MARINA COAST WATER DISTRICT

2015 URBAN WATER MANAGEMENT PLAN

Prepared by

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

June 2016

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Table i. Acronyms Used in this Report

Acronym	Description
afy, ac-ft/yr	Acre-feet/year
ccf, hcf	Hundred cubic feet
gpd	Gallons per day
gpcd	Gallons per capita day, or gallons per person per day
mgd	Million gallons per day
BMP	Best management practice
CASGEM	California Statewide Groundwater Elevation Monitoring
CAW, CalAm	California American Water Company
CDPH	California Department of Public Health
CPUC	California Public Utilities Commission
CSUMB	California State University – Monterey Bay
DMM	Demand management measure
DWR	California Department of Water Resources
FORA	Fort Ord Reuse Authority
GSA	Groundwater Sustainability Agency
LAFCO	Local Agency Formation Commission
MCWD, District	Marina Coast Water District
MCWRA	Monterey County Water Resources Agency
MPWMD	Monterey Peninsula Water Management District
MRWPCA	Monterey Regional Water Pollution Control Agency
OMC	Ord Military Community
POM	Presidio of Monterey
PWM GWR	Pure Water Monterey Groundwater Replenishment Project
SB	California Senate Bill
SGMA	Sustainable Groundwater Management Act
SRDP	Salinas River Diversion Project
SVWP	Salinas Valley Water Project
SVGB	Salinas Valley Groundwater Basin
UCMBEST	University of California Monterey Bay Education, Science and Technology Center
UWMP	Urban Water Management Plan

Table ii. Units of Measure Used in this Report

Unit	Equals
1 acre-foot	= 43,560 cubic feet = 325,851 gallons
1 cubic foot	= 7.48 gallons
1 CCF	= 100 cubic feet = 748 gallons
1 MGD	= 1,000,000 gallons/day = 1,120 acre-feet / year

Section 1 - Plan Preparation

1.1 Background

The California Water Code, Division 6, Part 2.6, Section 10610 et. seq. (California Urban Water Management Planning Act) requires any municipal water supplier serving over 3,000 connections or 3,000 acre-feet of water per year (afy) to prepare an urban water management plan.

In adopting the Urban Water Management Planning Act, the state declared as policy that:

a) The management of urban water demand and efficient use of water shall be actively pursued to protect both the people of the state and their water resources;

b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions;

c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

Through the Urban Water Management Planning Act, the state recognizes that water is a limited, though renewable, resource and that a long-term reliable supply of water is essential to protect the economy. It also recognizes that, while conservation and efficient use of water is a statewide concern, planning for this use is best done at the local level. Therefore each supplier is required to submit its plan to the State Department of Water Resources.

In preparing this 2015 Urban Water Management Plan (UWMP), the Marina Coast Water District (MCWD) reviewed its 2005 and 2010 UWMPs, schedule of water conservation best management practices actions and other supply development actions. Redevelopment of the former Fort Ord, greatly delayed by the economic downturn at the time the 2010 UWMP was published, is resuming at a brisk pace. The ongoing multi-year drought of record and associated conservation measures continue to impact supply and demand. These developments are reflected in the updated demand projection tables in this report.

1.2 Public Participation in Plan Development

MCWD has encouraged public participation in the development of this Urban Water Management Plan. Notice of plan development was placed on MCWD's website in May 2016. MCWD's Water Conservation Commission, a public advisory group which helps shape MCWD's conservation programs, was also notified.

On May 23, 2016 the draft UWMP was made available for public inspection at MCWD's offices and at local libraries. A public hearing was held for the plan on June 6, 2016 as noted in the Board resolution reproduced in Appendix A.

1.3 Agency Coordination

The Urban Water Management Planning Act modified under SB 1518, effective January 1, 2003, requires MCWD to notify affected land use jurisdictions of plan development and provide an opportunity to review the draft plan. Requests to participate in development of the plan, and copies of the draft plan were sent to each affected land use jurisdiction, the United States Army, which holds groundwater rights with MCWD's Ord Community Service Area, and the Monterey County Water Resources Agency (MCWRA). A notice of hearing for the draft UWMP was publicly published and sent to all public agencies MCWD serves including the cities of Marina, Monterey, Seaside, and Del Rey Oaks, the U.S. Army, the University of California Monterey Bay Educational, Science and Technology Center (UCMBEST), California State University – Monterey Bay (CSUMB), California State Parks Monterey District and Monterey County (see Table 1.1). Additionally, MCWD notified the Fort Ord Reuse Authority (FORA) the Monterey Regional Water Pollution Control Agency (MRWPCA) and the Monterey Peninsula Water Management District (MPWMD) of the plan's development and availability. Copies of these notices are in Appendix D.

MCWD will provide each of the public agencies listed above and the California State Library with a copy of the final plan. A final copy of the plan and appendices will be posted on the MCWD website: www.mcwd.org.

Table 1.1 Coordination with Appropriate Agencies

Coordinating Agencies	Was sent the initial projections	Provided feedback on initial projections	Was sent a notice of intention to adopt	Was sent a copy of the draft plan	Commented on the draft plan	Attended public hearing	Not involved/ No information
U.S. Army	X		X	X			
City of Marina	X		X	X			
City of Seaside	X		X	X			
City of Del Rey Oaks	X		X	X			
City of Monterey	X	X	X	X			
County of Monterey (RDH)	X		X	X			
CSUMB	X		X	X	X		
UCMBEST	X	X	X	X	X		
State Parks	X		X	X			
FORA	X	X	X	X			
CalAm			X	X			
MCWRA			X	X			
MRWPCA			X	X			
MPWMD			X	X			
General Public						X	

1.4 Plan Adoption

The 2015 Urban Water Management Plan was adopted by the Marina Coast Water District Board of Directors on June 6, 2016. A copy of the resolution approving the plan is included in Appendix A.

1.5 Plan Implementation

The District has adopted policies and procedures that facilitate implementation of the plan, with many of the actions already in progress:

- The District Code of Ordinances includes mandatory prohibitions on water waste, water shortage contingency actions, and enforcement provisions.
- MCWD prepares Water Supply Assessments and Written Verifications of Supply for proposed projects and provides them to the land use jurisdiction.
- MCWD reviews project plans compared to water allocations made by the land use jurisdictions. If a development's proposed connections exceed the allocated supply, MCWD contacts the affected jurisdiction to resolve the discrepancy before allowing the connections in question.
- MCWD monitors new developments to ensure the average water demand does not exceed the water allocation made by the land use jurisdiction, and works with project owners and the affected jurisdiction when water uses habitually exceeds the allocation.
- New water supply projects as reflected in this plan are in the approved Capital Improvements Program. MCWD has entered into formal agreements with Monterey Regional Water Pollution Control Agency to implement the Pure Water Monterey Groundwater Replenishment Project (urban recycled water), as discussed in Section 4.
- MCWD has a full-time water conservation staff that provides customer assistance and manages the rebate programs discussed in Section 6.
- MCWD will be required to implement the Sustainable Groundwater Management Act discussed in Section 4.

Section 2 - System Description

2.1 District Location, History and Operations

The Marina Coast Water District is located on the coast of the Monterey Bay at the northwest end of the Salinas Valley (Figure 2.1). The District was formed in 1960 to provide potable water service to all residential, commercial, industrial, environmental, and fire protection uses in the unincorporated community of Marina. The original boundary was coincident with the Marina Fire District. In 1970, MCWD constructed a wastewater treatment plant and installed a wastewater collection system to serve the community. The City of Marina incorporated in 1975, but MCWD remained separate. In 1991, MCWD constructed a pilot recycled water system, providing tertiary treated wastewater for irrigation of public streetscapes and parks near the wastewater plant. This system operated only until 1992, when the wastewater collection system was connected to the regional wastewater system operated by the Monterey Regional Water Pollution Control Agency. The Marina wastewater treatment plant was retired, and MCWD now provides wastewater collection services only, with treatment performed at the regional plant. In 1996, MCWD constructed a seawater desalination facility to explore the feasibility of extracting seawater through shallow wells along the beach.

2.1.1 Central Marina Service Area

MCWD's current jurisdictional boundary[1] and Central Marina service area encompasses 3.2 square miles, and its sphere of influence encompasses an addition 2.4 square miles (see Figure 2.2). In 1996, MCWD entered into the Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands among MCWD, Monterey County Water Resources Agency (MCWRA), J.G. Armstrong family and RMC Lonestar (now CEMEX), to annex into Monterey County Zones of Benefit 2 and 2A. Under that agreement, MCWD may pump up to 3,020 AFY of Salinas Valley Groundwater for delivery to the Central Marina service area.

