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City of Oxnard

Public Works Integrated Master Plan

WATER

**PROJECT MEMORANDUM 2.1
BACKGROUND SUMMARY**

REVISED FINAL DRAFT
September 2017



PREFACE

The analysis and evaluations contained in these Project Memorandum (PM) are based on data and information available at the time of the original date of publication, December 2015. After development of the December 2015 Final Draft PMs, the City continued to move forward on two concurrent aspects: 1) advancing the facilities planning for the water, wastewater, recycled water, and stormwater facilities; and 2) developing Updated Cost of Service (COS) Studies (Carollo, 2017) for the wastewater/collection system and the water/distribution system. The updated 2017 COS studies contain the most recent near-term Capital Improvement Projects (CIP). **The complete updated CIP based on the near-term and long-term projects is contained in the Brief History and Overview of the City of Oxnard Public Works Department's Integrated Planning Efforts: May 2014 – August 2017 section.**

At the time of this Revised PWIMP, minor edits were also incorporated into the PMs. Minor edits included items such as table title changes and updating reports that were completed after the December 2015 original publication date.

City of Oxnard

Public Works Integrated Master Plan

WATER

**PROJECT MEMORANDUM 2.1
BACKGROUND SUMMARY**

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BACKGROUND SUMMARY

1.0 INTRODUCTION

The City of Oxnard (City) provides a blend of surface and groundwater through their water distribution system. Each of three sources of water originate in the City's system at six Blending Stations (BS) where all sources come together and are then distributed throughout the City. The City also provides treatment of the local groundwater at one of the six blending stations to remove high levels of total dissolved solids (TDS).

This Project Memorandum (PM) will provide an overview of the existing water system, its strengths and vulnerabilities as well as the regulatory requirements and climate change issues the system will be facing.

1.1 Project Memoranda Used for Reference

Other Project Memoranda (PMs) that expand on the water system needs/recommended projects include:

- PM 2.2 – Water System – Water Demand Projections.
- PM 2.3 – Water System – Infrastructure Modeling and Alternatives.
- PM 2.4 – Water System – Condition Assessment.
- PM 2.5 – Water System – Supply and Treatment Alternatives.
- PM 2.6 – Water System – Arc Flash Assessment.
- PM 2.7 – Water System – Cathodic Protection Assessment.
- PM 2.8 – Water System – SCADA Assessment.

1.2 Other Reports Used for Reference

In developing the alternatives in this Public Works Integrated Master Plan (PWIMP), recommendations from other reports were incorporated to ensure a well-rounded and holistic look at the water and recycled water systems. The following reports are referred to in this PM:

- City of Oxnard 2010 Urban Water Management Plan, May 2012 (Kennedy/Jenks Consultants, 2012).
- Preliminary Draft, Public Health Goals Report, June 2013 (Milner-Villa Consulting, 2013).

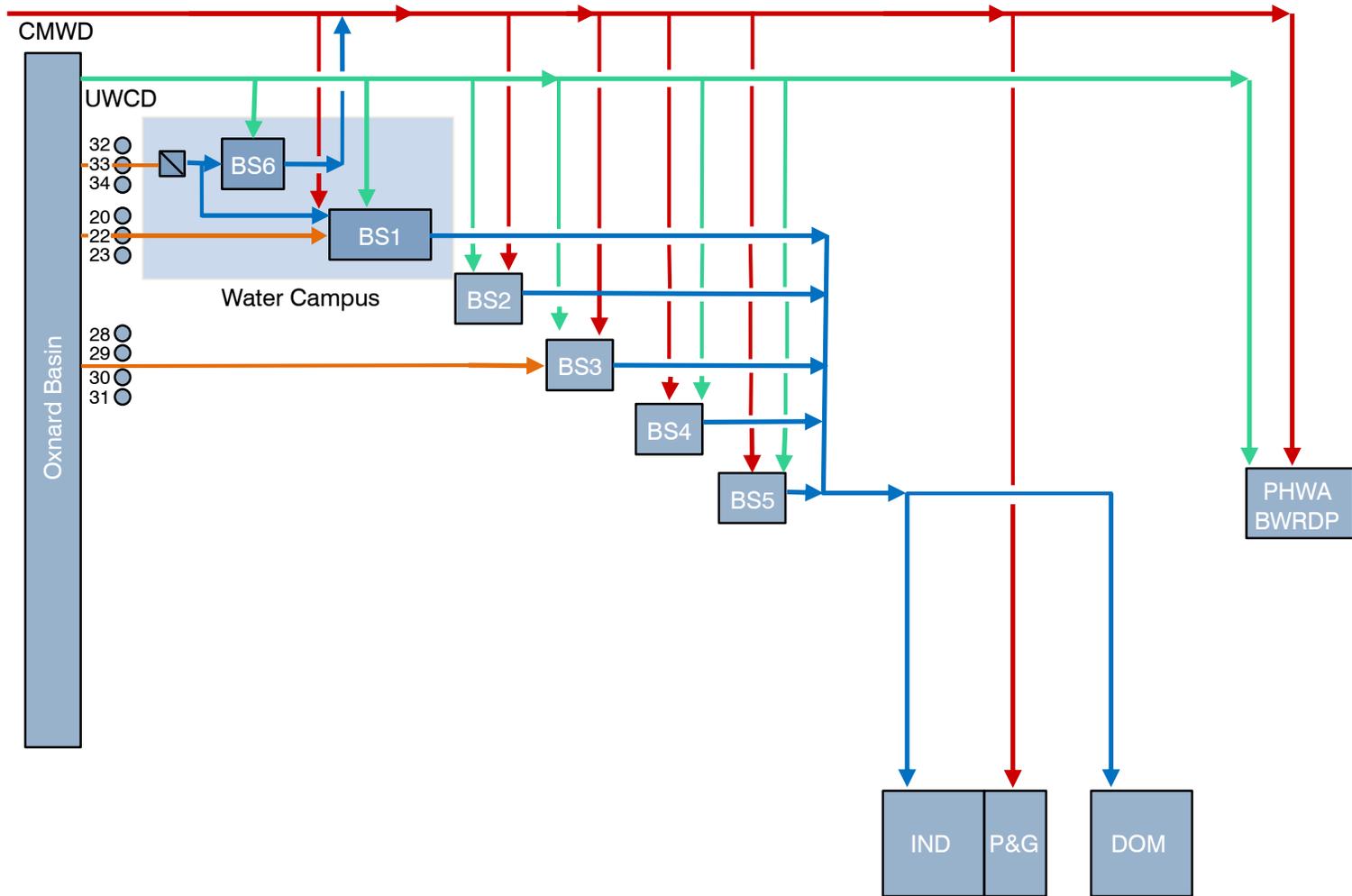
- Department of Water Resources, *Managing an Uncertain Future: Climate Change Adaptation Strategies for California's Water*, October 29, 2008. (DWR, 2008h) <http://www.water.ca.gov/climatechange/docs/ClimateChangeWhitePaper.pdf>.
- Madsen, T. and N. Willcox (2012) *When it Rains, it Pours - Global Warming and the Increase in Extreme Precipitation from 1948 to 2011*, a report by Environment America Research & Policy Center. (Madsen and Willcox, 2012).
- Madsen, T. and E. Figdor (2007) *When it Rains, it Pours - Global Warming and the Rising Frequency of Extreme Precipitation in the United States*, a report by Environment California Research & Policy Center. December. (Madsen and Figdor, 2007).
- Santa Barbara County Water Agency (SBCWA) (August 2004) *Santa Barbara County Regional Water Shortage/Drought Management Plan*. (SBCWA, 2004) <http://www.countyofsb.org/pwd/water/downloads/DroughtPlanFinal.pdf>.

2.0 EXISTING WATER SYSTEM

The City of Oxnard draws water from several sources to serve its constituents:

- *Groundwater* from ten local wells that draw from the Oxnard Plain Groundwater Basin and are owned and operated by the City.
- *Groundwater* from three local wells owned and operated by the City that is treated using reverse osmosis (RO).
- *Groundwater* imported from United Water Conservation District (UWCD), which draws from the Oxnard Plain Forebay.
- *Surface Water* imported from State Water Project via Calleguas Municipal Water District (CMWD).
- *Recycled Water (future)* will be available from the Advanced Water Purification Facility (AWPF) (discussed in detail in the Recycled Water Chapter).

These various sources of water are blended together at six distinct blending stations throughout the City. Although the exact ratio of the blend has varied, the City has indicated that future blending will be in a 1:1 (surface water to groundwater) ratio. This ratio produces water that has a TDS level between 600 and 700 milligrams per liter (mg/L), which meets the upper limit of the secondary drinking water standards (1,000 mg/L), at a fairly cost-effective unit rate. However, the City is targeting a lower TDS value in the future to provide an improved water quality to its customers. Figure 1 illustrates a schematic of the City's water system showing how all six blending stations are linked together. Figure 2 is a map of the City's water system facilities that illustrates the location of each blending station while Table 1 summarizes the major characteristics of each blending station. Descriptions of the City's individual facilities are contained in the succeeding discussion.

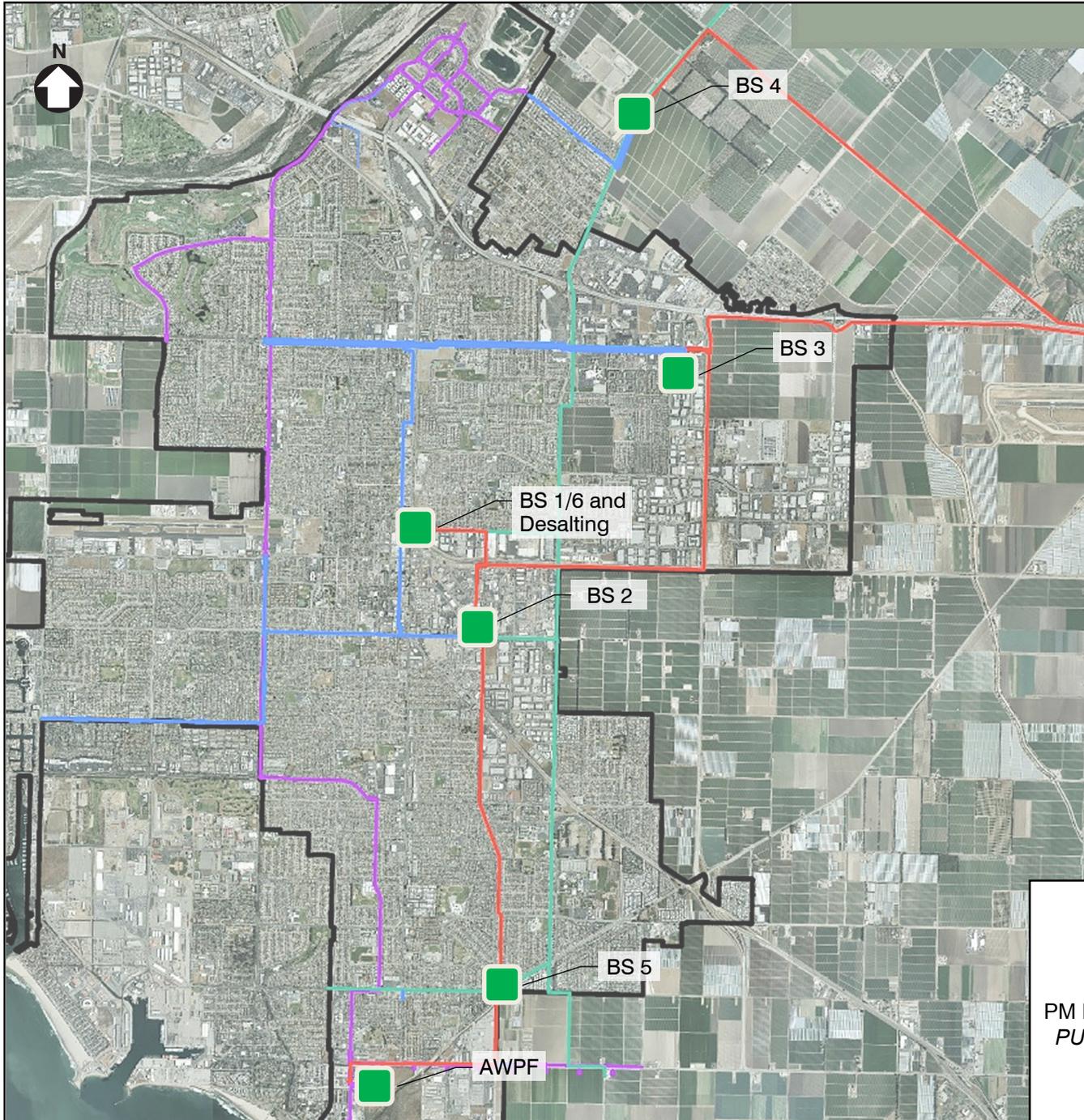


OVERALL WATER SYSTEM SCHEMATIC

FIGURE 1

CITY OF OXNARD
 PM NO. 2.1 – WATER BACKGROUND SUMMARY
 PUBLIC WORKS INTEGRATED MASTER PLAN





LEGEND	
	CMWD Pipeline
	O-H Pipeline
	RW Distribution
	Potable Distribution
	Service Area

NOTE:

1. This figure is schematic in nature. The recycled water distribution and potable distribution are independent systems.

WATER SYSTEM MAP
FIGURE 2
 CITY OF OXNARD
 PM NO. 2.1 - WATER BACKGROUND SUMMARY
 PUBLIC WORKS INTEGRATED MASTER PLAN




Table 1 Blending Station Facility Summary Public Works Integrated Master Plan City of Oxnard						
	BS No. 1	BS No. 2	BS No. 3	BS No. 4	BS No. 5	BS No. 6
Location	2 nd Street & Hayes	E Wooley & Richmond Rd	Solar Dr and Wankel Way	N Rose Ave South of Central Ave.	Pleasant Valley Rd East of Saviers Rd.	Co-Located with BS No. 1
Status	Operational	Stand-By	Operational	Operational	Operational	Stand-By
Construction Date	1900 Updates in 1965, 1986, 2008	1971	1975 Update in 2006	1994	2007	2008
Local Wells Available	Yes	No	Yes	No	No	Yes
Well No. - Capacity (gpm)	20 – 2,900 22 – 3,000 23 – 2,800	--	28 – 2,000 29 – 3,000 30 – 2,000 31 – 2,000	--	--	32 – 2,000 ⁽¹⁾ 33 – 3,000 ⁽¹⁾ 34 – 2,500 ⁽¹⁾
Total Well Capacity (mgd)	12.5	--	13	--	--	10.8
Imported Water Available						
CMWD Capacity, mgd	29.5	18.7	42	27.8	8	--
UWCD Capacity, mgd	29.5	27.8	29.5	30.2	8	--
Treatment	Yes	No	Yes	No	No	Yes
Type	Chloramination	--	Chloramination	--	--	Desalting [reverse osmosis(RO)] & Chloramination
Capacity, mgd	--	--	--	--	--	7.5 (RO permeate)
Permeate Storage, gallons	--	--	--	--	--	600,000

Table 1 Blending Station Facility Summary Public Works Integrated Master Plan City of Oxnard						
	BS No. 1	BS No. 2	BS No. 3	BS No. 4	BS No. 5	BS No. 6
	Yes	No	Yes	Yes	Yes	No
Backup Generator	2 @ 750 kW 1 @ 2.5 MW	--	1 @ 1000 kW	1 @ 25 kW	1 @ 20 kW	--
Notes: (1) These wells are fed directly to the desalter at BS No. 6; due to water quality, they are not able to blend directly into the City's distribution system.						

2.1 Supply

A thorough analysis of the City's water supply is included in the *2010 Urban Water Management Plan (2010 UWMP)* (Kennedy/Jenks, 2012). The City is in the process of updating their UWMP for 2015. The City's historical and current water supply allocations are summarized in Table 2. This information was derived from the 2010 UWMP and updated throughout the PWIMP development process with the most current information known at the time of plan development. For the most up-to-date information on current and projected supply allocations, the 2015 UWMP should be consulted. Existing water supply agreements that were made available to the project team are included in Appendix A.

Source	Type of Source	Transport Facility Details	Historical Source Allocation	Current Source Allocation
Local Wells	Groundwater	10 wells	<ul style="list-style-type: none"> • Baseline: 936 AFY⁽¹⁾ • Historical Pumping: 11,205 AFY⁽¹⁾ • One-Time Ferro Pit Credit: 11,000 AFY + 1,000 AFY per year (2012 – 2019)⁽¹⁾ • 700 AFY Transfer from PHWA (2002 Three-Party Agmt)⁽¹⁾ 	<ul style="list-style-type: none"> • 7,186 AFY⁽²⁾ • 700 AFY Transfer from PHWA (2002 Three-Party Agmt)
Calleguas Municipal Water District	Surface Water	Treated SWP water via Springville Reservoir and the Oxnard and Del Norte Conduits (36 inch)	Tier 1 Entitlement of 17,379 AFY ⁽³⁾	Tier 1 Entitlement of 13,826 AFY ⁽⁴⁾
United Water Conservation District	Groundwater	Oxnard-Hueneme Pipeline (42 inch)	• 9,378 AFY ⁽⁵⁾	• 7,328 AFY ⁽¹⁾

Table 2 Current Water Supply Allocations Public Works Integrated Master Plan City of Oxnard
Notes: (1) Based on historical pumping. (2) Groundwater pumping allocations have been reduced due to Emergency Ordinance E, Temporary Emergency Allocation. (3) Tier 1 water (from MWDSC) corresponds to the amount “contracted for” by the City. It is in essence a capacity reservation and includes the water being delivered to PHWA. (4) Based upon current planning efforts for 2015 UWMP. (5) Based upon 'new' historical pumping (from Jan 1, 2003 to Dec 31, 2012) as noted in the Emergency Ordinance E.

2.1.1 Local Wells

The City has 10 wells that it currently uses to withdraw groundwater from the Oxnard Plain Groundwater Basin up to its groundwater allocation limit. The wells are connected with different blending stations as shown in Table 1. Seven of these wells are chloraminated and blended directly with other sources. Three of these wells feed the desalter at BS No. 6. Table 1 also shows the capacity of each well and the total well capacity for each blending station.

2.1.2 Calleguas Municipal Water District (CMWD)

The State Water Project (SWP) water is purchased by CMWD after it is filtered and disinfected at Metropolitan Water District of Southern California’s (MWDSC’s) Joseph Jensen Water Treatment Plant in Granada Hills. CMWD receives the treated water from MWDSC and distributes the water directly to the Springville Reservoir in Camarillo. The City, then receives the treated SWP water from CMWD’s Springville Reservoir through the City’s Oxnard and Del Norte Conduits that feed five of the City’s six water blending stations. Blending Station No. 6 is unique in that is the only blending station designed to back-feed Oxnard’s blended water into the CMWD supply line (Oxnard Conduit) in the event of a pipe break.

2.1.3 United Water Conservation District (UWCD)

A portion of the City’s groundwater supply comes from UWCD through the formalized Water Supply Agreement for Delivery of Water through the Oxnard/Hueneme Pipeline, 1996. The Oxnard-Hueneme (O-H) Pipeline System is used to convey groundwater extracted from the Oxnard Forebay to the City, the Port Hueneme Water Agency (PHWA), and other small users. The system consists of wells at the El Rio Spreading Grounds, a groundwater collection and treatment system, a booster pump station, and transmission pipelines. Water that is extracted from the El Rio Spreading Grounds originates from Lake Piru water that is diverted by the Freeman Diversion and allowed to naturally percolate. The facilities are owned and operated by the UWCD, but the construction of the facilities and ongoing

operations and maintenance are funded through UWCD's water rates paid by O-H Pipeline users.

2.1.4 Sales Agreements with Other Agencies

Proctor and Gamble receives 100 percent imported water from CMWD as necessitated by its manufacturing processes. The City of Oxnard, CMWD and PHWA entered into a Three-Party Agreement in 2002, which provides PHWA with CMWD water through Oxnard's Calleguas pipeline. The City also supplied water to the Ocean View Municipal Water District (OVMWD) until 2008, when the OVMWD was dissolved and has since been managed and operated by the City.

2.1.5 Recycled Water

The source of water for the recycled water system is the Oxnard Wastewater Treatment Plant (OWTP) and the AWPf. The purpose of the AWPf is to offset potable water usage by providing recycled water for irrigation. In the future, it may support potable reuse, either direct (DPR) or indirect ([IPR] for groundwater replenishment and use. The initial capacity of the AWPf facility is 6.25 million gallons per day (mgd) (7,000 acre feet per year [AFY]) and can be added to in 6.25-mgd increments up to a maximum capacity of 25 mgd (28,000 AFY). More details of the recycled water system can be found in PM 4.1, *Recycled Water System Background Summary*.

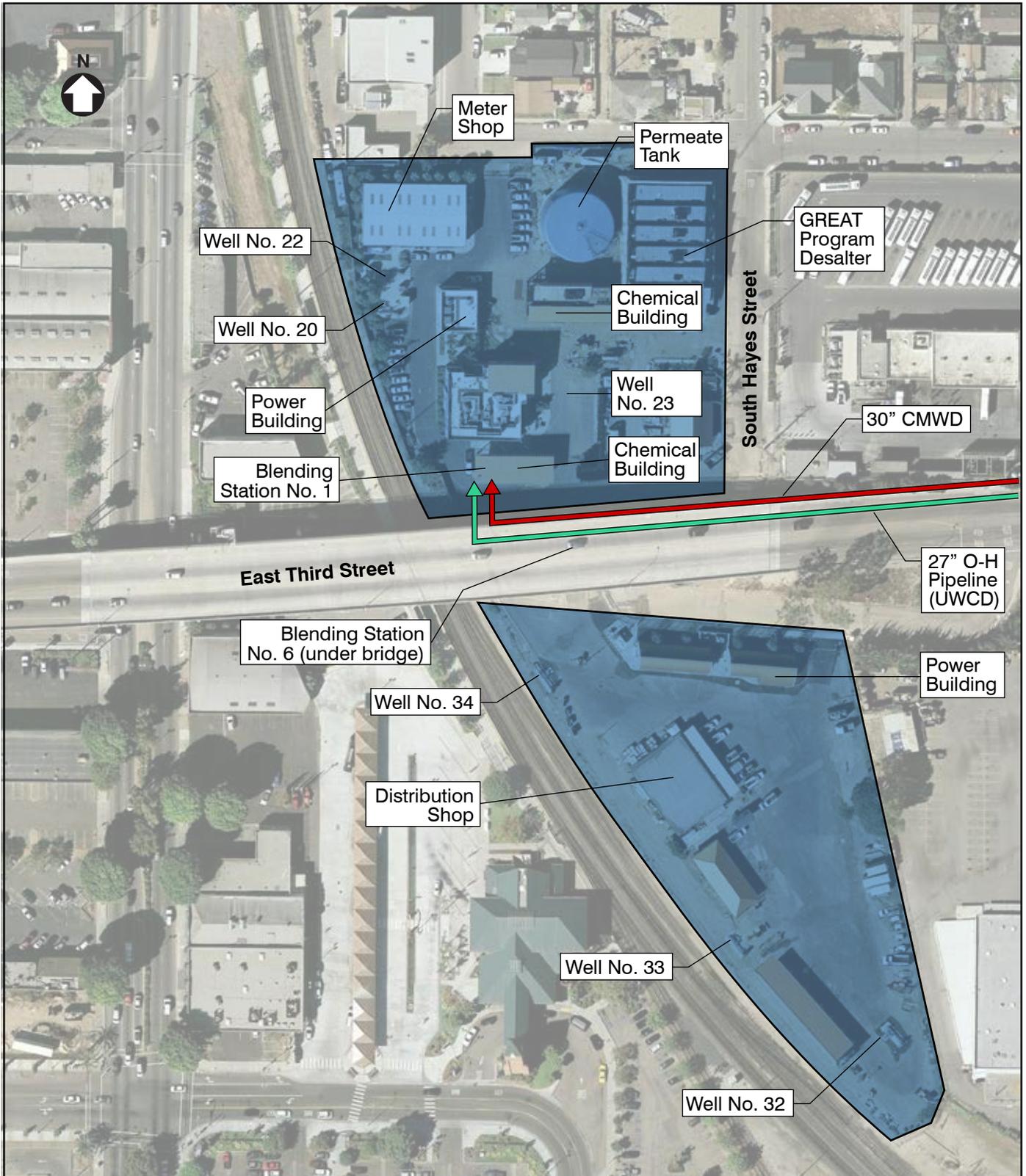
2.2 Blending Stations / Treatment

The City owns and operates six blending stations (BS) where the City blends its three sources of water supply. Each blending station is used to hydraulically blend the water before sending into the distribution system; only one of the blend stations also contains treatment for local groundwater.

2.2.1 Blending Station Nos. 1 and 6

Blending Station Nos. 1 and 6 are co-located near 2nd Street and South Hayes Avenue. Figure 3 shows an aerial view of Blending Station Nos. 1 and 6 and Figure 4 illustrates a schematic of the two blending stations. Blending Station No. 1, built first, contains three groundwater wells (Well Nos. 20, 22 and 23) as well as connections for CMWD and UWCD water. Years later, Well Nos. 32, 33 and 34 were constructed to feed the Desalter, which consists of cartridge filters and RO. The permeate from the facility is used as an alternative source fed through the existing CMWD connection at Blending Station No. 1.

Blending Station No. 6 was added at the time of the Rice Avenue Interchange project to temporarily supply CMWD equivalent water to Proctor and Gamble while the Oxnard Conduit was out of operation. The facility blends permeate from the Desalter with UWCD and has historically been used only during emergencies related to the Oxnard Conduit.



