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FINAL  
Port Hueneme Water Agency  
Urban Water  
Management Plan

October 2011

Prepared for  
Port Hueneme Water Agency  
250 North Ventura Road  
Port Hueneme, CA 93041

K/J Project No. 1089018\*00

## Table of Contents

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<i>List of Tables</i> .....	<i>iii</i>
<i>List of Figures</i> .....	<i>iii</i>
<i>List of Appendices</i> .....	<i>iii</i>
<i>List of Acronyms</i> .....	<i>iv</i>
Section 1: Introduction .....	1-1
1.1 Purpose .....	1-1
1.2 Overview of Document.....	1-2
1.3 Implementation of the Plan.....	1-2
1.3.1 Joint Preparation of the Plan.....	1-2
1.3.2 Public Outreach.....	1-3
1.4 Port Hueneme Water Agency.....	1-3
1.5 PHWA Retail Water Purveyors.....	1-6
1.5.1 City of Port Hueneme.....	1-6
1.5.2 Channel Islands Beach Community Services District (CIBCSD).....	1-6
1.5.3 Naval Base Ventura County.....	1-7
1.6 Climate .....	1-7
1.6.1 Potential Effects of Global Climate Change .....	1-7
Section 2: Water Use .....	2-1
2.1 Overview .....	2-1
2.2 Historical Water Use.....	2-1
2.3 Projected Regional Water Use.....	2-1
2.3.1 Purveyor Projections.....	2-1
2.3.2 Low Income Demands .....	2-2
2.4 Baselines and Targets.....	2-4
2.4.1 Weather Effects on Water Usage.....	2-4
2.4.2 Conservation Effects on Water Usage .....	2-5
Section 3: Water Resources .....	3-1
3.1 Overview .....	3-1
3.2 Imported Water Supplies.....	3-1
3.2.1 CMWD State Project Water Supply .....	3-1
3.2.2 CMWD Facilities.....	3-2
3.2.3 CMWD Reliability of Supply .....	3-2
3.3 Local Groundwater Supply .....	3-3
3.3.1 UWCD Local Groundwater Supply and Facilities.....	3-4
3.3.2 UWCD Groundwater Availability and Reliability.....	3-5

## Table of Contents (cont'd)

3.3.3	Fox Canyon Groundwater Management Agency (FCGMA) .....	3-6
3.3.4	FCGMA Ordinance No. 8.....	3-7
3.4	Transfers, Exchanges, and Groundwater Banking Programs.....	3-7
3.5	Planned Water Supply Projects and Programs.....	3-8
3.6	Development of Desalination .....	3-8
Section 4:	Recycled Water .....	4-1
4.1	Overview .....	4-1
4.2	Wastewater Treatment Facilities.....	4-1
4.3	Current Water Recycling Uses.....	4-1
4.4	Regional Recycled Water Master Plan .....	4-1
4.5	Impact of GREAT Program on PHWA .....	4-2
Section 5:	Water Quality.....	5-1
Section 6:	Reliability Planning .....	6-1
6.1	Overview .....	6-1
6.2	Reliability of Water Supplies .....	6-1
6.2.1	Wholesale Supply Reliability.....	6-1
6.2.2	Groundwater Supply Reliability.....	6-2
6.3	Normal, Single-Dry and Multiple-Dry Year Planning.....	6-2
6.3.1	Normal/Average Water Year Assessment .....	6-2
6.3.2	Single Dry-Year Water Assessment .....	6-3
6.3.3	Multiple Dry-Year Water Assessment .....	6-3
Section 7:	Water Demand Management Measures .....	7-1
7.1	Conservation Program Background.....	7-1
7.2	Implementation of DMMs .....	7-1
7.2.1	Utility Operations .....	7-2
7.2.1.1	Conservation Coordinator.....	7-2
7.2.1.2	Wholesale Agency Assistance .....	7-2
7.2.1.3	Water Loss Control.....	7-2
7.2.2	Education.....	7-2
7.2.2.1	Public Information.....	7-2
7.2.2.2	School Education.....	7-2
Section 8:	Water Shortage Contingency Planning.....	8-1
8.1	Overview .....	8-1
8.2	Emergency Preparedness .....	8-1
8.3	Actions to Prepare For Catastrophic Interruption.....	8-1
8.4	Three-Year Minimum Supply .....	8-3
8.5	PHWA and the Water Purveyors .....	8-3

## Table of Contents (cont'd)

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8.6	New Demand .....	8-3
8.7	Penalties for Excessive Use and Appeals Procedure .....	8-3

## List of Tables

---

1-1	Agency Coordination
1-2	Public Participation Timeline
1-3	Climate
2-1	Historic Deliveries to Purveyors
2-2	City Current and Projected Water Deliveries
2-3	CIBCSD Current and Projected Water Deliveries
2-4	NBVC Current and Projected Water Deliveries
2-5	PHWA Projected Water Deliveries
2-6	Low Income Demands
6-1	Water Supply and Demand Comparison for an Average Water Year
6-2	Water Supply and Demand Comparison for a Single Dry Water Year
6-3	Water Supply and Demand Comparison for a Multiple Dry Water Year
8-1	Three-Year Minimum Water Supply (AF)

## List of Figures

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1-1	PHWA Service Area and Retail Customers
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## List of Appendices

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A	DWR Checklist
B	<i>Signed Resolution (October 17, 2011)</i>

## Table of Contents (cont'd)

## List of Acronyms

AF	Acre-feet
AFY	acre-feet per year
AWPF	Advanced Water Purification Facility
BWRDF	Brackish Water Demonstration Reclamation Facility
Cal/EPA	California Environmental Protection Agency
CARB	California Air Resources Board
CAT	Climate Action Team
cfs	cubic feet per second
CIBCSO	Channel Islands Beach Community Services District
City	City of Port Hueneme
CMWD	Calleguas Municipal Water District
COPH	City of Port Hueneme
CVP	Central Valley Project
DHS	California State Department of Human Services
DWR	Department of Water Resources
Energy Commission	California Energy Commission
FCGMA	Fox Canyon Groundwater Management Agency
gpd/ft <sup>2</sup>	gallons per day per square foot
gpm	gallons per minute
GREAT	Groundwater Recovery Enhancement and Treatment
IRP	Integrated Resource Plan
LAS	Lower Aquifer System
M&I	Municipal and Industrial
MCL	maximum contaminant levels
MGD	million gallon per day
MTBE	methyl tert-butyl ether
MWD	Metropolitan Water District of Southern California
NBVC	Naval Base Ventura County
NF	nanofiltration
°F	Degrees Fahrenheit
O-H	Oxnard-Hueneme
OWTP	Oxnard Wastewater Treatment Plant
PHWA	Port Hueneme Water Agency
ppm	parts per million
RO	reverse osmosis
RUWMP	Regional Urban Water Management Plan
SWP	State Water Project
TDS	total dissolved solids
UAS	Upper Aquifer System
USNAWS	United States Naval Air Weapons Station
USNCBC	United States Naval Construction Battalion Center
UWCD	United Water Conservation District
UWMP	Urban Water Management Plan

## Section 1: Introduction

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### 1.1 Purpose

An Urban Water Management Plan (UWMP) is a planning tool that generally guides the actions of water management agencies. It provides managers and the public with a broad perspective on a number of water supply issues. It is not a substitute for project-specific planning documents, nor was it intended to be when mandated by the State Legislature. For example, the Legislature mandated that a plan include a section which “describes the opportunities for exchanges or water transfers on a short-term or long-term basis,” (California Urban Water Management Planning Act, Article 2, Section 10630[d]). The identification of such opportunities, and the inclusion of those opportunities in a general water service reliability analysis, neither commits a water management agency to pursue a particular water exchange/transfer opportunity, nor preclude a water management agency from exploring exchange/transfer opportunities not identified in the plan. When specific projects are chosen to be implemented, detailed project plans are developed, environmental analysis, if required, is prepared, and financial and operational plans are detailed.

The California Urban Water Planning Act requires urban water suppliers to describe and evaluate sources of water supply, efficient uses of water, demand management measures, implementation strategy and schedule and other relevant information. UWMPs are required to be submitted to the California Department of Water Resources (DWR) every five years. In accordance with Water Code §10631.5, a UWMP is required in order for a water supplier to be eligible for the DWR-administered state grants and loans and drought assistance.

In short, this Plan is a management tool, providing a framework for action, but not functioning as a detailed project development or action. It is important that this Plan be viewed as a long-term, general planning document, rather than as an exact blueprint for supply and demand management. Water management in California is not a matter of certainty, and planning projections may change in response to a number of factors. From this perspective, it is appropriate to look at the Plan as general planning framework, not a specific action plan. It is an effort to generally answer a series of planning questions including:

- What are the potential sources of supply and what is the reasonable probable yield from them?
- What is the probable demand, given a reasonable set of assumptions about growth and implementation of good water management practices?
- How well do supply and demand figures match up, assuming that the various probable supplies will be pursued by the implementing agency?

Using these “framework” questions and resulting answers, the implementing agency will pursue feasible and cost-effective options and opportunities to meet demands. Port Hueneme Water Agency (PHWA) and the retail water purveyors will explore enhancing basic supplies from traditional sources such as the State Water Project (SWP) as well as other options. These include groundwater extraction, water exchanges, recycling, desalination, and water banking/conjunctive use. Specific planning efforts will be undertaken in regard to each option, involving detailed evaluations of how each option would fit into the overall supply/demand

framework, how each option would impact the environment, and how each option would affect customers. The objective of these more detailed evaluations would be to find the optimum mix of conservation and supply programs that ensure that the needs of the customers are met.

The California Urban Water Management Planning Act requires preparation of a plan that:

- Accomplishes water supply planning over a 20-year period in five year increments (this plan utilizes a 25-year planning period).
- Identifies and quantifies adequate water supplies, including recycled water, for existing and future demands, in normal, single-dry, and multiple-dry years.
- Implements conservation and efficient use of urban water supplies.

## 1.2 Overview of Document

The data found in this Urban Water Management Plan is provided for the PHWA wholesale service area.

## 1.3 Implementation of the Plan

PHWA began preparation of its UWMP in October 2010. The final draft of the updated plan was adopted by the Agency Board in September 2011 and submitted to DWR within 30 days of Board approval. Attached as Appendix B is a signed copy of the resolution adopting the plan. This plan includes all information necessary to meet the requirements of California Water Code Division 6, Part 2.6.

### 1.3.1 Joint Preparation of the Plan

This plan was prepared in conjunction with efforts of other agencies within Ventura County. Table 1-1 provides a summary of the Agency Coordination for this Plan.