The agreement recognized the Armstrong property's right to use the groundwater underlying the property for irrigation but limited the property to 20 afy of potable water. The Armstrong property could withdraw an additional 150 afy of potable water when the property was annexed to Zones 2/2A and an additional 150 afy every two years thereafter, up to a total of 920 afy for potable purposes. Armstrong would be required to pay annexation fees to MCWRA in order to annex to Zones 2/2A. The Armstrong Ranch annexation to Zones 2/2A will be effective when LAFCO approves concurrent annexation to MCWD and the City of Marina.

The agreement limited the CEMEX property to its historic pumping rate of 500 afy of non-potable water. The CEMEX property could be annexed to MCWD upon payment of annexation fees to MCWRA. If CEMEX wanted to receive potable water, then CEMEX would be required

[1] Boundaries per the Local Area Formation Commission (LAFCO) of Monterey County

to pay an additional annexation fee to MCWRA. The CEMEX annexation to Zones 2/2A will take effect when the CEMEX property is annexed to MCWD.

If and when these properties are annexed into MCWD, the District would have the right to pump and deliver those quantities of water to customers within those areas.

2.1.2 Ord Community Service Area

The District also provides potable water delivery and wastewater conveyance services within the boundaries of the former Fort Ord Army Base, known as the Ord Community. The Ord Community lies to the southeast of the City of Marina and the District's Central Marina service area (see Figure 2.2). The Ord Community encompasses a 44 square mile area, of which about 20 square miles is designated for redevelopment, with the balance being parks and open space.

In 1991 the former Army base was downsized and realigned pursuant to the Defense Base Closure and Realignment Act of 1990, with closure in 1994. Portions of the base were retained for use by the U.S. Army under the control of the Presidio of Monterey (Presidio Annex), with the balance being converted to civilian use under the guidance of the Fort Ord Reuse Authority (FORA), a public agency created for this purpose by the State of California. FORA's membership includes the land use jurisdictions encompassed by the former Fort Ord lands and others on the Monterey Peninsula. FORA is governed by a 13-member board with representatives from the following jurisdictions:

- City of Carmel
- City of Del Rey Oaks
- City of Marina
- City of Monterey
- City of Pacific Grove
- City of Salinas
- City of Sand City
- City of Seaside
- County of Monterey

The Base Reuse Plan also included provisions for three institutions of higher learning:

- California State University, Monterey Bay (CSUMB)
- University of California, Monterey Bay Environmental Science and Technology Center (UCMBEST)
- Monterey Peninsula College

MCWD is an ex officio member of FORA.

FORA has the statutory authority to provide for public capital facilities, including but not limited to, water and wastewater facilities and capacity allocations on the former Fort Ord in support of the Base Reuse Plan. However, FORA has a limited statutory life and needed a reliable, long-term entity to provide public services to the area.[2] In May 1997, the FORA Board approved the preparation of a Public Benefit Conveyance (PBC) application to the federal government for transfer of the water distribution and wastewater collection systems to MCWD. In June 1997, the U.S. Army and MCWD signed a caretaker agreement authorizing MCWD to operate the water and wastewater collection systems. In February 1998, MCWD and FORA executed an agreement for water and wastewater facilities, providing for the ownership and operation of water and wastewater facilities acquired from the federal government for the benefit of the Ord Community service area. Title for these systems and the associated water and wastewater rights were transferred from the U.S. Army through FORA to MCWD in 2001, and the systems were subsequently interconnected. In 2007, MCWD combined the water system permits for the Central Marina and Ord Community service areas into a single California Department of Public Health Permit, No. 2710017.

Under the 1993 Agreement between the United States of America and the Monterey County Water Resources Agency concerning Annexation of Fort Ord into Zones 2 and 2A of the Monterey County Water Resources Agency, MCWRA allocated 6,600 afy of potable groundwater to the Army for use on Fort Ord. This amount is about equal to the peak historic water use on Fort Ord. Of this, MCWRA requires that not more than 5,200 afy may be pumped from the 180-Foot and 400-Foot aquifers, to reduce the risk of seawater intrusion. When the U.S. Army conveyed the water and wastewater rights and infrastructure on the former Fort Ord through FORA to MCWD, the Army retained a portion of the groundwater pumping rights and wastewater treatment capacity for the Presidio of Monterey Annex (also called the Ord Military Community). The U.S. Army contracted directly with MCWD to provide municipal water supply and wastewater collection services within the Ord Military Community[3].

The Marina Coast Water District Board does not allocate water supply to projects, but instead advises customer land use jurisdictions as to the current and historic water use within their boundaries and the estimated remaining supply available for new developments. Within the Ord Community, the FORA Board has managed the allocation of Salinas Valley groundwater

[2] Pursuant to Government Code 67700, FORA will sunset on June 30, 2020. The water and wastewater facilities and rights were deeded from FORA to MCWD in 2001, so no change in ownership of those facilities and rights will occur when FORA sunsets.

[3] Potable Water Utility Service for the Presidio of Monterey Annex, Contract DABT67-98-C-1001, dated 5/12/00, and Wastewater Collection Utility Service for the Presidio of Monterey Annex, Contract DABT67-98-C-1002, dated 5/12/00.

supplies among the seven land use jurisdictions, and they, in turn, sub-allocate water supply to specific projects. Water allocations are discussed in a technical memorandum in Appendix F.

Service to the Ord Community outside the Presidio of Monterey Annex is provided under the 1998 agreement with FORA. In 2006, the Local Agency Formation Commission (LAFCO) of Monterey County published the Municipal Services Review of the Monterey Peninsula Area, and stated that MCWD may pursue annexation of the Ord Community. At some indeterminate date, MCWD may consider applying to LAFCO formal annexation of all or portions of the former Fort Ord into the District. No formal decision has yet been made by the MCWD Board.