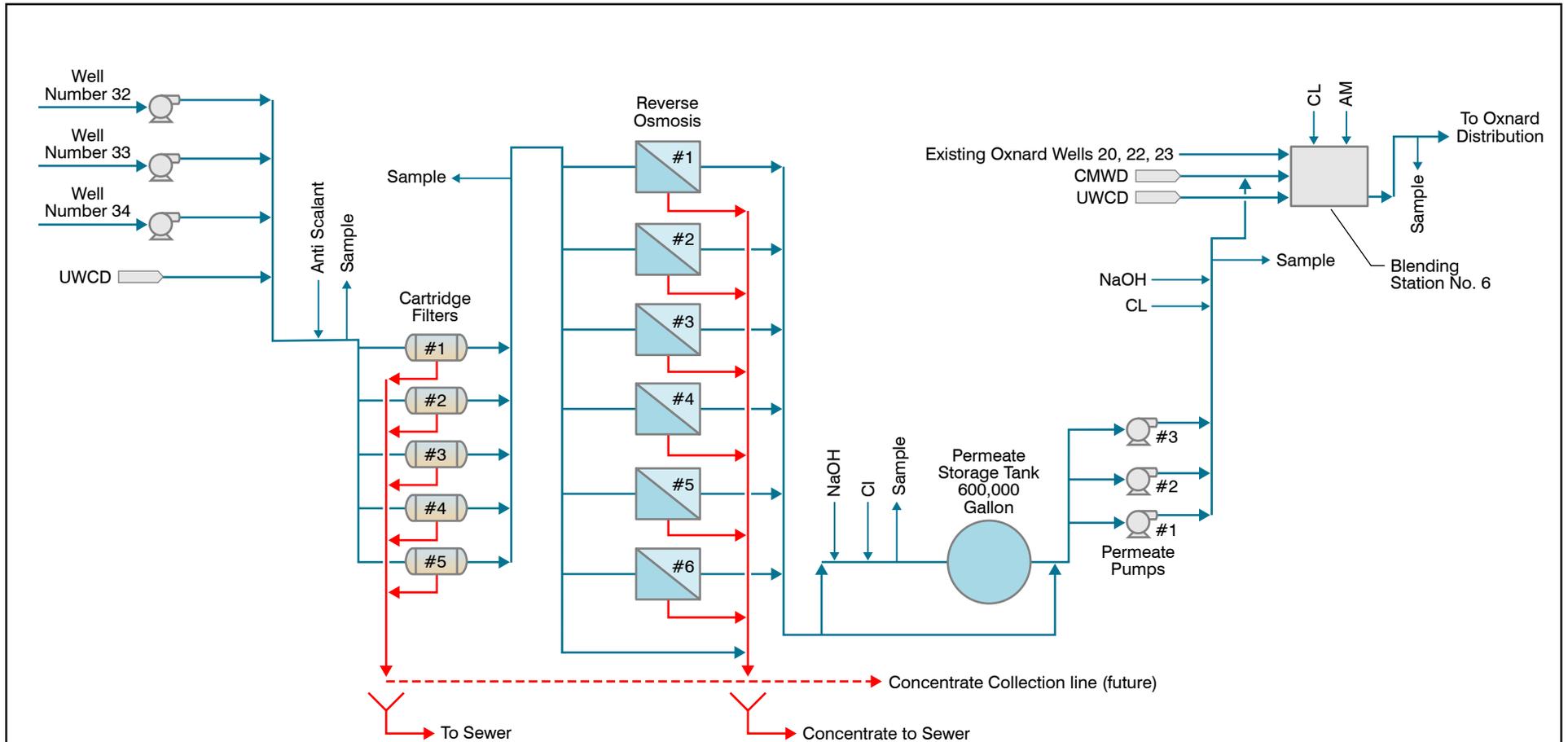
LEGEND	
	CMWD Pipeline
	UWCD O-H Pipeline
	Blending Station

BLENDING STATIONS NO. 1 AND NO. 6

FIGURE 3

CITY OF OXNARD
 PM NO. 2.1 - WATER BACKGROUND SUMMARY
 PUBLIC WORKS INTEGRATED MASTER PLAN





LEGEND
CL - Sodium Hypochlorite
NaOH - Sodium Hydroxide
AM - Ammonia

BLENDING STATION NO. 6 PROCESS FLOW SCHEMATIC

FIGURE 4

CITY OF OXNARD
PM NO. 2.1 - WATER BACKGROUND SUMMARY
PUBLIC WORKS INTEGRATED MASTER PLAN



2.2.2 Blending Station No. 2

Blending Station No. 2 is located at the intersection of East Wooley Road and Richmond Avenue. Figure 5 shows an aerial view of Blending Station No. 2. Blending Station No. 2, which contains connections to both CMWD and UWCD, serves as a standby station only.

2.2.3 Blending Station No. 3

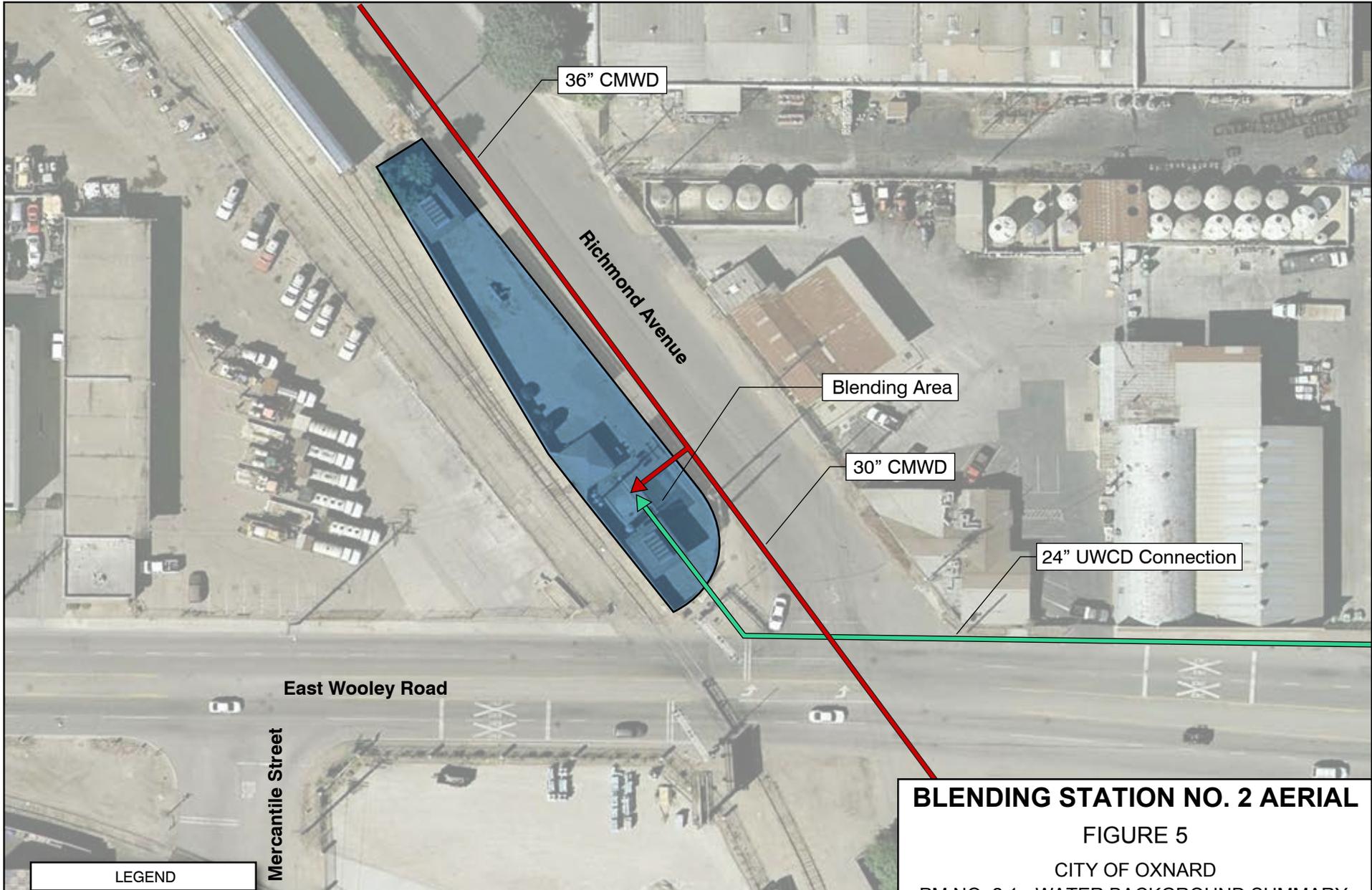
Blending Station No. 3 is located at Solar Drive and Wankel Way. Figure 6 shows an aerial view of Blending Station No. 3. Four local groundwater wells (Well Nos. 28, 29, 30 and 31) feed into Blending Station No. 3 and also contain connections to both CMWD and UWCD. Blending Station No. 3 can supply water to most of the system.

2.2.4 Blending Station No. 4

Blending Station No. 4 is located on North Rose Avenue. Figure 7 shows an aerial view of Blending Station No. 4. Blending Station No. 4 contains connections to both CMWD and UWCD.

2.2.5 Blending Station No. 5

Blending Station No. 5 is located Pleasant Valley Road east of Saviers Road. Figure 8 shows an aerial view of Blending Station No. 5. Blending Station No. 5 contains connections to both CMWD and UWCD.



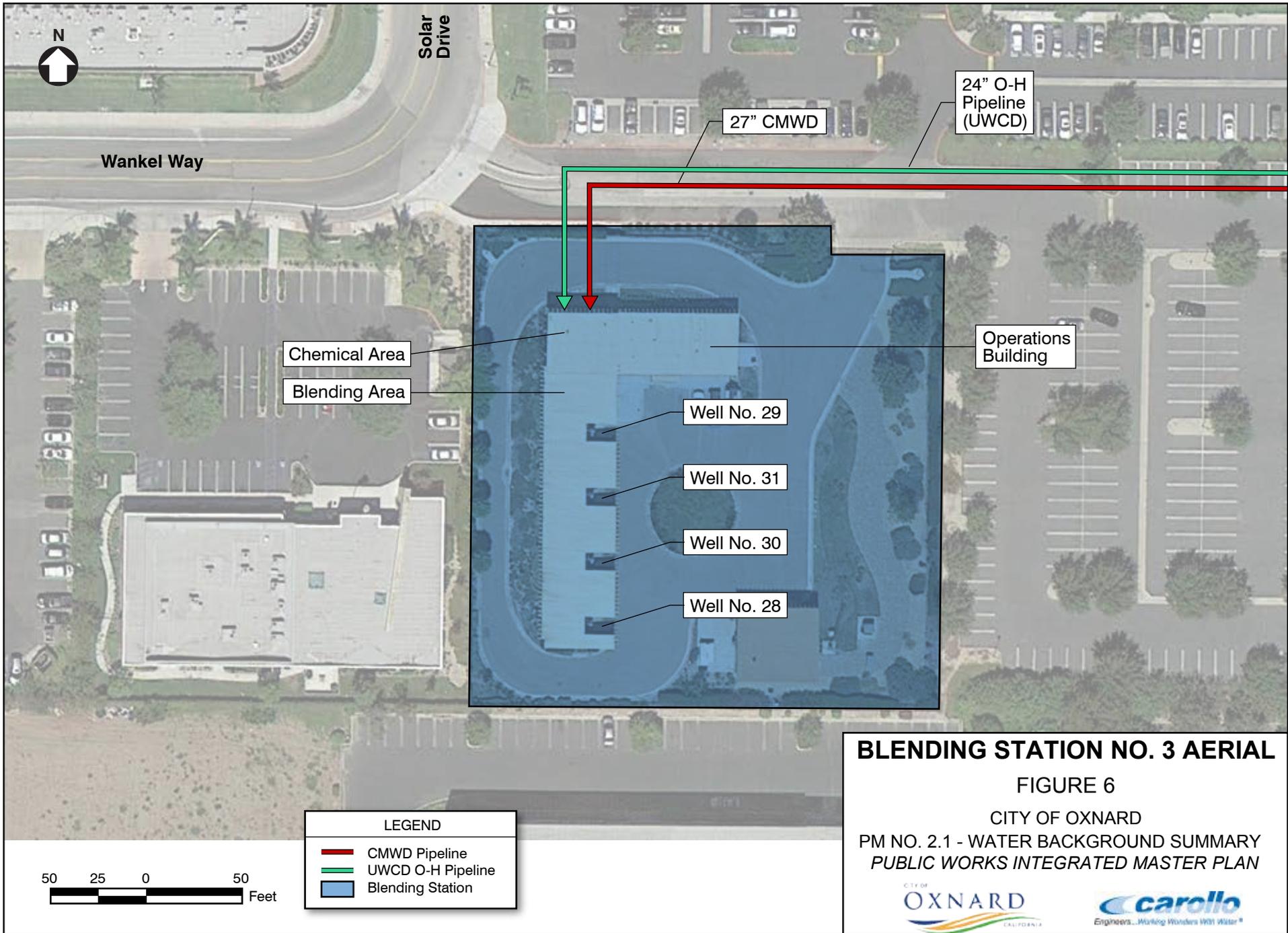
LEGEND	
	CMWD Pipeline
	UWCD O-H Pipeline
	Blending Station

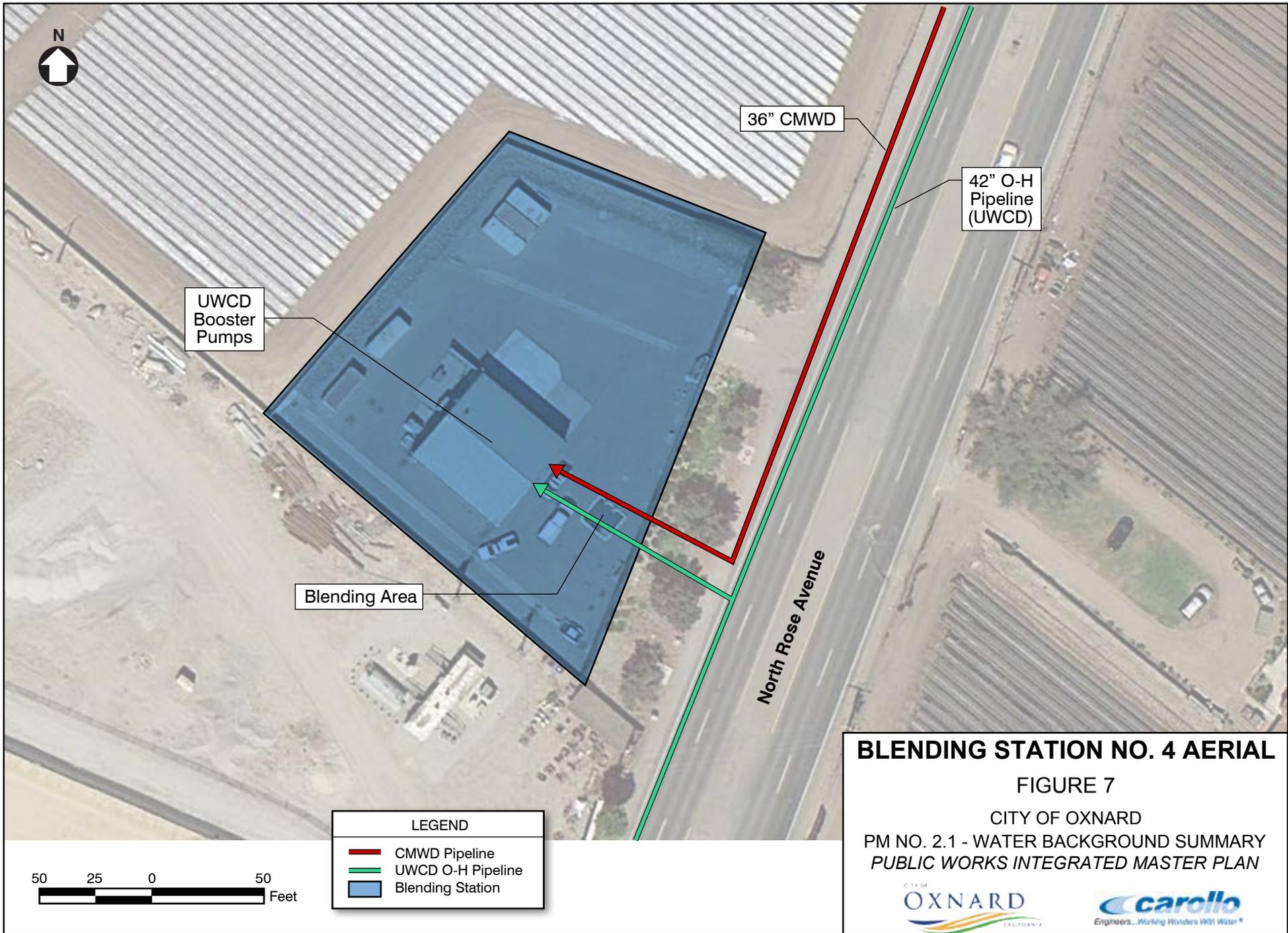
BLENDING STATION NO. 2 AERIAL

FIGURE 5

CITY OF OXNARD
 PM NO. 2.1 - WATER BACKGROUND SUMMARY
 PUBLIC WORKS INTEGRATED MASTER PLAN

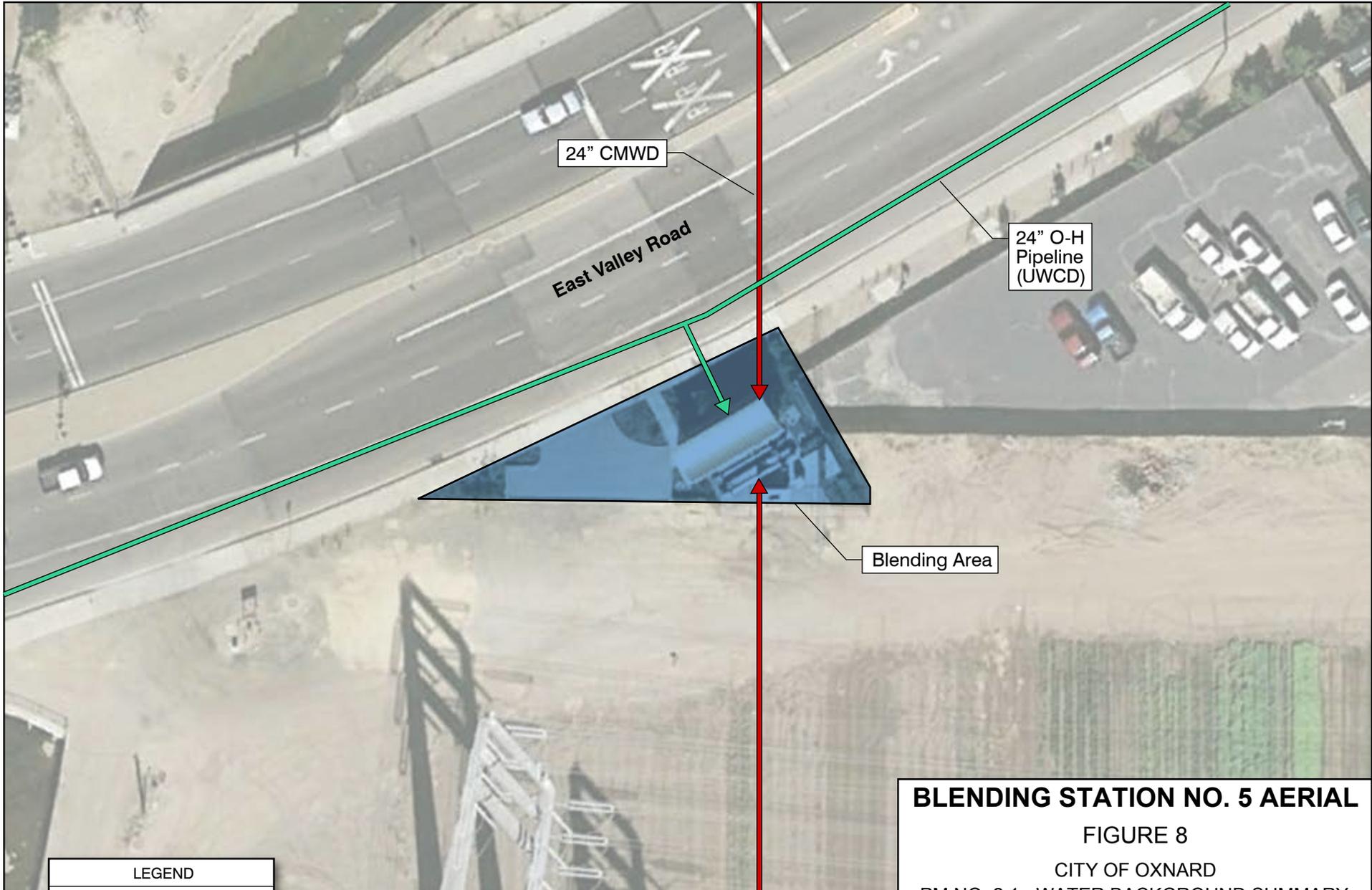






BLENDING STATION NO. 4 AERIAL
FIGURE 7
 CITY OF OXNARD
 PM NO. 2.1 - WATER BACKGROUND SUMMARY
 PUBLIC WORKS INTEGRATED MASTER PLAN



24" CMWD

East Valley Road

24" O-H Pipeline (UWCD)

Blending Area

LEGEND	
	CMWD Pipeline
	UWCD O-H Pipeline
	Blending Station

BLENDING STATION NO. 5 AERIAL

FIGURE 8

CITY OF OXNARD
 PM NO. 2.1 - WATER BACKGROUND SUMMARY
 PUBLIC WORKS INTEGRATED MASTER PLAN



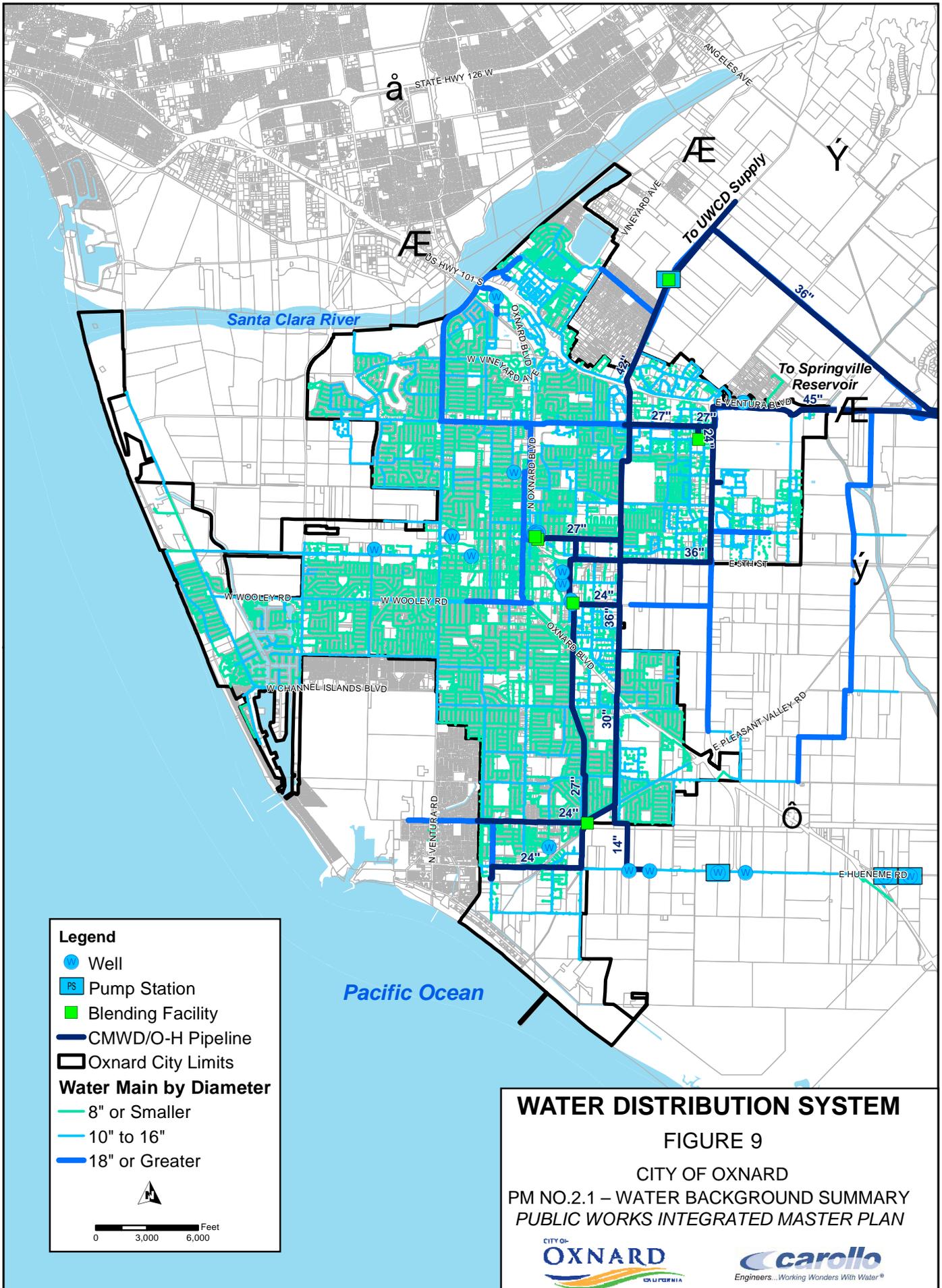
2.3 Distribution System

2.3.1 Piping

The City's transmission and distribution system consists of a wide variety of pipe types and sizes, and reflects the ongoing growth of the system. The City has implemented an infrastructure management system, but the database is not fully populated with all pipe attributes (diameter, material, year installed, etc.). Based on the 2013 March geographic information system (GIS) database (the latest available at the time of this project), the distribution of the nearly 3.25 million linear feet of pipe is shown differentiated by pipe size in Table 3. Figure 9 illustrates the City's existing water distribution system.

Pipe Diameter, in.	Length, ft	Length, miles	Percent of Total, %
Unknown	57,572	10.90	1.78%
1"	590	0.11	0.02%
1.5"	44	0.01	0.00%
2.5"	229	0.04	0.01%
2"	4,038	0.76	0.12%
3"	1,116	0.21	0.03%
4"	91,856	17.40	2.83%
6"	714,883	135.39	22.06%
8"	1,252,003	237.12	38.64%
10"	299,574	56.74	9.25%
12"	440,558	83.44	13.60%
14"	12,632	2.39	0.39%
16"	94,951	17.98	2.93%
18"	28,086	5.32	0.87%
20"	20,546	3.89	0.63%
24"	40,720	7.71	1.26%
27"	24,150	4.57	0.75%
30"	30,394	5.76	0.94%
36"	68,211	12.92	2.11%
42"	26,412	5.00	0.82%
45"	19,299	3.66	0.60%
48"	3,084	0.58	0.10%
54"	9,408	1.78	0.29%
Total	3,240,359	613.70	100.00%

Note: Source: City GIS Database, March 2013.



