determined to be invalid or unenforceable in particular circumstances by any court of competent jurisdiction, then such determination shall not affect any other provision of the Ordinance and all such other provisions shall remain in full force and effect.

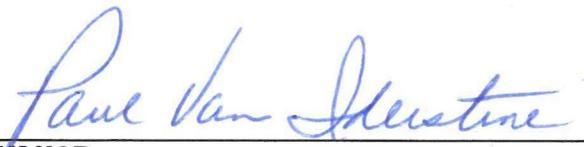
SECTION 2: EFFECTIVE DATE; POSTING; PUBLICATION

This Ordinance shall be in full force and effect as of April 1, 1993. The City Clerk shall publish this Ordinance within fifteen (15) days of its enactment in the San Mateo Times, a newspaper of general circulation printed and published in the County of San Mateo and circulated in the City of Millbrae. The City Clerk also shall post in the office of the City Clerk a certified copy of the full text of this Ordinance, along with the names of those Councilmembers voting for and against the Ordinance.

INTRODUCED at a regular meeting of the City Council of the City of Millbrae held on the 23 day of March, 1999.

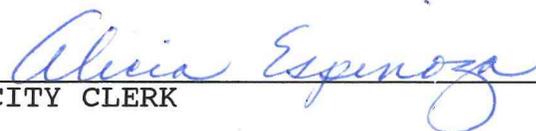
PASSED AND ADOPTED at a regular meeting of the City Council of the City of Millbrae held on the 13 day of April, 1993 by the following roll call vote:

AYES:	Councilmembers: Cannizzaro, Fogarty, Morse, Treseler, and Van Iderstine
NOES:	Councilmembers: None
ABSENT:	Councilmembers: None



MAYOR

ATTEST:



CITY CLERK

Appendix D – Hazard Mitigation Plan/Emergency Response Plan Flow Chart



Chapter 12.

City of Millbrae

12.1 Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
Colleen Haupt, Project Manager	Khee Lim, City Engineer
621 Magnolia Avenue	621 Magnolia Avenue
Millbrae, CA 94030	Millbrae, CA 94030
Telephone: 650-259-2354	Telephone: 650-259-2347
e-mail Address: chaupt@ci.millbrae.ca.us	e-mail Address: klim@ci.millbrae.ca.us

12.2 Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

- ❖ Date of Incorporation—January 14, 1948
- ❖ Current Population—23,136 (as of January 1, 2016 – CA DOF)
- ❖ Population Growth—3% growth since 2010 Census (21,536). As of January 2014, Millbrae had a total population of 22,605. According to census data, Millbrae’s population grew by four percent from 2000 to 2010. However, the Association of Bay Area Governments (ABAG) predicts that Millbrae’s growth will pick up over the next two decades, bringing the population to 25,700 by 2030.
- ❖ Location and Description—The City of Millbrae is located on the Peninsula, 15 miles south of San Francisco. The boundaries of this city extend roughly from the Bayshore Freeway on the east to Skyline Boulevard on the west. This distance is approximately 1.7 miles. The distance between the north and south city limit line is approximately 2.05 miles. The City of Millbrae has approximately 100 employees with an operating budget of \$52 million. The City of Millbrae borders the following San Mateo County jurisdictions: Burlingame to the south, Pacifica to the West, San Bruno and South San Francisco to the North.
- ❖ Brief History—Millbrae boasts over 22,000 residents of diverse ethnic, national, and cultural backgrounds. Residents are employed in various industries throughout the Bay Area and children attend one of five public elementary schools, or private schools. The City's senior citizen community, with the eager generosity of the City's many service clubs and private donations, recently dedicated an attractive new senior wing within the Millbrae community center. Millbrae's approach is demarcated by a picturesque new overpass. A small city with global vision, Millbrae proudly nurtures Sister City relationships with La Serena, Chile, Mosta, Malta, and its newest Sister City Kaiping, China.

The City of Millbrae has experienced its share of disasters, which include the Loma Prieta Earthquake of 1989, the winter storms of 1998 which resulted in landslides in the area of Sleepy Hollow,



Clearfield, and Morningside as well as flooding around the Westin and Clarion Hotels. In the year 2000 Millbrae experienced the Crestview landslide.

Major Government facilities include the Millbrae Park and Recreation Center, the City Hall complex, which contains City Administration and San Mateo County Sheriff's Office Millbrae Patrol Bureau, two fire stations, the Chetcuti Community Center and a water treatment and corporation yard. Millbrae is also home to the Bart Intermodal Station, which is a transportation hub for BART, CalTrain and Samtrans.

- ❖ Climate—According to the National Weather Service, Millbrae enjoys a typical Mediterranean climate featuring cool, wet winters and dry, mild summers. Night and morning fog are common during the summer months. Frequent, westerly sea breezes keep temperatures relatively mild throughout the year with highs in the middle fifties and lows in the lower forties during the winter and highs in the lower seventies and lows in the lower fifties during the summer. Annual precipitation ranges from 20 inches in the lowlands to 32 inches in the hills near Skyline Boulevard and I-280; most of the rain falls from November through April. Snow is very rare; the last measurable occurrence was on February 5, 1976. The nearest National Weather Service station is at the nearby San Francisco International Airport, where records go back to early 1927.
- ❖ Governing Body Format—Millbrae operates as a General Law City, providing for a Council/Manager form of government that clearly distinguishes the legislative power of the City Council from the administrative powers of the City Manager.
- ❖ The five-member City Council is elected directly by the residents of Millbrae. As the legislative branch of the government, the City Council makes final decisions on all major City matters. The Council adopts ordinances and resolutions necessary for efficient governmental operations, approves the budget, and acts as a board of appeals. The Council appoints the City Manager and City Attorney, as well as the members of the City's boards and commissions. The City Council assumes responsibility for the adoption of this plan; the City Manager will oversee its implementation.
- ❖ Development Trends— The City of Millbrae, incorporated in 1948, was a small settlement largely dependent on market farming, the Mills Estate and Dairy, West Coast Porcelain Works (later the Royal Container Company), and vegetable and flower farming until World War 2. Southern Pacific Railroad, the 40-line streetcar line, El Camino Real and Skyline Road (in the approximate location of I-280) linked the settlement to nearby towns and San Francisco. Millbrae in the period 1920-1950 was beginning its transformation from its roots as a farming village supplying the produce markets of San Francisco to a small town. Development of the town was largely governed by transportation features: the railway, streetcar line, highways and airport.
- ❖ Properties might also reflect the importance of modern transportation networks in their architectural style. For example, properties that show the influence of new, speedier forms of transportation emerged in a variant of Art Deco style known as Streamline Moderne. Streamline Moderne buildings borrowed curves, shiny metal, circular windows from newly modernized cars, train and ships. Smooth surfaces and “speed lines” are also characteristics of the style.