**TABLE 1-1  
AGENCY COORDINATION**

	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt
City of Port Hueneme	X	X	X	X	X	X
United Water Conservation District				X	X	
CIBCSD					X	X
NBVC					X	X
Calleguas Municipal Water District				X	X	
County of Ventura					X	X

Note: To be updated for Final.

### 1.3.2 Public Outreach

PHWA has encouraged community participation in water planning. For the current Plan, six public workshop sessions were held to solicit input on the Draft Plan before its adoption. Interested groups were informed about the development of the Plan along with the schedule of public activities. Notices of public meetings were published in the local press and at the water purveyor websites. Copies of the Draft Plan were made available at the water purveyors' offices and websites, local public libraries and sent to the City of Port Hueneme (City) and the County of Ventura, as well as to interested parties as identified in Table 1-1. Water purveyors also convened meetings with various interests to gather data concerning planned development and the probable implementation of approved development. Such informed data gathering on important issues is a means of checking the short-term "reality" of official projections and understanding the concerns of various groups.

PHWA notified the cities and counties within its service area of the opportunity to provide input regarding the Plan. Table 1-2 presents a timeline for public participation during the development of the Plan. A copy of the public outreach materials, including paid advertisements, newsletter covers, website postings and invitation letters are attached in Appendix B.

**TABLE 1-2  
PUBLIC PARTICIPATION TIMELINE**

Public Workshops and Hearings	Date	Public Participation Task[MLC1]
Public Workshop		
Public Hearing	October 17, 2011	
Plan Adoption	October 17, 2011	
Plan Submittal	October 31, 2011	

The components of public participation include:

- Local Media
- Community-Based Outreach
- Water Purveyors Public Participation
- City/County Outreach
- Public Availability of Documents

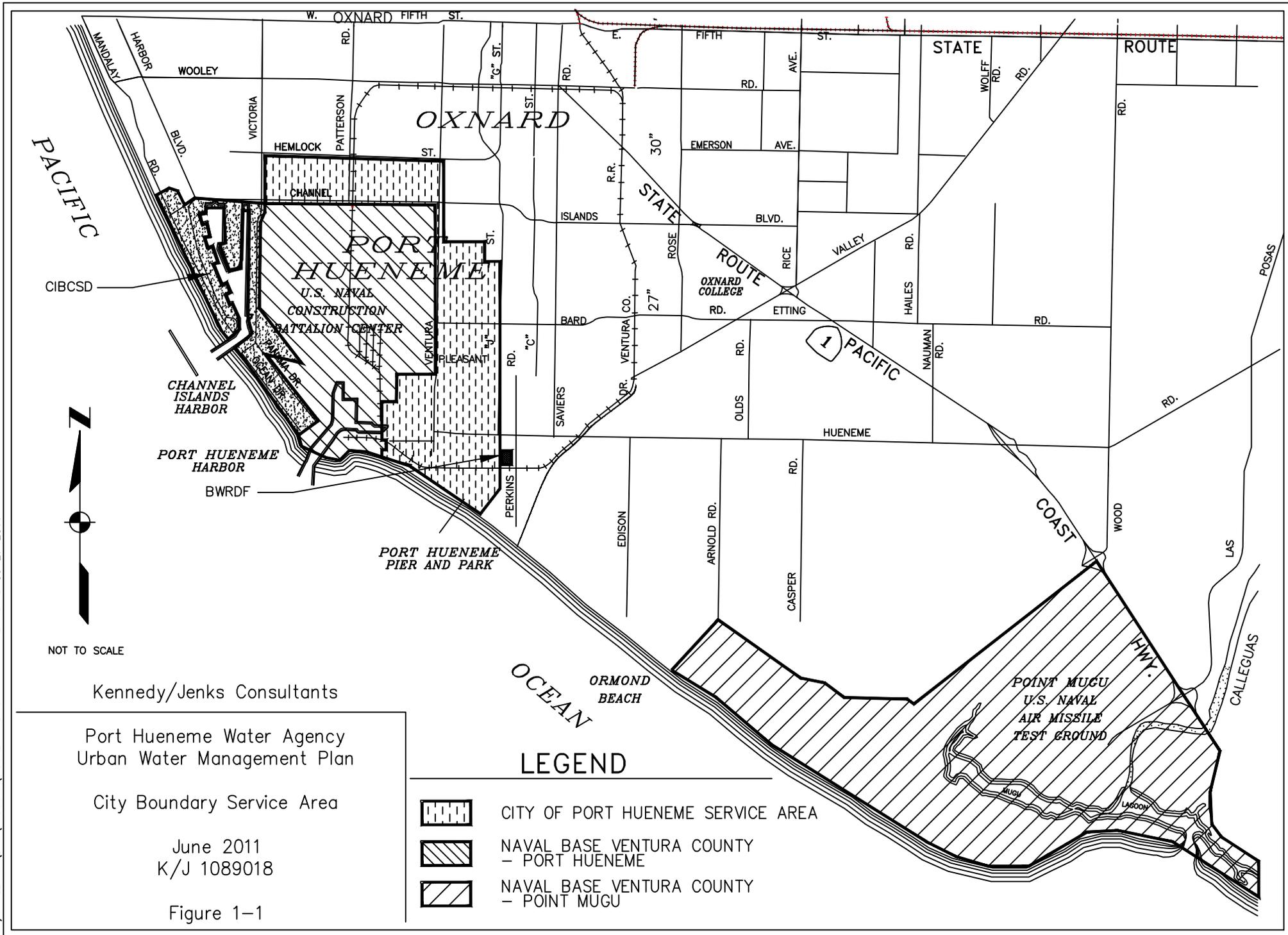
### 1.4 Port Hueneme Water Agency

The PHWA was formed in July 1994 as a means to better manage sub-regional urban water supplies for their customers. Along with the City of Port Hueneme, two neighboring Naval Bases became participants in the PHWA: 1) United States Naval Construction Battalion Center (USNCBC) and 2) the United States Naval Air Weapons Station (USNAWS). Since then, the USNCBC and USNAWS have been combined to form the Naval Base Ventura County (NBVC), and are served by PHWA.

The PHWA Board of Directors is composed of three City Council members from the City of Port Hueneme and two directors from the Channel Islands Beach Community Services District (CIBCSO). PHWA operates as a cost-effective conjunctive use water supply entity, which provides a means to reduce historical sea water intrusion along the coast, enhances fire protection, improves water quality, encourages wastewater reclamation, and complies with the county-wide extraction reduction schedule.

The PHWA annexed to the Calleguas Municipal Water District (CMWD) and was successful in arranging the exchange and transfer of State Water Project (SWP) supplies on a long-term basis and securing its use in the future. The imported SWP supplies through Metropolitan Water District of Southern California (MWD) and CMWD helps to ensure long-term reliability of quantity and quality for PHWA customers.

Figure 1-1 is a map of the PHWA service area and its retail customers.



NOT TO SCALE

Kennedy/Jenks Consultants

Port Hueneme Water Agency  
Urban Water Management Plan

City Boundary Service Area

June 2011  
K/J 1089018

Figure 1-1

**LEGEND**

	CITY OF PORT HUENEME SERVICE AREA
	NAVAL BASE VENTURA COUNTY - PORT HUENEME
	NAVAL BASE VENTURA COUNTY - POINT MUGU

**Figure 1-1 PHWA Service Area and Retail Customers**

## 1.5 PHWA Retail Water Purveyors

### 1.5.1 City of Port Hueneme

The City of Port Hueneme is located midway between the cities of Santa Barbara and Los Angeles, on the Pacific Coast in western Ventura County and encompasses an incorporated area of 4.7 square miles.

The local economy is composed of varied commercial interests. Major employers include the Port of Hueneme, retail stores, light manufacturing, restaurants, educational institutions, and the US Navy. Cargo through the Port of Hueneme has increased to record levels prompting the federal designation as a Port of Entry and Foreign Trade Zone. A number of business and industrial parks generate extensive commercial activity. Attractive beaches and harbors draw significant tourism to the area.

During the last 50 years, the City has experienced a moderate growth in population. United States Census data for 2010 indicated a population of approximately 21,555 which represents a two percent decrease since 2000. The City also experiences a moderate seasonal population increase during the summer months due to tourism and agriculture. According to the Ventura Council of Governments, the City population per dwelling unit ratio is approximately 2.8 to 1, and is not expected to change appreciably in the next 20 years.

Prior to 1994, the City relied solely on groundwater supplies through a combination of wells owned and operated by the City and UWCD. Seawater intrusion in the Oxnard Plain aquifer systems rendered many wells unusable for drinking water purposes. Currently, the City purchases all potable water supplies from the PHWA.

### 1.5.2 Channel Islands Beach Community Services District (CIBCSD)

The Channel Islands Beach Community was formed in 1924 when the Hollywood Beach subdivision was initiated in unincorporated Ventura County. The communities of Silverstrand and Hollywood by the Sea were mapped in 1925 and 1926, respectively. Small water districts were formed to serve the needs of those communities, but were subsequently consolidated into the Channel Islands County Water District, serving the water and sewer needs of the entire beach and harbor area. The Channel Islands Beach community has a long history of actively identifying community needs and organizing to pursue common goals. A Beach Chamber of Commerce and Homeowners Association were formed in 1947 and were active until the CIBCSD was created.

Other organizations were formed in the late 1970s to prevent the annexation of the beach community by adjacent cities and to focus on common concerns. As a result, through action of the County of Ventura Board of Supervisors and beach community citizens, the CIBCSD was created in December 1982. Its creation was a result of the demand of the citizens of the beach community for an independent governmental entity to provide services including, but not limited to, water, sewer, and trash services.

### 1.5.3 Naval Base Ventura County

In the 1990s, two (2) US Naval facilities, Naval Construction Battalion Center - Port Hueneme, and the Naval Air Weapons Station-Point Mugu (located southeast of Port Hueneme), became participants in PHWA following its initial formation. The bases have since been combined to form the Naval Base Ventura County (NBVC). These Federal facilities are exempt from the UWMP Act.

## 1.6 Climate

The climate in the Port Hueneme/Channel Islands Harbor area is characterized by mild temperatures year round with dry, warm summers and wet, cool winters. Average maximum day temperature varies between 65 and 75 degrees Fahrenheit (°F). The region's low and high temperature extremes are 28°F and 103°F. The average regional rainfall is 14.8 inches, most of which occurs between November and March. Table 1-3 summarizes the climatologic data.