Legend

- Well
- Pump Station
- Blending Facility
- CMWD/O-H Pipeline
- Oxnard City Limits

Water Main by Diameter

- 8" or Smaller
- 10" to 16"
- 18" or Greater

0 3,000 6,000 Feet

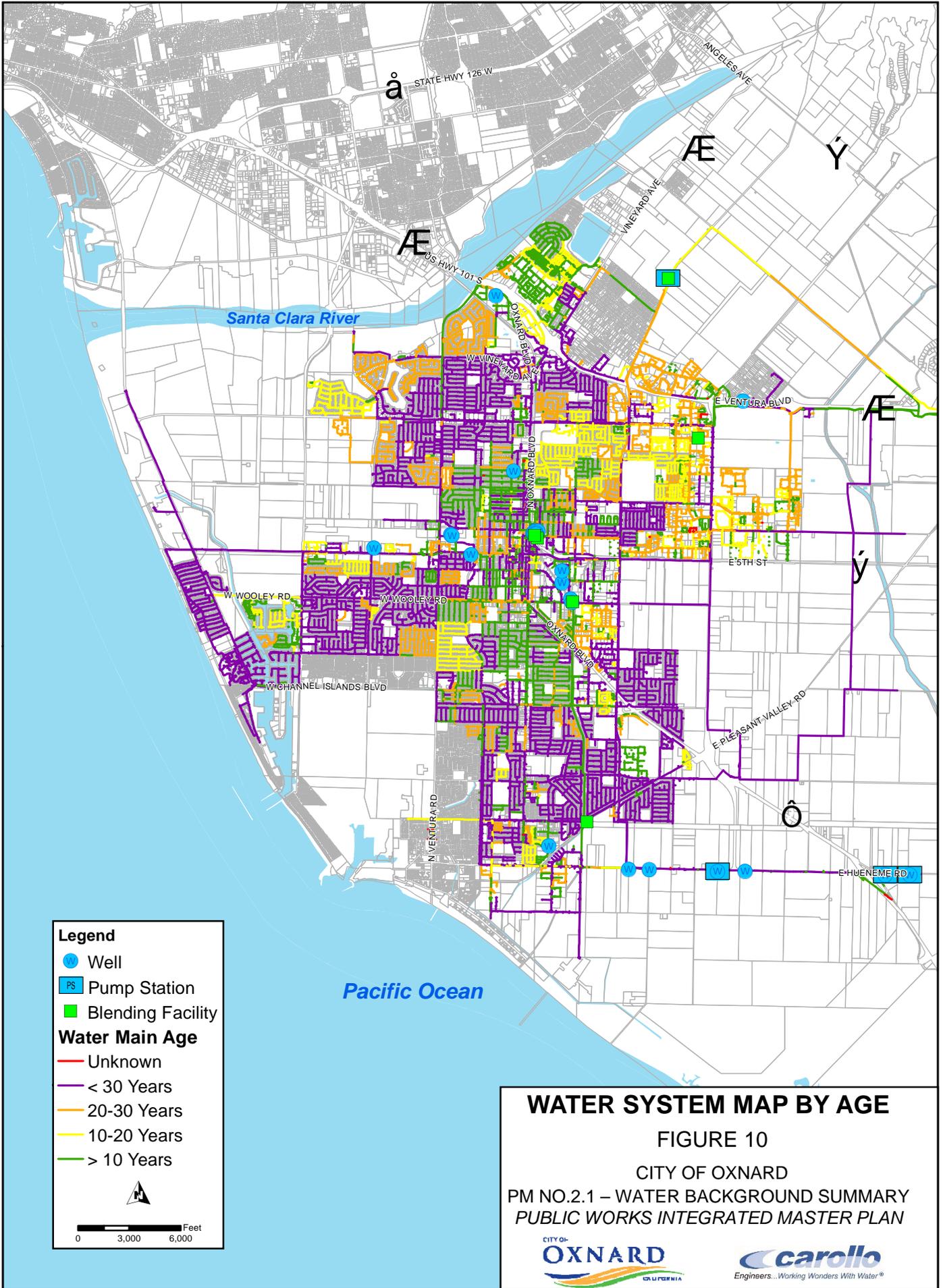
WATER DISTRIBUTION SYSTEM
FIGURE 9
 CITY OF OXNARD
 PM NO.2.1 – WATER BACKGROUND SUMMARY
 PUBLIC WORKS INTEGRATED MASTER PLAN



Pipe age and material factor into the required maintenance and replacement of piping and thus is important information to track. The 2013 GIS database offers some of that information. Figures 10, 11 and 12 illustrate graphically the water systems piping by age, by material, and by diameter, respectively. Table 4 further compiles and compares these two attributes.

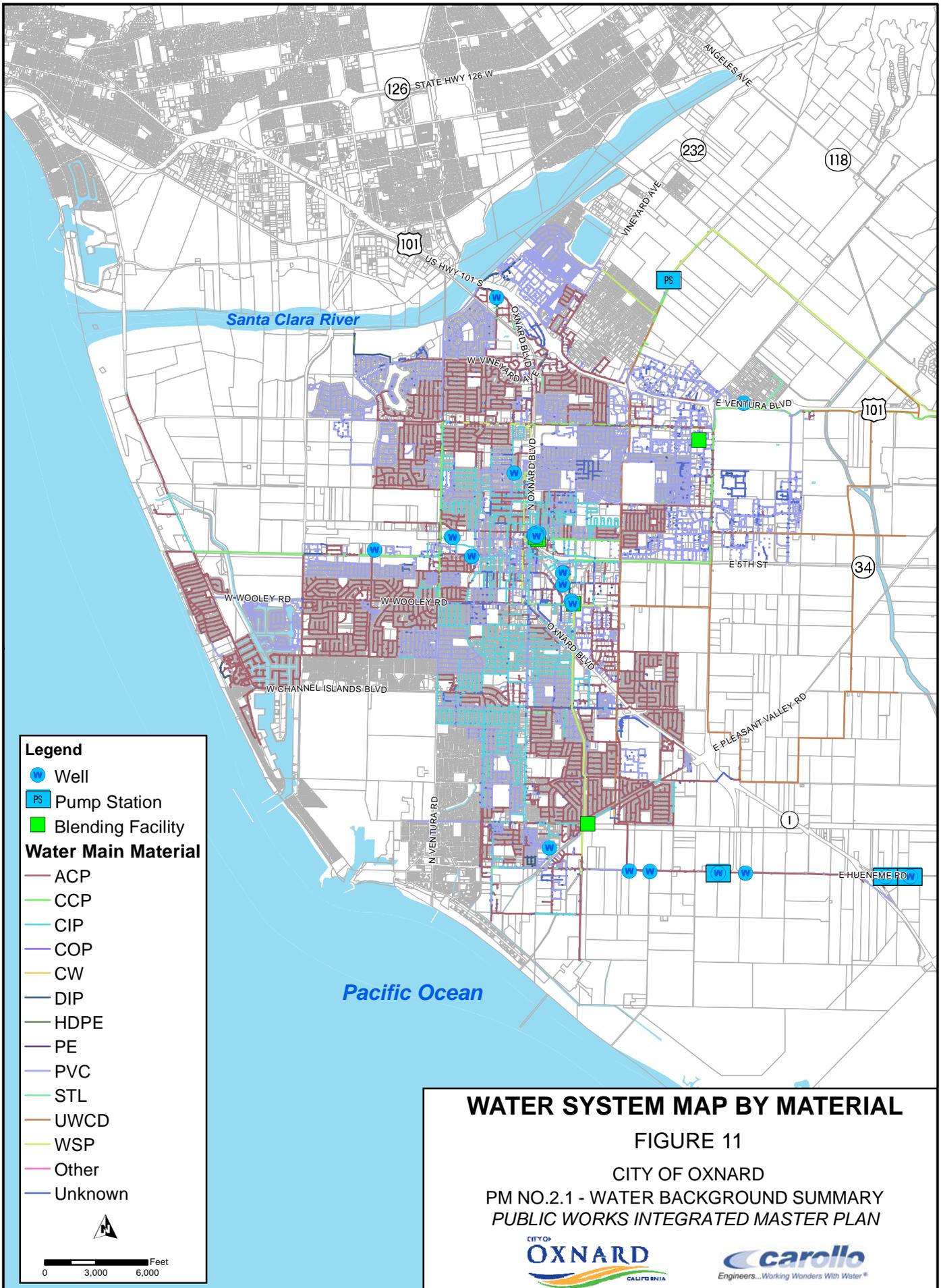
Table 4 Compilation of Pipe Age and Material within Water System Public Works Integrated Master Plan City of Oxnard						
Material	Length, feet					Total
	<10 years	10-20 years	20-30 years	>30 years	Unknown	
ACP	974	3,263	94,454	992,689	48,319	1,139,699
CCP	14,451	1,783	11,438	56,732	2,737	87,140
CIP	4,082	287	9,415	158,054	192,433	364,271
COP	28	28	18		401	474
CW				688		688
DIP	248	3,317	11,537	4,277	1,423	20,802
HDPE		1,117				1,117
Oth					60	60
PVC	333,714	276,006	430,562	54,147	85,493	1,179,922
STL	331	6,546	146	6,489	663	14,173
Unk	2,624	21,399	68,201	60,190	80,973	233,387
UWCD	14,931		268	103,442	1,379	120,020
WSP	7,044	17,802	9,854	22,885	21,021	78,605
Total	378,426	331,548	635,892	1,459,592	434,900	3,240,359

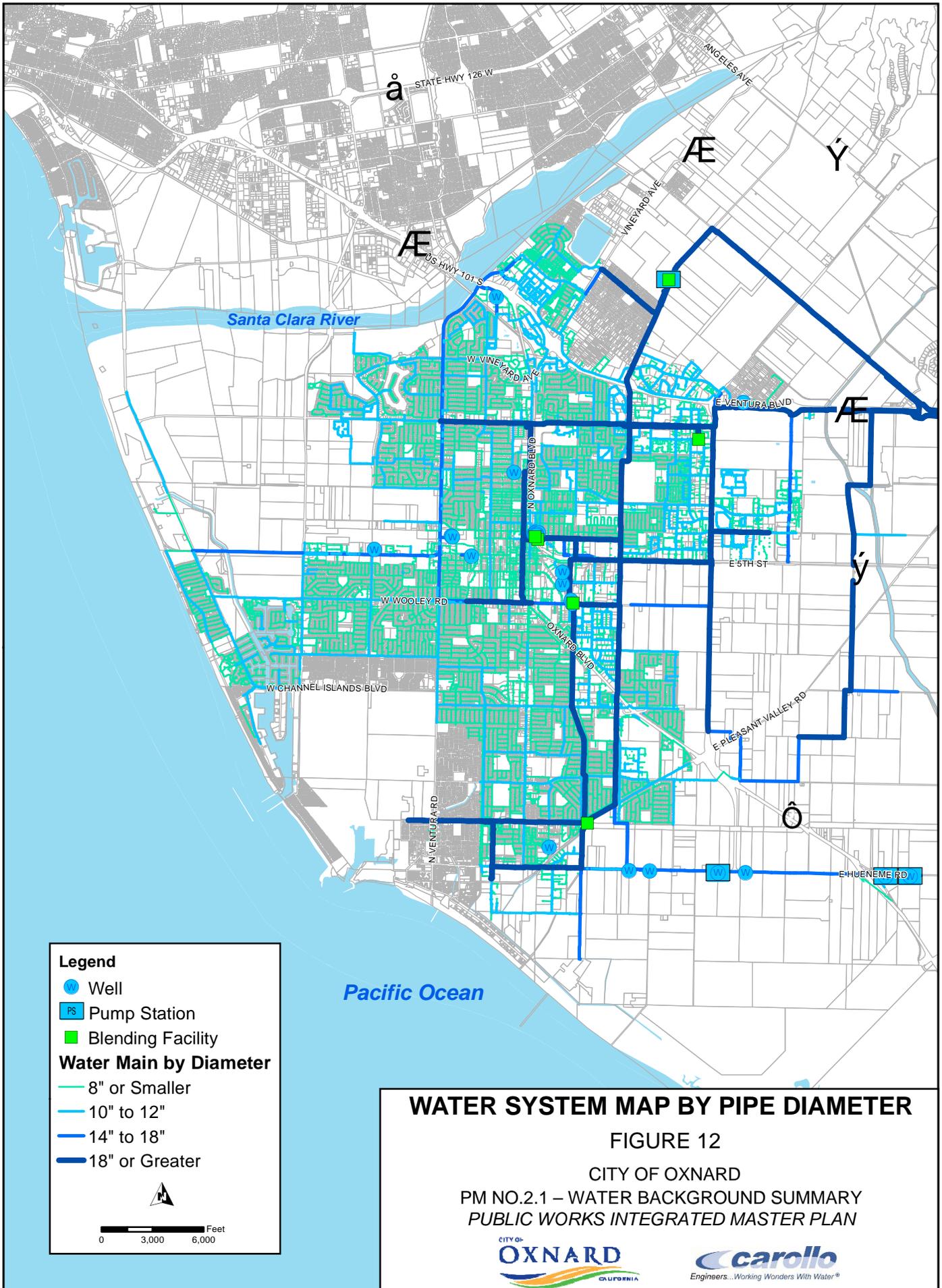
Notes:
(1) ACP = Asbestos Cement Pipe.
(2) CCP = Concrete Cylinder Pipe.
(3) CIP = Cast Iron Pipe.
(4) COP = Copper Pipe.
(5) CW = Continuous Weld Steel Pipe.
(6) DIP = Ductile Iron Pipe.
(7) HDPE = High Density Polyethylene.
(8) Oth = Other.
(9) PVC = Polyvinyl Chloride.
(10) STL = Steel.
(11) Unk = Unknown.
(12) UWCD = United Water Conservation District.
(13) WSP = Welded Steel Pipe.



WATER SYSTEM MAP BY AGE
 FIGURE 10
 CITY OF OXNARD
 PM NO.2.1 – WATER BACKGROUND SUMMARY
 PUBLIC WORKS INTEGRATED MASTER PLAN







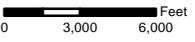
Legend

- Well
- PS Pump Station
- Blending Facility

Water Main by Diameter

- 8" or Smaller
- 10" to 12"
- 14" to 18"
- 18" or Greater





WATER SYSTEM MAP BY PIPE DIAMETER

FIGURE 12

CITY OF OXNARD
 PM NO.2.1 – WATER BACKGROUND SUMMARY
 PUBLIC WORKS INTEGRATED MASTER PLAN



2.3.2 Pressure Zone

The City's water system is currently operated in one pressure zone. However, there are some areas of the City experiencing pressures that are higher than 80 pounds per square inch (psi), the maximum pressure desired within the system. PM 2.3, *Model Update / Calibration and Recommended Distribution System Improvements* contains further details and assessment of pressure zones for the Oxnard system.

2.3.3 Storage and Backup Facilities

The City's distribution system currently contains 600,000 gallons of above ground, engineered storage in the form of permeate storage at BS No. 1 and 6. The City also utilizes the 18.0 million gallon (MG) Springville Reservoir, owned by CMWD. Seventy (70) percent of the reservoir's volume, or 12.5 million gallons (MG) is dedicated to the City. The City does have back-up generator capacity at 4 of 6 blending stations.

2.4 Operational Approach and Strategy

Prior to enactment of Emergency Ordinance E, the blend stations were operated in such a way as to provide TDS values of 600 to 700 mg/L and meet system pressures as needed. The preference was to use groundwater over CMWD due to the relative cost effectiveness of the local and UWCD sources. Generally, given the stability of the groundwater supply, the blend ratios at each blending station rarely needed to be modified, except due to well maintenance. Table 5 shows the overall production breakdown by blend station as well as approximate blend of the three major sources at each blend station. A more detailed analysis of the water system operation is included in PM 2.3, *Infrastructure Modeling and Alternatives*. Further details of the well production data can be found in Appendix B.

Table 5 Operational Approach to Blend Station Source Breakdown⁽¹⁾ Public Works Integrated Master Plan City of Oxnard						
	BS No. 1	BS No. 2	BS No. 3	BS No. 4	BS No. 5	Desalter Permeate Flow⁽²⁾
Overall Annual Production ⁽³⁾	23%	0.1%	30%	13%	3%	13%
Production by Source						
CMWD	22%	39%	47%	53%	46%	0%
UWCD	60%	61%	26%	47%	54%	0.5%
Local Wells	18%		27%			99.5%
Notes:						
(1) Based on annual average production data provided by the City from 2009 – 2012.						
(2) Based on permeate flows from the desalter.						
(3) To add up to 100%, contributions to industrial from UWCD (4%) and CMWD (13%) need to be added in.						

Since Emergency Ordinance E has been in effect, this has reduced the allotment of groundwater the City can pump and therefore, has increased their reliance on CMWD imported surface water. Though the CMWD water allotment has also been reduced, the City has still been able to meet demand without rising above their Tier 1 allotment from CMWD. The cut-backs in groundwater pumping means less water is available for desalting which means that overall the TDS concentration of the blended water quality has increased a bit (to around 750 mg/L).

3.0 REGULATIONS

Water treatment and supply facilities must meet all state and federal water quality guidelines. Federal regulations are put forth by the Environmental Protection Agency (EPA) and the state guidelines are administered by the California Division of Drinking Water (DDW). Because the City drinking water supply consists of a surface water/groundwater blend, regulations for both types of water sources apply. However, because the City only distributes rather than treats surface water, surface water regulations are less pertinent, presuming that the surface water meets all state and federal regulations upon entering the City's system.

3.1 Current

Current groundwater regulations are most relevant given that one of the City's major water supplies is local groundwater wells. It is assumed that the wholesalers that provide surface water for the City are responsible for meeting treatment regulations prior to entry to the City's system, so those are not summarized herein. However, the City is responsible for meeting any and all distribution-related regulations. Table 6 summarizes current regulations focused on groundwater and distribution systems.

3.2 Future (Potential)

Future regulations that could potentially impact the City's system are also summarized in Table 6.

4.0 WATER QUALITY

The City is committed to providing its customers with high quality water that meets all federal and state primary drinking water standards. A snapshot of their current water quality can be reviewed in their 2014 Consumer Confidence Report (see Appendix C). This summarizes the water quality of the City's two major imported sources as well as the blended water quality. In general, the quality of the water delivered by the City from the different sources meets all requirements set by the state and federal government.

Table 6 Overview of Relevant Drinking Water Regulations Public Works Integrated Master Plan City of Oxnard		
Regulation	Compliance Date	Requirements and Maximum Contaminant Level (MCL)
Current Applicable Regulations		
Safe Drinking Water Act (SDWA) and National Primary Drinking Water Regulations (NPDWR)	Ongoing	Maximum contaminant levels (MCLs), maximum contaminant level goals (MCLGs) and/or treatment techniques set for 83 contaminants, including turbidity, seven microorganisms (two of which are indicators), four radionuclides, 16 inorganic contaminants, and 57 organic contaminants.
Stage 1 Disinfectants and Disinfection Byproducts Rule (Stage 1 D/DBPR)	Ongoing	Trihalomethanes (TTHM) limit of 0.080 mg/L; haloacetic acids (HAA5) limit of 0.060 mg/L MCL for bromate of 0.010 mg/L; MCL for chlorite of 1.0 mg/L Compliance for TTHMs & HAA5 based on a running annual average (RAA).
Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 D/DBPR)	10/1/06 – first provision 1/1/13 – all provisions	Perform Initial Distribution System Evaluation (IDSE) to identify new DBP compliance locations. Change compliance calculations from RAA to Locational Running Annual Averages (LRAA).
Radionuclides Rule	Ongoing	Updated standards: Combined radium 226/228: 5 pCi/L. Total beta particles and photon emitters: 4 mrem/yr. Gross alpha particles (excluding U and Rn): 15 pCi/L. Uranium MCL: 30 µg/L.
Arsenic Rule	Ongoing	Arsenic MCL: 0.010 mg/L.
Secondary Drinking Water Regulations	Ongoing	Non-enforceable standards for aesthetic parameters.
Partnership for Safe Water	Ongoing	Voluntary standards and practices to minimize risk of microbial contamination of treated water.
Inorganic Chemicals	Various	Existing NPDWRs set standards for a number of different metals and other inorganic chemicals including aluminum and nitrate.
Synthetic and volatile organic chemicals	Various	Existing NPDWRs for a number of different herbicides, pesticides, solvents and other organic chemicals. Monitoring and reporting requirements.

Table 6 Overview of Relevant Drinking Water Regulations Public Works Integrated Master Plan City of Oxnard		
Regulation	Compliance Date	Requirements and Maximum Contaminant Level (MCL)
Lead and Copper Rule (LCR) and 2007 Revisions	Ongoing	Requires water suppliers to optimize their treatment system to control corrosion in customer's plumbing; If lead action levels are exceeded, requires the suppliers to educate their customers about lead and suggest actions they can take to reduce their exposure to lead through public notices and public education programs.
Cr(VI)	Ongoing	CDPH MCL of 10 µg/L. EPA will be deciding whether and where to set an MCL within the next few years.
New "lead free" standard under the SDWA	1/4/14	Amends SDWA Section 1417 – Prohibition on Use and Introduction into Commerce of Lead Pipes, Solder and Flux: Changes the definition of "lead-free" by reducing lead content from 8% to a weighted average of not more than 0.25% in the wetted surface material (primarily affects brass/bronze).
Future Potential Regulations		
Combined Volatile Organic Compounds (cVOCs)	Unknown	Efforts to define a VOC Rule are ongoing. The novel "group risk" approach focuses on total public health, not each chemical. May be combined based on a common analytical method, treatment, or MCLG.
Revised trichloroethylene (TCE) and tetrachloroethylene (PCE) MALss	Unknown	These may be regulated separately from other VOCs.
Revised LCR	Projected 2017 implementation	EPA has been evaluating all aspects of the current rule.
Nitrosamines	Unknown	EPA collecting data for possible future group MCL for nitrosamines (byproduct of chloramines). California Notification Level of 0.01 µg/L for NDMA.
Revised Total Coliform Rule (RTC)	April 2016	MCL for Total Coliforms (including fecal coliform and <i>E. coli</i>) of no more than 5% of samples total coliform - positive.

In addition, the City provided water quality monitoring data from their operational groundwater wells as well as limited data from the water campus. That data is summarized in Appendix D. In general, the local wells are above the state MCL for TDS, sulfate and nitrate. Consequently, Wells 32, 33 and 34 are always treated through the desalter to improve the overall blended water quality entering the distribution system.

Some contaminants monitored for are naturally-occurring minerals and radioactive material. In some cases, the presence of animals or human activity can contribute to the constituents in the source waters. The 2010 UWMP assessed the City's water quality using the following resources: 2010 Consumer Confidence Report (CCR), Public Health Goals (PHG) Reports, and past UWMPs that may impact water quality. Summarized below are a few areas of concern noted in the PHG Report:

- UWCD Groundwater:
 - Nitrates – Typically higher in the summer due to lack of river water for dilution; due to the presence of agricultural lands surrounding the El Rio area.
 - Methyl Tertiary Butyl Ether (MTBE) – Detected from the Poole Oil Site along Vineyard Ave.; had not been detected for several years but monitoring will continue.
- City Groundwater:
 - Nitrates – Similar issue to the UWCD groundwater.
 - Radionuclides – naturally occurring in certain groundwater.

In June 2013, a Public Health Goals Report, Preliminary Draft was published for the City and is included in Appendix E. As part of that work, recent water quality data (2010 – 2012) was compared with the following standards:

Maximum Contaminant Level Goals (MCLG) – the level of a contaminant in drinking water below which there is no observable adverse effect to human health. These can be enforced either through the United States Environmental Protection Agency (US EPA) or California Environmental Protection Agency (CAL EPA).

Public Health Goals – The concentration of a contaminant in drinking water below which no known or anticipated adverse health effects will occur, with an adequate margin of safety. Non-enforceable goals established by the Office of Environmental Health Hazard Assessment (OEHHA) of California.

The results of that study show there are a few constituents in which City levels exceed the PHG or MCLG, as shown in Table 7.

Constituent (units)	CAL EPA MCL	OEHHA PHG	USEPA MCLG	City Level
Arsenic (mg/L)	0.010	0.000004	0	ND-0.004
Copper (mg/L)	1.3	0.3	1.3	N/A
Lead (mg/L)	0.015	0.0002	0	N/A
Nickel (mg/L)	0.1	0.012	N/A	ND-0.013
Nitrate (mg/L)	45	45	10	ND-65
Nitrite (mg/L)	1	1	1	ND-11
N-Nitrosodimethylamine (mg/L)	NA	0.000003	N/A	ND-9
Gross Alpha Particles (pCi/L)	15	NA	0	ND-32
Gross Beta Particles (pCi/L)	50	NA	0	ND-5.2
Uranium (pCi/L)	20	0.43	0	ND-18

Note:
 (1) N/A = Not Applicable.
 (2) ND = Non-Detect.
 (3) Source: Public health Goals Report, 2013 (included in Appendix E).

5.0 CLIMATE CHANGE

5.1 Climate Change: Water Supply

As previously mentioned, the City draws water from both groundwater and surface water sources to serve its constituents. The management of these sources needs to accommodate increased variability brought by climate change. As projections of climate change impacts will never be perfect, flexibility must be a fundamental tactic, especially regarding water system operations (DWR 2008h, Madsen and Willcox 2012). This section provides a summary of current trends and projected climate change impacts on the City's water sources in terms of annual rainfall; rainfall intensity and distribution throughout the year; and drought intensity, duration, and frequency.

5.1.1 Rainfall

This section provides a brief summary of the current trends and future projections in annual rainfall and rainfall intensity and distribution for the City of Oxnard, the full discussion is provided in PM 5.1, *Stormwater - Background Summary*. Rainfall trends and projections are important mainly for their impact on future water supply.

California's precipitation patterns vary in different parts of the region. Most regional studies performed in California have focused on Northern California, and there is still no consensus on projections for total annual precipitation for the Oxnard area. Therefore, it is recommended that long-term planning be based on current trends of total annual precipitation analyzed on a monthly basis. Monthly trending would provide more specific information on general trends observed elsewhere of increasing rainfall as snowfall decreases, and the timing of precipitation events occurring earlier in the water year.

Although projections for total annual precipitation vary significantly, most regional climate model results in the U.S. suggest that the extreme daily precipitation rate will increase relative to changes in the annual mean precipitation rate. At the state level, records show a 13 percent increase in frequency of extreme precipitation events in California since 1948 on average – with southern California showing an increasing trend and northern California showing a decreasing trend (Madsen and Willcox, 2012). Detection of statistically significant trends in the frequency of extreme precipitation events becomes more difficult at the metropolitan level. However, in the 2007 version of the study, 55 of the 248 metropolitan areas (as defined by the U.S. Census Bureau) showed a statistically significant increase in the frequency of extreme precipitation events. A review of extreme precipitation for an area including Santa Barbara, Santa Maria and Lompoc showed a 69 percent average increase in frequency of extreme precipitation events since 1948 and an area including Los Angeles, Riverside, and Orange County showed a 58 percent average increase in frequency of extreme precipitation events since 1948 (Madsen and Figdor, 2007).

While there is a lack of model simulation results relevant to projections for the Central Coast, including the area in and around the City, it is recommended that long-term planning be based on the current trends of an increase in frequency and change in distribution within the year of extreme levels of precipitation, as opposed to increases or decreases in average annual precipitation.

5.1.2 Drought

Current Trends. Drought is defined as “deficiency of precipitation (relative to some long-term average) over an extended period of time, usually a season or more” (SBCWA 2004). This definition of a drought does not align completely with the City's definition of a critical drought period, which is a five-year period of below average annual rainfall. Historical records for Santa Barbara show that critical drought periods have historically recurred about every forty years.

