COASTSIDE COUNTY WATER DISTRICT

766 MAIN STREET

HALF MOON BAY, CA 94019

SPECIAL MEETING OF THE BOARD OF DIRECTORS

Tuesday, February 25, 2014 – 2:00 pm

AGENDA

1) ROLL CALL

2) PLEDGE OF ALLEGIANCE

3) PUBLIC COMMENT

Members of the public may address the Board of Directors on the items on the agenda for this special meeting. The Chair requests that each person addressing the Board complete and submit a speaker slip, and limit their comments to three (3) minutes.

4) GENERAL BUSINESS – *(Note: staff report included for agenda item 4A only)*

- **A. Water Shortage Contingency Planning and Analysis** (attachment)
- **B. Legal Considerations for Declaration of Drought Emergency**
- **C. Bay Area Water Supply and Conservation Agency (BAWSCA) Tier 2 Shortage Allocations**
- **D. Next Steps in Preparing for Possible Drought Emergency**

5) ADJOURNMENT

Accessible Public Meetings - *The Coastside County Water District (CCWD) does not discriminate against persons with disabilities. Upon request, the agenda and agenda packet materials can be provided in a format to accommodate special needs. If you require a copy of the agenda or related materials in an alternative format to accommodate a disability, or if you wish to attend this public meeting and will require special assistance or other special equipment, please call the District at (650) 726-4405 in advance and we will make every reasonable attempt to provide such an accommodation.*

Staff Report

To: **Coastside County Water District Board of Directors**

From: **Cathleen Brennan, Water Resources Analyst**

Agenda: **February 25, 2014**

Date of Report: **February 20, 2014**

Subject: **Water Shortage Contingency Planning and Analysis**

Attachment: **Copy of the Water Shortage Contingency Plan**

This report is for informational purposes only.

Background

Water shortage contingency planning and analysis is required for urban water suppliers and it must be included in the water supplier's Urban Water Management Plan. The District refers to this analysis as the Water Shortage Contingency Plan. This requirement is part of the Urban Water Management Planning Act (California Water Code § 10632) and requires that the water shortage analysis include specific elements. The following is a brief summary of those required elements:

(1) Stages of action to be undertaken in response to water supply shortages up to a 50 percent reduction in water supply.

(2) An estimate of the minimum water supply available during each of the next three water years based on the driest three year historic sequence.

(3) Actions to be undertaken to prepare for and implement during a catastrophic interruption of water supplies.

(4) Mandatory prohibitions against specific water use practices during water shortages.

(5) Consumption reduction methods in the most restrictive stages.

(6) Penalties or charges for excessive use.

(7) An analysis of the impacts of each of the actions and conditions described on revenues and expenditures and proposed measures to overcome those impacts.

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

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

In addition, California Water Code (CWC § 350-359) provides authority to the urban water supplier to declare water shortage emergencies and to implement regulations and restrictions to manage the water shortage emergency.

Water Shortage Contingency Plan

The current Water Shortage Contingency Plan was adopted by the Board in 2011 and was included in the District's 2010 Urban Water Management Plan. The objective of the Plan is to establish actions and procedures for managing water supply and water demand during water shortages.

The Water Shortage Contingency Plan should minimize non-essential uses of water and conserve remaining supplies for the greatest public benefit. The intent is to maintain essential public health and safety and minimize adverse impacts on economic activity and environmental resources during periods of water shortage. Periods of water shortage can burden the District's finances due to less revenue from water sales, increased work load for staff and the potential for penalties from the water wholesaler. This plan relies on the use of the District's reserves to help meet any gaps between revenues and expenses.

The Water Shortage Contingency Plan will need to be updated and included in the District's 2015 Urban Water Management Plan.

Water Shortage Contingency Plan

Coastside County Water District

DRAFT April 12, 2011

Water Shortage Contingency Plan

Coastside County Water District

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Acronyms, Abbreviations and Definitions

Ac-ft	Acre feet
Ac-ft/year	Acre feet per year
BAWSCA	Bay Area Water Supply and Conservation Agency
cf	Cubic foot
cfs	Cubic foot per second
CWC	California Water Code
District	Coastside County Water District
g/cycle	Gallons per cycle
GPCD	Gallons per day per capita
gpf	Gallons per flush
gpm	Gallons per minute
MG	Million gallons
MGD	Million gallons per day
MOU	Memorandum of Understanding
MWSD	Montara Water and Sanitary District
Plan	Water Shortage Contingency Plan
RWS	Regional Water System
SFPUC	San Francisco Public Utilities Commission
UWMP	Urban Water Management Plan
WF	Water Factor is the number of gallons needed for each cf of laundry

Introduction

This plan provides guidelines for Coastside County Water District to manage water supply and demand in the event of a water supply disruption. This plan addresses both progressive situations, such as those that are weather related, and more drastic and immediate situations, including facility emergencies and natural disasters. This Water Shortage Contingency Plan is an update of the Plan that was included in the 2005 Urban Water Management Plan.

Requirement

The Urban Water Management Planning Act (CWC § 10632) requires water agencies to provide water shortage contingency planning and analysis and to include that analysis in their Urban Water Management Plan.

Authority

California Water Code (CWC § 350-359) provides the authority for a water agency to declare a water shortage emergency through its governing body. The water agency has the power to implement and enforce regulations and restrictions to manage the water shortage emergency. The water agency shall adopt regulations and restrictions that conserve the water supply for the greatest public benefit with particular regard to domestic use, sanitation and fire protection.

Objective

The objective of the Plan is to establish actions and procedures for managing water supply and demand during water shortages. The overall intent of this plan is to develop strategies to minimize non-essential uses of water and to conserve remaining supplies for the greatest public benefit, with particular regard to domestic use, sanitation and fire protection. Implementation of the Plan will help the District maintain essential public health and safety and minimize adverse impacts on economic activity and environmental resources during periods of water shortage.