**TABLE 1-3  
CLIMATE**

	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>
Standard Monthly Average ETo (inches)	1.98	2.28	3.33	4.59	4.91	4.94
Average Rainfall (inches)	3.15	3.33	2.45	1.06	0.16	0.06
Average Max Temperature (°F)	65.5	66.0	66.5	68.0	69.2	71.2
Average Min Temperature (°F)	43.5	44.5	45.7	47.8	50.9	53.8

	<b>Jul</b>	<b>Aug</b>	<b>Sept</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Annual</b>
Standard Monthly Average ETo (inches)	4.92	5.03	3.67	3.16	2.49	2.16	43.46
Average Rainfall (inches)	0.02	0.04	0.20	0.38	1.51	2.47	14.82
Average Max Temperature (°F)	74.0	74.7	74.8	73.9	71.1	66.5	70.1
Average Min Temperature (°F)	56.7	57.5	56.0	52.2	47.2	44.2	50.0

Source: CIMIS data for the Port Hueneme Station No. 97 and the Western Regional Climate Center data for the Oxnard Station No. 046569.

### 1.6.1 Potential Effects of Global Climate Change

A topic of growing concern for water planners and managers is global warming and the potential impacts it could have on California's future water supplies. Climate change models have predicted that potential effects of global warming will result in increased temperature, reduction in Sierra Nevada snowpack depth, early snow melt, and a rise in sea level. In the 2009 update of the California Water Plan, multiple scenarios of future climate conditions are evaluated. These changing hydrological conditions could affect future planning efforts, which are typically based on historic conditions.

In June 2005, Governor Arnold Schwarzenegger issued Executive Order S-3-05, which requires biennial reports on climate change impacts in several areas, including water resources. The Climate Action Team (CAT) was formed in response to executive order S-3-05. To help unify analysis across topic areas, the CAT worked with scientists from the California Applications Program's California Climate Change Center to select a set of future climate projections to be used for analysis. For the 2008-2009 assessment of climate change impacts, the CAT selected

six different global climate change models, assuming two different greenhouse gas emission levels (a high end and a low end), for a total of 12 scenarios. The results of the study indicated that climate change has already been observed, in that in the last 100 years, air temperatures have risen about 1°F, and there has been a documented greater variance in precipitation, with greater extremes both in terms of heavy flooding and severe droughts.

The 2009 California Water Plan Update identifies the following probable impacts due to changes in temperature and precipitation:

- Decrease in snowpack, which is a major part of annual water storage, due to increasing winter temperatures.
- More winter runoff and less spring/summer runoff due to warmer temperatures.
- Greater extremes in flooding and droughts.
- Greater water demand for irrigation and landscape water due to increased temperatures and their impacts on plant water needs.
- Increased sea level rise, further endangering the functions of the SWP, which depends on movement of water through the low-lying channels of the low-lying Sacramento-San Joaquin Delta. Sea level rise could also require the SWP to release additional storage water to avoid sea water intrusion into the Delta.

Even without population changes, water demand could increase. Precipitation and temperature influence water demand for outdoor landscaping and irrigated agriculture. Outdoor water use is a large component of southern California water demands. Lower spring rainfall increases the need to apply irrigation water. Further, warmer temperatures increase evapotranspiration, which increases water demand.

## Section 2: Water Use

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### 2.1 Overview

This chapter describes historic and current water usage and the methodology used to project future demands within PHWA's service area. PHWA provides service to three purveyors of water: City of Port Hueneme, Channel Islands Beach Community Services District, and Naval Base Ventura County.

### 2.2 Historical Water Use

Predicting future water supply requires accurate historical water use patterns and water usage records along with coordinating with the three retail water purveyors. Table 2-1 presents the historical accounts and deliveries to each of PHWA's retail purveyors since 2005 as well as their combined totals.

**TABLE 2-1  
HISTORIC DELIVERIES TO PURVEYORS**

	2005	2006	2007	2008	2009	2010
<i>Purveyor</i>						
City of Port Hueneme	3,296	3,448	3,481	3,415	3,094	2,704
Channel Islands Beach Community Services District	744	721	774	692	657	628
Naval Base Ventura County	2,330	2,227	2,027	1,965	1,922	1,633
<b>Total</b>	<b>6,370</b>	<b>6,396</b>	<b>6,282</b>	<b>6,072</b>	<b>5,673</b>	<b>4,965</b>

Source: PHWA Sales Records – Including brine loss assignment

### 2.3 Projected Regional Water Use

#### 2.3.1 Purveyor Projections

Each of the three retail water purveyors provided projected water demands based on the projects that are under evaluation, are in the planning process, or the result of its own water planning efforts for its service area. The purveyors maintain historical data, as well as work closely with property owners and developers in their service areas, to ensure they have an adequate water supply and the necessary infrastructure to provide water service.

Since there are only three purveyors in the service area, there is close coordination and exchange of data. Tables 2-2 through 2-5 summarize the purveyors' projected water demands through 2035.

**TABLE 2-2  
CITY OF PORT HUENEME CURRENT AND PROJECTED WATER DELIVERIES**

	2010	2015	2020	2025	2030	2035
<b>Total</b>	<b>2,704</b>	<b>2,500</b>	<b>2,500</b>	<b>2,500</b>	<b>2,500</b>	<b>2,500</b>

Source: PHWA Sales Records – Including brine loss assignment (City is 99% built out. Demand is expected to stabilize at around 2,500 afy as a result of water meter installation and volumetric billing)

**TABLE 2-3  
CIBCSD CURRENT AND PROJECTED WATER DELIVERIES**

	2010	2015	2020	2025	2030	2035
<b>Total</b>	<b>628</b>	<b>716</b>	<b>773</b>	<b>829</b>	<b>886</b>	<b>886</b>

Source: CIBCSD Infrastructure Review February 2010. (Including brine loss assignment)

**TABLE 2-4  
NBVC CURRENT AND PROJECTED WATER DELIVERIES**

	2010	2015	2020	2025	2030	2035
<i>Naval Base Ventura County</i>						
NBVC-PH	766	728	690	690	690	690
NBVC-PM	867	824	780	780	780	780
<b>Total</b>	<b>1,633</b>	<b>1,552</b>	<b>1,470</b>	<b>1,470</b>	<b>1,470</b>	<b>1,470</b>

Source: PHWA Sales Records – Including brine loss assignment (NBVC not expected to increase population or demand, PHWA will strive for 10% reduction through conservation efforts with NBVC).

**TABLE 2-5  
PHWA PROJECTED WATER DELIVERIES**

	2010	2015	2020	2025	2030	2035
<i>Purveyor</i>						
City	2,704	2,500	2,500	2,500	2,500	2,500
CIBCSD	628	716	773	829	886	886
NBVC (2)	1,633	1,552	1,470	1,470	1,470	1,470
<b>Total</b>	<b>4,965</b>	<b>4,768</b>	<b>4,703</b>	<b>4,799</b>	<b>4,856</b>	<b>4,856</b>

### 2.3.2 Low Income Demands

Senate Bill 1087 requires that water use projections of a UWMP include the projected water use for single-family and multi-family residential housing for lower income households as identified in the housing element of any city, county, or city and county general plan in the service area of the supplier.

Housing elements rely on the Regional Housing Needs Allocation (RHNA) generated by the State Department of Housing and Community Development (HCD) to allocate the regional need for housing to the regional Council of Governments (COG) (or a HCD for cities and counties not covered by a COG) for incorporation into housing element updates. Before the housing element is due, the HCD determines the total regional housing need for the next planning period for each

region in the state and allocates that need. The COGs then allocate to each local jurisdiction its “fair share” of the RHNA, broken down by income categories; very low, low, moderate, and above moderate, over the housing element’s planning period.

Jurisdictions located within the region covered by the Southern California Association of Governments (SCAG), including the County of Ventura, were required to submit their adopted Housing Elements to the State Department of Housing and Community Development by July 1, 2008.

The City of Port Hueneme and the County of Ventura last updated their housing elements in 2008, and it covers the planning period 2008-2014. These elements incorporate the formally transmitted Ventura County housing allocation that was incorporated into the Final RHNA approved by the SCAG Regional Council on July 12, 2007<sup>1</sup>. The allocation for very low and low income classes as defined by the California Health and Safety Code were the following for the City of Port Hueneme:

- Very Low –20.0%
- Low –17.2%

Neither the SCAG RHNA nor the City of Port Hueneme and County housing elements further classify the allocation of low income households into single-family and multi-family residential housing units. For this reason, it is not possible to project water use for lower income households by this specific land use category. However, to remain consistent with the intent of the SB1087 legislation and also to comply with the UWMP Planning Act, intent has been made to identify those water use projections for very low- and low- residential income households based on the income category, classification percentage, calculated demand projections as shown in Table 2-6 below.

Note that the current planning period for the RHNA is January 1, 2006 to June 30, 2014. The next RHNA planning cycle will cover January 1, 2011 to September 30, 2021. Thus, the 2015 UWMP update will need to be updated with the next RHNA planning cycle and allocation low income category percentages.

City of Port Hueneme and Channel Islands Beach Community Services District will not deny or condition approval of water services, or reduce the amount of services applied for by a proposed development that includes housing units affordable to lower income households unless one of the following occurs:

- City of Port Hueneme and Channel Islands Beach Community Services District specifically finds that it does not have sufficient water supply,
- City of Port Hueneme and Channel Islands Beach Community Services District is subject to a compliance order issued by the State Department of Health Services that prohibits new water connections, and

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<sup>1</sup> Final Regional Housing Need Allocation Plan - Planning Period (January 1, 2006 - June 30, 2014) for Jurisdictions within the Six-County SCAG Region (approved by the SCAG Regional Council on July 12, 2007); [http://www.scag.ca.gov/housing/pdfs/rhna/RHNA\\_FinalAllocationPlan071207.pdf](http://www.scag.ca.gov/housing/pdfs/rhna/RHNA_FinalAllocationPlan071207.pdf)

- The applicant has failed to agree to reasonable terms and conditions relating to the provision of services.

**TABLE 2-6  
LOW INCOME DEMANDS**

	2015	2020	2025	2030	2035
City of Port Hueneme <sup>(c)</sup>	2,500	2,500	2,500	2,500	2,500
Very Low Income <sup>(b)</sup>	500	500	500	500	500
Low Income <sup>(b)</sup>	430	430	430	430	430
Sub-total City <sup>(a)</sup>	930	930	930	930	930
Channel Islands Beach Community Services District <sup>(d)</sup>	716	773	829	886	886
Very Low Income <sup>(b)</sup>	143	155	166	177	177
Low Income <sup>(b)</sup>	123	133	143	152	152
Sub-total CIBCSD <sup>(a)</sup>	266	288	309	329	329
<b>Total Low Income Demand</b>	<b>1,196</b>	<b>1,218</b>	<b>1,239</b>	<b>1,259</b>	<b>1,259</b>

**Notes:**

- (a) Demands already included within purveyor projections  
 (b) 2007 Adopted SCAG RHNA; allocation for very low income (20.0%), low income (17.2%)  
 (c) City Total water use (from Table 2-2)  
 (d) CIBCSD Total water use (from Table 2-3)

## 2.4 Baselines and Targets

As described in Senate Bill 7 of Special Extended Session 7 (SBX7-7), it is the intent of the California legislature to increase water use efficiency and the legislature has set a goal of a 20 percent per capita reduction in urban water use statewide by 2020. Only retail agencies supplying more than 3,000 connections or 3,000 acre-feet per year (AFY) are subject to SBX7-7's requirements. Urban wholesale water suppliers are not required to comply with the target-setting and reporting requirements of SBX7-7. PHWA is thus subject to regulatory requirements only in its role as a wholesaler.