In May 2015, due to the ongoing drought, the California State Water Board adopted Emergency Conservation measures in accordance with Governor Gerry Brown's Executive Order. These measures mandated a statewide reduction of water by 25 percent between June 2015 and February 2016. The City of Oxnard is required to reduce its consumption by 12 percent.

Future Projections. As an increase in extreme precipitation events in the winter months is anticipated to increase in the future in California, it is also projected that there will be a subsequent increase in the number of dry days in summer months, thus extending California's already long dry season. Longer, drier, and more frequent periods of drought are anticipated with up to 2.5 times the number of critically dry years by the end of the century. Until more accurate scientific information and regional model results are available and show otherwise, the Department of Water Resources (DWR) recommends that local agencies assume a 20 percent increase in the frequency and duration of future dry conditions to prepare communities for future droughts (DWR 2008h).

APPENDIX A – WATER SUPPLY AGREEMENTS

A-6169

approved
cc. 12/10/03

THREE PARTY WATER SUPPLY AGREEMENT

THIS THREE PARTY WATER SUPPLY AGREEMENT ("Agreement") is made and entered into in the County of Ventura as of December 10, 2002, by and among:

THE CITY OF OXNARD ("City"), a general law city authorized to provide retail water service pursuant to the California Constitution, Article XI, section 9, and California Government Code sections 38730, *et seq.*; and

THE PORT HUENEME WATER AGENCY ("Agency"), a joint powers agency established in 1994 pursuant to California Government Code sections 6500, *et seq.*, which provides water service to its member agencies; and

The CALLEGUAS MUNICIPAL WATER DISTRICT ("District"), a municipal water district formed and operating pursuant to California Water Code sections 71000, *et seq.*, which provides wholesale water service to City and Agency;

together referred to as the "Parties," and singularly as "Party".

WHEREAS, the Parties rely on both native and imported surface and groundwater resources to provide water service to lands, people and businesses within their respective jurisdictions in Ventura County; and

WHEREAS, Agency owns and operates the Brackish Water Reclamation Demonstration Facility (BWRDF), from which Agency obtains treated potable water for delivery to its customers; and

WHEREAS, Agency and City entered into a Water Treatment, Plant Site Facilities and Land Lease Agreement dated February 13, 1996 ("Land Lease"); and

WHEREAS, City is currently developing the design for a multi-faceted water supply program, entitled the Groundwater Recovery Enhancement And Treatment Program ("GREAT Program"), which generally includes facilities for groundwater demineralization, wastewater recycling and reuse, groundwater injection and recovery, brine disposal, and wetlands enhancement; and

WHEREAS, Agency and City entered into a Memorandum of Understanding, on or about July 2002, in which the two entities have agreed to collaborate on the development and use of GREAT Program facilities; and

WHEREAS, District will implement a new rate structure on January 1, 2003, which contains, among other things, significant peaking penalties, pursuant to which City and Agency intend to execute an aggregate purchase order ("PO") commitment; and

COPH - Public Works
DEC 16 2002
Rec'd by _____

WHEREAS, Agency and District entered into an Imported Water Service Agreement dated February 21, 1996, as amended by a letter agreement dated March 21, 2000 (collectively the "Water Service Agreement"), through which the two entities exchanged certain commitments regarding the provision of water service to the BWRDF; and

WHEREAS, City and District entered into an Agreement for the Purchase and Lease of the Oxnard Conduit and the Lease of the Industrial Lateral dated February 13, 1996 ("Capacity Lease") which provides District with exclusive capacity rights in certain City water supply facilities that are necessary to the successful implementation of the Water Service Agreement; and

WHEREAS, through this Agreement, the Parties intend to modify certain provisions of the Water Service Agreement, and terminate the Capacity Lease to accommodate the PO and the potential City and Agency collaboration on the GREAT Program.

NOW, THEREFORE, THE PARTIES ENTER INTO THIS AGREEMENT in accordance with the following provisions:

Section 1. Purpose. The purpose of this Agreement is to establish the terms and conditions through which the Parties can enter into an aggregate PO commitment under the revised District rate structure effective January 1, 2003, and facilitate the potential for collaboration on the GREAT Program. This Agreement is not intended to modify each Party's individual groundwater rights, or rights or obligations with respect to water supplies obtained from United Water Conservation District.

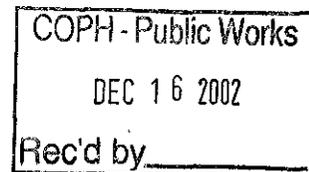
Section 2. Water Service Agreement. Except as modified below, the Water Service Agreement remains in full force and effect. The Water Service Agreement is modified as follows:

2.1. Sections 3(c)(6), 3(c)(11) and 4 are eliminated from the Water Service Agreement and Paragraphs 4 and 6 are eliminated from the March 21, 2000 letter amendment to the Water Service Agreement.

2.2. On or before January 31, 2003, Agency shall transfer to District the 700 conservation credits as required pursuant to Section 4(b) of the Water Service Agreement, for calendar year 2002.

2.3. A new Section 4 is inserted and reads as follows:

"4. Imported Water Service to Agency. District agrees to provide water service to Agency up to the downstream side of the "Oxnard No. 3" turnout and meter station which measures water delivered out of Springville Reservoir to City and Agency. Water delivered through that turnout by District will be billed to City as provided in this Agreement and the PO."



Section 3. Capacity Lease.

3.1. The Capacity Lease is terminated. In exchange for the provisions and payment set forth in Section 6 below, District relinquishes and releases to City any and all rights that may have accrued to District under the Capacity Lease. City relinquishes and releases to District any and all rights that may have accrued to City under the Capacity Lease.

3.2. City and District hereby fully, completely, finally and forever release, relinquish and discharge one another from any and all claims, actions, causes of action (whether at law or in equity), demands, rights, debts, agreements, promises, liabilities, damages, accountings, costs and expenses, whether known or unknown, suspected or unsuspected, accrued or unaccrued, of every nature whatsoever which they currently have, or may have in the future, arising directly or indirectly out of the Capacity Lease ("Released Claims").

3.3. City and District intend that this Agreement shall be effective as a full and final accord and satisfaction and release of the Released Claims. In furtherance of this intention, City and District, and each of them, acknowledge that they are familiar with Section 1542 of the California Civil Code, which provides as follows:

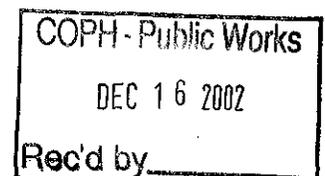
A general release does not extend to claims that the creditor does not know or suspect to exist in his favor at the time of executing a release, which, if known by him, must have materially affected his Settlement with the debtor.

3.4. City and District, and each of them, waive and relinquish all of the rights and benefits which any of them has, or may have, under Section 1542 of the California Civil Code (as well as any similar rights and benefits which they may have by virtue of any statute or rule of law in any other state or territory of the United States). City and District, and each of them, acknowledge that they may hereafter discover facts in addition to, or different from, those which they now know or believe to be true with respect to the subject matter of this Agreement and the Released Claims, but that notwithstanding the foregoing, City and District intend to fully, finally, completely and forever settle and release each, every and all Released Claims, and that in furtherance of such intention, the releases given shall be and remain in effect as full and complete general releases, notwithstanding the discovery or existence of any such additional or different facts.

Section 4. Purchase Order.

4.1. Concurrent with the execution of this Agreement, City shall execute a PO representing the aggregate needs of Agency and City. The PO to be executed shall be in the form as attached to this Agreement as Exhibit "A."

4.2. For the purpose of this Agreement, the point of delivery of District water shall be at the outlet of Springville Reservoir, unless the Parties mutually agree to an alternative location.



4.3. Meters. The point of metering from District to City and Agency shall be the Oxnard No. 3 Turnout and Meter Station that measures water delivered out of the Springville Reservoir. District will invoice City for water delivered through that meter. The delivery of water to City and Agency by District regardless of the nature and time of use of such water, shall be subject to the rules and regulations, including pricing of such water, as such rules are promulgated from time to time by District. The method of pricing the water delivered by District shall not be different than the method of pricing water delivered to other District customers, except that for the purposes of calculating rates and charges applicable to City and Agency, City and Agency shall be considered to be one entity.

Section 5. BWRDF Supply Lateral and Associated Facilities. In exchange for the provisions and payment set forth in Section 6 below, District quitclaims and relinquishes to City any and all rights, title and interest in the pipelines, service interconnections, and Richmond Bypass pipelines as described in Exhibit "B." City accepts District's interest in the pipelines, services connections, and Richmond Bypass pipelines described in Exhibit "B" "as-is", with all faults, as of the date of the District's quitclaim and relinquishment of such interest, and District makes no representations or warranties regarding the condition of such property.

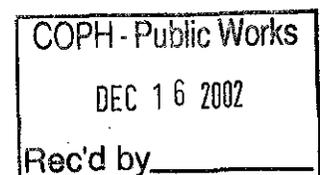
Section 6. Consideration Between City and District.

6.1. City shall pay to District four equal payments of \$616,500 (Six Hundred Sixteen Thousand Five Hundred Dollars). The first payment shall occur within 30 days of the execution of this Agreement. The second, third and final annual payments shall occur on or before July 31, in 2004, 2005, and 2006, respectively. The outstanding balance of payments shall accrue interest at an annual rate of 4.5%, starting 30 days from the execution of this Agreement.

6.2. On or before January 31, 2003, District shall transfer to City 2,400 acre-feet of Fox Canyon Groundwater Management Agency ("GMA") conservation or storage credits, as those credits are established under GMA Ordinance 8. Agency and City shall use their best efforts to cooperate and coordinate to obtain approval from the GMA of this transfer. District agrees that the credits are unique and subject to specific performance. City agrees that the credits will be used in a manner consistent with the rules and regulations of the GMA, as may be amended from time to time.

Section 7. Agency Access to Water. City shall provide Agency with access to District water under the following terms.

7.1. City shall provide Agency with District water through City's Oxnard Conduit and Industrial Lateral, and the Port Hueneme Water Agency Pipeline, which City shall dedicate to supplying the BWRDF with the same quality of water City obtains from District. City shall utilize its best efforts to provide District water to Agency at the BWRDF at not less than 90 pounds per square inch. City agrees that the provision of water in accordance with this Agreement is unique and subject to specific performance.



7.2. City shall make available District water to Agency under the same conditions and with the same reliability District makes its water available to City. Any shortage of supply from or operational limitations imposed by District on City shall be shared proportionally between City and Agency, under the same conditions the District allocates shortages among its customers.

7.3. City shall maintain meters in working order at locations mutually agreed upon between City and Agency that are capable of measuring the total water volume delivered to the BWRDF, and the rate at which water is delivered.

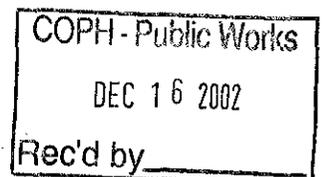
7.4. Agency and City shall use their reasonable best efforts to coordinate their operations so that neither entity causes District to impose a peaking penalty or surcharge. City shall not pass through to Agency any peaking penalty or surcharge imposed by District. To avoid triggering a District peaking penalty or surcharge, Agency acknowledges and agrees, if Agency is unable to maintain the BWRDF in normal operation or upon mutual agreement between City and Agency, City may provide Agency with potable water from City's water distribution system ("Substitute Water"), in lieu of water from District. Prior to providing Agency with Substitute Water, City shall use its reasonable best efforts to develop a mutually agreeable plan with Agency for the delivery of Substitute Water, given the then existing operational flexibility available within City's water distribution system to avoid a District peaking penalty or surcharge. City and Agency agree to use their best efforts to reduce to a minimum compromised operation of the BWRDF during high demand periods when it may be necessary for City to deliver to Agency Substitute Water to avoid the imposition of a District peaking penalty or surcharge.

7.5. Agency shall use its reasonable best efforts to minimize its instantaneous demand for District water. City shall use its reasonable best efforts to adjust City's use of alternative water supplies to buffer Agency's variable needs for District water and assist Agency in resolving any operational constraints that impact Agency's ability to maintain its instantaneous demand below 2.5 cubic feet per second ("cfs").

7.6. Agency and City shall cooperate and employ their reasonable best efforts to develop any operational plans and supporting agreements that allow both entities to maximize the efficient use of their aggregated access to District water and interconnections between City and Agency water supply facilities.

7.7. City shall bill Agency at the same frequency City is billed by District. City shall bill Agency for the volume of District water delivered at the then existing District Tier 1 Supply Rate for its cumulative purchases up to 3,262.5 acre-feet per year. Any additional purchases shall be billed and payable at the then existing District Tier 2 Supply Rate. In the event the City provides Agency with Substitute Water as referred to in Section 7.4 above, City shall bill Agency at the then current cost of the Substitute Water delivered to Agency.

7.8. Agency's share of the Capacity Reservation Charge shall be 2.5 cfs, and shall be billed and payable over the same period as charged by District to City.



7.9. Agency shall remit payment to City within 45 days of receipt of any invoice. Agency may dispute any item of the invoice by withholding payment for that disputed charge and providing notice to City of the nature of the dispute, within 30 days of the receipt of the invoice. Agency shall not withhold payment of any undisputed item. If the City and Agency cannot resolve the dispute informally, the Parties shall resolve it as provided in section 9.10.

7.10. On or before January 31 of each year, beginning in 2004, Agency shall transfer to City annually a total of 700 acre-feet of conservation credits and/or municipal/industrial pumping allocation provided through GMA for the term of this Agreement. In the event that City fails to provide water to Agency pursuant to the terms of this Agreement, Agency has no obligation to transfer any conservation credits and/or municipal/industrial pumping allocation. Agency and City shall use their best efforts to cooperate and coordinate to obtain approval from the GMA of this annual transfer. Agency agrees that the conservation credits and pumping allocation are unique and subject to specific performance.

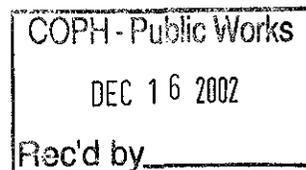
7.11. All meters used to measure water service shall be of standard manufacture, and maintained, repaired, calibrated and read by the owning entity, at its expense. In the event any meter fails to register (or registers incorrectly) the service furnished, the Parties shall agree upon the length of meter malfunction and the quantity of service delivered during such period of time. An appropriate adjustment shall be made to the next invoice for the purpose of correcting such errors.

7.12. Any meter that registered not more than 3% slow or fast shall be deemed correct. Meters shall be read at periodic intervals of approximately 30 days. All billings based on meter readings of less than 30 days shall be prorated accordingly. Meters shall be periodically inspected and tested at intervals not exceeding two years. Each Party to this Agreement has the right to have its representatives present during the inspection and test.

7.13. Upon written request, each Party shall make additional tests of any or all such meters in the presence of the other Party's representatives. The cost of such additional tests shall be borne by the requesting Party if the percentage of error is found not to be more than 3% slow or fast. No meter shall be placed in service or allowed to remain in service that has an error in registration in excess of 3% under normal operating conditions.

7.14. Agency shall provide City reasonable advance notice regarding any material changes anticipated in the volume or characteristics of the water service required by Agency. Agency and City agree to renegotiate Agency's share of District's Capacity Reservation Charge established in Section 7.8, if Agency's instantaneous peak demand equals or exceeds 10 cfs in any three of five consecutive years during the term of this Agreement.

Section 8. Term. This Agreement shall remain in full force and effect through June 30, 2036.



Section 9. Standard Provisions.

9.1. Recitals. The recitals stated at the beginning of this Agreement of any matters or facts shall be conclusive proof of their truthfulness, and the terms and conditions of the recitals, if any, shall be deemed a part of the Agreement.

9.2. Notices.

9.2.1. All notices, approvals, acceptances, requests, demands and other communications required or permitted, to be effective, shall be in writing and shall be delivered, either in person or by United States mail (postage prepaid, registered or certified, return receipt requested) or by Federal Express or other similar overnight delivery service, to the Party to whom the notice is directed at the address as follows:

To: Agency
Port Hueneme Water Agency
Executive Director
250 North Ventura Road
Port Hueneme, California 93041

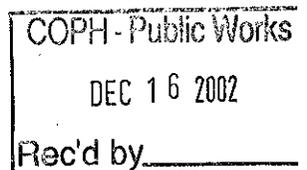
With a copies to:
City of Port Hueneme
Attn: City Manager
250 North Ventura Road
Port Hueneme, California 93041

City of Port Hueneme
Attn: City Attorney
250 North Ventura Road
Port Hueneme, California 93041

To: City
City of Oxnard
Attn: Water Superintendent
251 South Hayes
Oxnard, CA 93030

With a copies to:
City of Oxnard
Attn: City Manager
300 W. Third Street
Oxnard, CA 93030

City of Oxnard
Attn: City Attorney
300 W. Third Street
Oxnard, CA 93030



To: District

General Manager
Calleguas Municipal Water District
2100 Olsen Road
Thousand Oaks, CA 91362

With a copy to:

Douglas E. Kulper, Esq., District Counsel
Ferguson, Case, Orr Paterson
& Cunningham LLP
1050 South Kimball Road
Ventura, CA 93004

9.2.2. Any communication given by mail shall be deemed delivered two business days after such mailing date, and any written communication given by overnight delivery service shall be deemed delivered one business day after the dispatch date. Each Party may change its address by giving the other Parties written notice of its new address.

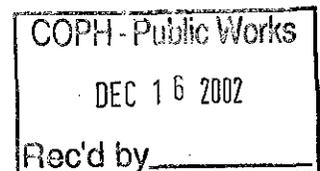
9.3. **Successors and Assigns.** This Agreement shall be binding on and shall inure to the benefit of the Parties and their respective heirs, successors and assigns. Nothing in this Agreement, express or implied, is intended to confer on any person other than the Parties or their respective heirs, successors and assigns, any rights, remedies, obligations or liabilities under or by reason of this Agreement.

9.4. **Assignability.** This Agreement shall not be assignable without the prior written consent of each of the Parties. Any attempted assignment without the approval of the Parties shall be void.

9.5. **Waiver.** No waiver by any Party of any of the provisions of this Agreement shall be effective unless explicitly set forth in writing and executed by the Party so waiving. Except as provided in the preceding sentence, no action taken pursuant to this Agreement, including, without limitation, any investigation by or on behalf of any Party, shall be deemed to constitute a waiver by the Party taking such action of compliance with any representations, warranties, covenants, or agreements contained herein, and in any documents delivered or to be delivered pursuant to this Agreement. The waiver by any Party of a breach of any provision of this Agreement shall not operate or be construed as a waiver of any subsequent breach. No waiver of any of the provisions of this Agreement shall be deemed, or shall constitute, a waiver of any other provision, whether or not similar, nor shall any waiver constitute a continuing waiver.

9.6. **Headings.** The section headings contained in this Agreement are for convenience and reference only, and shall not affect the meaning or interpretation of this Agreement.

9.7. **Severability.** If any term, provision, covenant or condition of this Agreement shall be or become illegal, null, void or against public policy, or shall be held by any court of competent jurisdiction to be illegal, null, void or against policy, the remaining provisions of this Agreement shall remain in full force and effect, and shall not be affected, impaired or invalidated. The term, provision, covenant or condition that is so invalidated, voided or held to be



unenforceable shall be modified or changed by the parties to the extent possible to carry out the intentions and directives set forth in this Agreement.

9.8. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all of which shall constitute one and the same instrument.

9.9. Governing Law. This Agreement shall be governed by, and interpreted in accordance with, the laws of the State of California.

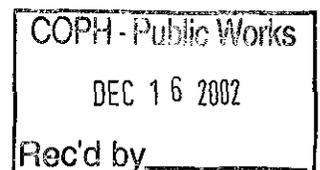
9.10. Arbitration. Any dispute not resolved informally shall be resolved through binding arbitration.

9.10.1. A single arbitrator shall conduct the arbitration. The arbitration proceedings shall be initiated immediately following written notice provided by any Party, given to the other Party(ies) in dispute. Within ten days of the written notice, the Parties in dispute shall attempt to select an arbitrator. If the Parties are unable to agree upon a mutually acceptable arbitrator within ten business days from the initiation of the arbitration proceeding, the presiding judge of the Ventura County Superior Court shall select a neutral arbitrator. The arbitrator shall be a lawyer, judicial officer, or retired judge with expertise in deciding disputes and interpreting contracts. Prior to the commencement of the arbitration proceedings, the appointed arbitrator shall take an oath of impartiality. The Parties shall use their reasonable best efforts to have the arbitration proceeding concluded within 120 days of the selection of the arbitrator.

9.10.2. In rendering a decision, the arbitrator shall determine the rights and obligations of the Parties according to the substantive and procedural laws of California and the responsibilities of the Parties in the context of this Agreement. The California Code of Civil Procedure shall govern all discovery with all applicable time periods for notice and scheduling provided therein being reduced by one-half. The arbitrator may establish other discovery limitations or rules. The Commercial Arbitration Rules of the American Arbitration Association will govern the arbitration hearing. The arbitrator shall decide all issues regarding compliance with discovery requests. The arbitration decision shall be in writing and shall specify the factual and legal bases for the decision. The arbitration decision shall be final and binding upon the Parties.

9.10.3. The costs (including, but not limited to, arbitration fees and costs, reasonable fees and expenses of counsel and expert or consultant fees and costs) incurred in the arbitration (including the costs to enforce or preserve the rights awarded) shall be borne by the Party that the decision is against, as determined by the arbitrator. If the decision is not clearly against one Party on one or more issues, each Party shall bear its own costs.

9.10.4. Where the dispute involves cost, payment or reimbursement obligations, all undisputed payments shall be made in a timely manner as provided in this Agreement. Only disputed amounts may be withheld, pending resolution through arbitration.



9.11. Parties in Interest. Nothing in this Agreement, whether express or implied, is intended to confer any rights or remedies under or by reason of this Agreement on any persons other than the Parties to it and their respective successors and assigns, nor is anything in this Agreement intended to relieve or discharge the obligation or liability of any third persons to any Party to this Agreement, nor shall any provision give any third persons any right of subrogation or action against any Party to this Agreement.

9.12. Cooperation. The Parties shall, whenever and as often as reasonably requested to do so by the requesting Party, execute, acknowledge and deliver, or cause to be executed, acknowledged and delivered, any and all documents and instruments as may be necessary, expedient or proper in the reasonable opinion of the requesting Party to carry out the intent and purposes of this Agreement, provided that the requesting Party shall bear the costs and expense of such further instruments or documents (except that each Party shall bear its own attorneys' fees).

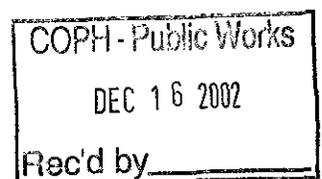
9.13. Good Faith. The Parties agree to exercise their best efforts and utmost good faith to effectuate all the terms and conditions of this Agreement and to execute such further instruments and documents as are necessary or appropriate to effectuate all of the terms and conditions of this Agreement.

9.14. Construction. The provisions of this Agreement should be liberally construed to effectuate its purposes. The language of all parts of this Agreement shall be construed simply according to its plain meaning and shall not be construed for or against any Party, as each Party has participated in the drafting of this document and had the opportunity to have its counsel review it. Whenever the context and construction so require, all words used in the singular shall be deemed to be used in the plural, and all masculine shall include the feminine and neuter, and vice versa.

9.15. Several Obligations. Except where specifically stated in this Agreement to be otherwise, the duties, obligations, and liabilities of the Parties are intended to be several and not joint or collective. Each Party shall be individually and severally liable for its own obligations under this Agreement.

9.16. Authority. The individuals executing this Agreement represent and warrant that they have the authority to enter into this Agreement and to perform all acts required by this Agreement, and that the consent, approval or execution of the Agreement by any third party is not required to legally bind each Party to the terms and conditions of this Agreement.

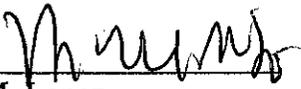
9.17. Entire Agreement. This Agreement contains the entire understanding and agreement of the Parties, and supersedes all prior agreements and understandings, oral and written, between the Parties, except as otherwise noted. There have been no binding promises, representations, agreements, warranties or undertakings by any of the Parties, either oral or written, of any character or nature, except as stated in this Agreement. This Agreement may be altered, amended or modified only by an instrument in writing, executed by the Parties to this Agreement and by no other means. Each Party waives its future right to claim, contest or assert that this



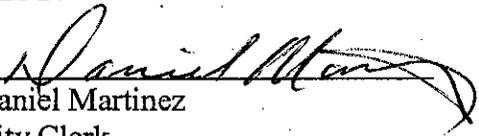
Agreement was modified, cancelled, superseded or changed by any oral agreement, course of conduct, waiver or estoppel.

IN WITNESS WHEREOF, the Parties have executed this Agreement on the day and year and at the place first written above.

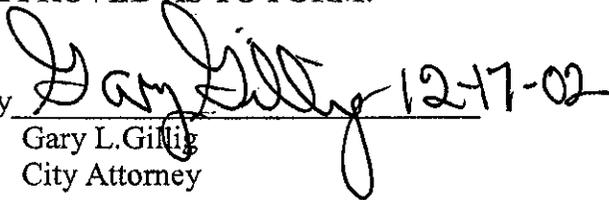
CITY OF OXNARD

By 
Dr. Manuel M. Lopez
Mayor

ATTEST:

By 
Daniel Martinez
City Clerk

APPROVED AS TO FORM:

By  12-17-02
Gary L. Gillig
City Attorney

CALLEGUAS MUNICIPAL WATER DISTRICT

By _____
Donald R. Kendall
General Manager

APPROVED AS TO FORM:

FERGUSON, CASE, ORR, PATERSON,
& CUNNINGHAM LLP

By _____
Douglas E. Kulper
District General Counsel

[Signatures continue on next page.]

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Mayor

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Gary L. Gillig
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CALLEGUAS MUNICIPAL WATER DISTRICT

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APPROVED AS TO FORM:

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& CUNNINGHAM LLP

By _____
Douglas E. Kulper
District General Counsel

[Signatures continue on next page.]

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Mayor

ATTEST:

By _____
Daniel Martinez
City Clerk

APPROVED AS TO FORM:

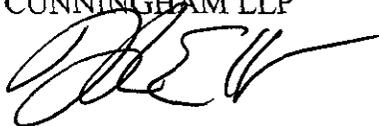
By _____
Gary L. Gillig
City Attorney

CALLEGUAS MUNICIPAL WATER DISTRICT

By _____
Donald R. Kendall
General Manager

APPROVED AS TO FORM:

FERGUSON, CASE, ORR, PATERSON,
& CUNNINGHAM LLP

By  _____
Douglas E. Kulper
District General Counsel

[Signatures continue on next page.]