Service Area

Coastside County Water District is a coastal community in San Mateo County. The District has approximately seven thousand water service connections that provide potable water to roughly twenty thousand people in the City of Half Moon Bay and the unincorporated communities of El Granada, Miramar and Princeton by the Sea. The local area supports approximately six thousand jobs and seven thousand households.

Climate

The service area of the District has a mild climate typical of central and northern California. The rainy season is October through April with the annual average water year precipitation of 26.3 inches. The Pacific Ocean influences the climate along the coast with wind typical during the day and fog typical in the morning and evenings.

The upper Pilarcitos Creek watershed, which supplies water for the SFPUC's Pilarcitos Lake and the District's Pilarcitos Creek Canyon wells, has an average water year precipitation of

39.5 inches. The District relies on imported water from the Hetch-Hetchy watershed in the Sierra Nevada Mountain Range. The Hetch-Hetchy watershed has an average water year precipitation of approximately 35.6 inches. Two minor watersheds that supply runoff, to what the SFPUC considers to be local reservoirs, are the Crystal Springs Reservoir with an average water year precipitation of approximately 27.1 inches and the Calaveras Reservoir with an average water year precipitation of approximately 21.8 inches.

Water Shortage

A water shortage occurs when a geographic area experiences water demand that can't be met by current water supply. This can be caused by drought, natural disaster or water system failure. The term drought is used to indicate a water shortage but a drought is a meteorological occurrence, which describes less precipitation than average for a specific geographic area. It is possible for a geographic area to be in a drought but not have a water shortage. If a geographic area has extensive water storage compared to their demand, they may have enough water storage to make up for the deficit in precipitation for a defined period of time. It is also possible for a geographic area to have normal precipitation but find itself in a water shortage because demand is greater than the normal amount of precipitation can meet.

Water Shortage Impacts

Public Health

The District must balance the basic needs for health and safety for the residential population against the needs of the commercial, industrial, institutional and agricultural needs for water, to sustain employment and the economic stability of the community.

Risks to public health from a water shortage include impacts on water supply and water quality. Water quality can decline during a water shortage. As reservoir levels drop, water temperatures rise and the concentration of contaminants increase. The result is an increased risk of waterborne illness along with a negative impact on odor and taste. Impacts on food production can range from a collapse in fisheries to a decline in irrigated agriculture and grazing land.

Recreation

Most of the recreation in the District's service area is focused on the coastline. Day use of beaches and parks could be impacted, if there isn't enough water for restrooms and drinking. Hiking in the local hillsides may be restricted, if fire danger becomes a threat from human activity. Golf is a popular recreational sport for both local and visiting populations. If local golf courses are not able to irrigate their greens, it could result in a diminished golfing experience and fewer visitors coming to the area to play golf.

Wildfire

Wildlands in California can be strongly affected by drought. Moisture content decreases and plant materials become fuels that increase fire risk and can intensify wildfire behavior. A significant portion of the District's raw water transmission infrastructure is surrounded by open space wildlands vulnerable to fire. The northern section of the District's service area in is heavily wooded with eucalyptus trees, which are known for their fuel potential.

The local climate is influenced by cool temperatures and fog most of the year, so the risk of a wildfire is low during normal water years, but during an extended drought, the risk of wildfires is a recognized threat by both the community and the local fire protection district.

During a catastrophic wildfire, in a normal or drought period, the District's infrastructure would not be able to provide enough water to suppress a fire. At best, during a catastrophic wildfire, the District's infrastructure may be able to prevent structures from being destroyed and provide protection for some of the urban boundaries.

Infrastructure
If local sources were impacted by a drought or a natural disaster, the District would rely more on Upper Crystal Springs Reservoir, as a source of water. Raw water from Upper Crystal Springs Reservoir must be pumped over the Cahill Ridge to the Nunes Water Treatment Plant, which requires electricity.

During a power outage or facility failure at the Crystal Springs Pump Station, the District would rely on the Denniston Project, Pilarcitos Lake and Pilarcitos Creek wells (Pilarcitos Creek wells can only be operated from November through March). If the water level in Pilarcitos Lake is below the outlet, with permission from the SFPUC, the District could set up a temporary pumping system to draw water out of Pilarcitos Lake to supply the District. Nunes Water Treatment Plant has a generator that can operate the plant during a power failure and the District has a portable generator on a trailer that can be deployed where it is needed.

During droughts and water shortages, annual flushing of the distribution system will need to cease. This could impact water quality in the long term.

The District office and corporation yard have sufficient water and emergency rations to support a full crew for three days. An emergency generator is maintained in operable condition at all times at the District office and corporation yard.

Livestock
The City of Half Moon Bay and surrounding unincorporated areas have an agricultural base with many property owners that maintain livestock. In addition, there are recreationally based operations that have horseback riding and stables. The District must consider the needs of livestock when implementing any mandatory rationing.

Assessing Water Supply and Water Demand

Description of Water Sources
The District currently has three water supply sources, which consist of imported water, local surface water and local groundwater. Production from a specific water supply source can vary year to year, due to a variety of reasons. But during drought conditions, the District will rely more on imported water from the SFPUC sources. A brief description of each source is provided below in Table 1.

Table 1 – Water Sources (Million Gallons)					
Local			**Imported**		**Total**
Denniston Creek Project		Pilarcitos Creek	SFPUC		
Surface Water	Groundwater	Wells	Pilarcitos Lake	Crystal Springs Reservoir	
172.24	27.11	43.96	337.72	258.64	839.67
21%	3%	5%	40%	31%	100%
Based on a sixteen year average					

San Francisco Public Utilities Commission (SFPUC)
The District purchases roughly 71 percent of its total water supply from the SFPUC. On average, 40 percent of the District's annual water supply comes from Pilarcitos Lake and 31 percent comes from Upper Crystal Springs Reservoir. Purchases from the SFPUC are limited to approximately 2.175 MGD, until at least 2018, based on agreements with the SFPUC.