- ❖ Millbrae’s development continues to be shaped by the transportation network that surrounds it. As a major hub on the networks that connect rail (Caltrain), mass transit (BART and SAMTRANS) and air travel (SFO), the city has attracted higher density commercial and residential development along the rail line and State Highway 82/El Camino Real. The downtown area on Broadway and the west side of El Camino Real north of Victoria Street still display some of the small town feeling of the mid-20th Century.
- ❖ The City of Millbrae General Plan identifies policies and programs addressing the development and redevelopment of land, preservation of parks and open spaces, provision of housing for current and future residents, conservation of natural resources, improvement of the circulation and transportation system, control of noise and protection of life and property from hazards. Additionally, the General Plan assures that tax money is generated to provide high levels of public services and maintenance of public facilities and infrastructure.

12.3 Capability Assessment

An assessment of legal and regulatory capabilities is presented in Table 12-1. An assessment of fiscal capabilities is presented in Table 12-2. An assessment of administrative and technical capabilities is presented in Table 12-3. Information on National Flood Insurance Program (NFIP) compliance is presented in Table 12-4. Classifications under various community mitigation programs are presented in Table 12-5. An assessment of education and outreach capabilities is presented in Table 12-6.

TABLE 12-1. LEGAL AND REGULATORY CAPABILITY

	Local Authority	Other Jurisdiction Authority	State Mandated
Building Code <i>Comment: Local Building Official and Fire Marshal for Standards Codes – Muni Code 9.05.010 – Adopted California Building Code, 2013 Edition, 11/26/2013, Ordinance 746</i>	Yes	No	Yes
Zoning Code <i>Comment: Community Development MMC 10.05, Adoption of Zoning Plan, Adopted 10/13/09, Ordinance 726MMC 10.05</i>	Yes	No	No
Subdivisions <i>Comment: Public Works & Community Development MMC 10.15, Adopted 6/17/51, Ordinance 69,</i>	Yes	No	No
Stormwater Management <i>Comment: Public Works MMC 8.70 & MRP 2.0 Order No. R2-2015-0049 NPDES Permit No. CAS612008</i>	Yes	Yes	Yes
Post-Disaster Recovery <i>Comment: Community Development with Public Works San Mateo County Public Works Mutual Aid Resolution 074124 adopted 10/20/05</i>	Yes	No	No



TABLE 12-1. LEGAL AND REGULATORY CAPABILITY

	Local Authority	Other Jurisdiction Authority	State Mandated
Real Estate Disclosure <i>Comment: County Assessors Office. CA. State Civil Code 1102 requires full disclosure on Natural hazard Exposure of the sale/re-sale of any and all real property.</i>	No	Yes	Yes
Growth Management <i>Comment: Community Development The City of Millbrae General Plan (1998-2015) addresses growth management through the following land use goals: Preserve the Quality of Residential Neighborhoods, Promote Property Site Planning, Architectural Design and Property Maintenance, Maintain a Variety of Land Uses, Support Economic Development and revitalize and Enhance Commercial Areas, and Provide Adequate Services and Facilities. The Housing and Circulation Elements provide guidance on managing future growth. The Chapter 4 Circulation Element identifies current traffic, circulation, and parking issues, presents current traffic counts for City arterials and adjoining freeways, and discusses relevant regional transportation plans. Recommended policies and implementing actions address current and anticipated needs. The Chapter 5 Housing Element provides goals and objectives to guide housing requirements, needs, policies, programs and address future trends and projections.</i>	Yes	No	Yes
Site Plan Review <i>Comment: Community Development The City of Millbrae addresses Site Plan Review in the General Plan (1998-2015) Land Use Goal 2 (LU2): Promote Proper Site Planning, Architectural Design and Property Maintenance. The City of Millbrae Planning and Zoning Code (effective November 13, 2009) establishes the requirements for the project site plan design review and entitlement process. In addition to Planning, all proposed projects are reviewed by the Building, Public Works and Fire Departments to ensure they meet all local, state and federal requirements and obtain all of the necessary permits and entitlements, including Planning Commission and/or City Council approval before construction.</i>	Yes	No	No
Environmental Protection <i>Comment: Community Development with Public Works The Community Development Department evaluates all proposed development projects for environmental impacts under the California Environmental Quality Act/National Environmental Protection Act (CEQA/NEPA)</i>	Yes	No	Yes
Flood Damage Prevention <i>Comment: Public Works MMC 8.50, Flood Damage Prevention, Adopted 9/23/03, Ordinance 688MMC 8.50</i>	Yes	No	Yes
Emergency Management <i>Comment: This role and position is currently be defined for assignment. (Municipal Code with Title 19, Division 2)</i>	Yes	No	Yes



TABLE 12-1. LEGAL AND REGULATORY CAPABILITY

	Local Authority	Other Jurisdiction Authority	State Mandated
Climate Change	Yes	No	No

Comment: *Community Development with Public Works*

The City has not formally adopted a Climate Action Plan. However the City has adopted and implemented a number of policies, programs and projects to address the reduction of GHG emissions and related efforts to improve sustainability. The following are the City’s Goals and Policies:

Climate Protection and Sustainability Goals and Policies:

- *U.S. Mayor’s Climate Protection Agreement, Adopted 6/12/07, Resolution 07-31.*
- *Participated in ICLEI- Cities for Climate Protection Campaign, Adopted 6/12/07, Resolution 07-32.*
- *Resolution 09-68, adopted 9/22/09: Establishes specific Green House Gas (GHG) emissions reduction goals for municipal operations and communitywide GHG emissions sources in the City of Millbrae.*
- *Currently participating in the countywide RICAPS program for regionally-integrated climate action planning, GHG inventories and CAP development.*
- *Currently preparing a draft CAP pursuant to adopted targets and in coordination with RICAPS.*

The Safety Element of the City of Millbrae General Plan (1998) contains policies related to climate change effects and adaptation:

Policy S1.1 Location of A Future Development; Policy S1.8 Reforestation

- *Policy S1.12 Ordinances and Codes*
- *Policy S1.17 Drainage Channels, Hydraulic Pumps and Conduits*
- *Policy S1.18 Hazards*
- *Policy S1.19 Rise in Sea level*
- *Policy S2.2 Emergency Services Facilities*
- *Policy S2.3 Hazardous Awareness*

The San Mateo County Sea-Level Rise Vulnerability Assessment: The City of Millbrae is participating in this regional assessment to inventory of all assets vulnerable to sea-level rise, identify specific vulnerabilities of 30 representative assets, issue initial recommendations on adaption measures, and improve flooding and sea-level rise mapping. The assessment is currently scheduled for completion in August, 2016.

Other		No	No
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Comment:

General or Comprehensive Plan	Yes	No	Yes
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Is the plan equipped to provide linkage to this mitigation plan? Yes.