PORT HUENEME WATER AGENCY

By *Anthony Volante*
Anthony Volante
Vice Chair

APPROVED AS TO FORM:
BURKE, WILLIAMS & SORENSEN LLP

By _____
Mark Hensley
PHWA General Counsel

COPH - Public Works
DEC 16 2002
Rec'd by _____

PORT HUENEME WATER AGENCY

By _____
Anthony Volante
Vice Chair

APPROVED AS TO FORM:
BURKE, WILLIAMS & SORENSEN LLP

By 
Mark Hensley
PHWA General Counsel

EXHIBIT "A"

Calleguas Municipal Water District Purchase Order

COPH - Public Works
DEC 16 2002
Rec'd by _____

**PURCHASE ORDER FOR IMPORTED WATER SUPPLY TO BE PROVIDED BY
CALLEGUAS MUNICIPAL WATER DISTRICT**

PURCHASER: CITY OF OXNARD (pursuant to the "THREE PARTY WATER SUPPLY AGREEMENT" entered into by and among the City of Oxnard, Calleguas Municipal Water District and Port Hueneme Water Agency, dated December 12, 2002).	TERM 10 years
INITIAL BASE DEMAND: 19,310.4 acre-feet	EFFECTIVE DATE: January 1, 2003
INITIAL TIER 1 ANNUAL MAXIMUM: 17,379.4 acre-feet	
PURCHASE ORDER COMMITMENT: 115,862.4 acre-feet	

Definitions of capitalized terms used in this Purchase Order are provided in Attachment 1. Terms used in this Purchase Order and not defined in Attachment 1 are defined in Metropolitan's Administrative Code.

COMMITMENT TO PURCHASE

In consideration of Purchaser's commitment to purchase System Water pursuant to this Purchase Order, Calleguas agrees to sell such System Water to Purchaser at the Tier 1 Supply Rate each year in an amount up to the Tier 1 Annual Maximum. System Water sold to Purchaser (excluding deliveries of System Water made under the Interim Agricultural Water Program and Long-term Seasonal Storage Service) in an amount greater than the Tier 1 Annual Maximum shall be sold to the Purchaser at the Tier 2 Supply Rate. In connection with the receipt of System Water, the Purchaser also agrees to pay all other applicable rates and charges, as established by Calleguas from time to time. The rates and charges applicable to System Water as of the Effective Date are shown in Attachment 2.

Purchaser agrees to purchase System Water from Calleguas during the Term in an amount (excluding deliveries of System Water, made under the Interim Agricultural Water Program and Long-term Seasonal Storage Service) not less than the Purchase Order Commitment.

COPH - Public Works
DEC 16 2002
Rec'd by _____

Purchaser recognizes and agrees that Calleguas has relied and will, during the term of this Purchase Order, rely on this commitment by Purchaser in setting its rates and charges, planning and providing its capital facilities and developing its water supply, management and reliability programs. If Purchaser's applicable System Water purchases during the Term are less than the Purchase Order Commitment, Purchaser agrees to pay Calleguas an amount equal to the difference between the Purchase Order Commitment and Purchaser's applicable System Water purchases during the Term times the average of the Tier 1 Supply Rate in effect during the Term. The Purchaser agrees to pay such amount to Calleguas within the next regular billing cycle following the reconciliation of all certifications for special programs that the Purchaser may participate in (e.g. Interim Agricultural Water Program, Long-term Seasonal Storage Service). The Purchaser may elect to pay such amount in twelve equal monthly payments over the course of the next twelve months beginning with the first regular billing cycle following the reconciliation of all outstanding certifications for special programs. If the Purchaser elects to pay such amount over the course of the next twelve months following the regular billing cycle any outstanding balance shall bear interest at Calleguas' then current investment portfolio average yield. All other amounts payable under this Purchase Order shall be billed and paid in accordance with Ordinance 12.

RENEWAL

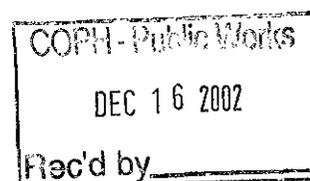
Prior to but not later than December 31, 2010, the Purchaser may provide a non-binding written notice to Calleguas of the Purchaser's determination to extend this Purchase Order. Upon the receipt of such notice, the Board of Directors of Calleguas (the "Board") shall determine whether Calleguas will continue to provide System Water to retail purveyors by Purchase Order. If the Board so determines, the Purchaser and Calleguas shall amend this Purchase Order to include an extended term and/or to include such other terms and conditions as may be mutually agreed by the parties. If the Purchaser elects not to renew this Purchase Order it will terminate upon the expiration of the Term.

WATER SERVICE

Conditions of water service by Calleguas to the Purchaser, including but not limited to (i) delivery points, (ii) water delivery schedules, and (iii) water quality, will be determined in accordance with Ordinance 12.

In accordance with its Ordinance 12, Calleguas shall use its reasonable best efforts to supply System Water in the quantities requested by the Purchaser, but is not obligated to dedicate any portion of System capacity for the conveyance, distribution, storage or treatment of System Water for the benefit of the Purchaser or any other retail purveyor. Calleguas shall use its reasonable best efforts to deliver the Base Demand when needed by the Purchaser during the Term; provided however, there shall be no default under this Purchase Order if Calleguas fails to deliver water to the Purchaser in accordance with any such schedule of deliveries during the Term.

By execution of this Purchase Order, the Purchaser recognizes and agrees that it acquires no interest in or to any portion of the System or any other Calleguas facilities, or any right to receive water delivered through the System, excepting the right to purchase up to Purchaser's Tier 1 Annual Maximum at the Tier 1 Supply Rate provided that System Water is available. This Purchase Order governs pricing of the System Water delivered to the Purchaser pursuant to this Purchase Order and does not confer any entitlement to receive System Water.



System Water provided to the Purchaser under the terms of this Purchase Order shall be subject to reduction in accordance with the shortage allocation provisions as adopted by the Board.

In the event that Calleguas' Board determines to reduce, interrupt or suspend deliveries of System Water (excluding deliveries of System Water made under the Interim Agricultural Water Program and Long-term Seasonal Storage Service) any outstanding balance of the Purchase Order Commitment at the end of the Term shall be reduced by the reduction in System Water made available to the Purchaser under this Purchase Order.

MISCELLANEOUS

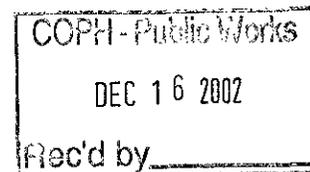
This Purchase Order will be interpreted, governed and enforced in accordance with the laws of the State of California.

This Purchase Order will apply to and bind the successors and assigns of the Purchaser and Calleguas.

No assignment or transfer of the rights of the Purchaser under this Purchase Order will be valid and effective against Calleguas or the Purchaser without the prior written consent of Calleguas and the Purchaser. In the event that a Calleguas purveyor is acquired by another Calleguas purveyor, the Purchase Order commitment of the acquiree will transfer to the acquirer.

If at any time during the Term, by reason of error in computation or other causes, there is an overpayment or underpayment to Calleguas by the Purchaser of the charges provided for under this Purchase Order, which overpayment or underpayment is not accounted for and corrected in the annual re-determination or reconciliation of said charges, the amount of such overpayment or underpayment shall be credited or debited, as the case may be, to the Purchaser. Calleguas will notify the Purchaser in writing regarding the amount of such credit or debit, as the case may be. In no case will credits or debits for charges provided for under this Purchase Order be administered beyond the limit for billing adjustments as specified in Metropolitan's Administrative Code.

[Signatures on next page.]



IN WITNESS WHEREOF, this Purchase Order is executed by the duly authorized officers of the Calleguas Municipal Water District and City of Oxnard, to be effective January 1, 2003.

CALLEGUAS MUNICIPAL WATER DISTRICT

CITY OF OXNARD

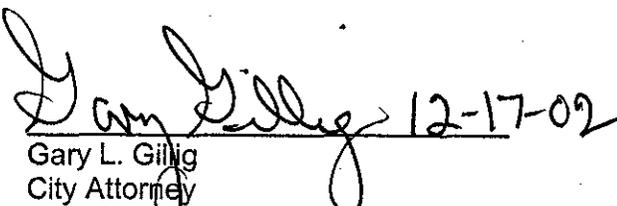
By: 
Donald R. Kendall
General Manager

By: 
Edmund Sotelo
City Manager

APPROVED AS TO FORM ~~AND CONTENT~~:

APPROVED AS TO FORM: .

By: 
Douglas Kulper
District General Counsel

By:  12-17-02
Gary L. Gillig
City Attorney

Attachment 1
Purchase Order for Imported Water Supplies
DEFINITIONS

"Base Demand" means the greater of (i) the Initial Base Demand or (ii) the ten-year rolling average of the Purchaser's Firm Demand, measured on a fiscal year basis.

"Calleguas" means Calleguas Municipal Water District.

"Effective Date" means the effective date of this Purchase Order as specified above.

"Firm Demand" means the Purchaser's purchases of non-surplus System Water supplies, including full-service and seasonal shift deliveries.

"Initial Base Demand" means the Purchaser's highest annual Firm Demand on Calleguas in any fiscal year during the period from fiscal year 1989/90 through fiscal year 2001/02.

"Metropolitan" means The Metropolitan Water District of Southern California.

"Purchase Order Commitment" means 60% of the initial Base Demand times 10. Deliveries of System Water made under the Agricultural Water Program and Long-term Seasonal Storage Service, will not count toward the Purchase Order Commitment.

"Purchase Order" means this Purchase Order.

"Purchaser" means the retail purveyor specified above, a duly organized [city/water district/county water authority] of the State of California.

"System" means the properties, works and facilities of Calleguas necessary for the supply, development, storage, conveyance, distribution, treatment or sale of water.

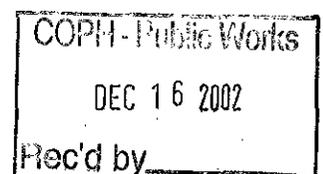
"System Water" means water supplies developed by Calleguas and delivered to the Purchaser through the System or other means (e.g. conjunctive use storage).

"Term" means the term of this Purchase Order as specified above.

"Tier 1 Annual Maximum" means an amount equal to 90% of the Base Demand.

"Tier 1 Supply Rate" means Metropolitan's per-acre-foot Tier 1 Supply Rate, as determined from time to time by Metropolitan's Board of Directors. The initial Tier 1 Rate is \$73/AF.

"Tier 2 Supply Rate" means Metropolitan's per-acre-foot Tier 2 Supply Rate, as determined from time to time by Metropolitan's Board of Directors. The initial Tier 2 Rate is \$154/AF.



Attachment 2

Purchase Order for Imported Water Supplies

Metropolitan Water District Rates and Charges (as adopted by MWD Board)	Effective January 1, 2003
Tier 1 Supply Rate (\$/af)	\$73
Tier 2 Supply Rate (\$/af)	\$154
System Access Rate (\$/af)	\$141
System Power Rate (\$/af)	\$89
Water Stewardship Rate (\$/af)	\$23
Long-term Storage Water Rate (\$/af)	\$290
Interim Agricultural Water Program (\$/af)	\$294
Treatment Surcharge (\$/af)	\$82
Readiness-to-Serve Charge (\$millions)	\$80
Capacity Reservation Charge (\$/cfs)	\$6,100
Peaking Surcharge (\$/cfs)	\$18,300

Calleguas Municipal Water District Rates and Charges (as adopted by CMWD Board)	Effective January 1, 2003
Tier 1 Supply Rate (\$/af)	\$74
Tier 2 Supply Rate (\$/af)	\$74
Long Term Seasonal Rate (\$/af)	\$74
Interim Agricultural Program Rate (\$/af)	\$74
Readiness to Serve Charge (\$) (Total for all customers)	\$2,748,490
Capacity Reservation Charge (\$/cfs)	\$19,500

COPH - Public Works
DEC 16 2002
Rec'd by _____

EXHIBIT "B"

Section 5 Facilities (to be transferred from District to City):

Facility Name	Location(s)	Description	District Construction Specification Number
Interconnections between City and Agency Water Systems	Three locations: Pleasant Valley Road/Rose Avenue, Harbor Boulevard/Channel Islands Boulevard, and Victoria Avenue/Channel Islands Boulevard	8-inch and 10-inch diameter water pipelines, meters, pressure regulating valves and appurtenances	377
Richmond Avenue Blending Station Bypass Pipeline	Richmond Avenue north of Wooley Road	24-inch diameter steel water pipeline, meter, valves and appurtenances	396
Port Hueneme Water Agency Pipeline	In Hueneme Road from Edison Road to the Meter Station at Agency Brackish Water Treatment Facility	24-inch diameter steel water pipeline, valves and appurtenances (a meter was added in a line valve vault the vicinity of Edison Road after the original construction)	378
Port Hueneme Water Agency Meter Station	Western Terminus of 24" pipeline at Agency Brackish Water Treatment Facility	Two meters (high and low flow) and associated instrumentation	Constructed by Agency

COPH - Public Works
 DEC 16 2002
 Rec'd by _____

**PURCHASE ORDER FOR IMPORTED WATER SUPPLY TO BE PROVIDED BY
CALLEGUAS MUNICIPAL WATER DISTRICT**

PURCHASER: City of Oxnard	TERM 10 years
INITIAL BASE DEMAND: 19,310.4 acre-feet	EFFECTIVE DATE: January 1, 2003
INITIAL TIER 1 ANNUAL MAXIMUM: 17,379.4 acre-feet	
PURCHASE ORDER COMMITMENT: 115,862.4 acre-feet	

Definitions of capitalized terms used in this Purchase Order are provided in Attachment 1. Terms used in this Purchase Order and not defined in Attachment 1 are defined in Metropolitan's Administrative Code.

COMMITMENT TO PURCHASE

In consideration of Purchaser's commitment to purchase System Water pursuant to this Purchase Order, Calleguas agrees to sell such System Water to Purchaser at the Tier 1 Supply Rate each year in an amount up to the Tier 1 Annual Maximum. System Water sold to Purchaser (excluding deliveries of System Water made under the Interim Agricultural Water Program and Long-term Seasonal Storage Service) in an amount greater than the Tier 1 Annual Maximum shall be sold to the Purchaser at the Tier 2 Supply Rate. In connection with the receipt of System Water, the Purchaser also agrees to pay all other applicable rates and charges, as established by Calleguas from time to time. The rates and charges applicable to System Water as of the Effective Date are shown in Attachment 2.

Purchaser agrees to purchase System Water from Calleguas during the Term in an amount (excluding deliveries of System Water, made under the Interim Agricultural Water Program and Long-term Seasonal Storage Service) not less than the Purchase Order Commitment.

Purchaser recognizes and agrees that Calleguas has relied and will, during the term of this Purchase Order, rely on this commitment by Purchaser in setting its rates and charges, planning and providing its capital facilities and developing its water supply, management and reliability programs. If Purchaser's applicable System Water purchases during the Term are less than the Purchase Order Commitment, Purchaser agrees to pay Calleguas an amount equal to the difference between the Purchase Order Commitment and Purchaser's applicable System Water purchases during the Term times the average of the Tier 1 Supply Rate in effect during the Term. The Purchaser agrees to pay such amount to Calleguas within the next regular billing cycle following the reconciliation of all certifications for special programs that the

Purchaser may participate in (e.g. Interim Agricultural Water Program, Long-term Seasonal Storage Service). The Purchaser may elect to pay such amount in twelve equal monthly payments over the course of the next twelve months beginning with the first regular billing cycle following the reconciliation of all outstanding certifications for special programs. If the Purchaser elects to pay such amount over the course of the next twelve months following the regular billing cycle any outstanding balance shall bear interest at Calleguas' then current investment portfolio average yield. All other amounts payable under this Purchase Order shall be billed and paid in accordance with Ordinance 12.

RENEWAL

Prior to but not later than December 31, 2010, the Purchaser may provide a non-binding written notice to Calleguas of the Purchaser's determination to extend this Purchase Order. Upon the receipt of such notice, the Board of Directors of Calleguas (the "Board") shall determine whether Calleguas will continue to provide System Water to retail purveyors by Purchase Order. If the Board so determines, the Purchaser and Calleguas shall amend this Purchase Order to include an extended term and/or to include such other terms and conditions as may be mutually agreed by the parties. If the Purchaser elects not to renew this Purchase Order it will terminate upon the expiration of the Term.

WATER SERVICE

Conditions of water service by Calleguas to the Purchaser, including but not limited to (i) delivery points, (ii) water delivery schedules, and (iii) water quality, will be determined in accordance with Ordinance 12.

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By execution of this Purchase Order, the Purchaser recognizes and agrees that it acquires no interest in or to any portion of the System or any other Calleguas facilities, or any right to receive water delivered through the System, excepting the right to purchase up to Purchaser's Tier 1 Annual Maximum at the Tier 1 Supply Rate provided that System Water is available. This Purchase Order governs pricing of the System Water delivered to the Purchaser pursuant to this Purchase Order and does not confer any entitlement to receive System Water.

System Water provided to the Purchaser under the terms of this Purchase Order shall be subject to reduction in accordance with the shortage allocation provisions as adopted by the Board.

In the event that Calleguas' Board determines to reduce, interrupt or suspend deliveries of System Water (excluding deliveries of System Water made under the Interim Agricultural Water Program and Long-term Seasonal Storage Service) any outstanding balance of the

Purchase Order Commitment at the end of the Term shall be reduced by the reduction in System Water made available to the Purchaser under this Purchase Order.

MISCELLANEOUS

This Purchase Order will be interpreted, governed and enforced in accordance with the laws of the State of California.

This Purchase Order will apply to and bind the successors and assigns of the Purchaser and Calleguas.

No assignment or transfer of the rights of the Purchaser under this Purchase Order will be valid and effective against Calleguas or the Purchaser without the prior written consent of Calleguas and the Purchaser. In the event that a Calleguas purveyor is acquired by another Calleguas purveyor, the Purchase Order commitment of the acquiree will transfer to the acquirer.

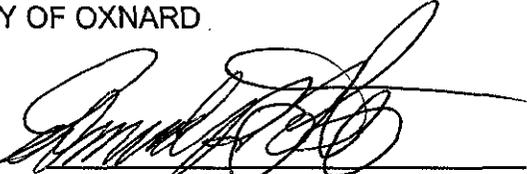
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IN WITNESS WHEREOF, this Purchase Order is executed by the duly authorized officers of the Calleguas Municipal Water District and [Purchaser], to be effective January 1, 2003.

CALLEGUAS MUNICIPAL WATER DISTRICT

CITY OF OXNARD

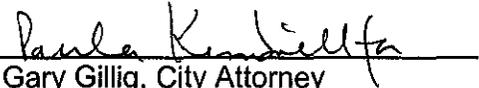
By: _____
Donald R. Kendall
General Manager

By: 
Edmund Sotelo, City Manager

APPROVED AS TO FORM AND CONTENT:

APPROVED AS TO FORM:

General Counsel

By: 
Gary Gillig, City Attorney

By: _____

Attachment 1
Purchase Order for Imported Water Supplies
DEFINITIONS

“Base Demand” means the greater of (i) the Initial Base Demand or (ii) the ten-year rolling average of the Purchaser’s Firm Demand, measured on a fiscal year basis.

“Calleguas” means Calleguas Municipal Water District.

“Effective Date” means the effective date of this Purchase Order as specified above.

“Firm Demand” means the Purchaser’s purchases of non-surplus System Water supplies, including full-service and seasonal shift deliveries.

“Initial Base Demand” means the Purchaser’s highest annual Firm Demand on Calleguas in any fiscal year during the period from fiscal year 1989/90 through fiscal year 2001/02.

“Metropolitan” means The Metropolitan Water District of Southern California.

“Purchase Order Commitment” means 60% of the initial Base Demand times 10. Deliveries of System Water made under the Agricultural Water Program and Long-term Seasonal Storage Service, will not count toward the Purchase Order Commitment.

“Purchase Order” means this Purchase Order.

“Purchaser” means the retail purveyor specified above, a duly organized [city/water district/county water authority] of the State of California.

“System” means the properties, works and facilities of Calleguas necessary for the supply, development, storage, conveyance, distribution, treatment or sale of water.

“System Water” means water supplies developed by Calleguas and delivered to the Purchaser through the System or other means (e.g. conjunctive use storage).

“Term” means the term of this Purchase Order as specified above.

“Tier 1 Annual Maximum” means an amount equal to 90% of the Base Demand.

“Tier 1 Supply Rate” means Metropolitan’s per-acre-foot Tier 1 Supply Rate, as determined from time to time by Metropolitan’s Board of Directors. The initial Tier 1 Rate is \$73/AF.

“Tier 2 Supply Rate” means Metropolitan’s per-acre-foot Tier 2 Supply Rate, as determined from time to time by Metropolitan’s Board of Directors. The initial Tier 2 Rate is \$154/AF.

Attachment 2
Purchase Order for Imported Water Supplies
METROPOLITAN RATES AND CHARGES
(as adopted by MWD Board)

	Effective January 1, 2003
Tier 1 Supply Rate (\$/af)	\$73
Tier 2 Supply Rate (\$/af)	\$154
System Access Rate (\$/af)	\$141
System Power Rate (\$/af)	\$ 89
Water Stewardship Rate (\$/af)	\$ 23
Long-term Storage Water Rate (\$/af)	\$290
Interim Agricultural Water Program (\$/af)	\$294
Treatment Surcharge (\$/af)	\$ 82
Readiness-to-Serve Charge (\$millions)	\$ 80.0
Capacity Reservation Charge (\$/cfs)	\$6,100
Peaking Surcharge (\$/cfs)	\$18,300

ORIGINAL

TOLLING AGREEMENT

THIS TOLLING AGREEMENT ("Tolling Agreement") is made by and between the City of Oxnard ("City" or "Party") and United Water Conservation District ("United" or "Party") (collectively, the City and United are referred to as the "Parties") on June 18, 2013.

WHEREAS, the validity and magnitude of United's groundwater pumping rates and charges ("United Pump Charges") are being litigated in the matter of *City of San Buenaventura v. United Water Conservation District* Santa Barbara County Superior Court Case No. VENCI-00401714 (related case 1414739] ("Litigation");

WHEREAS, the Litigation currently concerns the United Pump Charge imposed during United's fiscal years 2011-2012 and 2012-2013. The Parties anticipate that United Pump Charges imposed in subsequent fiscal years will be subject to and related with the Litigation until the underlying legal issues are resolved through a final judgment (including appeals) or settlement ("Final Resolution");

WHEREAS, the City pays the United Pump Charge because the City pumps groundwater from City owned wells and implementation of the "Water Supply Agreement for Delivery of Water Through the Oxnard/Hueneme Pipeline" by and between the City and United, dated July 1, 1996, and all amendments thereto. As a result, the City has a substantial monetary interest in the Final Resolution depending upon the substantive terms of the Final Resolution. That is, if as a result of the Final Resolution, the United Pump Charge is adjusted lower than that which was imposed or in place during the period prior to the Final Resolution, the City will have overpaid United because the City paid to United funds owned based on the higher United Pump Charge that was in place prior to the Final Resolution;

WHEREAS, the City is not a party to the Litigation, nor has the City filed a claim with United for refund of overpayment of the United Pump Charge and the Parties desire the City to remain a non-party to the Litigation through its Final Resolution;

WHEREAS, the Parties agree that it is in their interests to toll any applicable statute of limitations;

NOW, THEREFORE, in consideration of the mutual covenants herein contained, the Parties agree that:

- 1. Subject Matter.** This Tolling Agreement shall apply to any and all claims by the City against United that are associated with the imposition on the City of the United Pump Charge imposed by United for fiscal year 2011-2012 and any subsequent years that are included in the Final Resolution ("Claims"). The Claims may include: (i) recovery of portions of payments the City has made to United, or (ii) calculation of amounts the City owes to United.

2. **Effective Date.** This Tolling Agreement shall be effective as of the date of filing of the Litigation (August 5, 2011) (the "Effective Date").

3. **Period of Tolling Agreement.** This Tolling Agreement shall remain in place from the Effective Date until the ninetieth (90th) day from the date United provides written notice to the City that the Final Resolution is in effect.

4. **No Accrual of Interest.** The City agrees that during the Tolling Period no interest will accrue on any amount of money related to the United Pump Charge the City claims is due and owing from United and the City shall not seek recovery of any interest in the event it asserts a Claim to recover payments the City has made to United.

5. **Computation of Statute of Limitations.** The period that this Tolling Agreement is in effect shall not be included in determining the applicability of any applicable statute of limitations in any action brought by the City against United concerning the Claims.

6. **Claims and Defenses.** Nothing in this Tolling Agreement shall affect any claim or defense available to either Party as of the Effective Date of this Tolling Agreement and this Tolling Agreement shall not be deemed to revive any claim or defense that is already time barred as of the Effective Date. Nothing in this Tolling Agreement or in the circumstances which gave rise to this Tolling Agreement shall be construed as acknowledgment by either Party that any claim or defense has or has not heretofore been barred by the statute of limitations, laches, or other defense based upon lapse of time.

7. **No Admissions.** This Tolling Agreement shall not operate as an admission of liability by either Party. Neither this Tolling Agreement nor any action taken hereunder shall be offered or received in evidence in any action or proceeding as an admission of liability or wrongdoing of any nature on the part of either Party.

8. **Modifications.** This Tolling Agreement constitutes the entire agreement between the Parties on the issues addressed herein, and may be modified, amended, or supplemented only by a written instrument signed by both Parties hereto.

9. **Multiple Counterparts.** This Tolling Agreement may be executed in multiple counterparts each of which shall be deemed an original. Each Party agrees to transmit a copy of the executed agreement to the other by electronic transmission or overnight mail within 3 days of execution by such Party of the Tolling Agreement.

10. **Applicable Law.** This Tolling Agreement shall be construed, interpreted, and governed in accordance with California law.

11. **Successors and Assigns.** This Tolling Agreement shall be binding upon the Parties hereto and their respective successors and assigns.

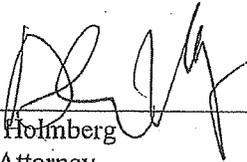
IN WITNESS WHEREOF, the undersigned have executed this Tolling Agreement the day and year indicated next to their respective signatures below.

SIGNATURES

CITY OF OXNARD

UNITED WATER CONSERVATION
DISTRICT

By



Alan Holmberg
City Attorney

By

Daniel C. Naumann
President

Approved as to Form:

By

Anthony Trembley
General Counsel

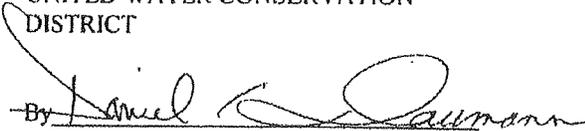
IN WITNESS WHEREOF, the undersigned have executed this Tolling Agreement
the day and year indicated next to their respective signatures below.