Pilarcitos Lake is a local reservoir owned and operated by the SFPUC. It is located in the coastal foothills north of the City of Half Moon Bay. It is totally dependent upon local precipitation and runoff.

Upper Crystal Springs Reservoir is a local reservoir owned and operated by the SFPUC. It is located in the foothills east of the City of Half Moon Bay. This reservoir is dependent upon imported water from the Regional Water System (RWS) and is supplemented by local runoff and local precipitation.

Pilarcitos Creek Wells
The District produces 5 percent of its water supply from a well field located in Pilarcitos Creek Canyon adjacent to Pilarcitos Creek. The District can pump from November 1st through March 31st of each year, as described in the license for diversion from the State Water Resources Control Board. The license also limits diversions to 1.5 cfs or 360 ac-ft/year. During drought conditions, supply from this source is extremely low since the wells are dependent upon Pilarcitos Creek (sub-surface) flow. Pilarcitos Creek flows are influenced by local runoff and by the SFPUC's operation of Pilarcitos Dam on upper Pilarcitos Creek.

Denniston Creek Project
The Denniston Project has two water supply sources: Denniston groundwater and Denniston Creek. Denniston groundwater comes from the Airport Subbasin of the Half Moon Bay Terrace Basin. On average, the District obtains 21 percent of its total water supply from Denniston surface water and 3 percent of its supply from Denniston groundwater. During drought years the production from Denniston Creek is extremely low because of the small watershed area. In addition, production from the Denniston well field may decrease during drought periods because of the lowering of the water table in the

Airport groundwater subbbasin. Denniston groundwater is used to supplement surface water diversions.

Facility Description
The District has two surface water treatment plants with a combined treatment capacity of 5.5 MGD. The Nunes Water Treatment Plant, located within the City of Half Moon Bay, treats raw water from Upper Crystal Springs Reservoir, Pilarcitos Lake and Pilarcitos Creek wells. The Denniston Water Treatment Plant, located in the County of San Mateo, treats raw water from Denniston Creek and Denniston groundwater. The District has eleven treated water storage tanks for a total of 8 MG of storage.

Description of Demand
On average, 61 percent of the District's water sales are to the residential sector. The second major water use sector is commercial, with an average of 16 percent of annual water sales. Floriculture (agriculture) is the third major water use sector with an average of 13 percent of annual water sales. Table 2 summarizes the average demand and percentage of total demand by sales class.

Table 2 - Average Annual Water Demand History

Sales Class	Average Demand	Percentage
Floriculture/Agriculture	97	13%
Commercial, Industrial and Institutional	117	16%
Residential	446	61%
Irrigation	67	9%
Portable Meters	4	1%
Total Average Demand (MG)	731	100%
Average Annual Demand (MGD)	2.00	

Based on a five year average

Historic Water Shortage Records
The District has experienced water shortages in the past due to drought conditions. District customers have been very responsive to water rationing programs that have been implemented during critically dry periods in the past. Mandatory water rationing was in effect for all of 1977, 1978, 1988, 1990, 1991, and 1992 as well as four months in 1989 and 1993.

The residential sector has been particularly responsive to drought measures imposed by the District. In 1977, residential consumption dropped by 33 percent, the first year in which water rationing was instituted. Subsequent dry years, in which rationing was instituted, also saw significant reductions in residential water use: 1989, 24 percent; 1990, 40 percent; 1991, 32 percent; and 22 percent in 1993.

Most recently, there were three consecutive dry water years (2007-2008-2009) with 2007 being critically dry. Voluntary 10 percent rationing was implemented during this most recent drought and the District experienced a 17 percent reduction in total sales between 2007 and 2009. A significant difference between the water shortages in the 1970's and 1990's, compared to the most recent water shortage in 2007 to 2009, is that the District did

not have Upper Crystal Springs Reservoir as a source of water during the 1970's and 1990's water shortages. Upper Crystal Springs Reservoir became available to the District in 1994. During the most recent water shortage, the District relied upon the available water storage in Upper Crystal Springs Reservoir to avoid having to mandate water rationing.

Table 3 summarizes the historic water shortage episodes or periods in the District's recent past and the resulting rationing status.

Table 3 - Historic Water Shortage Episodes

Year	Production (MG)	Rationing Status	Inches Precipitation	Percent of Mean Precipitation
1976	475	Voluntary	14.72	55
1977	356	Mandatory	14.61	55
1978	450	Mandatory	34.15	128
1987	733	No Rationing	18.16	68
1988	632	Voluntary	20.17	76
1989	637	Mandatory	24.51	92
1990	593	Voluntary	16.45	62
1991	479	Mandatory	20.76	78
1992	548	Mandatory	24.19	91
1993	644	Mandatory	33.22	125
2007	932	Voluntary	18.78	71
2008	848	Voluntary	20.41	77
2009	761	Voluntary	20.48	77
Rainfall Data NOAA NCDC Station 43714				

After multiple consecutive dry years, it may be necessary to maintain voluntary or mandatory rationing within the District's service area for another year, once precipitation has returned to normal or above normal. This is illustrated in 1978 and again in 1993 in Table 3. It may take a couple of consecutive normal to above normal water years to allow surface water storage and ground water storage to recover.

During past water shortage emergency periods, residential accounts were allocated an average number of billing units per cycle per person. According to the District's Ordinance No. 26 (1990), permanent residents were allocated 7 units per billing cycle (approximately 87 gallons per day per person). In Ordinance No. 28 (1991), the District allocated 8 units per billing cycle per person (100 gallons per day per person).

Water Waste

The District originally adopted an ordinance (No. 1997-01) in 1997 that establishes rules and regulations prohibiting wasteful water use during a normal water supply situation and providing enforcement thereof. This ordinance was updated in 2008 (2008-01) to conform

to the California Urban Water Conservation Council's memorandum of understanding (MOU) for best management practices.