Comment: *The City of Millbrae has begun a two-year process to update the General Plan, which was last adopted in 1998. The General Plan will guide decision making for land use, transportation, infrastructure, community design, environmental issues, and other important topics that impact the community. The General Plan is a long-range planning document that will look ahead to 2040. The General Plan Update will include a specific plan for the Downtown Priority Development Area and an Active Transportation Plan. The City contracted the consultant, Mintier Harnish to prepare the General Plan. The project began in March, 2016 and is estimated to be completed in the fall of 2017. The Updated General Plan will include linkages to the Local Hazard Mitigation Plan*





TABLE 12-1. LEGAL AND REGULATORY CAPABILITY

	Local Authority	Other Jurisdiction Authority	State Mandated
<p>Capital Improvement Plan</p> <p><i>What types of capital facilities does the plan address? Utilities, building improvements, engineering, equipment, and similar projects. Specific projects in the 2015-2020 CIP include street improvements, storm drains, water system, sewer collection system, water pollution control plant, public facilities, parks, studies and technology, and garage (listed in budget)</i></p> <p><i>How often is the plan updated? Annually</i></p> <p>Comment: Public Works with Finance</p>	Yes	No	No
<p>Floodplain or Watershed Plan</p> <p>Comment: Public Works</p> <p><i>MMC 8.50, Flood Damage Prevention, Adopted 9/23/03, Ordinance 688. Includes subsections such as 8.50.040 Basis for establishing the areas of special flood hazard, 8.50.080 Warning and disclaimer of liability, and 8.50.110 Designation of the floodplain administrator. The City Engineer or Director of Public Works are appointed to administer and enforce policies outlined in this chapter. Section 8.50.050 Compliance required ensures public safety by prohibiting construction in floodplains without proper permitting and code compliance. MMC 8.50</i></p>	No	No	No
<p>Stormwater Plan</p> <p>Comment: Public Works with Community Development</p> <p><i>MMC 8.70, Adopted in 6/14/94. Ordinance 607, The purpose of this chapter is to ensure the future health, safety and general welfare of city citizens: Eliminating non-storm water discharges to the municipal separate storm sewer; Controlling the discharge to municipal separate storm sewers from spills, dumping or disposal of materials other than storm water; Reducing pollutants in storm water discharges to the maximum extent practicable. The intent of this chapter is to protect and enhance the water quality of our watercourses, water bodies and wetlands in a manner pursuant to and consistent with the Clean Water Act. (Ord. 607, § 1; 1976 Code § 8-14.02). MMC 8.70</i></p>	Yes	No	No
<p>Habitat Conservation Plan</p> <p>Comment: N/A – if one developed would be defined by Community Development</p>	No	No	No
<p>Economic Development Plan</p> <p>Comment: Community Development, Comprehensive Annual Financial Report</p> <p><i>2013 Millbrae Economic Development Plan. Adopted 2/12/13. (By William R. Kelly, Kelly Associates Management Group). There was an update to the 2013 Millbrae Economic Development Plan completed Feb. 2015 by William R. Kelly.</i></p> <p><i>The 2013 Economic Development Plan provides an analysis of City’s current economic profile, identifies certain financial issues facing the City that are interrelated with economic development, assesses the relative strengths, weakness, opportunities and threats that are perceived by community stakeholders, and offers short-term and long-term strategies for addressing economic needs.</i></p>	Yes	No	No
<p>Shoreline Management Plan N/A</p> <p>Comment: Managed by Bay Area Conservation Development District with U.S. Fish and Wildlife Service</p>	No	Yes	No



TABLE 12-1. LEGAL AND REGULATORY CAPABILITY

	Local Authority	Other Jurisdiction Authority	State Mandated
Community Wildfire Protection Plan Comment: Fire Marshal and Building Official Annex to 2010 Association of Bay Area Governments Local Hazard Mitigation Plan, Millbrae <i>The Annexation to the MJ-LHMP outlines mitigation measures that Millbrae is required to implement to decrease the loss or risk to life and property in event of a hazard, including fire. Exhibit C to the annex lists mitigation actions and priorities adopted by Millbrae to address fire hazards. The Plan identifies the Fire Chief as a liaison between the Millbrae Fire Department and the City in terms of emergency response issues, and the City's Emergency Response Operating Center.</i> Community Wildfire Protection Plan <i>In 2010, a collaborative group consisting of CAL FIRE, Resource Conservation District of Santa Cruz County, San Mateo Resource Conservation District, and the US Fish and Wildlife Service worked together to create a draft Community Wildfire Protection Plan (CWPP) which includes the city of Millbrae in the planning area. The Plan identifies fire protection agencies with jurisdiction, volunteer organizations, large land owners, communities, neighborhoods, open spaces and other environmental resources in the planning area that may be at risk of fire hazards.</i> Municipal Code Chapter 9.30 (Fire Code) <i>Chapter 9.30 of the Millbrae Municipal Code (Fire Code) was last updated as a result of Ordinance 757 passed October 27, 2015. The code identifies safety information, restricted use of flammable materials, and other detailed rules for handling combustible or flammable goods. The code also identifies climate conditions, geographical conditions, and topographical conditions that may exacerbate fire hazards in the city of Millbrae. Some of these conditions include prolonged periods of drought in combination with warm western winds and increasing temperatures due to climate change, and increasing response times for fire equipment and other emergency services due to urban sprawl and physical locations of residential dwellings.</i>	Yes	No	No
Forest Management Plan Comment: National Forest Service	No	No	Yes
Climate Action Plan Comment: Public Works with Community Development <i>The City has not formally adopted a Climate Action Plan. However the City has adopted and implemented a number of policies, programs and projects to address the reduction of GHG emissions and related efforts to improve sustainability. Please Climate Change Section for more details.</i>	Yes	No	No
Other Comment: Urban Water Management Plan (2010, 2015), Millbrae Station Area Specific Plan (2016)	Yes	No	No
Comprehensive Emergency Management Plan Comment: This role and position is currently being defined for assignment.	Yes	No	No