According to Water Code §10608.36, wholesale agencies are required to include in their UWMPs an assessment of present and proposed future measures, programs, and policies that would help the retailers within their service area achieve the water use reductions required under SBX7-7. PHWA will encourage the participation of the retailers in existing conservation programs and welcome the introduction of creative ideas for new and collaborative efforts that will lead to the successful achievement of each entity's conservation goals.

Chapters 4 and 7 of this UWMP provide additional information on the types of plans and programs that PHWA may implement or assist with, to support water demand reduction goals.

### 2.4.1 Weather Effects on Water Usage

Two major factors that affect water usage are weather and water conservation. Historically, when the weather is hot and dry, water usage increases. This was observed from 2007 to 2009 when the State had its most recent drought. The amount of increase varies according to the number of consecutive years of hot, dry weather and the conservation activities imposed. During cool, wet years, historical water usage has decreased to reflect less water usage for external landscaping. Water conservation measures employed within PHWA's and the retail

purveyors' service areas have, and will continue to, have a direct long-term effect on water usage.

#### 2.4.2 Conservation Effects on Water Usage

In recent years, water conservation has become an increasingly important factor in water supply planning in California. Since the 2005, there have been a number of regulatory changes related to conservation including new standards for plumbing fixtures, a new landscape ordinance, a state universal retrofit ordinance, metering and billing requirements, new Green Building standards, demand reduction goals and more. These legislative and code changes will have the long-term impact of reducing demand for water in the urban sector in California, and will be expected to be observed by the member agencies within the PHWA service area.

NBVC is federally owned and subject to federal facilities requirements for water conservation. NBVC has begun to install smart irrigation control systems and facility metering. PHWA has also initiated discussions with the NBVC to identify additional conservation opportunities.

## Section 3: Water Resources

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### 3.1 Overview

This section describes the water resources available to PHWA for the 25-year period addressed by the Plan.

The term "dry" is used throughout this chapter in reference to water resources and reliability as a measure of supply availability. Dry years are those when supplies are the lowest, which primarily occurs when annual precipitation is lower than the long-term average precipitation. The impact of low precipitation in a given year on a particular supply may differ based on how low the precipitation is, or whether the year follows a high-precipitation year or another low-precipitation year.

For the SWP, a low-precipitation year may or may not affect supplies, depending on how much water is in SWP storage at the beginning of the year. Also, dry conditions can differ geographically. For example, a dry year can be local to the area affecting local groundwater replenishment and production; local to northern California affecting SWP water deliveries; or statewide affecting both local groundwater and the SWP. When the term "dry" is used in this Plan, statewide drought conditions are assumed, affecting both local groundwater and SWP supplies at the same time.

### 3.2 Imported Water Supplies

The lower percentage of PHWA water (20 percent) originates with water delivered through agreement with CMWD via MWD supply.

#### 3.2.1 CMWD State Project Water Supply

The PHWA purchases imported SWP water from CMWD, which in turn purchases it from MWD. Imported surface water originates in Northern California and is conveyed to southern California through the SWP system of reservoirs, aqueducts and pump stations. Water is filtered and disinfected at MWD's Joseph Jensen Filtration Facility in Granada Hills. CMWD receives the treated water via MWD's West Valley Feeder and CMWD's mile-long tunnel through the Santa Susana Mountains. CMWD either stores the treated water in Lake Bard or sends the water directly to its CMWD Springville Reservoir near Camarillo.

CMWD currently wholesales water to 23 local public agencies, including PHWA and private companies, which in turn deliver water to approximately 550,000 customers. CMWD supplies approximately 75 percent of the total demand within its service area, which is roughly 375 square miles in southern Ventura County. CMWD has served the needs of its members, without fail, except for a few days following the 1994 Northridge Earthquake.

Similarly, MWD has the same obligation to provide available water to its member agencies based on its existing statute, governing regulations, and agreements. MWD provides water to a service area of nearly 5,200 square miles currently composed of 26 member agencies, including cities, municipal water districts, and one county water authority. Those member agencies in

turn, serve water to residents in more than 145 cities and 94 unincorporated communities. Both MWD and CMWD are undertaking a variety of programs to increase the reliability of imported water deliveries. Both CMWD and MWD have, and will continue, to provide a reliable source of water to the PHWA.

### 3.2.2 CMWD Facilities

Facilities of CMWD include an open reservoir, water treatment plant, transmission lines, closed reservoirs, and pump stations. Water enters Ventura County and the CMWD system through the Santa Susana Tunnel via MWD's West Valley Feeders. Upon entering the CMWD system, the water flows by gravity to Lake Bard, located between the cities of Simi Valley and Thousand Oaks, for storage or is distributed throughout the system. Lake Bard has a total storage capacity of 10,500 acre-feet (AF) and is used for peaking and emergency use only. In 1995, CMWD completed the 50 million gallon per day (MGD) Lake Bard Water Filtration Plant. Water from Lake Bard serves mainly the lower pressure zones (i.e., Moorpark, Camarillo, and Oxnard) but can be pumped to the higher zones during emergencies.

The CMWD distribution system consists of more than 130 miles of pipelines and seven reservoirs ranging in size from 2 to 18 million gallons (MG). Ranging in size from 35 to 39 inches, the Oxnard-Santa Rosa Feeder delivers water to Camarillo and Oxnard. The 18 MG Springville Reservoir, located on the west end of the Camarillo Hills at the terminus of the Oxnard-Santa Rosa Feeder, is the largest CMWD reservoir. This reservoir serves the PHWA and City of Oxnard by gravity through the Oxnard Conduit.

### 3.2.3 CMWD Reliability of Supply

CMWD operates several facilities that increase the reliability of the CMWD's supply to its purveyors. These facilities are discussed below.

1. **Las Posas Aquifer Storage and Recovery**

As shown on Figure 2-1, CMWD and MWD have banked a significant amount of water in the Las Posas groundwater basin. This water can be extracted during times when imported supplies are curtailed.

2. **Lake Bard and Lake Bard Water Treatment Plant**

Lake Bard is located in the center of the CMWD service area and can store approximately 8,000 AF of water. CMWD operates the Lake Bard WTP, which is adjacent to the lake and has a treatment capacity of 100 cfs. Supplies stored in Lake Bard can be used during times when imported supplies are curtailed.

3. **Salinity Management Project**

As described in Chapter 2, the SMP will facilitate treatment of local groundwater that is currently too saline for potable use. These desalters will improve overall regional supply reliability.

4. **Transfer Opportunities**

Water transfer agreements between agricultural and municipal water users are another method for increasing supply reliability. As a member agency to MWD, CMWD benefits from transfer agreements made through MWD. Therefore, CMWD does not currently pursue independent transfer agreements.

As part of its rate program, CMWD has a two-tier rate system. Tier 1 rates apply to allocations for each CMWD purveyor in a take-or-pay arrangement. The amount of Tier 1 allocation is based on using 90 percent of the maximum deliveries from fiscal years 1989/90 to 2000/01. Tier 2 rates apply to imported water purchases that exceed the Tier 1 allocation. Tier 2 water would be priced at a higher rate than Tier 1 water. These rates do not impact PHWA due to the long-term agreement previously established.

Although there are no guarantees that Tier 1 or Tier 2 water will be available, it is assumed for this analysis that the Tier 1 allocation is reliable under both average and drought conditions. This is consistent with MWD's and CMWD's 2010 Regional UWMPs. These documents project that MWD is capable of meeting 100 percent of its member agencies' projected supplemental demands (consumptive and replenishment needs) over the next 20 years in average and wet years and meet 100 percent of its member agencies' supplemental demands over the next 10 years in single dry years. Under drought conditions, it is assumed that Tier 2 water availability may be subject to cutbacks, potentially to the extent of not being available. These conservative assumptions acknowledge that both CMWD and MWD have undertaken a number of steps to provide increased water supply reliability, but that availability of the supplies, under the most dire circumstances, is not guaranteed.

Such conservative assumptions are buttressed by other conservative assumptions in MWD's and CMWD's planning documents. By way of example, MWD conservatively determined the following:

1. Projected that water demands of its member agencies would be higher than the water demands projected by each member agency.
2. Identified water supplies currently available to MWD as those projects that have completed environmental review, have funds appropriated or budgeted, have requested or received permits and approvals, and are operationally on-line by a certain date.
3. Plans to develop water supplies at least ten years in advance of the need for such water.
4. Established a reserve supply of water under the assumption of State Project Water deliveries of around 7 percent allocation in a single-dry year and 34 percent allocation on average.

Such conservative planning objectives allow MWD to continue to provide a reliable supply of water despite any future loss of one particular source of supply.

### 3.3 Local Groundwater Supply

The majority (80%) of PHWA water supply is provided by groundwater through agreement with UCWD. In 1996 PHWA negotiated a new 40-year supply agreement with the UWCD and improves the quality of the water supplied by treatment at the Brackish Water Demonstration Reclamation Facility (BWRDF), a PHWA operated membrane filtration facility. The BWRDF has a capacity of 4.0 MGD of finished potable water.

Much of Ventura County's groundwater supply is located in the Oxnard Plain area and is subject to the regulations of the Fox Canyon Groundwater Management Agency. The FCGMA was

formed by the California State Legislature in 1982, is governed by a five member Board of Directors, and operates currently under Ordinance 8.3. All local groundwater supplies are coordinated and managed in accordance with the FCGMA.

Extraction credits are earned when the purveyor's water demand in AFY is less than the PHWA's FCGMA groundwater allocation established during the baseline period of 1985 to 1989. If extracting values exceed historical allocations, a monetary penalty is charged by the FCGMA. Sub-allocation credits held by UWCD on behalf PHWA can be used to off-set any surcharge penalty.

In addition, credits are also subject to revision or expiration at any time by the FCGMA's Board of Directors.

### 3.3.1 UWCD Local Groundwater Supply and Facilities

Starting in late 1998, PHWA began providing its purveyors with water from UWCD (80 percent of supply). Since that time, UWCD has been able to provide a continuous supply of municipal water to meet the water demands without any curtailment of supply.