During times of mandatory rationing, this ordinance will not apply. The District will need to implement, with the Board of Directors approval, additional and specific regulations to prevent water waste during periods of mandatory rationing.

Impacts on Revenues and Expenditures

Successful water rationing programs lead to reduced water sales and reduced revenues. However, the District's expenditures do not decline in proportion to reduced sales because a large part of the District's expenditures are related to fixed capital costs, maintenance and operations. In addition, the District will pay more for imported water because the SFPUC will raise their wholesale rates to cover their reduced water sales and their increased administrative costs. During periods of rationing, the District's administrative costs and staffing costs will increase due to enforcement of new rules and complex billing structures.

Consequently, retail water rates will increase during years of water shortages when rationing programs are implemented. The District has an emergency reserve that it can use to cover increased costs, until it can implement and realize the benefit of adjusted water rationing rates, surcharges and penalties. The District will need to follow Proposition 218 requirements for the drought rates, which might cause a slight delay in the actual implementation of the drought rates.

Agreements

San Francisco Regional Water System (RWS)
The District purchases water from the SFPUC along with 25 other public and private water retailers. There are drought implementation plan agreements between the SFPUC and the SFPUC's wholesale customers, known as Tier 1, and among wholesale customers, known as Tier 2. Tier 1 is part of the 2009 Water Supply Agreement (WSA). These agreements allocate available water from the RWS during system wide shortages of 20 percent or less.

In drought years, the SFPUC will formally declare a water shortage between April 15th and April 31st. At this time, the SFPUC will declare the magnitude of the water shortage and determine the need for voluntary or mandatory actions. On June 1st, final drought allocations will be issued for the supply year beginning on July 1st through June 30th. In addition, monthly water budgets will become effective July 1st. Excess use charges will be implemented at the same time the monthly water budgets are implemented.

Since the District purchases anywhere from 70 percent to 90 percent of our water supply from the SFPUC, these agreements are critical to the District's drought planning and analysis. Table 4 summarizes the District's allocation from the SFPUC and the District's estimated local supply. The total projected water supply, during a single dry year and multiple dry years, includes purchased and local supplies.

Table 4 - Projected Water Supply During Dry Years					
	Normal Year	Single Dry Year	Multiple Dry Years		
			Year 1	Year 2	Year 3
SFPUC RWS Shortage	0%	10%	10%	20%	20%
SFPUC Wholesale Allocation (MGD)	184	152.6	152.6	132.5	132.5
SFPUC District's Allocation (MGD)	2.18	1.82	1.82	1.58	1.58
SFPUC District's Allocation (MG/Year)	800	662	662	575	575
District's Local Sources (MG/Year)	290	145	145	48	0
Total Projected Water Supply (MG/Year)	1090	807	807	623	575

Agreement for Emergency Water Supply

The District and Montara Water and Sanitary District (MWSD) entered into an agreement, as of October 18, 2010, for the mutual benefit of both districts, to provide a temporary, interruptible supply of water for use during a water shortage emergency.

For the purposes of this agreement, emergency water supply is defined as a temporary and interruptible supply of water to help alleviate a water shortage emergency. The water shortage emergency is when ordinary demands and requirements of the District's water users cannot be satisfied without depleting its water supply to the extent that there would be insufficient water for human consumption, sanitation and fire protection. The water shortage emergency has to be due to a lack of water supply caused by circumstances outside the District's reasonable control or damage to the water system facilities, as a result of a "Force Majeure". For the purposes of this agreement, Force Majeure means; fire, flood, earthquake, natural calamity or acts of God, and governmental action or inaction.

The implementation of this agreement is still under review by both agencies, but the District would likely only receive an emergency water supply from the MWSD during a critical water shortage emergency, as defined in this Plan.

Utility Billing

The District has a mix of monthly and bi-monthly billing. The District utilizes software from the vendor Springbrook Software, Inc. The District has been in contact with Springbrook Software, Inc. and is in the process of developing software modifications to allow for residential allocations based on gallons per day per person and commercial allocations based on a percentage reduction from a base year's consumption. The District uses the services of CSG Systems to prepare and mail the billing statements. CSG Systems also provides on-line payment options for customers of the District.

It would be beneficial for both the District and customers to have all customers on monthly billing during mandatory rationing. Monthly billing gives the customer faster feedback on meeting reduction goals and gives the District time to notify and work with customers having difficulty meeting reduction goals. For the District to go to monthly billing, it would

require hiring additional temporary staff to read meters and process the customer service tasks.

Determination of a Water Shortage

The SFPUC will notify the District by April 15th, if there will be a water shortage. The magnitude of the water shortage will be determined by June 1st and the District's allocation from the SFPUC will become effective July 1st. Since the District is dependent on imported water, the SFPUC's determination will be critical to implementing the Water Shortage Contingency Plan and determining which stage will be implemented.

The District monitors local precipitation to assist in determining the adequacy of local surface and groundwater sources. During periods of less than normal precipitation, the District will make a determination on how productive local sources will be for the upcoming fiscal year.

The District will take the SFPUC reduction and the District's projected reduction in local sources to determine the total reduction in production and the corresponding needed reduction in demand to be implemented on July 1st.

Approach to Demand Reduction

This plan provides five stages of response based on increasing severity, as progressively more serious conditions warrant. This type of response would be appropriate to a drought or other water shortages. The five stages are listed in Table 5:

Table 5 - Stages of Action

Stage	Stage Name	Water Shortage Measurement
1	Water Shortage Advisory	0%-5%
2	Water Shortage Warning	5%-10%
3	Water Shortage Emergency	10%-20%
4	Severe Water Shortage Emergency	20%-30%
5	Critical Water Shortage Emergency	30%-50%

These stages would be declared by the Board of Directors, as recommended by staff. Each water shortage episode is unique and will require individual water use restrictions to fit those unique circumstances.