TABLE 12-1. LEGAL AND REGULATORY CAPABILITY

	Local Authority	Other Jurisdiction Authority	State Mandated
Threat & Hazard Identification & Risk Assessment	Yes	No	No
<p>Comment: <i>Community Development to align with General Plan.</i> <i>The City of Millbrae addresses the following hazard and safety issues as required by federal, state, regional and local agencies: Emergency Preparedness, Seismic and Geologic Hazards, Flood Hazards, Fire Hazards, Aviation Hazards, Hazardous Materials and Noise (Ground Transportation, Aircraft, Non-Transportation).</i></p> <p><i>MMC 4.65, Adopted 12/27/83, Ordinance 476. Chapter 4.65 addresses the storage of hazardous materials to ensure the protection of health, life, resources, and property through prevention and control of unauthorized discharges of hazardous materials. Chapter 4.65 requires a permit for the storage of any hazardous material as well as regulates the manner in which materials are stored.</i></p> <p><i>In 2010 Millbrae officials, in cooperation with the San Mateo County Fire Department and the San Mateo County Sheriff's Office of Homeland Security and Emergency Services, drafted the Millbrae Local Hazard Mitigation Plan Annex (LHMP) to ensure the most effective and economical allocation of resources for protection of human health, property and the environment in the event of an emergency or disaster.</i></p> <p><i>2015 Multijurisdictional Local Hazard Mitigation Plan and Millbrae Annex: In September of 2015, the San Mateo County Emergency Manager's Associate selected a consultant to update the 2010 Multijurisdictional Plan. The consultant has been working on the update and it is anticipated that the update will be completed in the summer of 2016. In addition to the Multijurisdictional Annex, individual jurisdictions and districts within the County will be preparing their own specific Annex which will tier off of the County-wide plan. The City of Millbrae will be preparing an updated Annex as part of this process.</i></p> <p><i>Geologic and Seismic Hazards: MMC Chapter 9.05 adopts the 2013 City Building Code (CBC). The CBC contains requirements for seismic safety. All new development in the city is required to adhere to the standards and regulations in the code. Chapter 9.65 of the municipal code addresses the seismic identification program for unreinforced masonry buildings.</i></p>			
Post-Disaster Recovery Plan	Yes	No	No
<p>Comment: <i>This role and position is currently being defined for assignment.</i></p>			
Continuity of Operations Plan	Yes	No	No
<p>Comment: <i>This role and position is currently being defined for assignment.</i></p>			
Public Health Plan	No	Yes	No
<p>Comment: <i>San Mateo County Health System</i></p>			

TABLE 12-2. FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	Yes, Water and Sanitation
Incur Debt through General Obligation Bonds	Yes





TABLE 12-2. FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Other	No

TABLE 12-3. ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Community Development / Municipal / Contract Support/Public Works
Engineers or professionals trained in building or infrastructure construction practices	Yes	Community Development / Municipal / Contract Support/Public Works
Planners or engineers with an understanding of natural hazards	Yes	Community Development\Local/ Contract Support/Public Works
Staff with training in benefit/cost analysis	Yes	Community Development\Local/ Contract Support
Surveyors	Yes	/ Contract Support (San Mateo County Public Works)
Staff capable of making substantial damage estimates	Yes	Community Development\Local/ Contract Support
Personnel skilled or trained in GIS applications	Yes	Community Development\Local/ Contract Support/Public Works
Scientist familiar with natural hazards in local area	Yes	Community Development\Local/ Contract Support
Emergency manager (via San Mateo County Emergency Operation Services)	Yes	Community Development\Local/ Contract Support
Grant writers	Yes	Community Development\Local/ Contract Support/Public Works

TABLE 12-4. NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

Criteria	Response
When did the community enter the NFIP?	1981
When did the Flood Insurance Rate maps become effective?	September 30, 1981
What local department is responsible for floodplain management?	Public Works & Community Development
Who is your floodplain administrator? (department/position) Per Municipal Code section 8.50.260.2	City Planner, Building Official, Public Works Director, City Engineer





TABLE 12-4. NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

Criteria	Response
<ul style="list-style-type: none"> Is this a primary or auxiliary role? 	Auxiliary
Are any certified floodplain managers on staff in your jurisdiction?	No
What is the date of adoption of your flood damage prevention ordinance?	Ordinance 688, 1976
<ul style="list-style-type: none"> Does your floodplain management program meet or exceed minimum requirements? 	Meet
When was the most recent Community Assistance Visit or Community Assistance Contact?	11/20/2007
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction?	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program?	Yes
<ul style="list-style-type: none"> If so, what type of assistance/training is needed? 	Training on any new regulations.
Does your jurisdiction participate in the Community Rating System (CRS)?	No
<ul style="list-style-type: none"> If so, is your jurisdiction seeking to improve its CRS Classification? 	Yes
How many Flood Insurance policies are in force in your jurisdiction?	61
<ul style="list-style-type: none"> What is the insurance in force? What is the premium in force? 	\$18,323,800 \$61,392
How many total loss claims have been filed in your jurisdiction?	38
<ul style="list-style-type: none"> How many claims were closed without payment/are still open? What were the total payments for losses? 	14 CWOP \$178,560.42

TABLE 12-5. COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule – Currently participating in the process to receive a rating.	Yes	TBD	TBD
Public Protection	No	N/A	
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A





TABLE 12-6. EDUCATION AND OUTREACH

Criteria	Response
Do you have a Public Information Officer or Communications Office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website?	Yes
<ul style="list-style-type: none"> ▪ If yes, please briefly describe. 	Link to the last Hazard Mitigation Annex and Emergency Preparedness information
Do you utilize social media for hazard mitigation education and outreach?	Yes – PD & FD No – City of Millbrae
<ul style="list-style-type: none"> ▪ If yes, please briefly describe. 	FD, PD with focus on public safety in general.
Do you have any citizen boards or commissions that address issues related to hazard mitigation?	Yes
<ul style="list-style-type: none"> ▪ If yes, please briefly specify. 	Muni Code - Emergency Services Disaster Board
Do you have any other programs already in place that could be used to communicate hazard-related information?	Yes
<ul style="list-style-type: none"> ▪ If yes, please briefly describe. 	CERT program
Do you have any established warning systems for hazard events?	Yes
<ul style="list-style-type: none"> ▪ If yes, please briefly describe. 	SMC Alert via PD and FD

12.4 Integration with Other Planning Initiatives

The following describe the jurisdiction's process for integrating the hazard mitigation plan into local planning mechanisms.

12.4.1 Existing Integration

The following plans and programs currently integrate the goals, risk assessment and/or recommendations of the hazard mitigation plan

- ❖ General Plan – Community Development & Public Works: The General CIP Storm Projects-Storm Drain System Master Plan will integrate information and link with the LHMP be prepared to address deficiencies in the 2015 General system. The Master Plan Update, in the Hazards & Safety Element will link with LHMP.
- ❖ New FEMA maps: The City of Millbrae has received the FEMA Flood Map Update in 2016 and Public Works will update flood insurance information as needed based on the updated maps. The FEMA Flood Map Update for 2016 is in the draft stage and there will be additional opportunities for the City to comment on the new FEMA flood maps.



Opportunities for Future Integration

The following plans and programs do not currently integrate the goals, risk assessment and/or recommendations of the hazard mitigation plan, but provide an opportunity for future integration:

- ❖ Grant participation opportunities (FEMA) which the city will collaboratively work on, with the Fire and Sheriff's departments
- ❖ Participation in more rating programs and will work collaboratively with the Fire and Sheriff's departments
- ❖ Mutual Aide Agreements-San Mateo County Public Works Mutual Aid Agreement has been established in 2015. Protocols and Standard Operating Procedures have also been established
- ❖ Update Flood Damage Prevention Ordinance to 2004 standards
- ❖ Increased integration with public outreach initiatives

12.5 Jurisdiction-Specific Natural Hazard Event History

Table 12-6 lists all past occurrences of natural hazards within the jurisdiction.