SIGNATURES

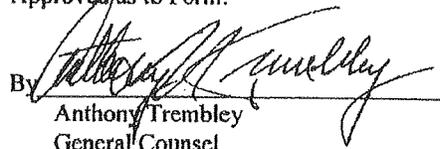
CITY OF OXNARD

By _____
Alan Holmberg
City Attorney

UNITED WATER CONSERVATION
DISTRICT

By  _____
Daniel C. Naumann
President

Approved as to Form:

By  _____
Anthony Trembley
General Counsel

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding ("MOU") is made by and between Calleguas Municipal Water District, organized under the Municipal Water District Act of 1911 of the State of California, hereinafter referred to as "Calleguas"; Casitas Municipal Water District, organized under the Water Code, Section 71000 et seq., hereinafter referred to as "Casitas"; United Water Conservation District, organized under the Water Conservation Act of 1931 of the State of California et seq., hereinafter referred to as "United"; the City of San Buenaventura, a Charter City, hereinafter referred to as "Ventura"; and the City of Oxnard, a California General Law City, hereinafter referred to as "Oxnard." Calleguas, Casitas, United, Ventura and Oxnard shall be collectively referred to as the "Agencies."

Explanatory Recitals

WHEREAS, the Agencies, and others that may participate, jointly desire to develop regional facilities that maximize the beneficial use of available water resources and enhance the reliability of the region's water supply; and,

WHEREAS, an objective of the Agencies is to insulate their respective service areas from the adverse effects of future dry periods and catastrophic events such as earthquakes; and,

WHEREAS, Calleguas is a member agency of the Metropolitan Water District of Southern California (hereinafter referred to as "Metropolitan") and is the sole wholesale purchaser and supplier of Metropolitan water within its service area; and,

WHEREAS, the mission of Calleguas is to provide its service area with a reliable and adequate supply of quality supplemental water through the acquisition and distribution of both regionally and locally developed water in an environmentally responsible manner; and,

WHEREAS, Casitas stores and distributes water on both a wholesale and retail basis to maintain the quality of water in the service area and address the needs of its customers; and,

WHEREAS, one of Casitas' goals is to provide leadership in water management to maximize supplies and the joint use of facilities as well as manage demands; and,

WHEREAS, United assists the replenishment of local groundwater basins by spreading runoff water and Lake Piru releases at its three spreading grounds located at Piru, Satcoy, and El Rio. In addition, United delivers water by conduit to the Oxnard Plain region for urban and agricultural uses; and,

AMENDMENT NO. 3 (December 2012)

**WATER SUPPLY AGREEMENT
FOR DELIVERY OF WATER THROUGH THE
OXNARD/HUENEME PIPELINE**

This Amendment No. 3 to the original WATER SUPPLY AGREEMENT (“Agreement”) between UNITED WATER CONSERVATION DISTRICT and the CITY OF OXNARD, UNITED WATER CONSERVATION DISTRICT and the PORT HUENEME WATER AGENCY, UNITED WATER CONSERVATION DISTRICT and DEMPSEY ROAD MUTUAL WATER COMPANY, UNITED WATER CONSERVATION DISTRICT and SAVIERS ROAD MUTUAL WATER COMPANY, UNITED WATER CONSERVATION DISTRICT and CYPRESS MUTUAL WATER COMPANY, UNITED WATER CONSERVATION DISTRICT and E & H LAND COMPANY LLC, and UNITED WATER CONSERVATION DISTRICT and MUTUAL WATER COMPANY of VINEYARD AVENUE ESTATES is hereby entered into between the parties effective December 3, 2012.

RECITALS

A. The parties previously entered into the original Water Supply Agreement (“Agreement”); and thereafter entered into Amendment No. 1 to the Agreement in or about January 2002, and Amendment No. 2 to the Agreement in or about January 2003. With the exception of UNITED WATER CONSERVATION DISTRICT (“UNITED”), all parties hereto are defined as “Contractors” pursuant to the Agreement.

B. DONLON FARMS, as a Contractor pursuant to the Agreement, is in good standing under the Agreement and has sold its real property benefited by the Agreement to E & H LAND COMPANY (“E & H”).

C. In accordance with Section 19.A. of the Agreement, E & H as successor to DONLON FARMS has agreed to be bound by: (1) the rights and obligations of DONLON FARMS under the Agreement; and (2) all of the terms of the Agreement.

D. In accordance with Sections 19. J. and M., respectively of the Agreement, the parties hereto consent to the assignment by DONLON FARMS of its rights and obligations under the Agreement to E & H.

NOW, THEREFORE, IT IS MUTUALLY AGREED BY ALL OF THE PARTIES HERETO AS FOLLOWS:

1. E & H as successor to DONLON FARMS agrees to be bound by: (1) the rights and obligations of DONLON FARMS under the Agreement; and (2) all of the terms of the Agreement.

2. The parties hereto consent to the assignment by DONLON FARMS of its rights and obligations under the Agreement to E & H.

COUNCIL APPROVAL

DATE: 11-19-13 AGENDA # S-3

3. SECTION 4.A. of the Agreement shall be amended to read as follows:

A. **Division** The peak capacity in the O/H Pipeline is 53.0 cubic feet per second (cfs), which United agrees to maintain as the minimum capacity as long as UNITED determines it is feasible as supported by engineering data. However, this minimum capacity may be increased by UNITED to meet operational demands, as permitted by the system and as supported by verifiable engineering data. The peak capacities, in cfs, presently allocated to each Contractor are as follows:

<u>Agency</u>	<u>Capacity</u>	<u>% of Total</u>
City of Oxnard	26.75	50.47
Port Hueneme Water Agency	22.25	41.98
Dempsey Road Mutual WC	.85	1.60
Cypress Mutual WC	.40	0.75
E & H Land Company	.05	0.09
Saviers Road Mutual WC	.25	0.47
Rio School District	1.10	2.08
Vineyard Avenue Estates	<u>1.35</u>	<u>2.55</u>
Total	53.00	100.00

In the event the capacity of the Pipeline is increased, the Contractors' peak capacities shall be increased, respectively, in accordance with part C(6) of this SECTION.

4. All other terms of the Agreement (including Amendment Nos. 1 and 2 thereto) shall remain in full force and effect and are unchanged by this Amendment No. 3 to the Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement effective as of the day and year set forth above.

CITY OF OXNARD

By: Tom Kupin
Mayor

By: Daniel Wang
City Clerk

PORT HUENEME WATER AGENCY

By: George Stankovic
President Chair

By: Michelle Ascencio
Secretary/Treasurer Board Clerk

**DEMPSEY ROAD MUTUAL
WATER COMPANY**

By: Jack J. Jell
President

By: Stephanus Polk
Secretary/Treasurer

**SAVIERS ROAD MUTUAL
WATER COMPANY**

By: Paul Rodriguez
President

By: Veronica Hernandez
Secretary/Treasurer

CYPRESS MUTUAL WATER COMPANY

By: Kenneth Benefield
President

By: Yanwen Li
Secretary/Treasurer

RIO SCHOOL DISTRICT

By: [Signature]
Superintendent

By: Mark A. King
Secretary/Treasurer
ASST. Supt. for BUSINESS SERVICES

E & H LAND COMPANY LLC

[Signature]

MUTUAL WATER COMPANY of VINEYARD AVENUE ESTATES

By: [Signature]
President

By: [Signature]
Secretary/Treasurer

UNITED WATER CONSERVATION DISTRICT

By: [Signature]
President

By: F.W. Richardson
Secretary/Treasurer

AGREEMENT BETWEEN UNITED WATER CONSERVATION DISTRICT AND THE CITY OF OXNARD FOR THE DELIVERY OF SUPPLEMENTAL M&I WATER

UNITED WATER CONSERVATION DISTRICT ("United") and the CITY OF OXNARD ("Oxnard") enter into this Agreement for the Delivery of Supplemental M&I Water ("Agreement") on this 11th day of April, 2006, in Ventura County, California. United and Oxnard are collectively referred to as the "Parties" and individually, as a "Party".

RECITALS

This Agreement is entered into with reference to the following facts:

- a. United and its Oxnard/Hucneme ("OH") pipeline customers, including Oxnard, are parties to the "Water Supply Agreement for Delivery of Water Through the Oxnard/Hueneme Pipeline," dated July 1, 1996, which provides for delivery of potable water through the OH Pipeline. This agreement has been amended twice: Amendment No. 1, dated January 2002, and Amendment No. 2 dated January 2003. This agreement, as amended, is referred to as the "OH Agreement".
- b. United and Calleguas Municipal Water District ("Calleguas") are parties to an agreement entitled "Agreement between Calleguas Municipal Water District and United Water Conservation District regarding the Supplemental M&I Water Program" ("Supplemental M&I Water Agreement") under which Fox Canyon Groundwater Management Agency ("GMA") credits will be transferred from Calleguas to United for use in a GMA approved groundwater management program referred to as the "Supplemental M&I Water Program".
- c. The Supplemental M&I Water Program (or the "Program") was approved by the GMA as a policy under which GMA groundwater credits earned as a result of the Conejo Creek Project will be transferred from Pleasant Valley County Water District ("PVCWD") to Calleguas and then to United. These credits will allow additional pumping of groundwater for delivery to United's participating OH Contractors.
- d. The purpose of this Agreement is to set forth how the Supplemental M&I Water Program will be implemented by United and how Oxnard, as an OH Contractor, will participate in the Program.

NOW, THEREFORE, THE PARTIES HEREBY MUTUALLY AGREE as follows:

1. DEFINITIONS

The defined terms provided in the OH Agreement are specifically incorporated herein. This Agreement refers to the following additional terms:

COUNCIL APPROVAL

DATE: 04/11/06 AGENDA # I-4

**AGREEMENT BETWEEN UNITED WATER CONSERVATION DISTRICT AND THE
CITY OF OXNARD FOR THE PURCHASE OF SUPPLEMENTAL WATER**

United Water Conservation District ("United") and the City of Oxnard ("Oxnard") enter into this Agreement for the Purchase of Supplemental Water ("Agreement") on this 1st day of December, 2009, in Ventura County, California. United and Oxnard are collectively referred to as the "Parties".

This Agreement is entered into with reference to the following facts:

- a. United has accumulated over 11,000 acre-feet of Fox Canyon Groundwater Management Agency ("GMA") storage credits as a result of its past purchases of State Water Project water that has been used directly for groundwater recharge within the GMA. These credits are held in United's "Good Deed Credit Trust," established pursuant to GMA Resolution 2002-1.
- b. The Good Deed Credit Trust was established to facilitate good groundwater management practices. United obtained approval from the GMA on November 4, 2009, as set forth in Resolution 2009-7, as authorized by GMA Resolution 2002-1, for the use of a portion of the Good Deed Credit Trust credits ("GDCT Credits") as provided in this Agreement.
- c. United anticipates the completion of its purchase of certain property commonly referred to as the Ferro Property ("Ferro Property") in late 2009. United is the current legal owner of real property commonly referred to as the Rose Property. Upon completion of these transactions, United will acquire, along with the two Properties, certain GMA historical extraction allocations ("Ferro/Rose Properties Allocation").
- d. United anticipates a future project involving converting a portion of the Ferro and Rose Properties into groundwater retention basins, which will provide long-term water management benefits within United's and the GMA's boundaries.
- e. Oxnard obtains a portion of its water supplies from local groundwater resources, through its groundwater wells and from groundwater purchased from United. Oxnard purchases groundwater from United pursuant to the "Water Supply Agreement for Delivery of Water Through the Oxnard/Hueneme Pipeline" ("OH Agreement").
- f. Oxnard is also proceeding with its Groundwater Recovery Enhancement and Treatment ("GREAT") Program, to utilize recycled water in a manner that benefits Oxnard and the groundwater basins within United's and the GMA's boundaries.
- g. In addition to the GREAT Program, Oxnard has and will continue to obtain a portion of its water supplies through the use of local groundwater.
- h. Oxnard attempts to maximize its access to local groundwater supplies, consistent with the GMA's groundwater management plan and rules.

COUNCIL APPROVAL

DATE: 12/1/09 AGENDA # I-8

i. The purpose of this Agreement is to set forth how the Parties shall utilize a portion of the GDCT Credits and the Ferro/Rose Properties Allocation to offset some of the costs of the Ferro Property acquisition.

NOW, THEREFORE, in consideration of the preceding recitals, which are incorporated herein by reference as set forth in full and the mutual covenants and promises presented below, the Parties agree as follows:

Section 1. Purpose. This Agreement establishes the terms and conditions under which United will make available to the City a total of 11,000 acre-feet ("AF") of GDCT Credits and a total of 8,000 AF of Ferro/Rose Properties Allocation for use pursuant to this Agreement.

Section 2. Condition Precedent. This Agreement is contingent upon United acquiring title to the Ferro Property and the Ferro/ Rose Properties Allocation.

Section 3. GMA Approval and Compliance. As may be necessary to undertake this Agreement, United shall: a) obtain all approvals required from the GMA for the use of the GDCT Credits and Ferro/Rose Properties Allocation, and b) provide all compliance and monitoring reports consistent with GMA requirements. Oxnard shall cooperate and coordinate with United in obtaining approvals from and making any required compliance reports to the GMA.

Section 4. Use of GDCT Credits and Ferro/Rose Properties Allocation. United shall make available to Oxnard and Oxnard shall use the GDCT Credits and Ferro/Rose Properties Allocation as follows:

4.1. For calendar year 2010, Oxnard shall have available up to 5,500 AF of GDCT Credits.

4.2. For calendar year 2011, Oxnard shall have available up to 5,500 AF of GDCT Credits.

4.3. Annually, from July 1, 2011, through June 30, 2019, Oxnard shall have available up to 1,000 AF of Ferro/Rose Properties Allocation, for a combined total of 8,000 AF of Ferro/Rose Properties Allocation.

4.4. In each year, the Parties agree that the associated pumping of groundwater shall occur from either or both the Oxnard-Hueneme System (the El Rio well field, or the "OH System") and from wells located at Oxnard's Blending Stations #1 and #3.

4.5. The Parties shall coordinate their groundwater reporting to the GMA to account for the above use of GDCT Credits and the Ferro/Rose Properties Allocation.

Section 5. Consideration. Oxnard shall make the following payments to United:

5.1. Oxnard shall make 24 monthly payments of \$160,416.67, concurrent with and included in the OH System invoices to Oxnard for the period of January 2010 through December 2011.

5.2. Concurrent with OH System invoices for the period July 1, 2011 and each month following, through and including June 30, 2019, Oxnard will pay monthly to United \$20,833.83. These monthly payments are in addition to those provided in subsection 5.1.

5.3. To the extent the City obtains a portion of the groundwater from the OH System, the monthly payments made pursuant to subsections 5.1 and 5.2 are in addition to any other costs incurred by Oxnard for OH System water purchases and deliveries.

Section 6. Restrictions on Use of GDCT Credits or Ferro/Rose Properties Allocation.

6.1. The Parties agree that, while the intent of this Agreement is to provide access to the GDCT Credits and Ferro/Rose Properties Allocation consistent with the schedule provided in Section 4 above, the Parties acknowledge there may be periods in which Oxnard may not be able to fully utilize these water supplies because of extraordinary conditions within the GMA. Nonetheless, the Parties agree that Oxnard has the right to use a total of 19,000 AF of groundwater as provided herein.

6.2. Oxnard agrees to use its reasonable efforts to utilize the GDCT Credits and Ferro/Rose Properties Allocation in a manner which minimizes any significant impacts on groundwater resources. United agrees to use its reasonable efforts to assist Oxnard in making full use of the GDCT Credits and the Ferro/Rose Properties Allocation as provided herein.

Section 7. OH System. Nothing in this Agreement is intended to modify the OH Agreement. The Parties acknowledge that Oxnard may opt out of OH Agreement on or about 2016. In the event the OH Agreement is terminated, the Parties shall continue to comply with their commitments under this Agreement, with Oxnard taking delivery of the entirety of the Ferro/Rose Properties Allocation through Oxnard's groundwater wells.

Section 8. Term and Termination. This Agreement will be effective upon the date written at the top of page 1 and will remain in effect through the later of: a) Oxnard making the full and final payments, as required in section 5, or b) United making available and Oxnard making use of 11,000 AF of GDCT Credits and 8,000 AF of Ferro/Rose Properties Allocation.

Section 9. Suspension of Payment.

9.1. The monthly payments required in Section 5 shall be reduced or suspended in proportion to any restriction imposed on Oxnard to reduce or suspend its use of the GDCT Credits or the Ferro/Rose Properties Allocation. For example, if United or a third-party requires Oxnard to reduce its use of GDCT Credits or Ferro/Rose Properties Allocation such that Oxnard may only obtain 50% of the GDCT Credits or Ferro/Rose Properties Allocation amortized over the period in which the restriction applies, Oxnard shall only be required to pay United for 50% of the payment associated with the GDCT Credits or Ferro/Rose Properties Allocation.

9.2. The reduction or suspension in payments shall only apply during the period of the restriction or suspension of use.

9.3. The Parties agree to apply their reasonable best efforts to lift any restriction as promptly as possible.

9.4. Should any restrictions or suspensions be imposed on Oxnard's access to the GDCT Credits or Ferro/Rose Properties Allocation, the anticipated periods of use provided in Section 4 shall be extended so that Oxnard has access to and ability to make use of the full amount of GDCT Credits and Ferro/Rose Properties Allocation as provided in this Agreement. Oxnard's payment obligation shall also continue during any extended period of use so that United receives the total anticipated payments provided in Section 5. Any final payment(s) shall be adjusted in that proportion necessary to make up for any periods of reduced or suspended payments.

Section 10. Assignment. Neither Oxnard nor United may assign this Agreement, nor any right or duty hereunder, without prior written approval. This Agreement is binding upon and shall inure to the benefit of the successors of Oxnard and United.

Section 11. Authorization. Oxnard acknowledges that the person executing this Agreement on its behalf has been duly authorized to do so. United acknowledges that the person executing this Agreement on its behalf has been duly authorized to do so.

Section 12. Notices. Any notices to Oxnard may be delivered personally, or sent by U.S. mail addressed to the Director of Public Utilities, 300 West Third Street, Oxnard, CA 93030. Any notices to United may be delivered personally, or sent by U.S. mail addressed to General Manager, 106 North 8th Street, Santa Paula, CA 93060.

Section 13. Construction. The provisions of this Agreement should be liberally construed to effectuate its purposes. The language of all parts of this Agreement shall be construed simply according to its plain meaning and shall not be construed for or against any Party, as each Party has participated in the drafting of this document and had the opportunity to have its counsel review it. Whenever the context and construction so require, all words used in the singular shall be deemed to be used in the plural, and all masculine shall include the feminine and neuter, and vice versa.

Section 14. Cooperation. The Parties shall, whenever and as often as reasonably requested to do so by the requesting Party, execute, acknowledge and deliver, or cause to be executed, acknowledged and delivered, any and all documents and instruments as may be necessary, expedient or proper in the reasonable opinion of the requesting Party to carry out the intent and purposes of this Agreement, provided that the requesting Party shall bear the costs and expense of such further instruments or documents (except that each Party shall bear its own attorneys' fees).

Section 15. Parties in Interest. Nothing in this Agreement, whether express or implied, is intended to confer any rights or remedies under or by reason of this Agreement on any persons other than the Parties to it and their respective successors and assigns, nor is anything in this Agreement intended to relieve or discharge the obligation or liability of any third persons to any Party to this Agreement, nor shall any provision give any third persons any right of subrogation or action against any Party to this Agreement.

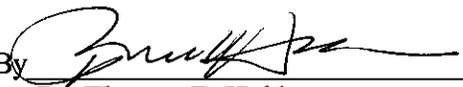
Section 16. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all of which shall constitute one and the same instrument.

Section 17. Waiver. No waiver by any Party of any of the provisions of this Agreement shall be effective unless explicitly set forth in writing and executed by the Party so waiving. Except as provided in the preceding sentence, no action taken pursuant to this Agreement, including, without limitation, any investigation by or on behalf of any Party, shall be deemed to constitute a waiver by the Party taking such action of compliance with any representations, warranties, covenants, or agreements contained herein, and in any documents delivered or to be delivered pursuant to this Agreement. The waiver by any Party of a breach of any provision of this Agreement shall not operate or be construed as a waiver of any subsequent breach. No waiver of any of the provisions of this Agreement shall be deemed, or shall constitute, a waiver of any other provision, whether or not similar, nor shall any waiver constitute a continuing waiver.

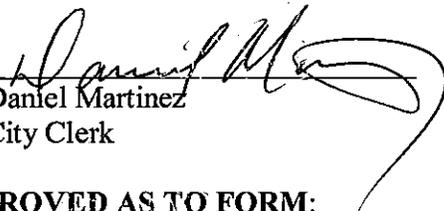
Section 18. Entire Agreement. This Agreement constitutes the entire agreement of the parties regarding the subject matter described herein and supersedes all prior communications, agreements and promises, either oral or written, on the subject matter of this Agreement.

IN WITNESS WHEREOF, the Parties have executed this Agreement on the day and year and at the place first written above.

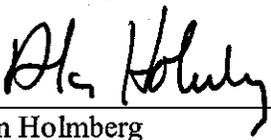
CITY OF OXNARD

By 
Dr. Thomas E. Holden
Mayor

ATTEST:

By 
Daniel Martinez
City Clerk

APPROVED AS TO FORM:

By 
Alan Holmberg
City Attorney

//signatures continue on following page

**UNITED WATER CONSERVATION
DISTRICT**

By *E. Michael Solomon*
E. Michael Solomon
General Manager

APPROVED AS TO FORM:

By *Anthony Trembley*
Anthony Trembley
General Counsel

4-43431
38CD

JOINT POWERS AGREEMENT

UNITED - OXNARD - OCEAN VIEW

This agreement is made and entered into this 27th day of June, 1967, by and between the UNITED WATER CONSERVATION DISTRICT, hereinafter called United, the CITY OF OXNARD, a municipal corporation, hereinafter called Oxnard, and OCEAN VIEW MUNICIPAL WATER DISTRICT, hereinafter called Ocean View.

WITNESSETH

WHEREAS, Oxnard has entered into a joint powers agreement with Ocean View to lease and purchase from Ocean View that certain pipeline known as the Hueneme Road Pipeline, more particularly described in an engineer's report, "Hueneme Road Pipeline Project", prepared by William P. Price, Jr., dated 1961, but excluding from said pipeline the injection plumbing beyond the 4-inch gate valves, as shown on the typical detail sheets of said report; and

WHEREAS, Ocean View is now furnishing water from said pipeline to several customers and it is expected that in the future other properties within Ocean View, but not within Oxnard, will desire to receive water service from said pipeline, and

WHEREAS, Oxnard's ordinances prohibit it from serving water outside of its boundaries except under restrictive conditions, and

WHEREAS, Ocean View desires to assure water users, present and prospective, within its district of their right to receive water from said pipeline while it is leased to Oxnard, and desires to continue to furnish water to certain customers within its boundaries but outside the boundaries of Oxnard, and

WHEREAS, Ocean View desires to have the operation, maintenance, billing, meter reading and other matters relating to the operation of the pipeline handled by the other parties to this agreement, it being the belief of all parties that these matters may be more economically handled by avoiding duplication of staff and equipment, and

WHEREAS, Oxnard is willing to be responsible for all connections to the line and all maintenance thereof and is willing to handle the meter reading, billing and collecting for customers within Oxnard, and

WHEREAS, United is willing to act as Ocean View's agent in reading meters, billing and collecting in the area of Ocean View not included in Oxnard's boundaries provided that United's costs incurred therefor are met, and

WHEREAS, there are existing contracts between United and Oxnard and between United and Ocean View for the furnishing of water by United to those entities, and

**APPENDIX B – 2009 – 2012 BLEND STATION
PRODUCTION DATA**

Month	BS No. 1	BS No. 2	BS No. 3	BS No. 4	BS No. 5	BS No. 6 (permeate)
Jan	539	5	591	284	36	288
Feb	532	3	473	260	31	220
Mar	554	4	603	305	38	271
Apr	593	2	756	309	45	217
May	748	4	873	342	78	206
Jun	576	5	958	347	87	320
Jul	592	2	972	388	96	315
Aug	607	1	987	375	104	295
Sep	564	1	916	335	92	276
Oct	626	1	708	328	67	230
Nov	491	1	673	323	47	253
Dec	474	13	562	300	36	234
Yearly Avera	6,896	41	9,070	3,894	757	3,127

Month	BS No. 1	BS No. 2	BS No. 3	BS No. 4	BS No. 5	BS No. 6 (permeate)
Jan	30.9%	0.3%	33.9%	16.3%	2.0%	16.6%
Feb	35.0%	0.2%	31.1%	17.1%	2.0%	14.5%
Mar	31.2%	0.2%	34.0%	17.2%	2.1%	15.3%
Apr	30.8%	0.1%	39.3%	16.0%	2.4%	11.3%
May	33.2%	0.2%	38.8%	15.2%	3.5%	9.2%
Jun	25.1%	0.2%	41.8%	15.2%	3.8%	14.0%
Jul	25.0%	0.1%	41.1%	16.4%	4.1%	13.3%
Aug	25.6%	0.0%	41.7%	15.8%	4.4%	12.5%
Sep	25.8%	0.0%	41.9%	15.3%	4.2%	12.6%
Oct	32.0%	0.0%	36.1%	16.7%	3.4%	11.7%
Nov	27.5%	0.1%	37.6%	18.1%	2.6%	14.1%
Dec	29.3%	0.8%	34.7%	18.5%	2.2%	14.5%
Yearly Average	29.3%	0.2%	37.7%	16.5%	3.1%	13.3%
Max	35.0%	0.8%	41.9%	18.5%	4.4%	16.6%

Table B.3 Total Annual Production by Blend Station (AF)								
Year	BS No. 1	BS. No 2	BS No. 3	BS No. 4	BS No. 5	BS No. 6 (permeate)	Industrial UWCD	Industrial CMWD
2009	5821	59	8775	4607	401	6280	1387	3421
2010	6978	42	7953	3439	220	5568	1135	3521
2011	7224	40	9036	3361	697	3958	1159	4369
2012	7561	25	10517	4169	1709	161	1199	4444
Percent of Tr	23%	0%	30%	13%	3%	13%	4%	13%

APPENDIX C – 2014 CONSUMER CONFIDENCE REPORT

Tim Flynn
Mayor

Carmen Ramírez
Mayor Pro Tem

Bryan A. MacDonald
Councilman

Dorina Padilla
Councilmember

Bert Perello
Councilmember

City Council Office
300 West Third Street
Oxnard, CA 93030

Public Information
You are invited to attend any
of the regularly scheduled
City Council meetings:

When:
Every Tuesday at 6:00 PM

Where:
City Council Chambers
305 West Third Street
Oxnard, CA 93030

For more information:
visit www.CityofOxnard.org/CCR
or call (805) 385-8136

For additional information:
Environmental Protection Agency Safe
Drinking Water Hotline: (800) 426-4791

Consumer Confidence Report

2014 Annual Water Quality Report
for City of Oxnard Water Customers

*Informe Anual de Calidad del Agua Para los Clientes
Consumidores de Agua en la Ciudad de Oxnard*

***Informe De Confiabilidad
Para El Consumidor 2014***



CITY OF OXNARD 2014 ANNUAL WATER QUALITY REPORT

DRINKING WATER SOURCES AND TREATMENT

Reason for This Report

The City of Oxnard Water Resources Division is committed to informing City residents about the sources and quality of their drinking water. The City is proud to have successfully met strict water quality guidelines set by the California Division of Drinking Water (CDDW) and the US Environmental Protection Agency (USEPA). This report provides an overview of the process used to deliver safe drinking water to your tap along with water quality data from January through December, 2014.