The following is a brief written description of a general escalation of actions that would be taken by the District at the different stages.

Stage 1: Water Shortage Advisory
The public is informed as early as meaningful data are available that a possible shortage may occur. The District's water waste ordinance would be enforced to the maximum extent possible. The District would request voluntary water conservation to encourage

behavior changes and a reduction in irrigation. District staff would assess local sources and begin to prepare for implementation of mandatory rationing. This stage relies heavily on voluntary cooperation and support of customers to meet consumption reduction goals.

- Implement a public information campaign
- Coordinate with the BAWSCA and the SFPUC
- Coordinate and communicate actions with all District staff
- Implement a supply, production and consumption monitoring and reporting plan
- Plan for continuation and escalation of water shortage conditions
- Encourage leak detection and repair
- Educate public on water waste prohibitions

An example of the public message for Stage 1 – Water Shortage Advisory is:

"Due to significantly less than normal precipitation this water year, we are asking customers to voluntarily conserve water with a goal of achieving a 5 percent reduction in water consumption. Conserving water now will help keep water storage at adequate levels, if the water shortage should continue or worsen."

Stage 2: Water Shortage Emergency Warning
If water supply conditions worsen, this stage would begin to implement mandatory restrictions on water use. This stage would be a transitional stage to prepare customers and the District for the Water Shortage Emergency.

- Continue with actions and measures from Stage 1
- Escalate public information campaign
- Encourage meter reading by customers, so they can track their own water usage
- Perform outreach to major customers, regarding water supply status
- Designate days and times that irrigation is allowed, if voluntary measures are not meeting goals
- Study the impacts to revenue and develop a budget strategy for mitigating losses
- Inform the City of Half Moon Bay and the County of San Mateo of water supply status
- Inform the Coastside Fire Protection District of water supply status and request cooperation in reducing training exercises
- Prohibit the cleaning of exterior surfaces
- Suspend routine flushing of water mains
- Emphasize leak detection and repair for the system and customers

An example of the public message for Stage 2 – Water Shortage Emergency Warning is:

"Water supply conditions have worsened and it is now necessary to impose mandatory restrictions on water use. The District encourages customers to conserve water and to help the District achieve a 10 percent reduction in water consumption. Conserving water now will help maintain an adequate water supply to meet the public health and safety needs of the community."

Stage 3: Water Shortage Emergency
This stage would escalate mandatory restrictions. The District would transition into water allocations, if it hasn't already needed to implement allocations. Restrictions would emphasize reducing or prohibiting decorative landscape irrigation for commercial and residential customers. Penalties and surcharges would be implemented for non-compliance with mandatory restrictions.

- Continue with actions and measures taken in stages 1 and 2
- Establish a hotline to respond to questions and reports of water waste
- Implement residential and non-residential water allocations
- Consider going to system-wide monthly billing
- Consider a temporary moratorium on new connections
- Consider implementing drought rates and drought surcharges
- Consider prohibiting the installation of new lawn (turf)
- Provide information on legal gray water use for irrigation
- Contact the Coastside Fire Protection District and consider eliminating fire training exercises that use water
- Evaluate water waste prohibitions and consider adding more prohibitions

An example of the public message for Stage 3 – Water Shortage Emergency is:

"A serious water shortage emergency exists and it is necessary to conserve the available water supply for public health and safety, while trying to minimize negative impacts to the local economy. The District needs the cooperation from its customers to achieve a 20 percent reduction in water consumption. "

Stage 4: Severe Water Shortage Emergency
This stage would include mandatory restrictions and water allocations. At this stage decorative landscape irrigation would be prohibited and residential allocations would be severely reduced from the previous stage. Penalties and surcharges would continue to be implemented for non-compliance with mandatory restrictions.

- Continue with actions and measures taken in stages 1, 2 and 3
- Adjust residential and commercial allocations for a more severe water shortage
- Consider the prohibition of all new landscape installation
- Only allow irrigation for the survival of approved trees and edible crops
- Schedule staff for enforcement and customer service on the weekends
- Prohibit on-site fleet, dealership and residential vehicle washing
- Prohibit the use of portable meters, except for sewer agency
- Consider deferring capital improvement projects

An example of the public message for Stage 4 – Severe Water Shortage Emergency is:

"A severe water shortage emergency exists and it is necessary to conserve water to the maximum extent possible. The District needs the cooperation from all its customers to achieve a 30 percent reduction in water consumption."

Stage 5: Critical (catastrophic) Water Shortage Emergency
This stage is the most severe. The need for demand reduction could include a combination of mandatory measures, penalties and rate surcharges. Allocations would be implemented to meet the minimum health and safety standards. This could be used as the last stage of a progressive situation, such as a drought of increasing severity, or to address an immediate crisis, such as; a facility failure, natural disaster or power failure.

- Continue with actions and measures from stages 1, 2, 3 and 4
- Adjust allocations for a critical water shortage emergency
- Provide special notification to major users and the hospitality industry in the area
- Close public pools and public showers
- Prohibit water used for recreational purposes (showers and restrooms at public parks and camping facilities)
- Consider purchasing bottled water to provide to customers for nominal charge or free of charge
- For extended catastrophic emergencies consider the use of a portable treatment plant (membrane) to treat groundwater, brackish water or saltwater to supplement water supplies

An example of the public message for Stage 5 – Critical Water Shortage Emergency is:

"A critical water shortage emergency exists and there is only water to meet the most basic needs of the community. The hardship to residential and commercial customers is severe and the District appreciates the cooperation of its customers to meet a 50 percent reduction in water consumption."

Reduction by Sales Category

In developing the allocations among the different sales categories and stages, the needs for public health and a healthy economy were considered. During a water shortage, the priority for public health, sanitation and safety are given priority over other water uses.