TABLE 12-6. NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Crestview Landslide & Pinehurst Court		February 2000	\$11,000,000
Sleepy Hollow, Clearfield & Morningside Landslide	DR-1203	February 1998	Unknown
1989 Loma Prieta Earthquake	DR-845	October 1989	Unknown
Landslide @ 21 & 25& 29 Via Canon	DR-677	February 1983	Not available

12.6 Jurisdiction-Specific Vulnerabilities

Repetitive loss records are as follows:

- ❖ Number of FEMA-identified Repetitive-Loss Properties: 0
- ❖ Number of FEMA-identified Severe-Repetitive-Loss Properties: 1
- ❖ Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 0

Other noted vulnerabilities include:

- ❖ City Water Storage Tanks are not up to current seismic codes. Tanks have been in service since 1970 and have passed their useful life. The City of Millbrae recently completed the Water Storage Tanks Master Plan and is actively seeking funding to implement the projects recommended in the Master Plan.



- ❖ Aging water distribution system. Majority of the 75 miles of water distribution system are also over 60 years old and in urgent need of replacement and retrofit
- ❖ Aging sanitary sewer collection system. Majority of the 55 miles sanitary sewer mains are over 60 years old and in urgent need of replacement.

12.7 Hazard Risk Ranking

Table 12-7 presents the ranking of the hazards of concern.

TABLE 12-7. HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)	Category
1	Earthquake	48	High
2	Severe Weather	33	Medium
3	Flood	18	Medium
4	Landslide	18	Medium
5	Drought	3	Low
6	Dam Failure	0	Low
7	Wildfire	0	Low

12.8 Hazard Mitigation Action Plan and Evaluation of Recommended Actions

Table 12-8 lists the actions that make up the City of Millbrae hazard mitigation action plan. Table 12-9 identifies the priority for each action. Table 12-10 summarizes the mitigation actions by hazard of concern and the six mitigation types.

TABLE 12-8. HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Action #MB-1: Water System Inter-Tie with San Francisco Airport						
Existing	Drought, Earthquake	2, 4, 5, 7, 8, 10 & 11	City of Millbrae	Medium	Water Enterprise Fund	Short Term
Action #MB-2: Water Storage Tanks Seismic Upgrade/Retrofit/Replacement						
Existing	Drought, Earthquake	2, 4, 5, 7, 8, 10 & 11	City of Millbrae	High	Water Enterprise Fund & SRF	Long Term
Action #MB-3: Tree Trimming Program						
New & Existing	Severe Weather, Wildfire	1 & 2	City of Millbrae	Low	General Fund	On Going
Action #MB-4: Emergency Evacuation Warning System & Shelter						



TABLE 12-8. HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Existing	Earthquake, Landslide, Wildfire, Flood, Tsunami	2, 3, 6, 9 & 10	City of Millbrae	High	General Fund	Long Term
Action #MB-5: Construct New Public Works Corporation Yard West of US101						
New	Earthquake, Flood, Tsunami	1, 4, 6 & 11	City of Millbrae	High	General Fund & Enterprise Funds	Long Term
Action #MB-6: Inspect and Retrofit Millbrae Avenue Overpass						
Existing	Earthquake	1, 4, 6 & 11	City of Millbrae	Medium	General Fund	Ongoing
Action #MB-7: Retrofit, acquire, or relocate the identified SRL property within Millbrae.						
Existing	Flood	1,3,4,5,6,7, 8,11	City of Millbrae	High	HMGP, PDM	Long Term
Action G-1 —Where appropriate, support retrofitting, purchase, or relocation of structures in hazard-prone areas to prevent future structure damage. Give priority to properties with exposure to repetitive losses.						
Existing	All	1, 3, 4, 5, 6, 7, 11	Jurisdictions	High	FEMA Hazard Mitigation Grants	Long-term (depending on funding)
Action G-2 —Consider participation in incentive-based programs such as the Community Rating System, Tree City, and StormReady.						
New and existing	All	All	Jurisdictions	Low	General Fund	Long-term
Action G-3 —Maintain good standing under the National Flood Insurance Program by implementing programs that meet or exceed the minimum NFIP requirements. Such programs include enforcing an adopted flood damage prevention ordinance, participating in floodplain mapping updates, and providing public assistance and information on floodplain requirements and impacts.						
New and existing	Flooding	2, 3, 5, 6, 8	San Mateo County Unincorporated and Municipalities with SFHAs	Low	General Fund	Short-term and ongoing
Action G-4 —Where feasible, implement a program to record high water marks following high-water events.						
New and existing	Flooding, Severe Weather	1, 3, 4, 5, 6	Jurisdictions	Medium	General Fund; FEMA Grant Funds (Public Assistance)	Long-term
Action G-5 —Integrate the hazard mitigation plan into other plans, programs, or resources that dictate land use or redevelopment.						
New and existing	All	1, 2, 3, 4, 5, 6, 7, 8, 10	Jurisdictions	Low	General Fund	Short-term
Action G-6 —Provide incentives for eligible non-profits and private entities, including homeowners, to adapt to risks through structural and nonstructural retrofitting.						
New and existing	All	2, 3, 4, 5, 6, 7, 8, 10, 11	Jurisdictions	Low	Operating Budgets	Ongoing
Action G-7 — Support the County-wide initiatives identified in Volume I of the hazard mitigation plan.						





TABLE 12-8. HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
New and existing	All	All	Jurisdictions	Low	General Fund	Short- and long-term

Action G-8— Actively participate in the plan maintenance protocols outlined in Volume I of the hazard mitigation plan.

New and Existing	All	1, 4	Jurisdictions	Low	Staff Time, General Funds	Short-term
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TABLE 12-9. MITIGATION STRATEGY PRIORITY SCHEDULE

Action #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/Budgets?	Implementation Priority ^a	Grant Priority ^a
MB-1	7	High	Medium	Yes	No	Yes	High	Low
MB-2	7	High	High	Yes	Yes	No	High	High
MB-3	2	Medium	Low	Yes	No	Yes	Medium	Low
MB-4	5	High	Medium	Yes	Yes	No	Low	Low
MB-5	4	High	High	Yes	No	No	Low	Low
MB-6	4	High	Medium	Yes	Yes	No	Medium	Medium
MB-7	8	Medium	High	No	Yes	No	Medium	Medium
G-1	7	High	High	Yes	Yes	No	High	High
G-2	11	High	Low	Yes	No	Yes	High	Low
G-3	5	Medium	Low	Yes	No	Yes	High	Low
G-4	5	Medium	Medium	Yes	Yes	Yes	Medium	Medium
G-5	9	Medium	Low	Yes	No	No	Medium	Low
G-6	9	Low	Low	Yes	No	Yes	Low	Low
G-7	11	Low	Low	Yes	No	Yes	High	Low
G-8	2	Low	Low	Yes	No	Yes	High	Low

a. See the introduction to this volume for explanation of priorities.