Figure 2.1 MCWD Vicinity Map

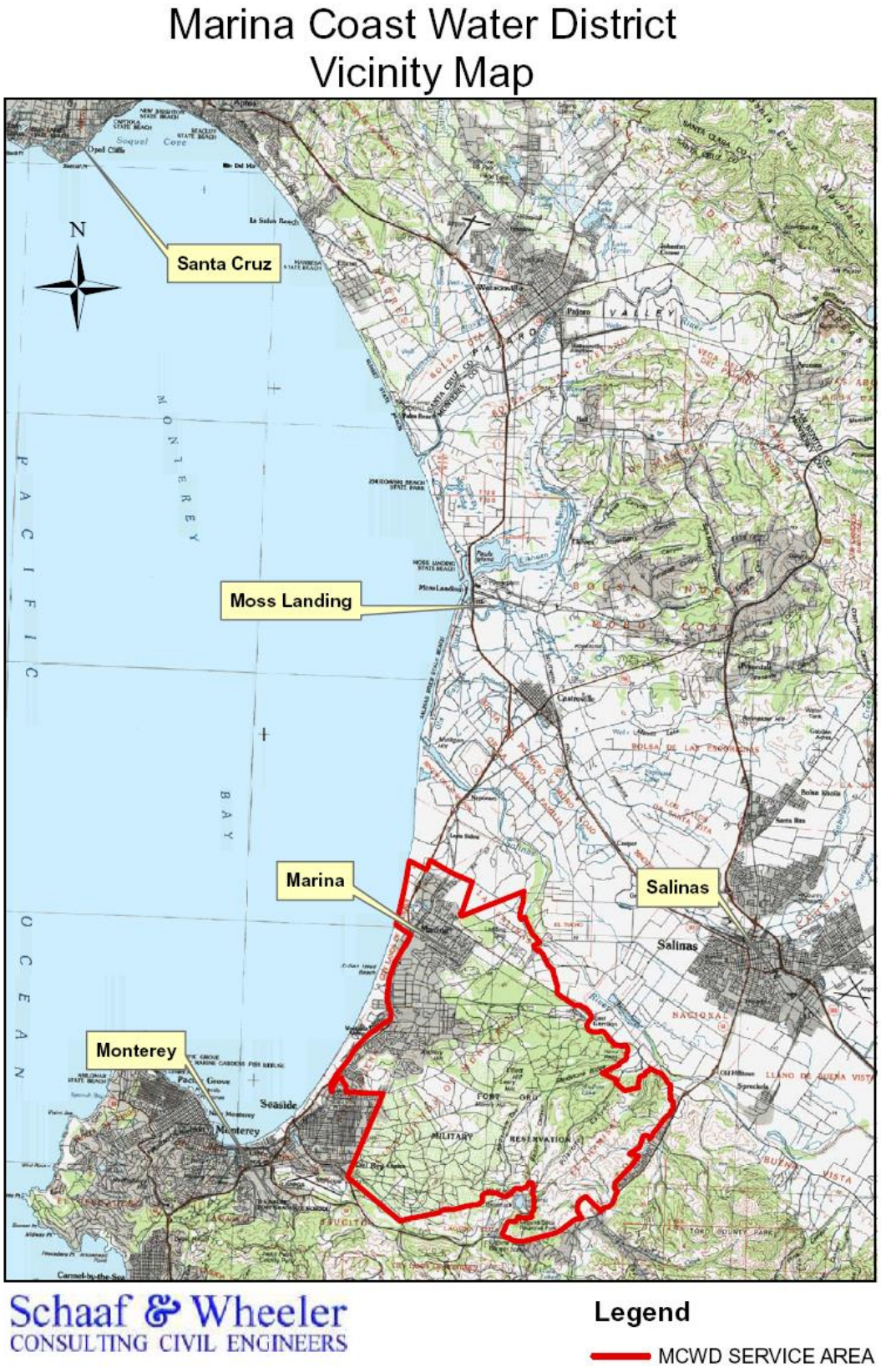
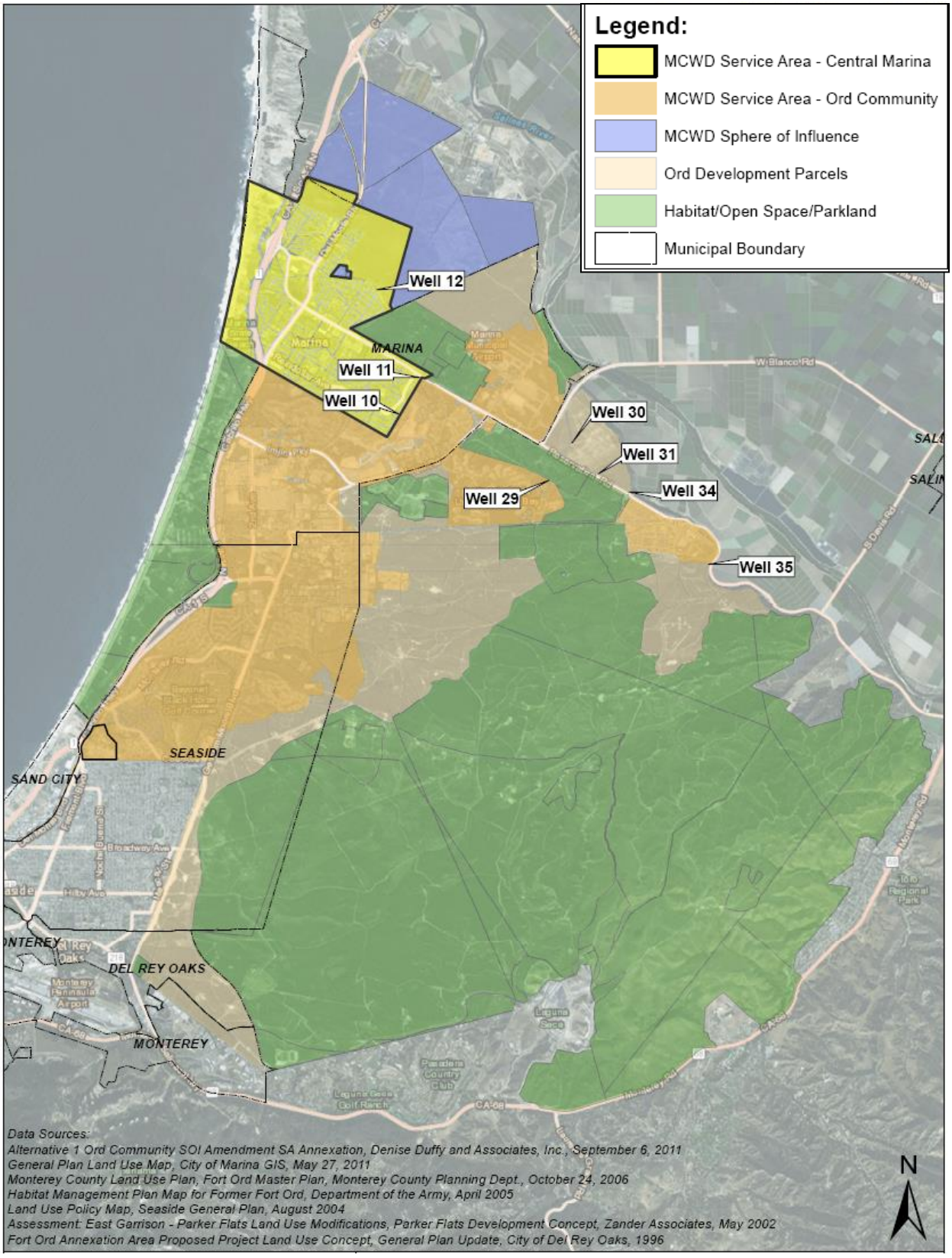


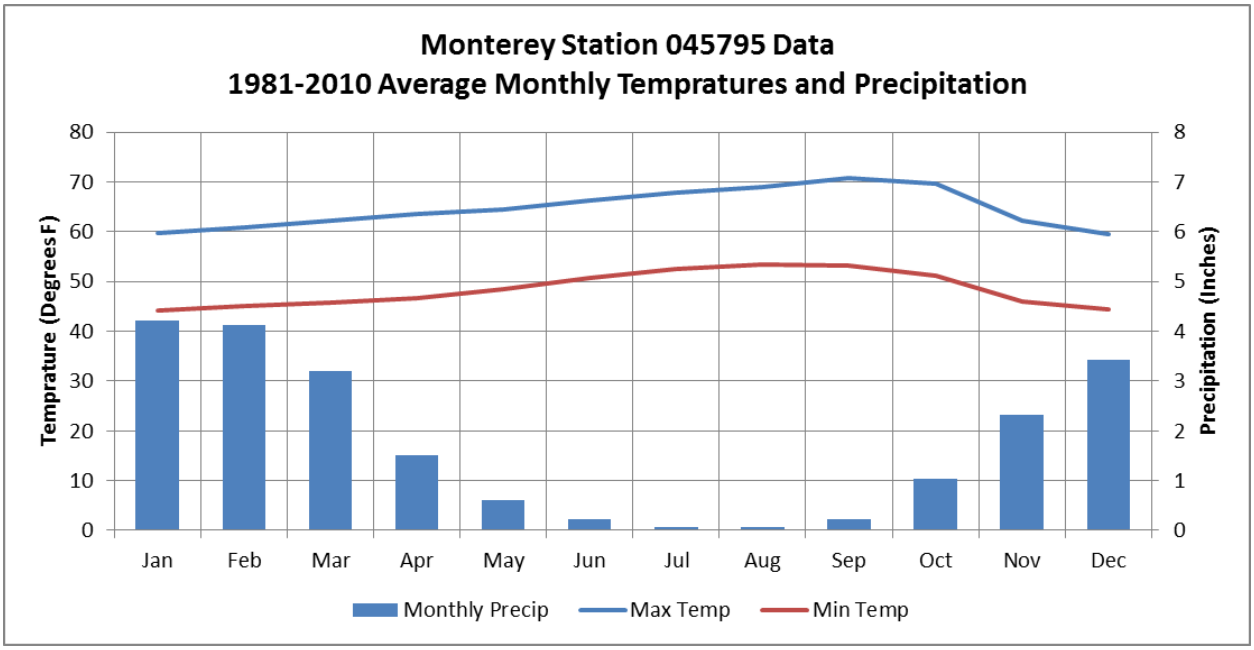
Figure 2.2 MCWD Service Areas



2.2 Climate

Marina has a cool summer-type Mediterranean climate with precipitation falling exclusively as rain, predominantly between October and May. The nearest official weather station is seven miles away in Monterey, California. Average climate data from this station from 1981-2010 is depicted in Figure 2.3.

Figure 2.3 Local Climate Averages



The moderating effect of the Pacific Ocean and its relatively cold water allows for mild summertime temperatures in Marina. This effect suppresses summertime irrigation demands for landscaping as compared to inland locations, especially when advection fog moves in from the Pacific Ocean, enveloping the immediate coast in response to heating inland. Unlike inland locations, summertime temperatures generally peak in September rather than July.

Peak summertime temperatures usually occur when high pressure is resident in the Great Basin (Santa Ana conditions), allowing for an offshore flow and compressional heating of the atmosphere.

Precipitation averages about 20 inches annually. Table 2.1 depicts monthly average evapotranspiration (ETo) at the nearest California Irrigation Management Information System (CIMIS) stations. Note that the ETo rate increases the more distant from the coast.

Table 2.1 Local Evapotranspiration Rates (inches)

City	CIMIS Station ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual ETo
Castroville	19	1.6	2.0	3.1	4.2	4.8	4.8	4.1	3.6	3.2	2.7	1.8	1.5	37.2
Salinas North	116	1.6	1.9	3.1	4.1	4.7	4.9	4.5	4.2	3.5	2.8	1.8	1.5	38.6
Pacific Grove	193	1.6	2.0	3.1	4.2	4.8	4.8	4.1	3.6	3.2	2.7	1.8	1.5	37.2
Laguna Seca	229	1.6	2.0	3.1	4.2	4.8	4.8	4.1	3.6	3.2	2.7	1.8	1.5	37.2

2.2.1 Current Statewide Drought

Since 2013, the state has been experiencing below-average rainfall, with 2013 being the driest year on record. Governor Brown declared a drought state of emergency in January 2014, and the State Water Resources Control Board (SWRCB) implemented a series of emergency regulations mandating water conservation measures and urban water use reporting. The District called for voluntary water conservation in January 2014, and implemented Stage 3 mandatory water use restrictions in November 2014. The Stage 3 restrictions included mandatory reductions in landscape watering, which significantly reduced water use. MCWD was assigned a water conservation goal of 12% compared to year 2013 water use (4,431 AF). The District achieved significant savings, reducing demand by 10% in 2014 (4,026 AF) and 27% in 2015 (3,228 AF).