Table 8 shows the water supply allocations at the different stages of a water shortage. The baseline (zero deficiency) is based on the most recent five year average demand by sales class. This table represents the analysis that must be done during every water shortage episode and at every water shortage stage because each water shortage episode has unique considerations based on the severity and cause of the water shortage. Each sales class or sector is listed with the percent of normal allocation and the allocation in million gallons. Based on the severity of the water deficiency and the resulting allocations, a plan can be developed to meet the necessary reductions. The actions and measures described for each stage are intended to meet the required reduction.

A population of 20,000 for the service area was assumed in the calculations for the residential component, as illustrated in Table 6. Table 6 represents the residential allocation at the different stages.

Table 6 - Residential Component of Stages		
Stage	Percent of Allocation	GPCD
0	100	61
1	95	58
2	90	55
3	80	49
4	75	46
5	58	34

Table 6 illustrates per person allocations and the percent of a normal year's allocation. The most severe water shortage stage allocates approximately 34 gallons per day per person. This table shows the progression of reducing residential demand during the different water shortage stages and confirms that enough water has been allocated to meet the basic domestic sanitation needs of the residential population.

With high efficiency fixtures and significant hardship, 34 gallons per day per person should provide enough water to meet the health and safety standards for residential customers. There will be some individuals with special medical needs that will need additional water allocated and any rationing scenarios implemented will need to take into account customers with special needs.

Table 7 illustrates how a dwelling with high efficiency fixtures could meet the most severe water shortage allocation of 34 gallons per day per person.

Table 7 - Stage 5 Residential GPCD			
Fixture	Multiplier	Efficiency	Gallons
Toilet	5 Flushes	1.28 gpf	7
Shower	7 minutes	2.0 gpm	14
Clothes Washer	1/3 WF	4.5 WF	2
Kitchen Sink	3 minutes	2.2 gpm	7
Dishwasher	1/3 cycle	6.5 g/cycle	2
Bathroom Sink	2 minutes	1.5 gpm	3
Total			34

For non-residential customers, a percent reduction from a chosen base year would be the method for reducing water demand. This method is commonly used as a method for non-residential customers because it is considered easy to understand and to administer. The negatives of this method are that it can be perceived as penalizing customers that are water efficient because they will be asked to reduce consumption from a base consumption that is already water efficient.

To some extent, financial rationing will be in place for all customers because rates will be higher and special penalties and charges will be in place for customers that use more water than they are allocated. Financial rationing gives an added incentive to reduce water consumption.

Another rationing method that will be used for all customers are specific use restrictions which prohibit certain uses of water; such as surface washing, vehicle washing, new connections and irrigation restrictions. This method is used in instances where other rationing methods might not be effective or there is the need for an immediate reduction in water use. This method is time and staff intensive because it requires patrolling the service area to look for violations.

Enforcement

During prior water shortage periods, the District implemented excess use fees to residential customers who consumed more water than their allocation. The fees were determined based on an allocation formula that considered, among other things, the number of residents per residential housing unit. Other enforcement measures used by the District include the installation of flow restrictors on a water service and turning off water service for specified time periods.

Table 8 – Water Supply Allocations

	Baseline 0% Deficiency		Stage 1 5% Deficiency		Stage 2 10% Deficiency		Stage 3 20% Deficiency		Stage 4 30% Deficiency		Stage 5 50% Deficiency	
	Allocation		Allocation		Allocation		Allocation		Allocation		Allocation	
	%	MG	%	MG	%	MG	%	MG	%	MG	%	MG
Floriculture/Agriculture	**100**	**97**	95	92	95	92	90	88	83	81	50	49
Beaches and Parks	**100**	**5**	95	4	95	4	90	4	75	3	25	1
Recreation	**100**	**2**	95	2	95	2	90	1	80	1	50	1
Marine Related	**100**	**6**	95	6	95	6	90	6	83	5	50	3
Restaurants	**100**	**16**	95	16	95	16	90	15	83	14	50	8
Commercial	**100**	**46**	95	44	90	41	90	41	80	37	50	23
Hotels & Motels	**100**	**31**	95	29	95	29	90	28	83	25	50	15
Schools	**100**	**12**	95	11	90	11	90	11	83	10	58	7
Residential	**100**	**446**	95	423	90	401	80	356	75	334	58	258
Dedicated Irrigation	**100**	**67**	95	64	80	54	50	33	0	0	0	0
Portable Meter Sales	**100**	**4**	75	3	70	3	50	2	25	1	0	0
Total Demand	**100**	**731**	95	694	90	658	80	585	70	512	50	366
Demand Reduction	**0**	**0**	5	37	10	73	20	146	30	219	50	365
Residential gpcd		61		58		55		49		46		34

Appendices

Appendix A

Sample Drought Ordinance

ORDINANCE NO. ____

COASTSIDE COUNTY WATER DISTRICT

AN ORDINANCE ESTABLISHING RULES AND REGULATIONS FOR RATIONING WATER DURING A WATER SHORTAGE EMERGENCY AND ESTABLISHING PENALTIES FOR VIOLATIONS THEREOF

BE IT ORDAINED BY THE BOARD OF DIRECTORS OF THE COASTSIDE COUNTY WATER DISTRICT AS FOLLOWS:

Section 1: Findings and Determinations

This ordinance is adopted in light of the following facts and circumstances, which are hereby found and declared by the Board of Directors.

Whereas, the District obtains the majority of its water from the San Francisco Public Utilities Commission (SFPUC) and is substantially dependent on the SFPUC supply throughout the year and particularly in dry years.

Whereas, the SFPUC has, on (insert date), found that due to (add qualifier; critically or severely) low water supplies within the reservoirs and anticipated low levels of inflow into such reservoirs, water consumption must be decreased and has declared a water shortage emergency.

Whereas, the SFPUC has adopted a water conservation program under which the amount of water allocated to the District will be reduced by approximately (insert percentage) during fiscal year (insert year).

Whereas, the District's local sources of water, which supplement the water supplies purchased from SFPUC, are also below normal as a result of (insert number of years or months) of below normal precipitation.