Oxnard's Drinking Water Sources and Treatment

Oxnard's water supplies consist of imported water from the Calleguas Municipal Water District (CMWD), regional water purchased from the United Water Conservation District (UWCD), and water produced by City wells.

City of Oxnard Groundwater Supplies

Water from City wells is blended with water imported from either CMWD, UWCD or treated water from the City's Groundwater Recovery Enhancement and Treatment (GREAT) Program Desalter. The City operates ten groundwater wells that are tested and monitored on a regular basis to ensure that the water meets safe drinking water standards. The Water Resources Division also conducts routine source water assessments in order to detect potential contaminants in the groundwater before they become a problem. The City remains vigilant in protecting its groundwater resources against the following

potential contaminants: local gas stations, private septic systems, drainage from agriculture, and industrial facilities such as chemical and petroleum processing and storage facilities, dry cleaners, metal plating, finishing and fabricating facilities.

The GREAT Desalter is fed by City wells and helps maintain and improve the water quality of the City's drinking water by using reverse osmosis treatment to remove dissolved minerals. The treated water from the GREAT Desalter is blended with water from UWCD or local groundwater to produce an aesthetically pleasing drinking water blend. The GREAT Desalter is capable of processing up to 7.5 million gallons of water per day and may be expanded in the future to produce up to 15 million gallons per day.

Calleguas Municipal Water District Supplies

CMWD is a member agency of the Metropolitan Water District of Southern California (MWDSC), the major water importer and wholesale agency for Southern California. Water supplied to the City from CMWD originates in Northern California via the State Water Project: a system of reservoirs, aqueducts and pump stations. This water is treated either by MWDSC's Jensen Water Treatment Plant or by CMWD's Lake Bard Water Filtration Plant. Both MWDSC and CMWD perform routine watershed surveys, source water quality sampling and analyses, and operational and treatment activities to ensure the water supplied maintains a high quality.

Continued on page 3

Water...essential to all life:
Past, present and future.

*Este informe
contiene información
muy importante
sobre su agua potable.
Tradúzcalo o hable
con alguien que lo
entienda bien.*

DRINKING WATER SOURCES AND TREATMENT

Continued from page 2

United Water Conservation District Supplies

UWCD water originates in Lake Piru which is then diverted into groundwater recharge wells in the Oxnard Plain. After storing this water underground for long periods of time, the water is then extracted, treated, and conveyed to several retail water agencies in the region which includes Oxnard. UWCD performs regular watershed surveys as well as routine sampling and water quality analyses to ensure that water received, stored, treated, and then supplied to its customers maintains its consistent quality.

Supplemental Information and Water Quality Results

Included in this report is a summary of constituents which were detected throughout the year. These constituents are summarized in the included tables which describe the water quality parameters measured in the various sources of water supply as well as the results of those measurements throughout the year.

Please share this information with others at your location by posting this notice in a public place or common area.

WATER QUALITY MONITORING

Please note that the water delivered to residences through the City receive a blend of the water quality that is summarized in the included tables (on pages 5, 6 & 7).

Water Quality Monitoring

All of the monitoring conducted is necessary to ensure that your water is safe to drink and also aesthetically pleasing. Monitoring is a result of prescribed regulations from the USEPA as well as the CDDW. These regulations limit the amount of certain health-based and aesthetic contaminants in water provided by all public water systems. Many of the monitoring, treatment, and water quality requirements that are placed upon these local drinking water supplies are actually more stringent than for bottled water.

Here is some additional information that may provide assistance in interpreting information that has been provided in the 2014 Water Quality Table:

Continued on page 4



Por favor comparta esta información con otras personas en su domicilio, poniendo éste aviso en un espacio público o área común.

WATER QUALITY MONITORING

Continued from page 3

- Monitoring Violation for TTHMs and HAA5 TTHMs and HAA5 are both chemical by-products that are formed when drinking water is disinfected during the chlorination process. These by-products are formed in treated water across the world and are regulated and monitored in the City's water system. The MCLs for these compounds are 80 µg/L for TTHMs and 60 µg/L for HAA5 based on a location-based running annual average of data from quarterly sampling. There is no immediate/acute health risk from these compounds being elevated in the treated water for a short term, but only if they remain at elevated levels for many years. In the last quarter of 2014, the City did not perform the required quarterly distribution system samples for TTHMs and HAA5. Therefore, the City cannot be sure of the values for those parameters at that time. The City's water has remained below the MCLs for these parameters in the past and because of automated monitoring for water treatment operations and chemical dosing there is reasonable assurance that the values for TTHMs and HAA5 would have remained below their respective MCLs.

WATER QUALITY MONITORING

- Some of the parameters measured will change very infrequently in their environment. For these parameters, the State allows the City to monitor them less than once a year. Therefore, some of the City's data – although representative – is more than one year old.
- Unregulated contaminant monitoring is conducted in order to assist USEPA and CDDW to determine where certain contaminants occur and whether the contaminants need to be regulated. There are many more contaminants that were monitored than what is reported in the included water quality table; however, they were never detected in your drinking water so they are not listed.
- Drinking water, including bottled water, may reasonably be expected to contain small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

Continued on page 8



2014 Water Quality Table - City of Oxnard Drinking Water Supply

Parameters Measured and Detected Contributing Water Sources

PARAMETER	UNITS	STATE MCL [MRDL]	PHG (MCLG) [MRDLG]	RANGE	AVERAGE PERCENT	City of Oxnard	United Water Conservation District	Calleguas Municipal Water District		MAJOR SOURCES IN DRINKING WATER
								MWDSC Jensen WTP	Calleguas Lake Bard WFP	
Percent of Supply	%	NA	NA		Average	28	24	48		
Primary Drinking Water Standards (Mandatory Health-Related Standards)										
<i>Clarity</i>										
Turbidity (from surface water sources)	NTU %	1 (TT) (a) (TT)	NA		Greatest value % ≤0.3	NA	0.26 100	0.06 100	0.05 100	Microscopic soil particles or materials.
<i>Microbiological</i>										
Total coliform bacteria	% number	5 >1 (b)	0 0		Percent Average	0 0	0 0	0 0	0 0	Naturally present in the environment.
Escherichia coli (E. coli)	(b)	(b)	0 0		Percent Average	0 0	0 0	0 0	0 0	Found in human and animal waste.
<i>Radionuclides (d)</i>										
Gross Alpha particle activity (i)	pCi/L (e)	15	0		Range Average	4.1 - 16.7 (m) 9.9 (m)	0 - 7.9 4.8	ND - 5 3	ND	Erosion of natural and man-made materials.
Gross Beta particle activity (k)	pCi/L (e)	50	0		Range Average	NR (f)	NR (f) NR (f)	ND - 5 ND	ND	Erosion of natural materials.
Uranium (i)	pCi/L (e)	20	0.43		Range Average	3.6 - 17 (m) 8 (m)	1.9 - 4.27 3.3	2 - 3 2	ND	Erosion of natural materials.
<i>Inorganic Chemicals</i>										
Aluminum	ppb	1000	600		Range Average	ND - 13 9	NR (f) NR (f)	ND - 110 57	ND	Erosion of natural materials.
Arsenic	ppb	10	0.004		Range Average	1.4 - 3.5 1.8	2 - 3 2.5	2.2 2.2	ND	Erosion of natural materials.
Fluoride	ppm	2.0	1		Range Average	0.28 - 0.82 0.54	0.3 - 0.4 0.35	0.7 - 1.0 0.8	0.7 - 1.0 0.8	Naturally occurring; water additive to strengthen teeth.
Nitrate, as NO ₃	ppm	45	45		Range Average	1.6 - 29 12.8	12.3 - 35.5 23.5	2.7 2.7	ND	Erosion of natural materials, fertilizer runoff, leaching septic tanks.
Selenium	ppb	50	30		Range Average	0.5 - 2.3 1.1	9 - 14 11.5	ND	ND	Erosion of natural materials; industrial and chemical manufacturing discharge.

2014 Water Quality Table - City of Oxnard Drinking Water Supply *(continued)*

Parameters Measured and Detected Contributing Water Sources

PARAMETER	UNITS	STATE MCL [MRDL]	PHG (MCLG) [MRDLG]	RANGE	AVERAGE PERCENT	City of Oxnard	United Water Conservation District	Calleguas Municipal Water District		MAJOR SOURCES IN DRINKING WATER
								MWDSC Jensen WTP	Calleguas Lake Bard WFP	
Percent of Supply	%	NA	NA	Average	28	24	48			
Secondary and Unregulated Drinking Water Standards (Non-health related and/or indicators of aesthetics such as taste, odor, and color)										
Alkalinity, total as calcium carbonate	ppm	NS	NA	Range Average	110 - 280 (m) 216 (m)	NR (f)	84 - 94 89	100 100		Erosion of natural materials.
Boron	ppm	1 (NL)	NA	Range Average	0.68 (m) 0.68 (m)	NR (f)	.16 .16	0.20 0.20		Erosion of natural materials.
Calcium	ppm	NS	NA	Range Average	26 - 250 (m) 153 (m)	NR (f)	26 - 36 31	32 32		Erosion of natural materials.
Chlorate	ppb	800 (NL)	NA	Range Average	NR (f)	NR (f)	36 36	ND		By-product from drinking water disinfection with chlorine.
Chloride	ppm	500	NA	Range Average	ND - 80 55	50 - 63 56.5	85 - 86 86	88 - 97 92		Erosion of natural materials; seawater influence.
Color	units	15	NA	Range Average	ND - 7.5 4.5	NR (f)	1 1	ND		Naturally-occurring organic matter.
Corrosivity, as aggressiveness index (AI) (g)	number	NS	NA	Range Average	NR (f)	NR (f)	NR (f)	NR (f)		--
Hardness, total as calcium carbonate	ppm	NS	NA	Range Average	92 - 964 (m) 649 (m)	577 - 630 604	114 - 136 125	137 137		Erosion of natural materials.
Iron	ppb	300	NA	Range Average	ND - 53 27	90 - 240 165	ND	ND		Erosion of natural materials.
Magnesium	ppm	NS	NA	Range Average	7 - 82 (m) 56 (m)	NR (f)	12 12	14 14		Erosion of natural materials.
Manganese	ppb	50	NA	Range Average	ND - 69 22	ND - 70 35	ND	ND		Erosion of natural materials.
N-Nitrosodimethylamine (NDMA)	ppt	10 (NL)	NA	Range Average	NR (f)	NR (f)	ND - 2.2 ND	ND		By-product from drinking water disinfection with chloramine.
Odor, as threshold odor number (TON)	TON	3	NA	Range Average	1 1	ND - 16 ND	3 3	ND		Naturally-occurring organic matter.
pH	units	NS	NA	Range Average	7.3 - 7.7 7.5	NR (f)	8.1 - 8.3 8.2	7.8 - 8.4 8.2		--
Potassium	ppm	NS	NA	Range Average	NR (f)	NR (f)	3 3	4 - Mar 4		Erosion of natural materials.
Radon	pCi/L (e)	NS	NA	Range Average	NR (f)	278 - 363 331	ND	ND		Erosion of natural materials.
Sodium	ppm	NS	NA	Range Average	NR (f)	101 101	69 - 73 71	67 - 70 69		Erosion of natural materials; seawater influence.
Specific conductance	µS/cm	1600	NA	Range Average	760 - 1200 1088	1370 - 1530 1458	588 - 631 610	630 - 645 636		Erosion of natural materials; seawater influence.
Sulfate	ppm	500	NA	Range Average	130 - 470 324	460 - 541 511	63 - 75 69	60 60		Erosion of natural materials.
Total dissolved solids (TDS)	ppm	1000	NA	Range Average	430 - 920 712	1020 - 1120 1078	325 - 355 340	340 - 360 350		Erosion of natural materials; seawater influence.
Turbidity (from well water sources)	NTU	5	NA	Range Average	NR (f)	0.04 - 0.26 0.08	NA	NA		Microscopic soil particles or materials.
Vanadium	ppb	50 (NL)	NA	Range Average	NR (f)	NR (f)	4.8 4.8	ND		Erosion of natural materials.

City of Oxnard Distribution System Samples

PARAMETER	UNITS	STATE MCL [MRDL]	PHG (MCLG) [MRDLG]	RANGE	AVERAGE PERCENT	City of Oxnard	MAJOR SOURCES IN DRINKING WATER
Percent of Supply	%	NA	NA	Average			
Disinfection-Related Monitoring							
<i>Disinfectant Residual</i> Total chlorine, as residual	ppm	4.0	4.0	Range Greatest RAA	1.6 - 2.8 1.86		Disinfectant added to control microbiological parameters.
<i>Disinfection By-Products</i> Haloacetic acids (HAA5)	ppb	60	NA	Range Greatest LRAA	3 - 10 (z) 6 (z)		By-product from drinking water disinfection with chlorine.
Total trihalomethanes (TTHM)	ppb	80	NA	Range Greatest LRAA	9 - 23 (z) 24 (z)		By-product from drinking water disinfection with chlorine.
Bromate	ppb	10	0.1	Range Greatest LRAA	4.4 - 13(c) 7.8 (c)		By-product from drinking water disinfection with ozone.
Lead and Copper Monitoring							
Copper (h)	ppb	1300 (AL)	1700	90th percentile value No. of sites sampled Sites exceeding AL	645 65 0		Erosion of natural materials and corrosion of household plumbing fixtures.
Lead (h)	ppb	15 (AL)	2	90th percentile value No. of sites sampled Sites exceeding AL	3.35 65 0		Erosion of natural materials and corrosion of household plumbing fixtures.

Embrace water conservation!
Using water more efficiently protects our water supply and environmental resources and can save you money on your water bill.



Abbreviations And Definitions

AI - Aggressiveness index
AL - Action level
DBP - Disinfection by-product
DDW - Department of Drinking Water
LRAA - Locational running annual average - The greatest LRAA is the greatest of all LRAAs calculated as an average of all the samples collected within a 12-month period.
MCL - Maximum contaminant level - The greatest level that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.
MCLG - Maximum contaminant level goal - The level below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency.
MRDL - Maximum residual disinfectant level - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
MRDLG - Maximum residual disinfectant level goal - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
NA - Not applicable
NL - Notification level
NR - Not reported
NS - No standard
NTU - Nephelometric turbidity units
pCi/L - picoCuries per liter
PHG - Public health goal - the level in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.
ppb - Parts per billion, or micrograms per liter (µg/L)
ppm - Parts per million, or milligrams per liter (mg/L)

ppt - Parts per Trillion - nanograms per liter (ng/L)
RAA - Running annual average - This is the greatest running annual average (RAA) value for each RAA monitored, calculated as an average of all the samples collected in a 12-month period.
SWRCB - State Water Resources Control Board
TDS - Total dissolved solids
TOC - Total organic carbon
TON - Threshold odor number
TT - Treatment technique - A required process that has been identified for use with the intention that it reduces the level of a contaminant in drinking water.
µS/cm - MicroSiemen per centimeter; or micromho per centimeter (µmho/cm).
WFP - Water filtration plant
WTP - Water treatment plant

Footnotes

a - The turbidity level of the filtered water shall be less than or equal to 0.3 NTU in 95% of the measurements taken each month and shall not exceed 1 NTU at any time. Turbidity is a measure of the cloudiness of the water and is an indicator of treatment performance.
b - Total coliform MCLs: No more than 1 monthly sample may be positive for total coliforms. The occurrence of 2 consecutive total coliform positive samples (one of which contains *E. coli*) constitutes an acute MCL violation.
c - Bromate is an ozonation treatment by-product. Bromate values shown are solely contributed by the MWDSC Jensen WTP and only occur in the system when water originates from that location.
d - Data are from samples collected triennially during four consecutive quarters of monitoring and are reported for three years until the next samples are collected.
e - SWRCB DDW considers 50 pCi/L to be the level of concern for beta particles; the gross beta particle activity MCL is 4 millirem/year annual dose equivalent to the total body or any internal organ.

f - This data is not available
g - AI measures the aggressiveness of water transported through pipes. Water with AI <10.0 is highly aggressive and would be very corrosive to almost all materials found in a typical water system. AI >12.0 indicates non-aggressive water. AI between 10.0 and 11.9 indicates moderately aggressive water.
h - Copper and lead sampling was last conducted throughout the City's distribution system in 2012 and is scheduled to be sampled again in 2015. Sampling for these parameters is conducted regularly every three years.
i - Radionuclides are sampled over a range from throughout a given year to every 6 years. This data is a summary of all samples over the last 6 years.
k - The gross beta particle activity MCL is 4 millirem/year annual dose equivalent to the total body or any internal organ. The screening level is 50 pCi/L. SWRCB considers 50 pCi/L to be the level of concern for beta particles.
m - Values shown here are for data collected in water wells prior to blending that water with the supplies provided by UWCD and CMWD. Therefore, actual values for this parameter in the water delivered to the customer are expected to be significantly lower than are shown here.
z - The results for TTHMs and HAA5 are based upon quarterly averages of data. For the final quarter of 2014 we failed to take the required quarterly samples for these compounds. Other monitoring does give reasonable assurance that their values would remain well below their respective MCLs. The data shown summarizes the first three quarterly results only. It should also be noted that there is no immediate/acute health risk from these compounds even if they were elevated for this short duration of time - they are regulated in order to protect public health over multiple-year / lifetime consumption.

WATER QUALITY MONITORING

Continued from page 4

- Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).
- Nitrate in drinking water at levels above 45 mg/L is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in a serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 45 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should ask advice from your health care provider.

For more information visit
www.CityofOxnard.org/CCR



WATER QUALITY MONITORING

- The City's water supply has been tested to be free of lead. However, if present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safe-water/lead>.

Para más información visite
www.CityofOxnard.org/CCR

**APPENDIX D – 2013-2014 LOCAL GROUNDWATER
MONITORING DATA**

2013 - 2014 Water Quality Monitoring Data

Water Campus Effluent

	From file that says 2013 Lab Results					From file that says 2014 Lab Results				
	01.11.12	03.07.12	01.16.13	02.06.13	03.06.13	01.11.12	03.07.12	01.16.13	02.06.13	03.06.13
Temperature (Field)	14	15.8				14	15.8			
pH (Field)	8.40	7.62	8.5	8.5		8.40	7.62	8.5	8.5	
Alkalinity as CaCO3	140	150	160	160	150	140	150	160	160	150
Bicarbonate Alkalinity as CaCO3	140	150	190	200	190	140	150	190	200	190
Carbonate Alkalinity as CaCO3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hydroxide Alkalinity as CaCO3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate-NO3	9.6	11			7.9	9.6	11			7.9
Sulfate	260	320			330	260	320			330
Total Dissolved Solids	670	750				670	750			
pH	7.5	7.62		7.82	8.5	7.5	7.62		7.82	8.5
Specific Conductance	100	100				100	100			
Aggressive Index		12		12	13		12		12	13
Langier Index		0.21					0.21			

Notes:

Data provided by the City.

Well:	Average Concentration (mg/L)										State MCL
	20 (1)	22 (1)	23 (1)	28 (1)	29 (1)	30 (2)	31 (3)	32 (4)	33 (4)	34 (4)	
Fluoride	0.63	0.55	0.59	0.67	0.65	0.53	0.61	0.52	0.44	0.65	NA
Sulfate	459.5	617.1	738	440.5	494.7	660.0	738.9	740	570	710	500
Nitrate-NO3	16.8	39.6	34	8.2	ND	53.2	50.1	56	42	43	45
Alkalinity as CaCO3	217.5	249.2	256	207.9	223.7	234.0	238.9	250	220	270	NS
Total Dissolved Solids	996.5	1284.9	1510	960.4	1040.5	1320.0	1544.4	1500	1200	1600	1000
Hardness (asCaCO3)	392.3	467.6	630	379.8	396.0	185.4	823.7	222	178	898	NS
Calcium	106.4	127.5	170	103.1	107.5	60.7	203.0	78.1	63.2	231	NS
Magnesium	29.7	29.1	48	30.1	30.0	ND	76.8	0.05	0.02	77.8	NS
Manganese	205.9	406.2	333	0.0	212.7	712.8	0.0	877	705	0.054	50
MTBE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA

Notes:

(1) Based on data from Jan 2013 - July 2014

NA Not Available

(2) Based on data from Mar 2014 - July 2014

NS No Standard

(3) Based on data from Jan 2013 - Sept 2013

(4) Based on one data point from May 7, 2014

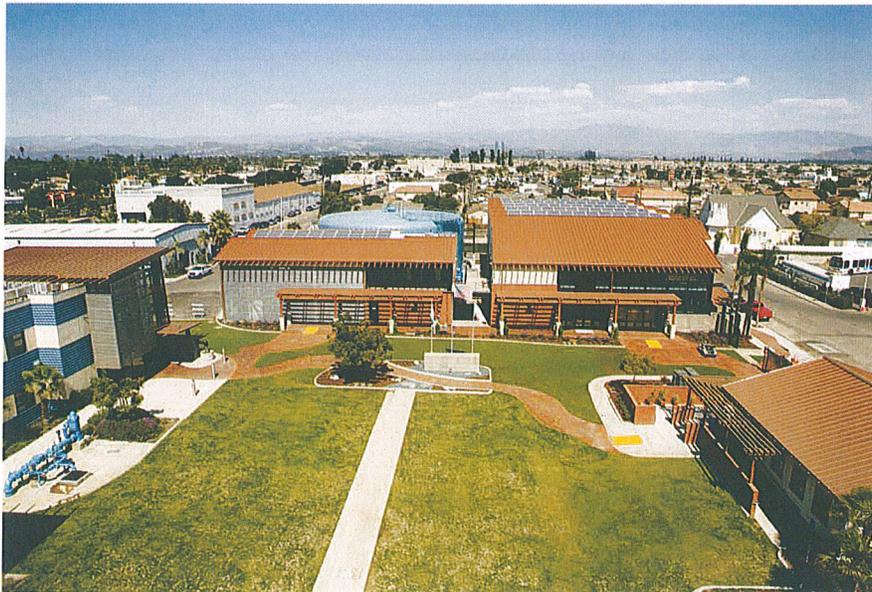
APPENDIX E – 2013 PUBLIC HEALTH GOALS REPORT

AE Comments 03 Jul 2013 

PRELIMINARY DRAFT PUBLIC HEALTH GOALS REPORT

Prepared for:
CITY OF OXNARD, CALIFORNIA

JUNE 2013



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 - C City of Oxnard 2010, 2011, and 2012 Consumer Confidence Reports

SECTION 1: INTRODUCTION

1.1 Purpose of Public Health Goals Report

[ACWA]

Provisions of the California Health and Safety Code (Section 116470; see **Appendix A**) specify that water utilities (serving greater than 10,000 service connections) prepare a special report by July 1, 2013 if their water quality measurements have exceeded any Public Health Goals (PHGs). PHGs are non-enforceable goals established by the California Environmental Protection Agency's (Cal EPA) Office of Environmental Health Hazard Assessment (OEHHA). The law also requires that where OEHHA has not adopted a PHG for a constituent, the water suppliers are to use the maximum contaminant level goal (MCLG) adopted by United States Environmental Protection Agency (USEPA). Only constituents which have a California primary drinking water standard and for which either a PHG or MCLG has been set are to be addressed in this report. **Appendix B** includes a list of all regulated constituents with the maximum contaminant level (MCL), PHG, and or MCLG.

There are a few constituents that are routinely detected in water systems at levels usually well below the drinking water standards for which no PHG nor MCLG has yet been adopted by OEHHA or USEPA, including total trihalomethanes. These constituents will be addressed in a future City report after a PHG has been adopted.

Comma
←

The Health and Safety Code (Section 116470) specifies the information to be provided in the report. If a constituent was detected in the City's water supply between 2010 and 2012 at a level exceeding an applicable PHG or MCLG, this report provides the information required by the law. The PHG report must include the following:

- identify each contaminant that exceeds the applicable PHG or MCLG
- numerical public health risk associated with the MCL and the PHG or MCLG
- category or type of risk to health that could be associated with each constituent
- best treatment technology available that could be used to reduce the constituent level
- estimate of the cost to install that treatment if it is appropriate and feasible.

1.2 What Are PHGs?

PHGs are set by the OEHHA and are based solely on public health risk considerations. By February 2013, a total of 89 PHGs for drinking water contaminants had been adopted by OEHHA. PHGs for non-carcinogenic chemicals in drinking water are set at a concentration "at which no known or anticipated adverse health effects will occur, with an adequate margin of safety." For carcinogens, PHGs are set at a concentration that "does not pose any significant risk to health."

None of the practical risk-management factors that are considered by the USEPA or the California Department of Public Health (CDPH) in setting drinking water standards (MCLs) are considered in setting the PHGs. These factors include analytical detection capability, treatment technology available, benefits and costs. The PHGs are not enforceable and are not required to be met by any public water system. MCLGs are the federal equivalent to PHGs.

Health risks can be described in terms of a category or type of health risk and numeric health risk. Typically, health risks are described in terms of acute toxicity (causing an immediate effect), chronic toxicity (causing a long-term effect due to prolonged exposure), and risk of developing cancer (carcinogenic).

The numeric public health risk associated with the MCL for each contaminant identified and the numeric public health risk associated with the PHG for that contaminant are determined by OEHHA pursuant to Health and Safety Code Section 113670. According to OEHHA, the cancer risk level is based on a theoretical 70-year lifetime excess cancer risk at the statistical confidence limit. Actual cancer risk may be lower or zero. Cancer risk is stated in terms of excess cancer cases per million (or fewer) populations (e.g., 1×10^{-6} means one excess cancer case per one million population).

For more information on health risk, visit the OEHHA website at <http://www.oehha.ca.gov/>. USEPA offers additional information for drinking water for customers via a website <http://www.usepa.gov/drink/> and Safe Drinking Water Hotline at 1-800-426-4791.

1.3 Water Quality Data Considered

All of the water quality data collected by the City between 2010 and 2012 was considered for purposes of determining compliance with drinking water standards. This data was summarized in our 2010, 2011, and 2012 Annual Water Quality Reports, which were mailed to all of our customers. Copies of these annual water quality reports are provided in **Appendix C**. In addition, the City was not required to monitor some constituents that have PHGs during the 2010 to 2012 period. These constituents will be evaluated for PHG compliance in the City's next PHG report due in 2016.