UWCD diverts water from the Santa Clara River at the Vern Freeman Diversion Dam, northwest of Saticoy, and delivers a portion of the water to the El Rio Spreading Grounds. UWCD's El Rio Spreading Grounds are located in the northeast portion of the Oxnard Plain. Water is used to recharge the underlying Montalvo Groundwater Basin/Forebay. The El Rio Wellfield, located at the Spreading Grounds, has a total of twelve wells with an active pumping capacity of 53.0 cubic feet per second (cfs). Of the twelve wells in the El Rio Wellfield, nine wells extract water from the Oxnard Aquifer, also known as the Upper Aquifer System (UAS), and three wells extract water from the Fox Canyon Aquifer, also known as the Lower Aquifer System (LAS).

The Oxnard Aquifer is composed of fine to coarse-grained sand, gravel, and boulder deposits. Within the area, the aquifer is a single unit of high permeability with no prominent silt or clay lens interruptions and has an average and maximum thickness of about 91 and 150 feet, respectively, at an average depth of 100 to 180 feet below grade. Permeability of this aquifer ranges from 1,700 to 2,000 gallons per day per square foot (gpd/ft<sup>2</sup>). Transmissivity of this aquifer typically ranges from 100,000 to more than 400,000 gpd/ft<sup>2</sup>.

The Fox Canyon Aquifer is composed of fine to coarse-grained sand with gravel stringers and interbedded silt and clay. With a maximum thickness of approximately 550 feet in the Oxnard Basin, permeability of this water-bearing zone range from 200 to 400 gpd/ft<sup>2</sup>.

Water extracted by wells in these aquifers is delivered to the UWCD El Rio Booster Pumping Station, chloraminated, and pumped directly through UWCD's Oxnard-Hueneme (O-H) Pipeline to PHWA, City of Oxnard, and small mutual water companies. UWCD built the O-H system in 1954 to move municipal groundwater extraction away from the coastal areas subject to seawater intrusion. The O-H delivery system consists of 12 miles of distribution pipeline. With a diameter of 24 to 42 inches, the O-H Pipeline was designed to deliver 50 cfs or 22,450 gallons per minute (gpm) and occasionally operates at capacity.

Even though UWCD groundwater is considered potable, it has elevated total dissolved solids (TDS) (approximately 1,000 ppm) and hardness (500 parts per million [ppm]). The PHWA

established a water quality improvement goal of 370 ppm TDS and 150 ppm hardness which will help ensure compliance with future federal and state water quality standards. To meet these goals, PHWA constructed and operates the BWRDF to treat brackish water supplied by UWCD.

The PHWA completed construction of the BWRDF and pipeline network between PHWA members to receive SWP water and the treated water from the desalination facility. Cost for the new PHWA facilities was approximately \$12.7 million. The BWRDF was partially funded by the United States Bureau of Reclamation. The BWRDF is located along Perkins Road, immediately to the north of the City of Oxnard Wastewater Treatment Plant site. The BWRDF was originally designed to desalinate 3.0 MGD of brackish groundwater and has been expanded to 4.0 MGD. The BWRDF uses two different brackish water desalination technologies: 1) reverse osmosis (RO) and 2) nanofiltration (NF) in parallel.

The facility blends the treated UWCD supply with a parallel stream of untreated UWCD supply to provide the desired level of water quality. Additional PHWA demand that may exceed the capacity of the facility (or in the event of a system shutdown) is served by CMWD supply.

### 3.3.2 UWCD Groundwater Availability and Reliability

UWCD holds a pumping sub-allocation for users of the O-H Pipeline. The Fox Canyon Groundwater Management Agency (FCGMA) manages groundwater extractions within the Oxnard Plain Basin. PHWA maintains a 40-year contract with UWCD on behalf of its purveyors. The current annual allocation for PHWA purveyors is 2,694.88 AF.

The Oxnard Forebay, Oxnard Plain and Pleasant Valley basins are hydrologically interconnected. Of those, the Oxnard Plain Basin and the Pleasant Valley Basin are currently overdrafted. Seawater intrusion is occurring only in the Oxnard Plain Basin, though the Pleasant Valley Basin has experienced elevated chloride levels in places due to the dewatering of prehistoric marine clays and the upward migration of poor quality water.

United's groundwater experts believe that the Oxnard Forebay basin itself is not currently in a state of overdraft. It is about 5 miles from the ocean and is not directly affected by seawater intrusion. Water levels in the Oxnard Forebay generally recover to historic highs following a single wet year. Although the Forebay is important for recharging the Oxnard Plain and Pleasant Valley basins via underground flow, the Forebay by itself is not overdrafted. Nevertheless, any long-term solution to the overdraft of the other basins must include the management of the Oxnard Forebay.

The OH System draws its groundwater supply from the Oxnard Forebay Basin. United's groundwater experts believe that the Oxnard Forebay should have sufficient groundwater to allow the OH demands to be met in the worst reasonably expected drought (e.g., equivalent to the worst drought in recorded history). If some future drought occurs that is worse than previously experienced, the Oxnard Forebay would still have reserve groundwater in storage; however, some restrictions might be imposed on OH pumping from the Forebay to help protect the other two basins. Policymakers developing such restrictions should consider the public health needs of United's OH customers.

### 3.3.3 Fox Canyon Groundwater Management Agency (FCGMA)

The FCGMA was established in Ventura County by State Assembly Bill No. 2995 of the State Legislature in 1982 to control groundwater overdraft and minimize the threat of seawater intrusion in the Upper and Lower aquifer systems of the Oxnard Plain. After completing the FCGMA Planning Study that analyzed the condition of the Lower Aquifer System (LAS) and Upper Aquifer System (UAS), the FCGMA adopted a plan of management of the LAS and UAS within the FCGMA boundaries in 1985. The objective of that plan and other policies adopted by the FCGMA is to eliminate overdraft in its service area, which includes the East and West Las Posas Basins, and bring these basins to a "safe yield" condition by 2010. A "safe yield" condition is achieved when groundwater extraction from a basin are approximately equal to annual replenishments of water into the groundwater basin. The safe yield estimate for the FCGMA area is approximately 100,000 AFY. Allowing for changes in annual rainfall, the reductions in groundwater allocations imposed by the FCGMA have significantly reduced groundwater extractions.

Major elements of the UAS Plan included:

- Ventura County Ordinance No. 3739 - This existing County ordinance prohibits the construction, repair or modification of UAS wells in areas where increased extractions would increase the overdraft and the rate of seawater intrusion in the Oxnard Plain.
- Completion of the Seawater Intrusion Abatement Project through improvement of the Vern Freeman Diversion and operating the new project under criteria developed to ensure proper water allocation.
- Annual monitoring to determine the effectiveness of the project.

Major elements of the LAS Plan included:

1. Monitoring for seawater intrusion in the LAS near the coastline by constructing four new monitoring wells.
2. Development of Contingency Plans in the event seawater intrudes the LAS. These plans call for conservation and reclamation efforts, increased monitoring and pumping restrictions.
3. Implementation of pumping restrictions in the North Las Posas Basin would prohibit expansion of all types of water above the LAS outcrop or to other non-water-bearing areas. This outcrop more or less parallels the south flank of South Mountain. The restriction would regulate the drilling of new LAS water wells and use of groundwater in the North Las Posas Basin to ensure that adopted FCGMA groundwater pumping projections are not exceeded.
4. Pumpage will be accurately monitored throughout the FCGMA by requiring semiannual reporting of metered extractions. Results will be used to verify water use rates and to limit groundwater extractions in basins where adopted FCGMA extractions are exceeded after adjustment of the date to account for wet and dry years.

### 3.3.4 FCGMA Ordinance No. 8

On 26 June 2002, the FCGMA adopted Ordinance No. 8. This ordinance combines each of the active individual ordinances (Ordinances Nos. 1.3, 3.2, 4.3, and 5.9) into a single comprehensive ordinance. One of the key elements of FCGMA Ordinance No. 8 is the gradual reduction in groundwater extractions by all municipal pumpers except those with baseline extraction allocations or annual efficiency extraction allocations. FCGMA assigned allocations to each groundwater pumper. The reduction schedule is based on the average "historical extraction" using the five calendar years of reported extractions from 1985 to 1989. (While groundwater rights in the Las Posas Basin have not been definitively adjudicated by a court, the extraction allocations reflect the prior production of groundwater by each pumper, which is one of the key considerations in determining groundwater rights).

Groundwater extraction allocations for each well are set according to the following formula:

- 1992-1994 extraction allocation = 95 percent of historical extraction, as adjusted.
- 1995-1999 extraction allocation = 90 percent of historical extraction, as adjusted.
- 2000-2004 extraction allocation = 85 percent of historical extraction, as adjusted.
- 2005-2009 extraction allocation = 80 percent of historical extraction, as adjusted.
- After 2009 extraction allocation = 75 percent of historical extraction, as adjusted.

Baseline allocations are not subject to the incremental reductions. Pursuant to its Ordinance No. 8, FCGMA also has the authority to grant an "annual efficiency allocation" to those agricultural users whose operations have demonstrated a certain level of efficiency and conservation in their water usage. Thus, although an efficiency allocation may be different than the extraction allocation; such efficiency allocations further the goal of bringing the basin to safe yield by encouraging water conservation.

PHWA's allocation is not legally binding, but an agreement between PHWA and FCGMA based on historical deliveries to PHWA.

## 3.4 Transfers, Exchanges, and Groundwater Banking Programs

Currently, PHWA is participating in transfers, exchanges or groundwater banking programs. From 1997-2002 PHWA transferred 700 AF to CMWD and since 2003 PHWA began to annually transfer 700 AF to the City of Oxnard per a "Three Party Agreement".

The current FCGMA Groundwater Credit Program allows those agencies that extract less than their annual allocation to bank/receive credit on a one for one bases. These groundwater credits can only be used to offset any surcharges (over-pumping penalties) imposed by the FCGMA on those users that exceed their annual allocation. (These credits should not be identified as "An Additional Water Source or as "A Storage of Water" for use at a later date).

PHWA will continue efforts to identify and evaluate additional opportunities as they arise.

### 3.5 Planned Water Supply Projects and Programs

Availability of future supplies is bound by FCGMA pumping restrictions imposed on the UWCD extractions, the capacity of CMWD's distribution system, and the reliability of SWP water deliveries.

PHWA has established diverse approaches to meeting future water demands including facility improvements, securing deliveries of local groundwater via long term agreement with UWCD, securing deliveries of imported water via long term agreement with CMWD, considering recycled water, and supporting demand management measures. Implemented over time, these programs are expected to provide PHWA with sufficient supplies to meet water demands of its retail customers.

### 3.6 Development of Desalination

Beyond the operation of the BWRDF to treat brackish water supplied by UWCD, PHWA is not involved in, nor does it currently have plans for, additional water desalination projects. However, PHWA is evaluating options for additional development.

## Section 4: Recycled Water

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### 4.1 Overview

This section summarizes PHWA's participation in the future regional water recycling program.