TABLE 12-10. ANALYSIS OF MITIGATION ACTIONS

Hazard Type	Action Addressing Hazard, by Mitigation Type ^a					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Drought						MB-1 MB-2
Flood						MB-4 MB-5 MB-7
Earthquake		MB-2 MB-6				MB-4 MB-5
Landslide					MB-4	
Severe Weather	MB-3				MB-4	

a. See the introduction to this volume for explanation of mitigation types.

12.9 Future Needs to Better Understand Risk/Vulnerability

None

12.10 Additional Comments

Approximately four year ago, the San Mateo County Sheriff’s Office Millbrae Patrol Bureau, along with other public safety partners such as, EMS, SamTrans, County offices of Probation, Public Works, Coroner’s Office and others, operate on a 700Mhz trunked two-way radio system using ‘P25’ technology. P25 is the industry standard for mission critical use and has proven functionality for interoperable communication amongst like users. Since the installation of this technology five years ago, the County has made it a priority to maintain the system and has recently funded radio infrastructure upgrades to: double channel capacity, ensure upgrades keep the system reliable, add additional frequencies and increase licensing. These upgrades will allow more agencies of any public safety discipline to join the system and provide more capacity in the event of a catastrophic emergency.

The budget for F/Y 2016-17, will include funding for an Emergency Preparedness Coordinator position. The coordinator will be responsible for reviewing relevant plans/documents to determine compliance with CalEOS/FEMA requirements and to provide training for City staff.

Below is a list of current City Municipal Operations Programs and Projects. Millbrae also has an extensive list of Communitywide Programs and Projects.

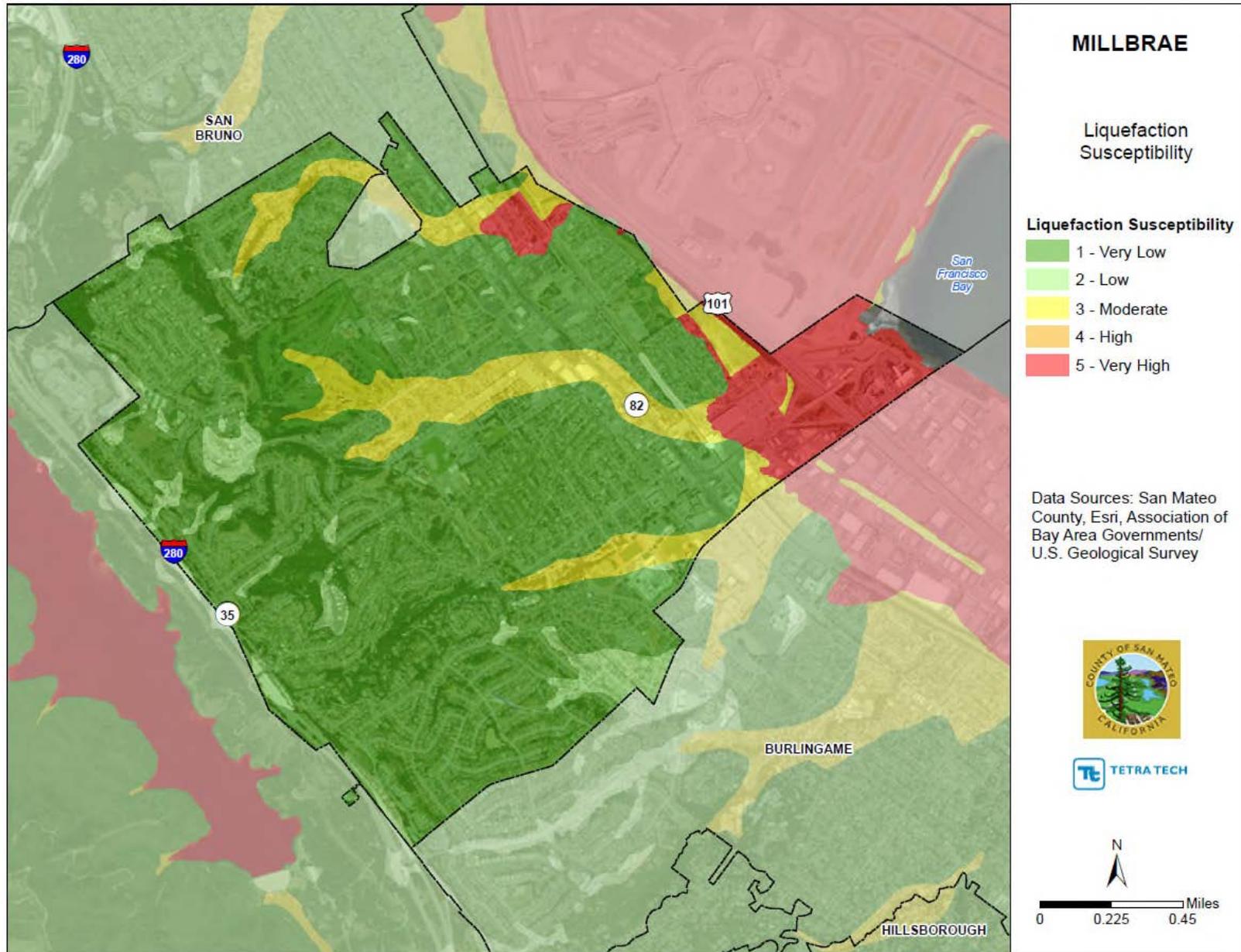
Municipal Operations Programs and Projects:

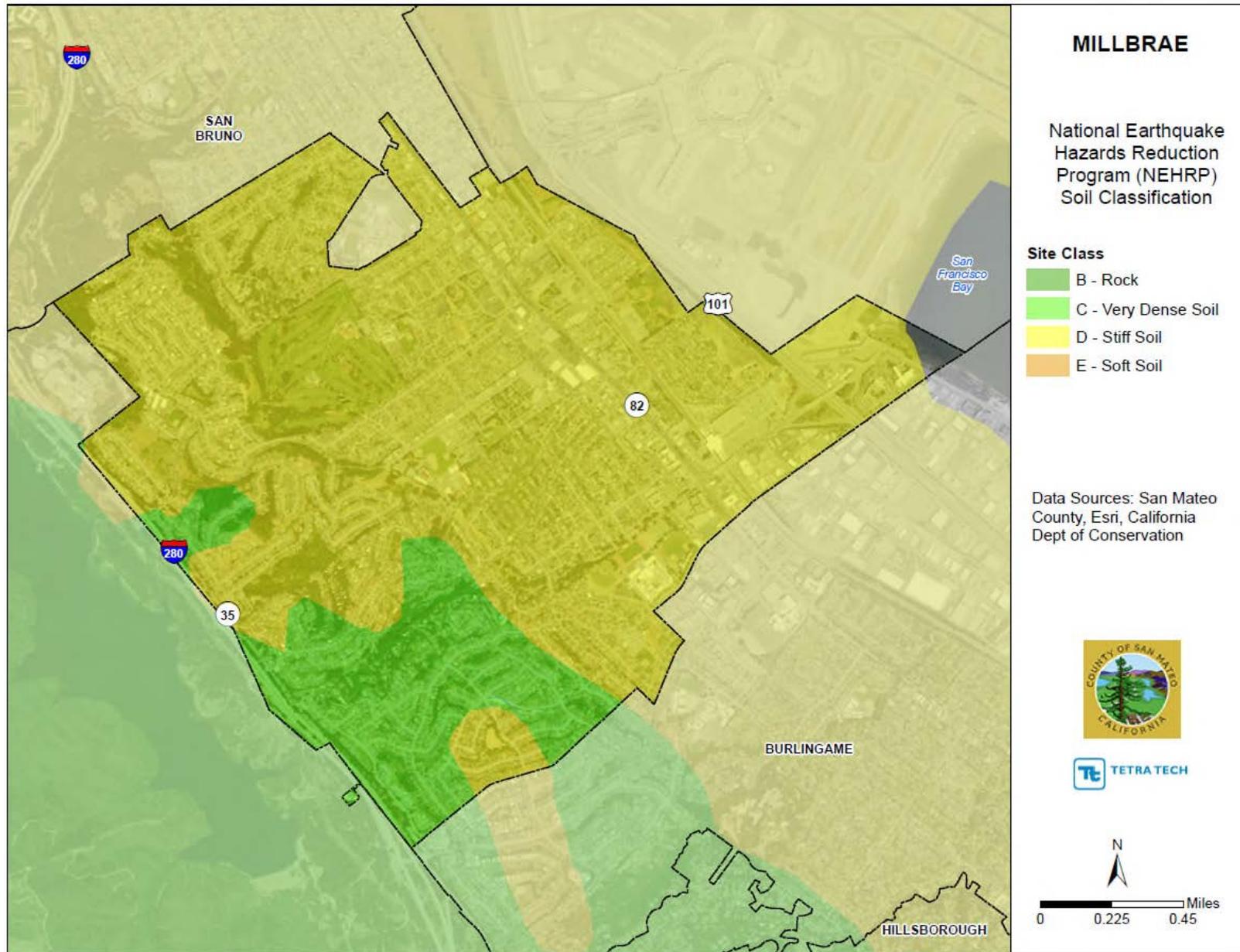
- ❖ Installed the co-generation system and grease receiving station at the City’s Water Pollution Control Plant in 2006, which increased the bio-gas and related energy production.
- ❖ Implemented the Clean Energy Project in 2012, which included a number of measures that reduce GHG emissions in the City’s government operations.
- ❖ Certified City Hall and the Library as Green Businesses and promote the program to businesses.





- ❖ Currently participating in Demand response Program/Energy Alert Days to reduce energy during peak demand by turning off lights, equipment and appliances. Participating City facilities included City Hall, Police Department and the Library.
- ❖ Off-set municipal greenhouse gas emissions through PG&Es Climate Smart Program from 2008-2012, reducing a cumulative total of 1.36 MMTCO₂e.
- ❖ Participate in winter and summer Spare the Air Day alerts to inform employees and the community on measures for reducing air pollutants.
- ❖ Implement the Commuter Options and Incentives Program to promote alternative transportation modes to reduce single occupancy driving.
- ❖ Installed LED lights in traffic lights in 2010.
- ❖ Upgrade interior and exterior lighting to energy-saving technology.
- ❖ Upgrade five City parks with smart irrigation controllers to save energy and water.
- ❖ Certify City Hall and Library as Green Businesses and promote the program to other businesses.









Appendix E – Water Shortage Contingency Plan Savings Analysis

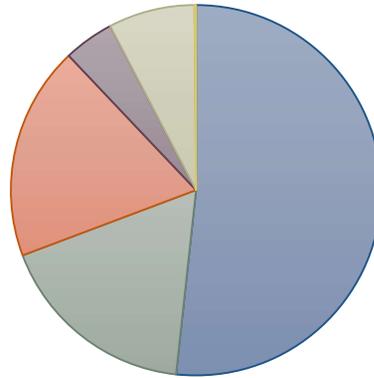
Water Shortage Contingency Plan Savings Tool

Version 4.0 (September 18, 2020)

Conservation Measures by Sector and Shortage Stage								
Number	Description	Stage(s)						Savings
		Level 1 (up to 10%)	Level 2 (up to 20%)	Level 3 (up to 30%)	Level 4 (up to 40%)	Level 5 (up to 50%)	Level 6 (over 50%)	
1	Public Information and Advertising Campaign	Yes	No	No	No	No	No	2.4%
2	Water Waste Enforcement	Yes	Yes	Yes	Yes	Yes	Yes	1.4%
3	Non-Essential Uses Banned	Yes	Yes	Yes	Yes	Yes	Yes	0.8%
4	Promote Efficient Irrigation	Yes	Yes	No	No	No	No	0.4%
5	Step Up Public Information Campaign	No	Yes	No	No	No	No	4.3%
6	Leak Management	No	Yes	Yes	Yes	Yes	Yes	3.8%
7	Landscape Workshops	No	Yes	No	No	No	No	0.2%
8	Irrigation Time of Day Restrictions	No	Yes	Yes	No	No	No	0.7%
9	Large Landscape Water Budgets	No	Yes	No	No	No	No	0.7%
10	Water Use Prohibitions- Exterior Washing, Leak Repair Requirements, Re-Circulated water for water features, Vehicle Washing Restrictions	No	Yes	Yes	Yes	Yes	Yes	2.5%
11	Expand Public Information Campaign- Stage 3	No	No	Yes	Yes	Yes	Yes	6.5%
12	Customer Leak Repair within 72 Hours	No	No	Yes	No	No	No	1.4%
13	Reduce Large Landscape Water Budgets	No	No	Yes	No	No	No	4.6%
14	Commercial Conservation Plans and Signage	No	No	Yes	Yes	Yes	Yes	3.0%
15	No Operation of Ornamental	No	No	Yes	Yes	Yes	Yes	0.3%