2.3 Population

MCWD historically served only the City of Marina, which incorporated in 1975. In 1997, the District began providing service to the Ord Community under agreement with FORA. Table 2.2 depicts MCWD's growth from 1960 to 2010. Between 1920 and 1970, population increases for Marina were quite steady. From 1970 to 1980 the population nearly tripled. Growth rates moderated in the 1980s, with the population reaching a near-term peak in 1990. With the closure of Fort Ord as a military base in 1994, the City and MCWD experienced a decline in population (the on-base population was estimated at 31,000 in 1990). A longer discussion of historic population can be found in Appendix E.

Table 2.2 Historic Population

Service Area	1960	1970	1980	1990	2000	2010
City of Marina*	3,310	8,343	20,647	26,436	18,927	19,718
Ord Community**					14,886	10,762
Total	3,310	8,343	20,647	26,436	33,813	30,480

Source: U.S. Census Bureau
*City of Marina totals include the portion of the city within the Ord Community
**Ord Community totals excludes the City of Marina portion. Ord population shown only for period served by MCWD.

With redevelopment of the Fort Ord lands, population growth is expected to return, with population projections shown in Table 2.3. These projections include redevelopment of the Ord Community, including portions of the cities of Seaside, Del Rey Oaks, and Monterey, campuses for the University of California and California State University, and lands remaining under the jurisdiction of the County of Monterey within the boundaries of the former Fort Ord.

Table 2.3 Projected Population

Service Area	2010*	2015	2020	2025	2030	2035
Central Marina	13,646	17,703	18,770	24,504	25,620	26,736
Ord Community	16,834	14,672	21,694	32,144	39,015	43,425
Total	30,480	32,375	40,464	56,648	64,635	70,161

* 2010 population aggregated by service area.

The above projections are based upon the existing population plus the anticipated occupancy of new residential development, as projected in Section 3. A more detailed discussion of the methodology can be found in Appendices C and E. The projected totals for 2035 are approximately equal to the 2030 projection in the 2010 Urban Water Management Plan (about 70,000 persons). The projection in the 2010 UWMP assumed that a recent housing project in the Ord Military Community would provide additional homes, but instead the housing authority moved personnel from older housing stock into the new units as part of a phased upgrade plan. Additionally, some of the projected redevelopment has been deferred beyond the 20-year planning horizon of this report due to the economic recession from December 2007 to June 2009.

2.4 Demographic Factors

Three industries have historically driven the local economy: agriculture in the Salinas Valley, tourism along the Pacific Coast and the Monterey Peninsula, and the military with bases at Fort Ord, the Presidio of Monterey and the Naval Postgraduate School. The closure of Fort Ord in 1994 greatly reduced the military contribution, but that has been replaced by higher education on the former Fort Ord. California State University – Monterey Bay is the largest campus within the Ord Community, which also contains the smaller campuses of Monterey College of Law and Monterey Peninsula College. The University of California Monterey Bay Education, Science and Technology Center is located at the Marina Municpal Airport.

Tourism and recreation are significant portions of MCWD's current and future customer base. Central Marina currently has hotels and visitor-serving commercial sectors, as well as Marina State Beach. The Ord Community has Fort Ord Dunes State Park and approximately 24 square miles of open space managed by the Bureau of Land Management. BLM's regional office is now located in Marina. The existing Bayonet and Blackhorse Golf Courses are being developed by the City of Seaside into a resort community. The City of Del Rey Oaks plans to add a golf resort to their portion of the Ord Community.

Within the District's service area there is a high percentage of residential use (95% of customer accounts, 85% of total water sales). This high percentage results in a low per capita water demand. Residents have historically worked on the former Fort Ord, as well in the nearby urban centers of Monterey, Salinas and the more distant San Jose/Silicon Valley; or in the agricultural industry of rural Monterey County. Employment on the former Fort Ord has not yet recovered to pre-closure levels.

As Central Marina and the Ord Community are redeveloped, a mix of commercial, office and light industrial uses are proposed, which will increase the average per capita water demand rate. Industries with high water-use are anticipated to be constrained due to the limited water supply available to the jurisdictions.

Section 3 - Water Demands

3.1 Current Water Use

Marina Coast Water District has two separate service areas: Central Marina, which encompasses the portion of the City of Marina outside the former Fort Ord, and the Ord Community. All water service connections in the Central Marina area are metered. Fort Ord did not have individual service meters while it was an active military base, and portions of the housing areas within the Ord Community remain without meters. Water meters continue to be installed in areas of the Ord Community in phases by the various property owners. Water use by customer type for calendar year 2010 is shown in Table 3.1, and year 2015 is shown in Table 3.2. The water use in the Ord Community without meters was estimated at 0.33 acre-feet/year per residential connection in 2010, and reduced to 0.28 acre-feet/year per residential connection in 2015.

Table 3.1 Water Deliveries in 2010

	Central Marina		Ord Community		Ord Non-metered		Total
Water use sectors	**# Cust.**	**Ac-Ft**	**# Cust.**	**Ac-Ft**	**# Cust.**	**Ac-Ft**	**Ac-Ft**
Single family	3,305	829.8	1,011	200.8	601	210.0	1,240.6
Multi-family	251	505.0	1,385	592.4	600	200.0	1,297.4
Commercial	234	232.5	70	95.4			327.9
Industrial	0	0.0	3	6.7			6.7
Institutional/governmental	25	67.9	136	214.6			282.6
Landscape	72	107.9	105	705.6			813.5
Agriculture	0	NA	0	NA			0.0
Other	0	NA	0	NA			0.0
Total	3,887	1,743.2	2,710	1,815.5	1,201.0	410.0	3,968.7

Table 3.2 Water Deliveries in 2015

	Central Marina		Ord Community		Ord Non-metered		Total
Water Use Sectors	**# Cust.**	**Ac-Ft**	**# Cust.**	**Ac-Ft**	**# Cust.**	**Ac-Ft**	**Ac-Ft**
Single family	3280	741.0	1334	227.1			968.1
Multi-family	261	399.2	1636	505.6	735	205.8	1110.6
Commercial	232	231.7	75	95.3			327.0
Industrial	0	0.0	2	0.2			0.2
Institutional/governmental	25	41.7	136	114.2			155.9
Landscape	18	242.9	139	389.3			632.3
Agriculture	0	NA	0	NA			0
Other	0	NA	0	NA			0
Total	3816	1656.6	3322	1331.7	735	205.8	3,194.1

MCWD began providing water for irrigation of Bayonet/Blackhorse Golf Courses in Seaside in 2010. Prior to this, the City of Seaside provided irrigation supply from wells within the Seaside Groundwater Basin, which was the source of supply for this demand at the time the former Fort Ord closed. In 2015, the City transitioned back to using Seaside Groundwater Basin wells for the golf courses, which is reflected in the reduced usage for landscape irrigation.

3.2 Projected Water Demands

3.2.1 Central Marina Service Area Demands

In October 2000, the City of Marina adopted a comprehensive General Plan laying out future land use over a 20-year planning horizon to the year 2020. The General Plan was amended in 2005 and 2006, and the housing element was updated in 2009. In the adopted General Plan the City's population (anticipated to expand into current spheres of influence) is projected to be 38,800 by 2020[4]. This includes increases in both Central Marina and the City's portion of the Ord Community. The economic recession from December 2007 to June 2009 delayed much of this redevelopment by five to ten years. The Marina General Plan estimates water consumption for the City will average 7,720 afy based upon the projected land uses and population. It also includes portions of the Ord Community that are either within the City limits or within its adopted and proposed spheres of influence. These areas include portions of the UCMBEST Center and CSUMB, which have specific allocations of water under the FORA Reuse Plan.

Even with the resumption of development in recent years, the City's average per-capita water demand is low, and has been trending downward for the last ten years due to aggressive water conservation programs. Per capita demands will continue to be affected by conservation efforts, future land use changes as well as increases in density of housing use (persons/unit). Marina has had a historically low job-to-housing balance ratio due, in part, to the fact that the City has been a bedroom community to the former Fort Ord, Monterey and San Jose areas. The General Plan will allow for greater balance in jobs-to-housing. This trend will tend to increase the average per capita water consumption, as more commercial and industrial activity will occur relative to population. If housing density increases, this would have an opposite influence, suppressing per capita demand.