### 4.2 Wastewater Treatment Facilities

PHWA does not provide wastewater services to its customers. Wastewater treatment is collected separately by local wastewater agencies and treated at the regional Oxnard Wastewater Treatment Plant (OWTP). The OWTP currently produces approximately 22 MGD of secondary treated wastewater and discharges the effluent to the Pacific Ocean through an outfall.

### 4.3 Current Water Recycling Uses

Currently, there are no water recycling programs in place in which PHWA or its retail purveyors are involved.

### 4.4 Regional Recycled Water Master Plan

In an effort to identify a project that could take advantage of the water reclamation potential from the OWTP, the City of Oxnard completed a Water Reclamation Master Plan in 1993. In response to recommendations included in the 1997 progress report titled, "Oxnard Water Reclamation Project Initial Implementation Elements of the Water Reclamation Master Plan," and with input from CMWD, UWCD, and FCGMA, the City of Oxnard developed a water recycling program – the Groundwater Recovery Enhancement and Treatment (GREAT) Program.

The cornerstone of the GREAT Program is the regional Advanced Water Purification Facility (AWPF) designed to treat wastewater flows and produce a useable non-potable resource. Construction of the AWPF began in 2011. The AWPF is owned and operated by the City of Oxnard. The AWPF will include tertiary treatment and demineralization of the high TDS recycled water to meet regulatory requirements for aquifer recharge during winter months.

Water produced by the AWPF is planned to be used for regional non-potable uses, including landscape irrigation, industrial processes, agricultural irrigation, and as a seawater intrusion barrier to protect the Fox Canyon aquifer. The new resource will provide a locally controlled, drought-proof source of water that meets all drinking water quality standards.

When complete, wastewater generated by PHWA customers, and currently treated at the regional WWTP in the City of Oxnard and discharged through an ocean outfall will be diverted to the AWPF for treatment and reclamation.

The recycled water component of the GREAT Program would include the development of a recycled water delivery system. The delivery system would include construction of approximately 22,600 feet of distribution pipe and a booster pump station. Size, specific

capacity, and location of the booster pump station are the subject of an ongoing study. Distribution piping would begin at the Oxnard WWTP and would connect into UWCD's existing Pumping-Trough-Pipeline for distribution to potential agricultural users located in the Pleasant Valley area. Additional agricultural, commercial, and industrial customers could be served along the pipeline alignment, as feasible. PHWA's retailer purveyors could at some future time be served by the system.

#### 4.5 Impact of GREAT Program on PHWA

PHWA would be an indirect beneficiary of the fully implemented GREAT Program. That benefit to PHWA would come in the form of reduced demand and protection of the groundwater aquifers from which UWCD serves water to PHWA. Since most of the reclaimed water is planned to be used for irrigation, it is not anticipated that the project will directly result in significantly reduced demands for potable water among the PHWA retail purveyors.

## Section 5: Water Quality

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PHWA receives 80 percent of its water from UWCD and 20 percent from CMWD. UWCD groundwater treated at the PHWA membrane filtration plant meets all DHS drinking water quality requirements. SWP surface water is treated by MWD and delivered through CMWD. All CMWD water is provided directly to PHWA retail customers without further treatment.

UWCD groundwater is pumped from shallow wells, located in the El Rio area of Ventura County, drilled into the Oxnard and Fox Canyon aquifers. These two aquifers are naturally high in minerals. The Santa Clara River drainage basin that recharges these aquifers receives water from various sources such as rivers, streams, wastewater treatment plants, and agricultural runoff.

PHWA's 2009 Consumer Confidence Report references the 2002 UWCD source water assessment survey for its water sources. That assessment provided a survey of potential sources of contamination of the groundwater that supplies the wells. Identified activities that constitute the highest risk are petroleum storage tanks, fueling operations, septic systems, and abandoned animal feedlots. The wells are vulnerable to contamination by methyl tert-butyl ether (MTBE); however, no MTBE has been detected in the wells. UWCD continues to monitor the water quality.

PHWA's membrane treatment plant uses two different types of state-of-the-art membrane filtration technologies to treat the UWCD water: reverse osmosis (RO) and nanofiltration (NF). These processes operate side-by-side and each one produces between 1 and 1.5 MG of drinking water every day. The treatment process softens the water lowering the mineral content and minimizes the corrosiveness of the water through the addition of sodium hydroxide. The water is disinfected using chloramines.

PHWA's 2009 Consumer Confidence Report references the December 2002 MWD water assessment of its SWP supplies. SWP supplies are considered to be most vulnerable to urban/storm water runoff, wildlife, agriculture, recreation, and wastewater.

Water provided by PHWA meets all California Department of Public Health (CDPH) primary maximum contaminant levels (MCL) requirements. PHWA did not experience regulatory violations of treatment, monitoring, or reporting requirements during 2005-2010. PHWA anticipates receiving high quality potable water from the UWCD and CWMD that meets all DHS standards for the foreseeable future. There are currently no water quality concerns affecting the reliability of supplies to PHWA.

## Section 6: Reliability Planning

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### 6.1 Overview

The Act requires urban water suppliers to assess water supply reliability that compares total projected water use with the expected water supply over the next twenty years in five year increments. The Act also requires an assessment for a single dry year and multiple dry years. This chapter presents the reliability assessment for PHWA's service area.

It is the stated goal of PHWA and the retail water purveyors to deliver a reliable and high quality water supply for their customers, even during dry periods. Based on conservative water supply and demand assumptions over the next 25 years, in combination with conservation of non-essential demand during certain dry years, the UWMP successfully achieves this goal.

### 6.2 Reliability of Water Supplies

Each water supply source has its own reliability characteristics. In any given year, the variability in weather patterns around the state may affect the availability of supplies differently. For example, from 2000 through 2002, southern California experienced dry conditions in all three years. During the same period, northern California experienced one dry year and two normal years. The PHWA service area is typical in terms of water management in southern California; local groundwater supplies are used to a greater extent when imported supplies are less available due to dry conditions in the north, and larger amounts of imported water supplies are used during periods when northern California has wetter conditions. To supplement these local groundwater supplies, PHWA contracted with CMWD for delivery of SWP water, providing an imported water supply to the City. CMWD and UWCD have met the City's purchased water demands; however, power outages, variability of State Water Project deliveries, hydrologic conditions, and catastrophic events may affect the ability of PHWA to reliably meet water demand estimates. PHWA has established diverse approaches to meeting a potential water shortage including long term contracts for groundwater deliveries, long term contracts for imported water deliveries, and supporting water demand management programs (see Section 7). Implemented over time, these programs are expected to provide the service area with the assurance that there will be sufficient supplies to meet water demands.

In order to determine PHWA water supply reliability, an assessment was developed that includes a comparison of the total projected water demand with the supply available for the following conditions: (1) normal/average water year, (2) single dry water year, and (3) three-year dry cycle. Results for the assessment for each of these three conditions are described below.

#### 6.2.1 Wholesale Supply Reliability

The PHWA purchases imported surface water from CMWD, which in turn purchases SWP water from MWD. Imported water supply originates in Northern California and is conveyed over 500 miles to Southern California through the SWPs's system of reservoirs, aqueducts and pump stations. Water is filtered and disinfected at MWD's Joseph Jensen Filtration Facility in Granada Hills. CMWD receives the treated water via MWD's West Valley Feeder and CMWD's three

mile-long tunnel through the Santa Susana Mountains. CMWD either stores the treated water in Lake Bard or feeds the water directly to the CMWD Springville Reservoir near Camarillo.

CMWD has served the needs of its members, without fail, except for a few days following the 1994 Northridge Earthquake.

MWD has the obligation to provide available water to its member agencies, such as CMWD, based on its existing statute, governing regulations, and applicable agreements. As discussed below, both MWD and CMWD are undertaking a variety of programs to increase the reliability of imported water deliveries. Both CMWD and MWD, due to their historical performance and scope of operations, have provided and will continue to provide a reliable source of water to PHWA.

### 6.2.2 Groundwater Supply Reliability

PHWA maintains a 40-year water supply contract with UWCD. PHWA holds a groundwater sub-allocation (entitlement) that totaled 4,613 AF in 1990. PHWA's current allocation is 3,468 AF due to the FCGMA extraction reduction of 25 percent.

Extraction credits are earned when the purveyor's water demand in AFY is less than the PHWA's FCGMA groundwater allocation established during the baseline period of 1985 to 1989. If extracting values exceed historical allocations, a monetary penalty is charged by the FCGMA. Sub-allocation credits held by UWCD on behalf PHWA can be used to off-set any surcharge penalty.

## 6.3 Normal, Single-Dry and Multiple-Dry Year Planning

PHWA has various water supplies available to meet demands during normal, single-dry, and multiple-dry years. The following sections assess the reliability of these supplies under various hydrologic conditions.

PHWA has the ability to offset water supply curtailment due to the conjunctive use of SWP water and treatment of the UWCD supply. The current supply capacity from both sources can be increased in the future to meet the PHWA demand. The PHWA is responsible for the purchase of a minimum of 1,850 AF and 3,468 AF from CMWD and UWCD, respectively. If SWP water were curtailed, the impact on the PHWA supply would be to increase the UWCD supply capacity. The PHWA treatment plant could meet demands by operating the treatment less efficiently and increasing a blend of UWCD bypass water, thereby reducing treated water quality from 350 ppm TDS to approximately 500 ppm TDS. This would require a minor piping modification of the UWCD bypass pipeline at the BWRDF. This drought contingency measure would provide an economical means to supplement the curtailment of State water capacity and meet the water demands of all customers.

### 6.3.1 Normal/Average Water Year Assessment

PHWA's current and future water demands are discussed earlier in Section 2 and current and future water supplies are described in Section 3. Conservative assumptions were utilized concerning availability of supplies. Values for calendar year 2009 were used for the average/normal year assessment. For the average/normal year reliability assessment, PHWA's demands were approximately 4,850 AF. Total water entitlements in 2009 were 5,725 AF via

PHWA's agreement with UWCD and CMWD. Table 6-1 displays the average/normal year assessment. Results for this assessment indicate that water supplies exceed water demands for the period 2015 through 2035.

**TABLE 6-1  
WATER SUPPLY AND DEMAND COMPARISON FOR AN AVERAGE WATER YEAR**

	2015	2020	2025	2030	2035
<i>Existing and Planned Water Supplies</i>					
PHWA <sup>(a)</sup>					
UWCD Groundwater (AF)	3,468	3,468	3,468	3,468	3,468
CMWD Imported Water (AF)	1,850	1,850	1,850	1,850	1,850
<b>Total Supply</b>	<b>5,318</b>	<b>5,318</b>	<b>5,318</b>	<b>5,318</b>	<b>5,318</b>
Demand (AF) <sup>(b)</sup>	4,765	4,703	4,799	4,856	4,856
Difference (supply minus demand) (AF)	553	615	519	462	462
Difference as % of Supply	10	12	10	9	9
Difference as % of Demand	12	13	11	10	10

**Notes:**

- (a) PHWA's entitlements for groundwater and surface water.  
 (b) From Table 2-5.