16	Expand water waste	No	No	No	Yes	Yes	Yes	0.7%
17	Residential Water Rationing	No	No	No	Yes	No	No	7.2%
18	Commercial Water Rationing	No	No	No	Yes	No	No	1.6%
19	Minimal Large Landscape Water Budgets	No	No	No	Yes	No	No	5.3%
20	Prohibit Turf Installation in New Development	No	No	No	Yes	Yes	Yes	0.4%
21	Prohibition on on-site vehicle washing	No	No	No	Yes	Yes	Yes	0.2%
22	Rescind Hydrant Permits	No	No	No	Yes	Yes	Yes	0.1%
23	Customer Leak Repair within 48 Hours	No	No	No	Yes	No	No	1.6%
24	Reduce Residential Water	No	No	No	No	Yes	No	10.6%
25	Reduce Commercial Water	No	No	No	No	Yes	No	3.3%
26	Prohibit Outdoor Irrigation	No	No	No	No	Yes	Yes	16.3%
27	No Water for Recreational	No	No	No	No	Yes	Yes	0.0%
28	Customer Leak Repair within 24 Hours	No	No	No	No	Yes	Yes	0.0%
29	Reduce Residential Water Allocations to Health and Safety Minimum	No	No	No	No	No	Yes	13.6%
30	No Water for Non-Essential Commercial Uses	No	No	No	No	No	Yes	4.9%
31	Measure 31	No	No	No	No	No	No	0.0%
32	Measure 32	No	No	No	No	No	No	0.0%
33	Measure 33	No	No	No	No	No	No	0.0%
34	Measure 34	No	No	No	No	No	No	0.0%
35	Measure 35	No	No	No	No	No	No	0.0%
36	Measure 36	No	No	No	No	No	No	0.0%
37								
38								
39								
40								
41								
42								
43								

Water Use by Sector



■ Single Family ■ Multiple Family ■ Commercial ■ Institutional ■ Landscape ■ Other

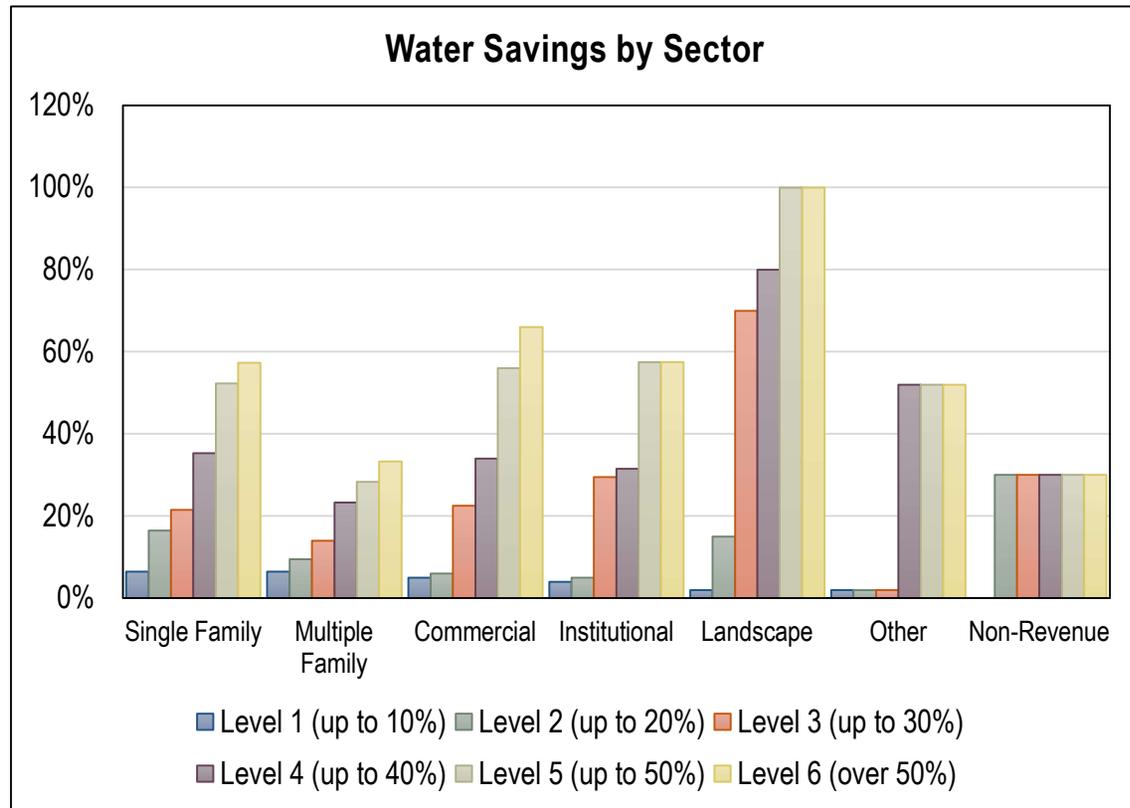
Customer Category Demand Projections - FY 2025 (Million Gallons Per Year)								
Stage	Single Family	Multiple Family	Commercial	Institutional	Landscape	Other	Non-Revenue	Total
Annual Water Use - Indoor	336	120	117	11	0	0	0	584
Annual Water Use - Outdoor	41	8	19	21	55	1	106	
Annual Water Use (MGY)	377	128	136	32	55	1	106	835
Percent of Total	45%	15%	16%	4%	7%	0%	13%	100%

Total % Water Savings by Sector								
Stage	Single Family	Multiple Family	Commercial	Institutional	Landscape	Other	Non-Revenue	Total
Level 1 (up to 10%)	7%	7%	5%	4%	2%	2%	0%	5%
Level 2 (up to 20%)	17%	10%	6%	5%	15%	2%	30%	15%
Level 3 (up to 30%)	22%	14%	23%	30%	70%	2%	30%	25%
Level 4 (up to 40%)	35%	23%	34%	32%	80%	52%	30%	35%
Level 5 (up to 50%)	52%	28%	56%	58%	100%	52%	30%	50%
Level 6 (over 50%)	57%	33%	66%	58%	100%	52%	30%	54%

Total Water Savings by Sector (Million Gallons per Year)								
Stage	Single Family	Multiple Family	Commercial	Institutional	Landscape	Other	Non-Revenue	Total
Level 1 (up to 10%)	25	8	7	1	1	0	0	42
Level 2 (up to 20%)	62	12	8	2	8	0	32	124
Level 3 (up to 30%)	81	18	31	9	39	0	32	209
Level 4 (up to 40%)	133	30	46	10	44	1	32	296
Level 5 (up to 50%)	197	36	76	18	55	1	32	415
Level 6 (over 50%)	216	43	90	18	55	1	32	454

Service Area Population **22,846**

Residential Per Capita Use	
Stage	R-GPCD
Pre-Shortage	61
Level 1 (up to 10%)	57
Level 2 (up to 20%)	52
Level 3 (up to 30%)	49
Level 4 (up to 40%)	41
Level 5 (up to 50%)	33
Level 6 (over 50%)	30



Water Savings by Stage (Acre-Feet)