In the 2005 UWMP, the City of Marina forecasted planned development through 2025. These plans within the City of Marina include 276 single-family homes, 1,050 hotel rooms and 102,000 square feet of retail uses. In 2010, the City drafted a Downtown Vitalization Specific Plan, for which a water supply assessment was also drafted. Under this plan, the City projects the addition of 380,000 square-feet of commercial space and 2,400 new multi-family dwelling units, targeting a pedestrian friendly downtown. Although it has not yet been formally adopted, the draft specific plan was reflected in the 2010 UWMP and in this update.

There are two significant undeveloped areas north of Central Marina: Armstrong Ranch and the CEMEX (formerly RMC Lonestar) Property. MCWD currently serves minor domestic uses on the Armstrong Ranch, and in the future, MCWD will serve municipal and industrial demands as they may occur on these properties. Current agricultural demands are met via private wells.

[4] This population includes an estimated 3,400 residents of the existing Fredericks-Schoonover Park, a housing area in Marina's sphere of influence.

Marina's General Plan accounts for growth within portions of the Armstrong Ranch, which was annexed into the City in 2007. The Marina Station Development Project on the Armstrong Ranch comprises 1,464 residential units and about 856,000 square feet of retail, office and light industrial space. Development density will be constrained by the available water supply as provided under the 1996 Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands, annexing the Armstrong Ranch lands to the MCWRA Zones 2 and 2A. According to that agreement, the Salinas Basin groundwater allocation for the Armstrong Ranch is 920 afy. This is further discussed in Section 4.

Similarly, the CEMEX Property, for which there are no near-term development plans, has a groundwater allocation under the annexation agreement of 500 afy, corresponding to current estimated use on the property. If CEMEX were to be developed for visitor-serving or recreation uses, it could only occur after the year 2020 pursuant to the Urban Growth Boundary Initiative. Planned development in these areas is included in the subtotals discussed in Section 3.2.4.

3.2.2 Ord Community Service Area Demands

The Fort Ord Reuse Authority developed the Draft Fort Ord Reuse Plan in 1996, and released the associated Draft Environmental Impact Report (DEIR). This plan and DEIR assessed the impacts of planned reuse on the environment, including demand for utility services. The DEIR noted that at full build out, some 40 to 60 years in the future, water demands for Ord Community lands would be 18,262 afy, or 11,662 afy in excess of current potable water supply now available to the lands under groundwater allocations from the Salinas Valley groundwater basin. Recognizing that plans did not exist to accommodate this excess demand, it was concluded in the DEIR that the Reuse Plan had a significant unavoidable environmental impact. It was also stated that the 7,000 acre-foot water use on the former Fort Ord lands (6,600 Salinas Basin, 400 Seaside Basin) provided sufficient supplies to allow for expected redevelopment through 2015.

In adopting a Final EIR, Reuse Plan and Master Resolution governing redevelopment of former Fort Ord lands to civilian uses, FORA agreed to constrain redevelopment on former Fort Ord lands by limiting the number of new residential housing units to 6,000 until the Reuse Plan is reassessed, and additional water supplies identified. FORA further recognized that the supply of Salinas Basin groundwater available to serve redevelopment, or reuse, projects is limited by a 1993 agreement with the MCWRA. Under that 1993 Agreement, 6,600 afy of Salinas Basin groundwater is available for use on Ord Community lands. Since the closure of Fort Ord, that total quantity of water has been allocated between FORA and the U.S. Army, with FORA sub-allocating its share of this Salinas Basin groundwater supply to its member land-use jurisdictions to support redevelopment projects within the Ord Community. FORA manages its groundwater allocation and sub-allocations through a Development and Resource Management Plan that annually tracks water use.

One of the mitigation measures in the Final EIR, Reuse Plan and Master is the development of 2,400 afy of additional water supply for the Ord Community, which will allow development beyond the initial 6,000 dwelling units. FORA is working with MCWD to develop this supply under the Regional Urban Water Augmentation Project, which is discussed in Section 4.4.1.

In 2015, as part of this UWMP update, MCWD surveyed land use jurisdictions responsible for development decisions within the Ord Community Service area for their development plans through the year 2035. Where used in this plan, individual responses from the Cities of Marina, Seaside, Del Rey Oaks and Monterey, the County of Monterey, CSUMB, UCMBEST, and the U.S. Army are detailed in Appendix C. These responses were correlated with the City of Marina General Plan Housing Element, City of Seaside General Plan Housing Element, the City of Seaside's Implementation Plan, 2007-2012, Seaside-Fort Ord Redevelopment Project Area, and the Monterey County General Plan.

3.2.3 Demand Projection Methodology

The primary method for developing future water demands in this Plan is through consolidating information from approved Specific Plans and the associated Water Supply Assessments, when available. Water supply assessments have been prepared per the requirements of SB 610 for the developments listed in Table 3.3. These documents contain detailed estimates of water demand for residential, commercial and irrigation use type, and are used as the basis of water supply allocation by the land use jurisdiction to the projects.

Table 3.3 Water Supply Assessments Used to Update the UWMP[5]

Development	Jurisdiction	Year Prepared
Cypress Knolls	Marina	2006
Dunes on Monterey Bay (University Villages)	Marina	2007
Marina Heights	Marina	2003
Marina Station	Marina	2006
Resort at Del Rey Oaks	Del Rey Oaks	2007
Seaside Main Gate	Seaside	2007
East Garrison	Monterey County	2004
Monterey Downs	Seaside/County	2012

Within the last five years, only one water supply assessment was completed. The Monterey Downs Project includes a residential development, the Monterey Horse Park and the California Central Coast Veterans Cemetery. The project is located in both the City of Seaside and unincorporated Monterey County, and would be annexed into the City of Seaside. In the 2010 UWMP, the Horse Park portion of the project was included in the Monterey County growth

[5] The WSAs did not conclude that there was existing water supply available for every project. Shortfalls were identified in the WSAs for Cypress Knolls and Monterey Downs.

projection, but has been moved under the City of Seaside for this update. Also in the last five years, the Whispering Oaks Business Park Specific Plan was adopted by Monterey County in 2011, but later rescinded in 2012. That project was included in the 2010 UWMP, but has been removed from this update.

Where water supply assessments do not exist, land-use development forecasts were used. California State University Monterey Bay and the U.S. Army – Ord Military Community projections are from their approved master plans. The projections provided by the other land use jurisdictions for areas outside specific plan areas reflect planning estimates based on the approved General Plans. The anticipated additional land uses in various categories were tabulated by year, and demands were calculated by applying water use factors for those uses. These factors (see Table 3.4) are general in nature and ultimate actual use can vary significantly, especially among the broad categories of commercial and industrial uses.

Table 3.4 Water Demand Factors Applied in the UWMP

Land Use	Units	Multiplier
SF Residential (< 5 units / acre)	dwelling unit	0.5
SF Residential (5-8 units / acre)	dwelling unit	0.33
Residential (8-15 units / acre)	dwelling unit	0.25
Multifamily (> 15 units / acre)	dwelling unit	0.25
Hotel, Motel and Timeshares	unit	0.17
Retail	square-feet	0.00021
Restaurant*	square-feet	0.00145
Office / R&D	square-feet	0.000135
Other Commercial	square-feet	0.0003
Light Industrial	square-feet	0.00015
Governmental	square-feet	0.0003
Institutional	square-feet	0.0003
Schools (K-12)*	square-feet	0.0003
Higher Education*	square-feet	0.0003
Landscape (non-turf)	acre	2.1
Landscape (turf)	acre	2.5

* typical per seat factor converted to square-feet

Some of the above usage factors were compared to actual usage for year 2015:

- Hotel/motel: 0.11 AFY/room (interior demand)
- Multifamily Residential (Apartments): 0.12 AFY/DU (interior only)
- Multifamily Residential (Duplex/Fourplex): 0.24 AFY/DU

Note that mandatory drought restrictions were in place that year, and overall water use was 25% below average. Detailed customer data from 2012 was not available to evaluate usage in an average weather year. The differences are significant enough to merit reevaluating the hotel/motel and apartment demand factors using data from a non-drought year. Single-family housing areas were also evaluated, but due to the mix of housing types and landscapes within a given subdivision (the smallest level of aggregated data), typical usage factors could not be determined.

On-campus uses specific to CSUMB were evaluated as well, using ten years of meter data compiled by the campus facilities staff. The following demand factors are recommended for use in evaluating the next campus master plan update, which is currently being drafted:

- Dormitory: 0.031 AFY/bed
- Academic Building: 0.00002 AFY/sq-ft
- Dining Hall: 0.00016 AFY/sq-ft
- Gymnasium: 0.00005 AFY/sq-ft

MCWD modified its District Code in August 2005 to require additional conservation measures in the construction of new development and remodeling. These new requirements include incorporation of hot water recirculation systems and high efficiency clothes washers for residential units, and zero-use urinals for non-residential construction. These residential requirements are expected to achieve the State water conservation goal of an average indoor per capita consumption rate of 55 gallons per person per day.