Whereas, the actions of the SFPUC, and the reduced amount of water available from local sources, a water shortage emergency exists within the area served by the District.

Whereas, the rules, regulations and restrictions set forth in this ordinance are intended to conserve the water supply of the District for the greatest public benefit with particular regard to domestic use, sanitation and fire protection.

Whereas, according to the District's Water Shortage and Drought Contingency Plan, conditions exist to implement Stage (insert stage number and description here), as developed under authority of California Water Code Section 10632.

Whereas, the specific uses prohibited or restricted by this ordinance are nonessential, and if allowed would constitute wastage of District water, and should be prohibited pursuant to the District's authority under California Water Code section 350 – 359 et seq., California Water Code Section 31026 et seq., and the common law.

Whereas, the actions taken hereinafter are exempt from the provisions of Section 21000 et seq. of the Public Resources Code as a project undertaken as immediate action necessary to prevent or mitigate an emergency pursuant to Title 14, California Code of Regulations Section 15269 and as a project undertaken to assure the maintenance, restoration or enhancement of a natural resource pursuant to Title 14, California Code of Regulations Section 15307.

Section 2: Definitions

A. "District" means Coastside County Water District
B. "General Manager" means the General Manager of the District.
C. "Person" means any person, firm, partnership, association, corporation, company, organization or governmental entity.
D. "Customer" means any person, whether within or without the geographic boundaries of the District, who uses water supplied by the District.
E. "Billing Unit" means a quantity of water equal to 100 cubic feet (ccf) or 748 gallons.
F. "Account" means a metered or unmetered water service.

Section 3: Prohibition of Nonessential Water Use

It shall be unlawful for any person to use water obtained from the water system of the District for nonessential uses as hereinafter defined in Sections 4 and 5.

Section 4: Allocations

A. Use of water in excess of the following allocation is hereby determined to be nonessential:

1. Residential Accounts
   a. Basic Allocation: The allocation for each billing period (monthly or bi-monthly) shall be:

      1. Minimum Allocation: Residential customers shall be granted an allocation based on the number of permanent, full-time residents. A customer shall submit evidence, satisfactory to the General Manager, of the number of permanent, full–time residents. The minimum allocation for a billing period is determined as follows:

Number of full-time permanent residents per living unit	Bi-Monthly Allocation (in billing units)	Monthly Allocation (in billing units)
One person	(insert ccf)	(insert ccf)
Second Person	(insert ccf)	(insert ccf)
Each Additional Person	(insert ccf)	(insert ccf)
For example, the minimum bi-monthly allocation for a living unit with three permanent, full-time residents would be (insert ccf) billing units.		

2. Maximum Allocation: No residential customer shall be entitled to an allocation of more than (insert ccf) billing units during a bi-monthly billing period.

3. Allocation for Livestock: Residential customers shall be entitled to an allocation for livestock: The allocation for a billing period is determined as follows:

Livestock	Gallons Per Day
Horse	12
Cow	20-45
Pig	5
Sheep/Goat	2
Poultry/Fowl	15/Q100
University of New Hampshire Cooperative Extension "water conservation on dairy and livestock farms"	

2. Non-Residential Customers

(fill in percent) of the base year (insert base year) during the corresponding billing period is allowed.

3. Dedicated Irrigation Customers

(fill in percent) of the base year (insert base year) during the corresponding billing period is allowed.

4. Raw Water Customers Under Contract

During a water emergency, customers under special contract shall not receive any water.

5. Allocation Where No Past History Exists

When water records are not available, individual allocations will be calculated on the basis of the current occupancy.

Section 5: General Prohibitions

The following uses of water are hereby determined to be nonessential:

A. Use of water through any meter when the customer has been given 24 hours notice to repair broken or defective plumbing, sprinkler, watering or irrigation systems and has failed to effect such repairs.

B. Use of water which results in flooding or runoff in gutters or streets.

C. The use of non-recycled water for washing cars, buses, boats, trailers, motorcycles, vehicles, and other equipment, except for washing with a bucket and rinsing with a hand held hose equipped with a nozzle with a positive shutoff valve.

D. Use of water through a hand-held hose for washing sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard surfaced areas.

E. Use of water for initially filling or refilling any swimming pool, sauna or hot tub constructed after the date of this ordinance.

F. Use of water for construction purposes, such as dust control and consolidation of backfill.

G. Service of water by restaurants except upon the specific request of the customer.

H. Use of water for residential and commercial decorative landscaped areas, unless the plants are edible and are intended to be used as a source of food for customers. Golf courses are exempt from this prohibition.

Section 6: Exceptions

Written applications for an exception to water use restrictions (Section 5) or for an adjustment to an allocation (Section 4) may be made to the General Manager on a form provided by the District.

The General Manager may grant an exception or adjust an allocation if he finds that (1) failure to do so would adversely affect the health, sanitation, fire protection or safety of the customer or the public, or (2) failure to do so would cause an unnecessary and undue hardship to the customer or the public, such as loss of jobs in the community. The General Manager may condition the exception or adjustment upon the customer's adopting practical water conservation measures.

A customer may appeal a decision of the General Manager to the Board of Directors. To do so, he or she must submit a written statement of the reasons for the appeal, together with evidence for support.

Section 7: Excess Water Use Charge

A. An excess use charge shall be imposed on water used in excess of a customer's allocation, during each billing period, as follows:

Amount in Excess of Allocation	Excess Use Charge
Up to 10% over allocation	(insert multiplier) times the applicable regular unit rate
10.01% -20% over allocation	(insert multiplier) times the applicable regular unit rate
20.01% - 25% over allocation	(insert multiplier) times the applicable regular unit rate
25.01% or more over allocation	(insert multiplier) times the applicable regular unit rate

B. The excess use charges are in addition to the basic rate for water used.

C. One billing unit will be subtracted from the consumption amount used to calculate excess use charges to account for the fact that meter reads are based on whole numbers, so the previous billing period's usage could be carried over to the next billing period, if it was less than 1ccf.