### 6.3.2 Single Dry-Year Water Assessment

A single year dry condition is not anticipated to result in a supply decrease by UWCD or CMWD due to future supply and reliability programs. As stated in CMWD's 2010 UWMP, it is projected that CMWD will be able to meet all of its purveyor demands during a single dry year. In future single dry years through 2035, PHWA should have an adequate water supply from the UWCD and CMWD to meet customer demands. This is indicated in Table 6-2.

**TABLE 6-2  
WATER SUPPLY AND DEMAND COMPARISON FOR A SINGLE DRY WATER YEAR**

	2015	2020	2025	2030	2035
<i>Existing and Planned Water Supplies</i>					
PHWA <sup>(a)</sup>					
UWCD Groundwater (AF)	3,468	3,468	3,468	3,468	3,468
CMWD Imported Water (AF) <sup>(b)</sup>	1,850	1,850	1,850	1,850	1,850
<b>Total Supply</b>	<b>5,318</b>	<b>5,318</b>	<b>5,318</b>	<b>5,318</b>	<b>5,318</b>
Demand (AF) <sup>(c)</sup>	5,003	4,938	5,039	5,099	5,099
Difference (supply minus demand) (AF)	315	380	279	219	219
Difference as % of Supply	6	7	5	4	4
Difference as % of Demand	6	8	6	4	4

**Notes:**

- (a) PHWA entitlements for groundwater and surface water.  
 (b) CMWD 2010 UWMP supply projections will meet projected demands in single dry year.  
 (c) Demand is projected to increase by 5% during a dry year.

### 6.3.3 Multiple Dry-Year Water Assessment

Multiple consecutive dry years are not anticipated to result in a supply decrease by UWCD or CMWD due to future supply and reliability programs. The UWCD and CMWD have met PHWA water demands without curtailment during each of the prior years. In future droughts, PHWA

should have an adequate water supply from the UWCD and CMWD to meet customer demands. As stated in CMWD's 2010 UWMP, it is projected that CMWD will be able to meet all of its purveyors demand during a multiple dry-year period. As indicated in Table 6-3, the multiple dry-year assessment resulted in sufficient water supply to meet water demands through 2035.

**TABLE 6-3  
WATER SUPPLY AND DEMAND COMPARISON FOR A MULTIPLE DRY WATER YEAR**

		2015	2020	2025	2030	2035
Multiple-Dry Year First Year Supply	Supply Totals <sup>(a)</sup>	5,318	5,318	5,318	5,318	5,318
	Demand Totals <sup>(b)</sup>	5,003	4,938	5,039	5,099	5,099
	Difference	315	380	279	219	219
	Difference as % of Supply	6	7	5	4	4
	Difference as % of Demand	6	8	6	4	4
Multiple-Dry Year Second Year Supply	Supply Totals <sup>(a)</sup>	5,318	5,318	5,318	5,318	5,318
	Demand Totals <sup>(b)</sup>	5,003	4,938	5,039	5,099	5,099
	Difference	315	380	279	219	219
	Difference as % of Supply	6	7	5	4	4
	Difference as % of Demand	6	8	6	4	4
Multiple-Dry Year Third Year Supply	Supply Totals <sup>(a)</sup>	5,318	5,318	5,318	5,318	5,318
	Demand Totals <sup>(b)</sup>	5,003	4,938	5,039	5,099	5,099
	Difference	315	380	279	219	219
	Difference as % of Supply	6	7	5	4	4
	Difference as % of Demand	6	8	6	4	4

**Notes:**

- (a) PHWA entitlements for groundwater and CMWD 2010 UWMP supply projections will meet projected demands.  
 (b) Demand is projected to increase by 5% during a dry year.

## Section 7: Water Demand Management Measures

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This section describes the water Demand Management Measures (DMMs) implemented by PHWA.

### 7.1 Conservation Program Background

PHWA recognizes the importance of conserving water and supports its retail purveyors in the development and implementation of conservation programs that achieve measurable savings. As described in Section 1, PHWA was established 1994 as strictly an administrative entity to facilitate better management of the sub-regional water supplies, including use of SWP water. In November 1995, the PHWA adopted the Water Efficiency Guidelines for Annexation No. 32 to the CMWD and the MWD. The guidelines describe the arrangements between the agencies relative to receiving State water including:

- 1) Annual Water Usage
- 2) Calleguas Water Management Peak Water Usage
- 3) Lake Bard
- 4) Seasonal Storage
- 5) High and Low Flow Penalties
- 6) Local Area Management
- 7) Water Conservation
- 8) Use of Reclaimed Water
- 9) Water Delivery Curtailment
- 10) Capital Construction Charge
- 11) Urban Conservation Best Management Practices
- 12) Water Use Efficiency Guidelines
- 13) Compliance

PHWA has no employees, no physical access to, or control of, water or water distribution infrastructure. To the extent feasible, given these constraints, PHWA plans to continue to support its retailers' conservation, outreach and education programs. Currently, PHWA works closely with the City of Port Hueneme (City) and collaborates with CMWD and MWD in conservation outreach efforts. It has also reached out to Naval Base Ventura County to discuss conservation (as a federal agency, however, the Naval Base is not obligated to meet state conservation requirements).

### 7.2 Implementation of DMMs

PHWA is subject to the Urban Water Management Planning Act, AB1420 and SBX7-7 requirements. The DMMs specified in the UWMP are the same as the California Urban Water Conservation Council's (CUWCC) Best Management Practices (BMPs). Although PHWA is not

a signatory to the CUWCC's Memorandum of Understanding (MOU), the UWMP requires compliance with the DMMs.

The MOU and DMMs were revised by the CUWCC in 2008. The revised DMMs now contain a category of "Foundational DMMs" that signatories are expected to implement as a matter of their regular course of business. These include Utility Operations (metering, water loss control, pricing, conservation coordinator, wholesale agency assistance programs, and water waste ordinances) and Public Education (public outreach and school education programs). The remaining "Programmatic" DMMs have been placed into three categories: Residential, Large Landscape, and Commercial, Industrial, Institutional Programs. As a wholesaler, PHWA is only required to address a subset of the Foundational DMMs. The following sections describe DMM compliance activities.

## 7.2.1 Utility Operations

### 7.2.1.1 Conservation Coordinator

PHWA shares conservation coordinator position with the City of Port Hueneme. The coordinator manages water conservation outreach, implementation, and planning activities implemented by PHWA as well as the City.

### 7.2.1.2 Wholesale Agency Assistance

PHWA is working with the City and CIBCSD to develop and implement conservation programs and identify opportunities for support and collaboration. Two of the largest customers in the service area are federally owned and subject to federal facilities requirements for water conservation. NBVC has begun to install smart irrigation control systems and facility metering. PHWA has also initiated discussions with the NBVC to identify additional conservation opportunities.

### 7.2.1.3 Water Loss Control

Because PHWA is strictly an administrative agency, it does not have access to water or water distribution facilities in order to evaluate or implement water loss control procedures. This function is addressed by PHWA's retailers individually.

## 7.2.2 Education

### 7.2.2.1 Public Information

PHWA initiated discussions with its retailers in 2010 to determine the most effective way that PHWA can provide outreach support. To date, PHWA has provided conservation materials supplied by Calleguas and MWD.

### 7.2.2.2 School Education

PHWA began discussions in 2010 with the City and CIBCSD on implementing outreach and educational programs in schools.

PHWA continues to work with its retailers, MWD and Calleguas to identify opportunities to support retailer conservation efforts.

## Section 8: Water Shortage Contingency Planning

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### 8.1 Overview

Water supplies may be interrupted or reduced significantly in a number of ways, such as a drought which limits supplies, an earthquake which damages water delivery or storage facilities, a regional power outage, or a hazardous spill that impacts water quality.

The frequency, magnitude, and cause of water supply deficiencies can vary significantly. Each water supply source has different capacity, availability, and curtailment limitations. It is difficult to establish a plan to address all potential scenarios. Some scenarios like fire, system failures, and quality contamination may result in a minimal water shortage. An earthquake may result in a six month shortage, or a drought may result in a multi-year shortage.

As a wholesale purveyor of water, PHWA's response to a water shortage is different than that of its retail purveyors (City of Port Hueneme, NBVC, and CIBCSD). PHWA's response to a water shortage involves providing a source of supply for its retailers and, in extreme cases, rationing of water to those retailers. However, PHWA does not have the authority to initiate specific restrictions on water use at the retail level. That authority remains with the management of the retail utilities.

This chapter of the Plan describes how PHWA plans to respond to such emergencies so that needs are met promptly and equitably. It establishes rationing stages and triggering mechanisms based on water supply reductions, identifies impacts on PHWA's budget, and provides preparation for PHWA Board water shortage implementation actions.

### 8.2 Emergency Preparedness

Emergency preparedness throughout Ventura County has been critically tested during the last ten years. Most public agencies have addressed their specific emergency response and recovery needs by preparing written plans, training personnel, and coordinating emergency operations and mutual aid needs with their neighbors. The Standardized Emergency Management System adopted by the State and used by all public agencies provides the framework for agencies to work together and request assistance in an orderly and efficient manner. Each of PHWA's retail customers has established working relationships with personnel from many agencies. In the event of an emergency, those leaders have the ability to make and issue rules and regulations on matters reasonably related to the protection of life and property, as affected by the emergency.

### 8.3 Actions to Prepare For Catastrophic Interruption

PHWA supplies could be interrupted by a regional power outage, earthquake or other disaster. This section describes PHWA's plans for such an interruption.

The California Division of Mines and Geology has stated two of the aqueduct systems that import water to southern California (including the California Aqueduct) could be ruptured by displacement on the San Andreas Fault, and supply may not be restored for a three to six-week

period. The situation would be further complicated by physical damage to pumping equipment and local loss of electrical power. The MWD and CMWD service areas lie at the end of the West Branch of the California Aqueduct and west of the San Andreas Fault. A major earthquake along the southern portion of the San Andreas Fault therefore has the potential to affect the water supply to MWD, CMWD and PHWA.

DWR has a contingency aqueduct outage plan for restoring the California Aqueduct to service should a major break occur, which it estimates would take approximately four months to repair.