It has been observed that during the development process and in the preparation of water supply assessments and written verifications of supply, more sophisticated forecasts are made by disaggregating indoor and outdoor uses when the proposed land use data is sufficient to support such analyses. These assessments generally result in lower projected water demands than the general methods used in this Plan. In a long-term forecast such as provided here, the precise types of uses and plot plans that will be constructed and maintained over the long term cannot be precisely known. As development proceeds, market forces will dictate the specific land uses within non-residential zones and refined plans for residential uses will allow for more detailed consumption projections. The Urban Water Management Planning Act recognizes this fundamental nature of demand forecasting in requiring updated Urban Water Management Plans every five years. In the case of MCWD, where development in the next twenty years is expected to dramatically change the nature of the community and more than double its population and water demands, these periodic updates will be critical to MCWD's ability to plan for future demands as they are identified.

3.2.4 Summary of Demand Projections

The projected 20-year water demands in this Urban Water Management Plan are roughly equal to the 20-year projection in the 2010 UWMP (both approximately 12,200 acre-feet/year). This lack of increase is due to a number of factors.

First and foremost, the economic downturn that began in 2007 severely slowed the pace of redevelopment in the Ord Community. Five residential developments were under construction in 2007: East Garrison in Monterey County, Dunes on Monterey Bay and Marina Heights in Marina, Seaside Resort in Seaside and Doe Park (formerly Stilwell) Housing in the Ord Military Community. Of these, only Doe Park was completed. Two affordable housing (apartment) projects within East Garrison and the Dunes on Monterey Bay were completed in 2014. East Garrison resumed construction in 2013, and has completed 70 market-rate units. The Dunes on Monterey Bay did not add market rate units until 2015. The other developments are not expected to resume construction until 2016 at the earliest. Similarly, most of the other development within the Ord Community has been delayed. Full reuse of the former Fort Ord may not occur until 2035 or later, versus the previous prediction of full reuse before 2020. Deferred projects include the golf resort near the Marina Airport, the Seaside east housing developments, and 2 million square-feet of projected office/research and development space within UCMBEST.

The second factor responsible for the lower water demand projection is the erroneous assumption in the 2010 UWMP that the Doe Park development would provide additional dwelling units within the Ord Community. As stated earlier in this report, that project provided replacement housing units for the Ord Military Community, and residents were moved from older housing stock into the new development.

The third factor contributing to reduced water demand is that housing within CSUMB and portions of the Ord Military Community are now metered, and data shows that actual water use declines with the installation of meters and transition to commodity-rate billing. The 2010 UWMP assumed that unmetered units used 0.33 AFY/dwelling unit. In this update, that factor has been revised down to 0.28 AFY/dwelling unit. The District is working with the Ord Military Community to install meters on the remaining occupied units. Additionally, several housing areas including Preston Park, CSUMB East Campus Housing and the older portions of the Ord Military Community have undergone water conservation retrofits within the last five years, replacing toilets with high-efficiency 1.28 gallon/flush units, shower heads with 2.0 gpm heads, and faucets with 1.5 gpm aerators.

Table 3.5 depicts the total expected growth in demands from all currently expected development and population growth through 2035. Due to the current drought restrictions, demand values reflect the actual year 2012 demands (typical year for rainfall) plus the actual/projected

development within each jurisdiction. Included for comparison are the existing allocations of groundwater supply by jurisdiction, which are explained in Section 4.

It should be noted that in 2010, the District began providing Salinas Valley groundwater for golf course and landscape irrigation at Seaside Resort (Bayonet and Blackhorse Golf Courses). This demand had been previously met with Seaside basin groundwater, from existing wells owned by the City of Seaside. In 2015, the City resumed operation of their Seaside Groundwater Basin wells. As discussed in Section 4, the District plans to supply recycled water for urban landscape irrigation in the near future. This early conversion to MCWD supply from the City's allocation of Salinas Valley groundwater allowed the City of Seaside to reduce their pumping from the Seaside Groundwater Basin, as part of the Seaside Basin Watermaster's management plan.

As discussed in Section 2.1.2, the 6,600 AFY of existing groundwater pumping rights for the Ord Community have been allocated among the land use jurisdictions. Table 3.5 shows that the current groundwater allocation for Central Marina is sufficient to meet projected demands through 2035. The City of Marina's Downtown Vitalization Specific Plan is projected for build-out by the year 2045, and will require the development of additional water supply for that service area by 2040. The Ord Community is projected to exceed its current Salinas Valley groundwater allocation by the year 2025. This is discussed in detail in Section 4, Water Supply.

Table 3.5 Water Demand by Jurisdiction (afy)

	Jurisdiction	2012*	2015**	2020	2025	2030	2035	Notes	Allocation
Ord	U.S. Army	620	633	663	825	825	825		1,577
	CSUMB	404	404	442	632	755	779		1,035
	Del Rey Oaks	0	0	186	551	551	551		243
	City of Monterey	0	0	0	130	130	130		65
	County of Monterey	8	52	377	539	539	539		720
	UCMBEST	3	3	94	299	515	515	3	230
	City of Seaside	657	657	997	1,852	2,447	2,876	1	1,012
	State Parks and Rec.	0	0	12	18	20	25		45
	Marina Ord Comm.	264	285	901	1,572	1,702	1,704	2	1,625
	Assumed Line Loss	395	348	348	348	348	348		348
Marina	Armstrong Ranch	0	0	0	680	680	680		920
	Cemex	0	0	0	0	0	500		500
	Marina Central	1,823	1,823	2,184	2,491	2,606	2,725		3,020
	Subtotal - Ord	2,351	2,382	4,021	6,766	7,833	8,293	4	6,900
	Subtotal - Marina	1,823	1,823	2,184	3,171	3,286	3,905		4,440
	Total	4,174	4,204	6,205	9,937	11,119	12,197		11,340

*Actual demands from calendar year 2012 used to represent a non-drought year.

** Projected 2015 demands. Actual use was lower due to mandatory drought restrictions

1 Seaside includes Seaside Resort Golf Course (250 AFY temp use).

2. Allocation includes 1325 AFY groundwater and 300 AFY existing pilot desalination plant

3. MBEST commented that they may develop up to 230 AFY as soon as the market allows it.

4. Allocation includes 6600 AFY groundwater and 300 AFY existing pilot desalination plant.

3.3 Projected Water Demand by Sector

Table 3.6 shows the projected water consumption by use sector in the period 2015-2035.

Table 3.6 Water Demand by Sector (afy)

Water use sectors	Existing*	2015	2020	2025	2030	2035
Single family	1,037	1,101	1,717	2,728	3,128	3,432
Multi-family	1,378	1,391	1,658	2,351	2,734	2,971
Commercial	289	289	1,220	2,339	2,616	2,645
Industrial	3	3	24	214	250	750
Institutional/Governmental	231	231	276	501	503	508
Landscape	753	755	875	1,337	1,420	1,423
Agriculture	0	0	0	0	0	0
Other (provision for loss)	482	435	435	467	467	467
Total	4,174	4,204	6,205	9,937	11,119	12,197

* Actual demands for 2012

Note: Provision for loss includes both Central Marina and the Ord Community

3.3.1 Lower Income Housing Demands

The Water Code requires water suppliers to document water demand projections for lower income single family and multi-family housing within their UWMPs. Lower income is defined in Section 50079.5 of the Health and Safety Code as less than 50% of the area median household income.

The housing elements of the general and specific plans for the land use jurisdictions served by MCWD all include Affordable Housing requirements. Affordable Housing, as required in the California Redevelopment Law and specified within Monterey County, includes four income levels: very low, low, moderate and workforce. Only the first two levels, very low income and low income, must be reported separately in the UWMP. The following discussion explains how the current and projected lower income housing water demands were estimated.

The City of Marina has a significant amount of existing affordable housing. Within the Central Marina Service Area, the City has 258 low and very low income multi-family units, and 2 single-family ownership units. Within the Ord Community, the City has 650 affordable housing units, of which 517 are low and very low income. All of the existing units are multi-family duplex, four-plex or apartments. The City requires new residential development of twenty or more units to include a minimum of 20% affordable housing. Within that 20%, 6% must be very low income, 8% must be low income and 6% must be moderate income. Based on approved specific plans, lower income projections for the City include 102 town homes and 23 single family homes in Marina Station, 116 apartments in Cypress Knolls, 53 duplexes in the Dunes on Monterey Bay, and 205 apartments within Marina Station. Of the 200 proposed dwelling units within the TAMC Transit Oriented Design development, 14% or 28 units are assumed to be lower income.

Infill development is projected for Central Marina, but it is unknown if any projects will exceed the 20 dwelling threshold requiring an affordable component.