← *Common*

The City of Oxnard is proud to provide its customers with water that meets or exceeds all federal and state drinking water standards. However, there are a very limited number of constituents that were observed at a level exceeding a PHG or MCLG in the City's drinking water.

1.4 List of Acronyms/Abbreviations

AF	acre-feet
AFY	acre-feet per year
AL	Action Level
BAT	Best Available <u>Treatment</u> <i>- is this "Technology" ?</i>
CCR	Consumer Confidence Report
CMWD	Calleguas Municipal Water District
DPH	California Department of Public Health
gpm	gallons per minute
IX	ion exchange
LBWFP	Lake Bard Water Filtration Plant
MAF	million acre feet
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
ug/L	micrograms per liter
mg/L	milligrams per liter
MGD	million gallons per day
mrem/yr	millirem per year
MWD	Metropolitan Water District of Southern California
NA	not applicable

ND	non-detect
OEHHA	Office of Environmental Health Hazard Assessment
O-H	Oxnard-Hueneme
PHG	Public Health Goal
pCi/L	picocuries per liter
RO	reverse osmosis
SB	Senate bill
SMCL	Secondary Maximum Contaminant Level
SWP	State Water Project
TDS	total dissolved solids
THM	trihalomethanes
TOC	total organic carbon
USEPA	United States Environmental Protection Agency
UWCD	United Water Conservation District
UWMP	Urban Water Management Plan.

1.5 Glossary

90th Percentile. The highest concentration of lead or copper in tap water that is exceeded by 10 percent of the sites sampled during a monitoring period. This value is compared to the lead or copper action level to determine whether an AL has been exceeded.

Action Level for Lead and Copper. The concentration of lead or copper in tap water which determines whether a system may be required to install corrosion control treatment, collect samples, collect lead and copper source water samples, replace lead service lines, and/or deliver public education about lead. The action level for lead is 0.015 mg/L (15 ug/L). The action level for copper is 1.3 mg/L (1,300 ug/L).

Best Available Technology. The best available treatment techniques or other means available for achieving compliance with the MCL.

Health Risks. Health risks with respect to Public Health Goals are based on long-term exposures to low levels of contaminants as would occur with drinking water, rather than high doses from a single or short-term exposure. The health risk category describes the type of health risk. Types of health risks include chronic toxicity (shortened life span, thyroid effects, liver effects, or kidney effects), acute toxicity (gastrointestinal effects), carcinogenicity (cancer), and reproductive toxicity.

Ion Exchange. A treatment technology that exchanges undesirable contaminants in the water with common salt components (e.g., sodium or chloride) contained in a solid matrix (resin). Regeneration is performed with a salt brine solution in which sodium or chloride is placed back on the resin and produces a waste brine requiring disposal. For radioactive contaminants, the resin itself can become a radioactive waste requiring disposal.

Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to PHGs as is economically and technologically feasible. Unless stated otherwise, the term MCL in this report refers to primary MCL.

Maximum Contaminant Level Goal. The level of a contaminant in drinking water below which there is no observable adverse effect to human health. MCLGs are similar to California PHGs, but not equivalent. MCLGs are nonenforceable goals established by the U.S. EPA based solely on health considerations for non-carcinogenic constituents. For all carcinogenic constituents (i.e., those chemicals known or suspected of causing cancer), U.S. EPA's policy is to set the MCLG at zero.

Micrograms per liter. The weight of a chemical dissolved in a liter of water. Equivalent to parts per billion (ppb).

Milligrams per liter. The weight of a chemical dissolved in a liter of water. Equivalent to parts per million (ppm).

Millirem per year. A measure of radiation in water. Annual dose equivalent to the total body or any internal organ.

Numeric Health Risk. Describes the cancer risk at the PHG, MCLG, or MCL. No cancer risk is calculated from chemicals considered "noncarcinogens". For carcinogens, PHGs are set at a concentration that "does not pose any significant risk of cancer; this is usually a one in a million excess cancer risk (1×10^{-6})."

One-in-one-million risk level. At the "one-in-one-million" risk level, not more than one person in a population of one million people drinking the water daily for 70 years would be expected to develop cancer as a result of exposure to that chemical in the water.

Picocuries per liter. A measure of radiation in a liter of water.

Public Health Goal. The concentration of a contaminant in drinking water below which no known or anticipated adverse health effects will occur, with an adequate margin of safety. This level is based on estimates that would pose a significant risk to individuals, including the most sensitive subpopulations, consuming water every day over an entire lifetime. PHGs are non-enforceable goals and unique to California. PHGs are established by the Office of Environmental Health Hazard Assessment (OEHHA), a subdivision of the California Environmental Protection Agency.

Reverse Osmosis. A treatment technology that passes water through a semipermeable membrane while under pressure. RO produces water with low levels of salts and other chemicals and concentrated waste brine containing the rejected salts and chemical contaminants that require disposal.

1.6 Authorization

Milner-Villa Consulting is authorized to prepare this PHG Report via City of Oxnard Agreement for Consulting Services, No. 6195-13-PW, dated April 23, 2013.

SECTION 2: WATER DEMAND AND SUPPLY

2.1 Water Demand

The City of Oxnard serves a population of approximately 201,500 through approximately 40,800 service connections. (Oxnard, 2012) In 2010, the City customers used approximately 26,700 acre-feet of water. For additional details regarding the City's water demands see the City's Urban Water Management Plan.(UWMP). (Oxnard, 2012)

2.2 Water Supply

4

The City provides water to its customers from three sources, as shown in. These sources include the following:

- Imported surface water purchased from the Calleguas Municipal Water District (CMWD)
- Groundwater purchased from the United Water Conservation District (UWCD)
- Groundwater pumped by the City from its own wells.
- Groundwater pumped by the City from its own wells and treated using reverse osmosis.

four → Water from these three sources is blended at the City's five blending stations and delivered to customers through the City's distribution system. With the exception of one industrial user, Procter & Gamble, all other City customers receive a blend of groundwater (from either the City or UWCD) and imported surface water. The City blends water from these three sources to achieve an appropriate balance between water quality, quantity, reliability, and cost. For additional details regarding the City's water resources see the City's Urban Water Management Plan. (Oxnard, 2012)

2.3 Water Quality

Quality of the water delivered by the City from the different sources meets all requirements set by the state and federal government. For consistency, the monitoring points chosen for comparison to the PHGs (or the MCLGs) are the same as those found in the Consumer Confidence Reports. These monitoring points represent both the groundwater and surface water supply sources used by the City.

or reverse osmosis - treated groundwater

The City is required to monitor its groundwater wells and the water in the distribution system in compliance with Title 22, Safe Drinking Water Act, compliance criteria and current vulnerability guidelines. CMWD and UWCD each monitor their water quality as well. Constituents and contaminants that require monitoring include microbial contaminants, inorganic compounds, volatile and synthetic organic contaminants, radioactive substances, and general minerals. Monitoring frequency varies depending on the constituent. Typically, monitoring is performed quarterly or annually. Some constituents, such as bacteria, require weekly monitoring while others, such as radionuclides, are monitored every few years. Based on the initial sampling results, if the water is found to be in compliance, a reduction in monitoring frequency is granted for certain constituents. If the source is found to be in violation at any point, the monitoring frequency is increased. Furthermore, monitoring requirements for certain compounds are waived if DPH decides that the source water is not vulnerable to these compounds.

← Add "C" (CDPH)

Data collected from tests are reviewed by DPH for compliance with state and federal standards. Water quality samples are tested at a state-certified commercial laboratory using state-of-the-art analytical instruments. The City administers a testing program for the constituents related to the distribution system that includes testing for bacteria, disinfection residuals and byproducts, and TDS. Weekly bacteriological testing of water in the distribution system is also performed. In compliance with the Lead and Copper Rule, lead and copper concentrations are sampled by the City at the customer's tap because, unlike most other water constituents, lead and copper can increase in concentration within the distribution system and in a customer's home, especially if the home plumbing copper pipes are joined with lead solder.

either or the City's own laboratory

SECTION 3: CONSTITUENTS DETECTED THAT EXCEED A PHG OR A MCLG

The constituents found in the City's drinking water sources, that do not meet the PHGs or the MCLGs, based on compliance monitoring data for the period 2010 to 2012, are listed in Table 3-1. In addition, the City was not required to monitor some constituents that have PHGs during the 2010 to 2012 period. These constituents will be evaluated for PHG compliance in the City's next PHG report due in 2016.

← Comm

**TABLE 3-1
CONSTITUENTS DETECTED THAT EXCEEDED A PHG OR MCLG**

CONSTITUENT (UNITS)	CALEPA MCL	OEHHA PHG	USEPA MCLG	CITY LEVEL
Arsenic (mg/L)	0.010	0.000004	NA	ND-0.004
Copper (mg/L)	1.3	0.3	NA	???
Lead (mg/L)	0.015	0.0002	NA	???
Nickel (mg/L)	0.1	0.012	NA	ND-0.013
Nitrate (mg/L)	45	45	NA	ND-65
Nitrite (mg/L)	1	1	NA	ND-11
N-Nitrosodimethylamine (NDMA) (mg/L)	NA	0.000003	NA	ND-9
Gross Alpha Particles (pCi/L)	15	NA	0	ND-32
Gross Beta Particles (pCi/L)	50	NA	0	ND-5.2
Uranium (pCi/L)	20	0.43	NA	ND-18

Use data from last round?

infert comma

Each of the constituents listed in Table 3-1 is described below, including current state and or federal water quality standards, level observed within City system, potential source of constituent, numerical public health risk associated with the MCL and the PHG or MCLG, category or type of risk to health that could be associated with each constituent, and best available technology for treatment.

3.1 Arsenic

Arsenic MCL for drinking water is 0.010 milligrams per liter (mg/L). The PHG for arsenic is 0.000004 mg/L. All City source waters meet the drinking water MCL, but the average arsenic concentrations in water supplies exceeded the California PHG. The concentration in the UCWD groundwater ranged from non-detect (ND) to 0.0015 mg/L. The Calleguas supply had arsenic levels that range from ND to 0.004 mg/L. The City of Oxnard wells had arsenic levels that ranged from ND to 0.002 mg/L. The most probable source of the arsenic detected in the City water system is erosion of natural deposits.

Health Risk Category: Cancer. Some people who drink water containing arsenic in excess of the MCL over many years may experience skin damage or circulatory system problems, and may have an increased risk of getting cancer. Numeric Health Risk at PHG: Cancer risk. Theoretical 70-year lifetime excess cancer risk is one excess cancer case per million people (expressed as 1×10^{-6}). Numeric Health Risk at California MCL: Cancer risk. Theoretical 70-year lifetime excess cancer risk is one excess cancer case per hundred people (expressed as 2.5×10^{-3}).

The BATs for arsenic removal include reverse osmosis (RO) and ion exchange (IX). Status: RO treatment is currently provided at City wells 32, 33, and 34 which is the BMP for arsenic. Additional details regarding construction of potential City BATs are provided in Section 4.

3.2 Copper

Water taken at the customer's tap must meet the state and federal drinking water Action Level (AL) for copper of 1.3 mg/L. The PHG for copper is 0.3 mg/L. In addition, the California Secondary Maximum Contaminant Level (SMCL) for copper is 1.0 mg/L. The 90th percentile average for copper was 0.87 mg/L. However, copper levels in at-the-tap samples did not exceed the AL. Sources of copper in City water system include internal corrosion of household plumbing systems, discharges from industrial manufacturers, and erosion of natural deposits. Unlike most other water constituents, copper can increase

in concentration within the distribution system and in a customer's home, particularly if the home plumbing consists of copper pipes. For this reason, copper levels are measured "at-the-tap."

Health Risk Category: Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time may experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years may suffer liver or kidney damage. Numeric Health Risk at PHG: Not applicable. According to OEHHA, present methodology does not allow a numerical determination of public health risk for non-carcinogens. Numeric Health Risk at AL: Not applicable. According to OEHHA, present methodology does not allow a numerical determination of public health risk for non-carcinogens.

The BAT for copper removal at the tap is corrosion control in the distribution system, which includes the addition of zinc phosphate as a corrosion inhibitor and seasonal additions of lime to passivate the system. Status: No treatment for copper is currently provided. Additional details regarding construction of potential City BATs are provided in Section 4.

3.3 Lead

The federal drinking water Action Level (AL) for lead is 0.015 mg/L. The PHG for lead is 0.0002 mg/L. The 90th percentile average for lead was 8.2 mg/L. However, lead levels in at-the-tap samples did not exceed the AL. Sources of ~~copper~~ lead in the City water system include internal corrosion of household plumbing systems, discharges from industrial manufacturers, and erosion of natural deposits. Unlike most other water constituents, lead can increase in concentration within the distribution system and in a customer's home, especially if the home plumbing copper pipes are joined with lead solder. For this reason, lead is measured "at-the-tap."

Health Risk Category: Neurotoxicity. Infants and children who drink water containing lead in excess of the action level may experience delays in their physical or mental development. Children may show slight deficits in attention span and learning abilities. Adults who drink this water over many years may develop kidney problems or high blood pressure. Numeric Health Risk at PHG: Not applicable. According to OEHHA, present methodology does not allow a numerical determination of public health risk for non-carcinogens. Numeric Health Risk at AL: Not applicable. According to OEHHA, present methodology does not allow a numerical determination of public health risk for non-carcinogens.

The BAT for lead removal at the tap is corrosion control in the distribution system, which includes the addition of zinc phosphate as a corrosion inhibitor and seasonal additions of lime to passivate the system. Status: No treatment for lead is currently provided. Additional details regarding construction of potential City BATs are provided in Section 4.

3.4 Nickel

Nickel in drinking water has a state MCL of 0.1 mg/L. The PHG for nickel in drinking water is 0.012 mg/L. On average, all City source waters meet the state drinking water MCL and PHG. However, the maximum observed level of nickel in the City water system was 0.013 mg/L. The most probable source of the nickel detected in the City water system is erosion of natural deposits.

Health Risk Category: Developmental toxicity and potential carcinogen. Some people who drink water containing nickel in excess of the MCL over many years may experience liver and heart effects. Numeric Health Risk at PHG: Not applicable. According to OEHHA, present methodology does not allow a numerical determination of public health risk for non-carcinogens. Numeric Health Risk at MCL: Not

applicable. According to OEHHA, present methodology does not allow a numerical determination of public health risk for non-carcinogens.

BATs: The BATs for nickel removal include RO and IX. Status: RO treatment is currently provided at City wells 32, 33, and 34 which is the BMP for nickel. Additional details regarding construction of potential City BATs are provided in Section 4.

3.5 Nitrate

Nitrate (as NO₃) in drinking water has a state MCL of 45 mg/L. The PHG for nitrate (as NO₃) in drinking water is also 45 mg/L. On average, all City source waters meet the state and federal drinking water MCL and PHG. However, the maximum level of nitrate in the City combined wells was 65 mg/L, which exceeds both the MCL and the PHG. The most probable source of the nitrate detected in the City water system is runoff and leaching from fertilizer use, leaching from septic tanks and sewage, and/or erosion of natural deposits.

Health Risk Category: Acute toxicity. Infants below the age of six months who drink water containing nitrate in excess of the MCL may quickly become seriously ill and, if untreated, may die because high nitrate levels can interfere with the capacity of the infant's blood to carry oxygen. Symptoms include shortness of breath and blueness of the skin. High nitrate levels may also affect the oxygen-carrying ability of the blood of pregnant women. Numeric Health Risk at PHG: Not applicable. According to OEHHA, present methodology does not allow a numerical determination of public health risk for non-carcinogens. Numeric Health Risk at MCL: Not applicable. According to OEHHA, present methodology does not allow a numerical determination of public health risk for non-carcinogens.

RO treatment is currently provided at City Wells 32, 33 and 34, which is the BMP for nitrate. Additionally,

The BATs for nitrate removal include RO and IX. Status: ~~The City currently~~ blends source waters so that average nitrate concentrations do not exceed the current MCL. Additional details regarding construction of potential City BATs are provided in Section 4.

3.6 Nitrite

Nitrite (as N) in drinking water has a state MCL of 1 mg/L. The PHG for nitrite (as N) in drinking water is also 1 mg/L. On average, all City source waters meet the state and federal drinking water MCL and PHG. However, in 2010 the maximum level of nitrite in the City combined wells was 11 mg/L, which exceeds both the MCL and the PHG. The most probable source of the nitrite detected in the City water system is runoff and leaching from fertilizer use and/or erosion of natural deposits.

Health Risk Category: Acute toxicity. Infants below the age of six months who drink water containing nitrite in excess of the MCL may become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blueness of the skin. Numeric Health Risk at PHG: Not applicable. According to OEHHA, present methodology does not allow a numerical determination of public health risk for non-carcinogens. Numeric Health Risk at MCL: Not applicable. According to OEHHA, present methodology does not allow a numerical determination of public health risk for non-carcinogens.

RO treatment is currently provided at City Wells 32, 33 and 34, which is the BMP for nitrite. Additionally,

The BATs for nitrite removal include RO and IX. Status: ~~The City currently~~ blends source waters so that average nitrite concentrations do not exceed the current MCL. Additional details regarding construction of potential City BATs are provided in Section 4.

3.7 N-Nitrosodimethylamine

Currently, there is no MCL for N-Nitrosodimethylamine (NDMA) for drinking water. However, California has an Action Level of 0.00001 mg/L. OEHHA PHG for N-Nitrosodimethylamine is 0.000003 mg/L. Average arsenic concentrations in City water supplies exceeded the California PHG, but did not exceed the Action Level. The Calleguas supply had NDMA levels that range from ND to 0.000009 mg/L. NDMA was not detected in the City of Oxnard wells nor the UWCD wells. The most probable source of the NDMA detected in the City water system is formation during the water disinfection treatment process.

Health Risk Category: considered a likely human carcinogen. Numeric Health Risk at PHG: Cancer risk. Theoretical 70-year lifetime excess cancer risk is one excess cancer case per million people (expressed as 1×10^{-6}).

BATs: The BATs for NDMA removal include reverse osmosis (RO) and ion exchange (IX). Status: RO treatment is currently provided at City wells 32, 33, and 34 which is the BMP for arsenic. Additional details regarding construction of potential City BATs are provided in Section 4

3.8 Gross Alpha Particle Activity

Gross alpha particle activity has a state MCL of 15 pico curies per liter (pCi/L). Gross alpha particle activity has no California PHG, so the federal MCLG is zero (0). Average levels of gross alpha particles ranged from non-detect to 32 pCi/L. The most probable source of gross alpha particle activity detected in the City water system is from erosion of naturally occurring minerals.

Health Risk Category: Alpha particle activity is considered to be a human carcinogen. Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer. Numeric Health Risk at MCLG: For an MCLG of zero, the excess cancer risk is zero. Numeric Health Risk at MCL: Not applicable.

BATs for removal of gross alpha particle emitters include RO and IX. Status: RO treatment is currently at wells 32, 33, and 34 and is the BMP for radioactivity. Average concentrations of these radionuclides in City source waters do not exceed the current MCLs.

3.9 Gross Beta Particle Activity

Gross beta particle activity has a state MCL of 50 pCi/L (equivalent to 4 millirem per year). Gross beta particle activity has no California PHG, so the federal MCLG is zero (0). Average levels of gross beta particles ranged from non-detect to 5.2 pCi/L. The most probable source of gross beta particle activity detected in the City water system is from erosion of naturally occurring minerals.

Health Risk Category: Beta particle activity is considered to be a human carcinogen. Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer. Numeric Health Risk at MCLG: For an MCLG of zero, the excess cancer risk is zero. Numeric Health Risk at MCL: approximately 2×10^{-3} for the most potent beta emitter.

BATs for removal of gross beta particle emitters include RO and IX. Status: RO treatment is currently at wells 32, 33, and 34 and is the BMP for radioactivity. Average concentrations of these radionuclides in City source waters do not exceed the current MCLs.

3.10 Uranium

The state MCL for uranium is 20 pCi/L. The PHG for uranium is 0.43 pCi/L. Average uranium concentrations in the City's water supplies ranged from non-detect to 18 pCi/L. The most probable source of uranium detected in the City water system is from erosion of naturally occurring minerals.

Health Risk Category: Carcinogenic/chronic toxicity. Some people who drink water containing uranium in excess of the MCL over many years may have kidney problems or an increased risk of getting cancer. Numerical Health Risk at Proposed PHG: The theoretical 70-year lifetime cancer risk for drinking water with uranium above 0.43 pCi/L is one excess cancer case per million people (i.e., 1×10^{-6}). For an MCLG of zero, the cancer risk is zero. Numerical Health Risk at California MCL: The theoretical 70-year lifetime cancer risk for drinking water with uranium above 20 pCi/L is 5 excess cancer cases per 100,000 people (i.e., 5×10^{-5}).

BATs for removal of uranium include RO and IX. Status: RO treatment is currently at wells 32, 33, and 34 and is the BMP for radioactivity. Average concentrations for uranium in City source waters do not exceed the current MCL of 20 pCi/L.

SECTION 4: TREATMENT OPTIONS AND COSTS

The following section describe the best available treatment technologies and costs for individual treatment facilities at each blending station and centralized treatment for all the blending stations.

4.1 Best Available Technologies

California Health and Safety Section 64447.4 lists the best available technology (BAT), treatment technologies, or other means available for achieving compliance with the MCLs. Reverse osmosis (RO), ion exchange (IX), and corrosion control are the potential BATs available for the constituents of concern listed in Table 3-1.

4.2 Sources of Estimated Costs

Both USEPA and DPH adopt BATs, which represent the best-known methods of reducing contaminant levels to the MCL. Costs can be estimated for such technologies using USEPA cost-estimating methodologies. However, because many PHGs and MCLs are set much lower than the MCL, it is not always possible, nor feasible, to determine what treatment is needed to further reduce a constituent downward to or near the PHG or MCLG, many of which are set at zero. Estimating the costs to reduce a constituent to zero is difficult, if not impossible, because it is not possible to verify by analytical means that the level has been lowered to zero. In some cases, installing treatment to try to further reduce very low levels of one constituent may have adverse effects on other aspects of water quality.

4.3 Preliminary Cost Estimates for Additional City Treatment

RO and IX are listed as BATs for arsenic, nickel, nitrate, nitrate, and radionuclides (gross alpha particle activity, gross beta particle activity, and uranium). RO was selected as the more suitable technology for removing multiple contaminants. Also, the City has several years of experience operating a RO facility. For copper and lead, the BAT is internal corrosion control optimization in the distribution system.

The City has two options for providing treatment to all of its water to meet the PHGs: Option 1 includes separate RO treatment units at Blending Stations Nos. 1, 2, 3, 4 and 5 with an internal corrosion control system at each location. Option 2 includes a centralized RO treatment facility with an internal corrosion

probably no RO @ Stn. 2, as
it serves as back-up to Stn. 1

How was this determined?

Hydraulic model?
Existing B.S. capacities?

control system. Option 1 would have a total installed RO treatment capacity of approximately 163 MGD, capable of producing approximately 130 MGD of treated water and 33 MGD of waste concentrate. Capital cost for Option 1, exclusive of land costs but inclusive of internal corrosion control optimization, would be approximately \$740 million, with annual O&M costs of approximately \$100 million. Total annual costs would be approximately \$170 million (includes capital costs amortized at 7 percent interest over 20 years). This represents a cost of \$6,000 per acre-ft, on the basis of 2007 through 2009 water use (25.5 MGD). Option 1 would increase the average residential water bill to approximately \$1,600 per year (increase of approximately \$76 per month).

Option 2 would include RO treatment at a central facility with a treatment capacity of approximately 75 MGD, capable of producing approximately 60 MGD of treated water and 15 MGD of waste concentrate. Total capital costs for Option 2, exclusive of land and conveyance system costs (pumping and piping) but inclusive of internal corrosion control optimization costs, would be approximately \$320 million, with annual O&M costs of approximately \$50 million. Total annual costs would be approximately \$80 million (includes capital costs amortized at 7 percent interest over 20 years). This represents a cost of over \$2,900 per acre-ft, on the basis of 2007 through 2009 water use. Option 2 would increase the average residential water bill to approximately \$1,100 per year (increase of approximately \$34 per month). A comparison of the two treatment options is summarized in Table 4-1.

Compare to master plan

**TABLE 4-1
ESTIMATED COSTS FOR TREATING CITY WATER TO PHGs/MCLGs**

System Characteristic	Option 1-Treatment at Blending Stations	Option 2 - Central Treatment
Number of Treatment Sites	5	1
Total Treatment Capacity (MGD)	163	75
Total Production Capacity (MGD)	130	60
Brine Production (MGD)	33	15
Annual Average Water Production (MGD)	26	26
Total Capital Costs (\$million)	740 (a)	320 (b)
Annual O&M (\$million per year)	100	50
Total Annual Costs (\$million per year) (c)	170	80
Unit Cost (\$ per acre-ft)	6,000	2,900
Unit Cost (\$ per customer per year)	1,600	1,100

Notes:

- (a) Includes corrosion control, but excludes land costs.
- (b) Includes corrosion control, but excludes land and conveyance costs.
- (c) Capital costs amortized at 7 percent interest over 20 years.

Section 5: Recommendations for Further Action

The City of Oxnard routinely performs and reports compliance monitoring of its water supplies. Any contaminants detected had concentrations far below MCLs on average. Only seven constituents including arsenic, copper, lead, nickel, nitrate, nitrite, NDMA, gross alpha particles, gross beta particles, and uranium had average concentrations at levels above a PHG or MCLG, which are non-enforceable goals.

To approach the level of PHGs and MCLGs for all detected contaminants using currently available technology, the City estimates it would require approximately \$740 million in capital improvements coupled with an increased budget for annual operations and maintenance of approximately \$100 million to

provide RO treatment at each Blending Station (Option 1). Alternatively, a centralized treatment facility (Option 2) could be constructed for approximately \$320 million, not including land acquisition or pumping and conveyance costs, with annual O&M costs of approximately \$50 million. Current average residential water bill is approximately \$690 per year. Additional treatment would be required to further reduce the levels of constituents identified in this report to provide water that meets or exceeds the PHGs. This additional treatment would increase the average residential water bill approximately \$76 per month (Option 1) or \$34 per month (Option 2). Estimated impact of the capital investments and operational costs would increase the average residential water bill to approximately \$1,600 per year (Option 1) or approximately \$1,100 per year (Option 2).

City staff determined that such an investment is not warranted at this time given the low risks associated with the PHGs and MCLs discussed in this report.

REFERENCES

- Association of California Water Agencies. 2013. Suggested Guidelines for Preparation of Required Reports on Public Health Goals to Satisfy Requirements of California Health and Safety Code Section 116470(b).
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- City of Oxnard. 2012. Urban Water Management Plan. Prepared by Kennedy/Jenks Consultants.
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- OEHHA. 2004. Public Health Goal for Chemicals in Drinking Water - Arsenic.
- OEHHA. 2001. Public Health Goal for Nickel in Drinking Water.
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