In addition to earthquakes, the SWP could experience other emergency outage scenarios. Past examples include slippage of aqueduct side panels into the California Aqueduct near Patterson in the mid-1990s, the Arroyo Pasajero flood event in 1995 (which also destroyed part of Interstate 5 near Los Banos), and various subsidence repairs needed along the East Branch of the Aqueduct since the 1980s. All these outages were short-term in nature (on the order of weeks), and DWR's Operations and Maintenance Division worked diligently to devise methods to keep the Aqueduct in operation while repairs were made. Thus, the SWP contractors experienced no interruption in deliveries.

Other events could result in significant outages and potential interruption of service. Examples of possible nature-caused events include a levee breach in the Delta near the Harvey O. Banks Pumping Plant, a flood or earthquake event that severely damaged the Aqueduct along its San Joaquin Valley traverse, or an earthquake event along either the West or East Branches. Such events could impact some or all SWP contractors south of the Delta.

The response of DWR and SWP contractors to such events would be dependent on the type and location of any such event. Under typical SWP operations, water flowing through the Delta is diverted at the SWP's main pumping facility, located in the southern Delta, and is pumped into the California Aqueduct. During the relatively heavier runoff period in the winter and early spring, Delta diversions generally exceed SWP contractor demands, and the excess is stored in San Luis Reservoir. Storage in SWP aqueduct terminal reservoirs, such as Pyramid and Castaic Lakes, is also refilled during this period. During the summer and fall, when diversions from the Delta are generally more limited and less than contractor demands, releases from San Luis Reservoir are used to make up the difference in deliveries to contractors.

In addition to SWP storage south of the Delta in San Luis and the terminal reservoirs, MWD has stored water in groundwater banking programs in the San Joaquin Valley, and many of its member agencies and their subagencies (such as PHWA) also have surface and groundwater storage within their own service areas.

The PHWA has the ability to offset water supply curtailment by conjunctive use of SWP water and treatment of the UWCD supply. The current supply capacity from both sources can be increased, in the future, to meet PHWA demand. PHWA has an allocation for the purchase of a minimum of 1,850 AF from CMWD and 3,467 AF from UWCD. If SWP water were curtailed, the response by PHWA would be to increase the UWCD production. The PHWA treatment plant could meet demands by operating at the higher production level and increasing a blend of UWCD bypass water, thereby, reducing treated quality from 350 ppm TDS to approximately 500 ppm TDS. This contingency measure would provide an economical means to supplement the curtailment of SWP water and meet water demand. In addition, PHWA would utilize reserve funds to overcome economic impacts to water-related expenditures and revenues.

All of PHWA's retail customers, have standby wells available. However, the standby wells can be operated for no more than five days per year and are not available for daily long-term use. The California Department of Health Services requires disinfection and well water treatment for the removal of iron and manganese. The city's wells are only available for emergency use due to catastrophic or unplanned event. At this time the wells are not equipped for emergency stand-by generator power.

#### 8.4 Three-Year Minimum Supply

PHWA's three-year minimum water supply is provided in Table 8-1. The three-year minimum supply was determined to occur for the base years 2011, 2012 and 2013, as stated in CMWD's 2010 UWMP, it is projected that CMWD will be able to meet all of its purveyor demands during a multiple dry year period. Furthermore, the reduction in overall water demand from the implementation of the DMMs discussed in Section 6 would yet to have reached its maximum.

**TABLE 8-1  
THREE-YEAR MINIMUM WATER SUPPLY (AF)**

Source	2011	2012	2013
<i>PHWA</i>			
UWCD Groundwater (AF)	3,468	3,468	3,468
CMWD Imported Water (AF)	1,850	1,850	1,850
<b>Total Supply</b>	<b>5,318</b>	<b>5,318</b>	<b>5,318</b>

#### 8.5 PHWA and the Water Purveyors

PHWA's retail water agencies that are required to complete their own individual 2010 UWMP will have Water Shortage Contingency Plans included in their 2010 Plans and are not discussed in this section.

PHWA will be developing and adopting its own Water Shortage Contingency Plan that will equal the City's plan. Upon adoption, PHWA will forward the plan to the appropriate regulatory agencies. That plan will include 50% Water Shortage Contingency.

#### 8.6 New Demand

During any declared water shortage emergency requiring mandatory rationing, PHWA recommends that building departments continue to process applications for grading and building permits, but not issue the actual permits until mandatory rationing is rescinded. In Stages 3 and 4, it may be necessary to discontinue all use of grading water, even if permits have been issued, and consider banning all use of water for non-essential uses, such as new landscaping and pools.

#### 8.7 Penalties for Excessive Use and Appeals Procedure

Excessive use penalties and the implementation of such penalties for excessive use are under the authority of PHWA's individual retail customers.

Customers seeking a variance from any of the provisions of the water rationing plan of their direct water provider must submit an appeal with that agency. PHWA does not have the authority to intervene in any appeals process. Any customer not satisfied with the response may file an appeal with the California Public Utilities Commission.

**Appendix A Urban Water Management Plan checklist, organized by legislation number**

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Subject <sup>b</sup>	Additional clarification	UWMP location
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)	System Demands		Sections 2.3 and 2.4
2	<i>Wholesalers:</i> Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. <i>Retailers:</i> Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	System Demands	Retailer and wholesalers have slightly different requirements	Section 7.2
3	Report progress in meeting urban water use targets using the standardized form.	10608.40	Not applicable	Standardized form not yet available	NA
4	Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	10620(d)(2)	Plan Preparation		Section 1.3
5	An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.	10620(f)	Water Supply Reliability . . .		Section 3
6	Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.	10621(b)	Plan Preparation		Section 1.3
7	The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).	10621(c)	Plan Preparation		NA

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Subject <sup>b</sup>	Additional clarification	UWMP location
8	Describe the service area of the supplier	10631(a)	System Description		Section 1.5
9	(Describe the service area) climate	10631(a)	System Description		Section 1.6
10	(Describe the service area) current and projected population . . . The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier . . .	10631(a)	System Description	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	NA
11	. . . (population projections) shall be in five-year increments to 20 years or as far as data is available.	10631(a)	System Description	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	NA
12	Describe . . . other demographic factors affecting the supplier's water management planning	10631(a)	System Description		NA
13	Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).	10631(b)	System Supplies	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 3.2
14	(Is) groundwater . . . identified as an existing or planned source of water available to the supplier . . . ?	10631(b)	System Supplies	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Section 3.3

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Subject <sup>b</sup>	Additional clarification	UWMP location
15	(Provide a) copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management. Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)	System Supplies		NA
16	(Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater.	10631(b)(2)	System Supplies		NA
17	For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board	10631(b)(2)	System Supplies		NA
18	(Provide) a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.	10631(b)(2)	System Supplies		NA
19	For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.	10631(b)(2)	System Supplies		NA
20	(Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.	10631(b)(3)	System Supplies		NA
21	(Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.	10631(b)(4)	System Supplies	Provide projections for 2015, 2020, 2025, and 2030.	NA

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Subject <sup>b</sup>	Additional clarification	UWMP location
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following: (A) An average water year, (B) A single dry water year, (C) Multiple dry water years.	10631(c)(1)	Water Supply Reliability . . .		Section 6.2
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)	Water Supply Reliability . . .		NA
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)	System Supplies		Section 3.4
25	Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses: (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof;(I) Agricultural.	10631(e)(1)	System Demands	Consider "past" to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Sections 2.2 and 2.3

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Subject <sup>b</sup>	Additional clarification	UWMP location
26	(Describe and provide a schedule of implementation for) each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) Water survey programs for single-family residential and multifamily residential customers; (B) Residential plumbing retrofit; (C) System water audits, leak detection, and repair; (D) Metering with commodity rates for all new connections and retrofit of existing connections; (E) Large landscape conservation programs and incentives; (F) High-efficiency washing machine rebate programs; (G) Public information programs; (H) School education programs; (I) Conservation programs for commercial, industrial, and institutional accounts; (J) Wholesale agency programs; (K) Conservation pricing; (L) Water conservation coordinator; (M) Water waste prohibition;(N) Residential ultra-low-flush toilet replacement programs.	10631(f)(1)	DMMs	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Section 7.2
27	A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.	10631(f)(3)	DMMs		NA
28	An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.	10631(f)(4)	DMMs		NA

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Subject <sup>b</sup>	Additional clarification	UWMP location
29	An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.	10631(g)	DMMs	See 10631(g) for additional wording.	Section 7
30	(Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.	10631(h)	System Supplies		Section 3.5
31	Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.	10631(i)	System Supplies		Section 3.6

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Subject <sup>b</sup>	Additional clarification	UWMP location
32	Include the annual reports submitted to meet the Section 6.2 requirement (of the MOU), if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	DMMs	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	NA
33	Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).	10631(k)	System Demands	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Section 6.3
34	The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)	System Demands		Section 2.3.2
35	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.	10632(a)	Water Supply Reliability . . .		Section 8
36	Provide 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.	10632(b)	Water Supply Reliability . . .		Section 8.4
37	(Identify) 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.	10632(c)	Water Supply Reliability . . .		Section 8.3

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Subject <sup>b</sup>	Additional clarification	UWMP location
38	(Identify) 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.	10632(d)	Water Supply Reliability . . .		Section 8.4
39	(Specify) 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.	10632(e)	Water Supply Reliability . . .		NA
40	(Indicated) penalties or charges for excessive use, where applicable.	10632(f)	Water Supply Reliability . . .		NA
41	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.	10632(g)	Water Supply Reliability . . .		NA
42	(Provide) a draft water shortage contingency resolution or ordinance.	10632(h)	Water Supply Reliability . . .		NA
43	(Indicate) a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)	Water Supply Reliability . . .		NA
44	Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area	10633	System Supplies		Section 4.4
45	(Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)	System Supplies		Section 4.2
46	(Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)	System Supplies		NA

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Subject <sup>b</sup>	Additional clarification	UWMP location
47	(Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)	System Supplies		Section 4.4
48	(Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)	System Supplies		Section 4.5
49	(Describe) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.	10633(e)	System Supplies		NA
50	(Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)	System Supplies		Section 4.5
51	(Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)	System Supplies		Section 4.4
52	The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.	10634	Water Supply Reliability . . .	For years 2010, 2015, 2020, 2025, and 2030	NA

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Subject <sup>b</sup>	Additional clarification	UWMP location
53	Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)	Water Supply Reliability . . .		Section 6.3
54	The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.	10635(b)	Plan Preparation		Section 1.3
55	Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	10642	Plan Preparation		Section 1.3
56	Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.	10642	Plan Preparation		Section 1.3
57	After the hearing, the plan shall be adopted as prepared or as modified after the hearing.	10642	Plan Preparation		Section 1.3
58	An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.	10643	Plan Preparation		Section 1.3

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Subject <sup>b</sup>	Additional clarification	UWMP location
59	An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.	10644(a)	Plan Preparation		Section 1.3
60	Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.	10645	Plan Preparation		Section 1.3

a The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.

b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.