The City of Seaside currently has 51 affordable multi-family units in the Ord Community, of which 41 are designated for lower income households. Within the current housing projection, the City will require 25 affordable single family units in Seaside Resort to be affordable, and 72 affordable units elsewhere in the Ord Community. Of this, 68 units, or 67%, are assumed to be lower income. Within the Monterey Downs Specific Plan there are 256 affordable apartment units planned, with 128 assumed to be for lower income.

Monterey County requires 20% of all residential development or redevelopment to be affordable housing. Within that 20%, 6% must be very low income, 8% must be low income and 6% must be moderate income. Workforce housing requirements are then assigned on a project by project basis. Within the East Garrison Development, 196 low and very low income housing units are identified in the project specific plan, greatly exceeding the minimum requirement.

UCMBEST is expected to develop 330 multi-family and 200 single family units within the Ord Community, in unincorporated areas within the Marina Sphere of Influence. For these projects, we have assumed that 14% of the units will be restricted for lower incomes, as required by both the County and City.

The City of Del Rey Oaks has not yet developed its portion of the Ord Community. In the Environmental Impact Report for the Resort at Del Rey Oaks, 138 affordable apartment units (multi-family) are identified. We estimate 97 of those units will be lower income, based on the Monterey County ratio of 70% of affordable being low or very low income.

Two institutional entities within the Ord Community, CSUMB and the U.S. Army, provide housing within the Ord Community for their students and employees. Because the assignment of this housing is governed by different rules than the California Redevelopment Law, we have assumed it to be workforce housing (and not low income) for the purpose of this report.

For projects with an approved Water Supply Assessment (WSA), the projected water demands were based upon the demand rates for the applicable type of housing unit in the WSA. For existing housing units and all other projected development, demands were estimated using the multi-family residential demand factor of 0.25 acre-feet per year. The time-phasing of lower income housing was assumed to match that of the larger development. The results are shown in Table 3.7.

Table 3.7 Lower Income Housing Demands (afy)

	Jurisdiction	Existing*	2015	2020	2025	2030	2035
Ord	U.S. Army		0	0	0	0	0
	CSUMB		0	0	0	0	0
	Del Rey Oaks		0	0	24	24	24
	City of Monterey		0	0	0	0	0
	County of Monterey		6	17	36	36	36
	UCMBEST		0	3	14	26	26
	City of Seaside	10	10	28	48	107	168
	State Parks and Rec.		0	0	0	0	0
	Marina Ord Comm.	129	129	290	452	596	736
Marina	Armstrong Ranch		0	0	55	55	55
	Cemex		0	0	0	0	0
	Marina Central	65	65	85	105	119	133

Subtotal - Ord	151	157	350	601	833	1,034
Subtotal - Marina	65	65	85	160	174	188
Total	216	222	435	761	1,007	1,221

*Existing (2012) demands estimated at 0.25 AFY/EDU

3.4 Water Conservation Baseline and Targets

The Water Conservation Act of 2009 (SB X7-7) requires each retail urban water supplier to establish baseline daily per capita water demand and water conservation targets, as outlined in California's 20x2020 Water Conservation Plan. The plan establishes a statewide goal of reducing average per capita water demand by twenty percent by the year 2020. The State estimated the average statewide demand for 2005 at 192 gallons per capita day (gpcd), with a statewide conservation target of 154 gpcd in 2020. An interim statewide target of 173 gpcd (ten percent reduction) by the year 2015 was also established. In the 20x2020 Plan, regional baselines and targets were also established.

The Marina Coast Water District is in the Central Coast Hydrologic Region. The regional baseline water demand was estimated to be 154 gpcd, the lowest in the state. The regional conservation targets are 139 gpcd by the year 2015, and 123 gpcd by the year 2020.

The Department of Water Resources (DWR) published detailed methodologies as to how baselines and targets are to be calculated. Baseline per capita water demands are calculated as a ten-year average water consumption rate for a period ending not earlier than December 31, 2004 and not later than December 31, 2010. This is calculated as gross annual water demand divided by average annual population. Water suppliers may choose any consecutive ten-year period within the allowable window, corresponding to calendar years, fiscal years or other standard reporting intervals. Once established, the baseline demand must be used for compliance reporting in 2015 and 2020, and the same reporting year (calendar, fiscal, etc.) must be used. If

the system-wide average water demand is 100 gpcd or less, the water supplier is not required to achieve additional conservation savings.

Historic water demand for MCWD is shown in Table 3.8. Annual population values were estimated using estimates from the California Department of Finance, as detailed in Appendix E. As can be seen, MCWD's average water demand has been at or below the regional 2020 target of 123 gpcd since 2009. The 10-year averages ending in 2004 and 2005 were not considered in selecting a baseline period, due to the large population changes in the mid-1990's when Fort Ord closed. Of the remaining periods, MCWD selected the period ending December 31, 2008, for calculating the baseline water demand, which is 135.3 gpcd. This period includes years with and without construction activity in the Ord Community, and is considered a more representative median than the lower value in later years.

Per Section 10608.20 of the Water Code, there are four methodologies available for calculating compliance targets, as listed below. A more detailed discussion of the methods and analysis are included at Appendix E.

- Method 1: Eighty percent of the water supplier's baseline per capita water use.
- Method 2: Per capita daily water use estimated using the sum of performance standards applied to indoor residential use; landscaped area water use; and commercial, industrial, and institutional uses.
- Method 3: Ninety-five percent of the applicable state hydrologic region target as stated in the State's April 30, 2009, draft 20x2020 Water Conservation Plan.
- Method 4: Estimated water savings by using conservation Best Management Practices (BMP) as prescribed by the California Urban Water Conservation Council (CUWCC). This method is similar to Method 2, but requires more detailed information on current water uses.

Table 3.8 Per Capita Water Demands

	Central Marina			Ord Community			System-Wide		
Year	Marina Pop.	Annual Water Use (MG)	Daily Per Capita (gals)	Ord Pop.	Annual Water Use (MG)	Daily Per Capita (gals)	Daily Per Capita (gals)	10-year Average (gpcd)	5-year Average (gpcd)
1995	16,685	657.6	108	5,000	913.0	500	198		
1996	16,465	690.5	115	7,796	811.4	285	170		
1997	16,586	699.6	116	10,593	838.7	217	155		
1998	17,128	606.1	97	11,119	679.7	167	125		
1999	17,331	730.4	115	11,327	780.6	189	144		
2000	17,574	749.4	117	11,563	772.7	183	143		
2001	17,715	744.6	115	11,701	726.0	170	137		
2002	17,781	751.5	116	11,867	696.2	161	134		
2003	17,805	712.1	110	11,808	698.7	162	131		
2004	17,876	737.0	113	11,757	789.5	184	141	147.8	
2005	17,672	715.1	111	11,805	649.6	151	127	140.6	
2006	17,509	582.1	91	11,645	817.5	192	132	136.8	
2007	17,493	528.6	83	11,572	958.3	227	140	135.3	134.0
2008	17,706	597.4	92	11,827	739.3	171	124	135.3	132.7
2009	17,852	639.2	98	11,891	676.5	156	121	132.9	128.7
2010	18,057	568.1	86	12,043	778.5	177	123	130.9	127.9

* Annual population values based upon CA Dept. of Finance estimates.

Water suppliers may select any of the four methods to calculate compliance water demand targets. They must also calculate the maximum allowable target, and select the lower of the two. The alternate maximum method consists of calculating a five-year average water consumption rate for a period ending not earlier than December 31, 2007 and not later than December 31, 2010. The 2020 conservation target must be less than or equal to 95% of the 5-year base daily per capita usage. MCWD selected the period ending December 31, 2008, for its 5-year baseline period, as reflected in Table 3.9.

Water demands within the District are already significantly below the state and regional averages due to aggressive water conservation practices. Therefore, MCWD has elected to use Method 3, which is a goal of 5% below the regional target. As seen in Table 3.9, the maximum allowable target is greater than the Method 3 target, so the Method 3 target may be used. The interim (2015) target is the average of the 10-year baseline and the 2020 target.

Table 3.9 District Baseline and Targets

Description	Year	Amount
Baseline Water Demand	2008	135 gpcd
Maximum Target (95% of 5-year baseline)	2020	126 gpcd
Method 3 Target (95% of Regional Target)	2020	117 gpcd
Interim Target	2015	125 gpcd

The District's actual 2015 water use was 3,228 AFY, and the population is estimated at 32,375 persons, resulting in an average 89 gpcd. This is well below the required conservation target, and was achieved by implementing District-wide conservation practices in addition to the statewide drought restrictions on urban water use. It is anticipated that water use will increase after the drought restrictions are removed, but that the average usage rate will remain below the conservation target due to the significant number of water conservation retrofits achieved in the past three years.