Section 8: Rates

A. The District shall recover the cost of increased rates imposed by the SFPUC.

Water Shortage Rates		
Sales Class	Consumption Range	$/ccf
Non Residential		
	1+	$ (insert dollar amount)
Residential		
	0-8	$ (insert dollar amount)
	9-25	$ (insert dollar amount)
	26-40	$ (insert dollar amount)
	41+	$ (insert dollar amount)

B. The District shall institute a water shortage surcharge to recover the increased costs of operations, maintenance and additional staffing needed for enforcement of rules and regulations. This surcharge is in addition to meter base charges.

Water Shortage Surcharge		
Meter Size	Monthly	Bi-Monthly
5/8 ”	$ (insert dollar amount)	$ (insert dollar amount)
5/8 ” (serving 2 dwelling units)	$ (insert dollar amount)	$ (insert dollar amount)
3/4 “	$ (insert dollar amount)	$ (insert dollar amount)
3/4 “ (serving 2 dwelling units)	$ (insert dollar amount)	$ (insert dollar amount)
1 “	$ (insert dollar amount)	$ (insert dollar amount)
1- 1/2 “ (1.5 “)	$ (insert dollar amount)	$ (insert dollar amount)
2 “	$ (insert dollar amount)	$ (insert dollar amount)
3 “	$ (insert dollar amount)	$ (insert dollar amount)
4 “	$ (insert dollar amount)	$ (insert dollar amount)

Section 9: Enforcement

A. Installation of Flow Restricting Devices

In lieu of, or in addition to, the penalties provided for in Section 356 and Section 31029 of the California Water Code, the District may, after one written warning, install a flow restricting device on the service line of any customer violating any of the provisions of this ordinance, including use of water in excess of the allocation set out on Section 4.

B. Charges for Installation of Flow Restricting Devices and Restoration of Service

Meter Size	Installation Charge	Removal Charge
5/8” to 1”	(insert charge)	(insert charge)
1-1/2” to 2”	(insert charge)	(insert charge)
3” and larger	(insert charge)	(insert charge)

First installation to be a minimum of 3 days; succeeding installations shall be a minimum of 10 days.

C. Discontinuance of Water Service

Continued water consumption in excess of the allocation may result in the discontinuance of water service by the District. A charge of (insert charge) shall be paid prior to reactivating the service.

Section 10: Effective Date

All provisions of this ordinance shall become effective immediately. Excess use charges shall become effective, and shall be included in billing statements commencing with billing statements mailed on or after July 1, (insert year).

Section 11: Severability

If any provision of this ordinance is held to be invalid, or unenforceable in particular circumstances, such invalidity shall not affect the remainder of the ordinance which shall continue to be of full force and effect and the Board declares this ordinance to be severable for that purpose.

Section 12: Publication

The Secretary is hereby directed to arrange for this ordinance to be published in a newspaper of general circulation in the District.

Passed and Adopted this (insert date) day of (insert month), (insert year) by the following vote:

Ayes:

Noes:

Absent:

_____
President, Board of Directors
Coastside County Water District

Attest:

_____
Secretary

Appendix B

Emergency Contact List

The complete and current emergency contact list can be found in the District's **Readiness Emergency Response & Emergency Communications Plan**.

Emergency Contact List			
Category		**Contact**	**Phone Number**
Public Safety			
	County Dispatch		650-363-4951
	Sheriff		650-726-4435
	County HAZMAT		650-802-4259
			650-363-4305
	Half Moon Bay Police Department		650-726-8288
		Sergeant	650-504-5080
		Chief	650-504-5077
	Coastside Fire Protection District		650-726-5213
		Chief	650-740-7245
			650-740-7248
Utilities			
	PG&E		650-726-6882
			650-222-6049
		Jay Strange	800-468-4743
			800-743-5000
	Sewer Authority Mid-Coastside		650-726-0124
	San Francisco Public Utilities Commission	Engineer	650-872-5900
		Water Quality	650-652-3102
		Paul Gambon	650-808-3811
			650-302-1733
		Pilarcitos Caretaker	415-518-2666
	USA		800-277-2600
	AT&T	Field Repair	800-332-1321
		Half Moon Bay Central	650-726-0027
		Test Center	800-924-9632
		Eric (Dispatch)	510-498-8023
	Montara Water And Sanitary District		650-728-3545
State Contacts			
	California Department of Public Health	Eric Lacy	510-620-3453
		Thuy Van Tsang	510-620-3602
	California Regional Water Quality Control Board		510-622-2300
		Lou Gonzles	510-622-2365
	Governor's Office of Emergency Services		916-845-8510
San Mateo County			
	San Mateo County Office of Emergency Service	Homeland Security	650-363-4790
	San Mateo County Harbor District		650-7264723
	San Mateo County Public Works	Steve Fischer	650-599-7281
	San Mateo County Environmental Health		650-627-8244
Schools			
	Cabrillo Unified School District		650-712-7160
Fuel			
	Alves Petroleum		650-726-4661
City of Half Moon Bay			
	City Manager		650-726-8270
	Public Works Department		650-726-8260
Laboratories			
	San Mateo County Public Health Laboratory		650-573-2500
	Monterey County Department of Public Health		831-755-4516

Appendix C

Reference Materials

City of Santa Cruz, City of Santa Cruz Water Department, Water Shortage Contingency Plan March 2009

Coastside County Water District, Coastside County Water District Readiness Emergency Response and Emergency Communication Plan June 2010

Coastside County Water District, Coastside County Water District Water System Emergency Response Plan 2009

State of California, California Natural Resources Agency and the Department of Water Resources, California Drought Contingency Plan November 2010

State of California, Department of Water Resources, Office of Water Use Efficiency and Transfers State of California Urban Drought Guidebook 2008 Updated Edition