3.4.1 Plan for Meeting Urban Conservation Targets

Table 3.10 shows the total projected water demands for the District, the projected population and the resulting per capita water demands. The average demand per person increases in the future due to the projected non-residential development. Population projections are based upon the projected housing developments and the associated persons per unit in the respective specific plans. Where specific plans do not exist, the average persons per unit for the City or census tract were used. Population tables are included in Appendix C.

Table 3.10 Projected Per Capita Water Demands

	2015*	2020	2025	2030	2035
Projected Demand (AFY)	4,204	6,205	9,937	11,119	12,197
Projected Recycled Water (AFY)**	0	600	1,359	1,359	1,359
Net Potable Demand (AFY)	4,204	5,605	8,578	9,760	10,838
Projected Population	32,375	40,464	56,648	64,635	70,161
Projected demand per person (gpcd)	115.9	123.7	135.2	134.8	137.9
Water Use Targets (gpcd)	125	117	117	117	117
Projected Target Exceedance (gpcd)	None	6.7	18.2	17.8	20.9

* 2015 demands adjusted to non-drought condition. Actual use was 3,228 AFY.
**Based on RUWAP Recycled Water Project Schedule

To reduce per capita demands below the compliance targets, the District has four strategies, in addition to the on-going water conservation efforts:

- First, MCWD is implementing an urban recycled water project for landscape irrigation.
- Second, the design standards for new construction exceed the State's plumbing code requirements.
- Third, the remaining non-metered customers will be metered and have a financial incentive to reduce water use.

- Finally, the phased redevelopment of the Ord Community will include the replacement of a significant amount of water distribution system that is over 50-years old. These replacements should reduce system water losses but are not reflected in this table.

As seen in the bottom line of Table 3.10, these measures will come close to achieving the conservation targets, but additional effort will be required. The District's water production and per capita demand rate have steadily declined over the past fifteen years due to water conservation retrofits, consumer education and replacement of existing housing stock. During the period 1999-2014, the District's service area population increased by 2,667 persons, but the overall water use declined by an average 41 acre-feet per year. The per capita usage rate declined by an average 2.0 gpcd/year over that period (see Figure 3.1 and Table 3.11). Assuming that decline continues, the District will continue to meet their demand target.

Figure 3.1 Population and Per Capita Usage

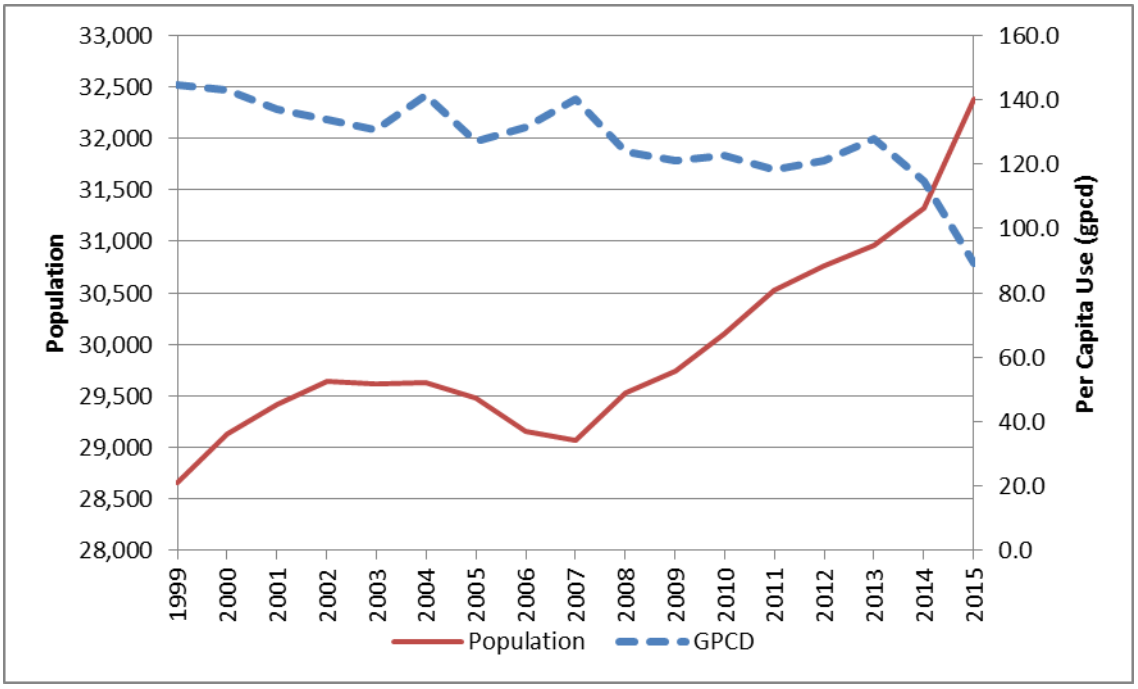


Table 3.11 Per Capita Water Demand, 2011-2015

Year	Population	Water Use (AF)	Average gpcd
2011	30,521	4,047	118.4
2012	30,767	4,174	121.1
2013	30,961	4,431	127.8
2014	31,325	4,026	114.7
2015	32,375	3,228	89.0

The use of recycled water to serve non-potable demands is a conservation measure recognized in the 20x2020 State Conservation Plan. As detailed in Section 4, MCWD included recycled water in the Regional Urban Water Augmentation Program, completed the project design and CEQA documents in 2007. On April 8, 2016, MCWD and MRWPCA entered into the Pure Water Delivery and Supply Project Agreement, wherein the District will receive up to 1,427 AFY of advanced treated recycled water from the Pure Water Monterey Project. As shown in Table 3.10, the project is expected to provide 600afy in 2020, and increase to 1,359 afy in 2025.

MCWD has adopted design guidelines and standards that exceed the state plumbing code requirements for water conserving fixtures, codified in Section 3.36 of the District Ordinances. New residential development is required to include high-efficiency toilets, hot-water recirculation systems, and when provided, clothes washers must meet high efficiency standards. Non-residential development must include waterless urinals and HET or dual-flush toilets. All landscapes over 2,500 square-feet are separately metered and must meet the requirements of the State's model water-efficient landscape ordinance.

The final jurisdiction on Fort Ord with non-metered accounts is the Ord Military Community. The Army is removing and replacing their older housing areas by phases, and when complete, all housing units will be metered. The housing manager began working with the District to install meters in the older housing areas in 2014. Sixty-six of the existing units have been metered, but over 900 units remain. Of those, about 730 units are occupied.

Section 4 - Water Supplies

4.1 Water Sources and Water Rights

The sole source of water supply for the Marina Coast Water District is the Salinas Valley Groundwater Basin, described in detail in Section 4.2. Both Central Marina and the Ord Community Service areas have relied upon this source of supply since the areas were initially developed. The District owns and operates its production wells, and does not purchase wholesale water supply.

As discussed in Section 2, under the 1993 and 1996 Annexation Agreements for Zones 2 and 2A, MCWRA granted groundwater allocations of 6,600 AFY to the Army and 3,020 AFY to MCWD The 1996 Annexation Agreement recognized the Armstrong Ranch's right to use groundwater for overlying irrigation uses and allocated 20 AFY of potable water. The agreement reserved an additional 900 AFY of potable water (920 AFY total) for the Armstrong Ranch subject to annexation to Zones 2/2A and to MCWD and the City of Marina. The agreement also recognized and limited the CEMEX property to its historic use of 500 AFY of non-potable water use. Zone 2 was formed as a benefit and assessment zone to finance the construction and operation of Lake Nacimiento, and Zone 2A was formed as a benefit and assessment zone to finance the construction and operation of Lake San Antonio.

The 1996 Annexation Agreement established "a contractual process for the exercise of regulatory authority by the MCWRA under Water Code App. Section 52-22, and the MCWD under Water Code section 31048."[6] The purpose of the 1996 Annexation Agreement was to "establish a groundwater mitigation framework for the lands to be annexed, and will provide money from the Marina area for the MCWRA's Basin Management Plan and for Zones 2 and 2A, for management protection of the groundwater resource in the Salinas Valley Groundwater Basin and to reduce seawater intrusion."[7]

MCWRA's Backstop: Under the 1993 and 1996 Annexation Agreements, MCWRA has "allocated groundwater pumping rights" to Fort Ord and to the Marina Area Lands. Under the Annexation Agreements, MCWRA has agreed to backstop those groundwater allocations in the event that the actual available groundwater is not physically or legally available (e.g., because of a Salinas Valley Groundwater Basin adjudication).

Section 4.g of the 1993 Annexation Agreement states:

> g. Should future litigation, regulation or other unforeseen action diminish the total water supply available to the MCWRA, the MCWRA agrees that it will consult

[6] MCWRA Negative Declaration re: Annexation of Marina Area Lands to Zones 2/2A, dated February 21, 1996, at p. 4.

[7] Purpose section, Attachment B-1 to Initial Study for Marina Lands Annexation.

with the Fort Ord/POM Annex Commander. Also, in such an event, the MCWRA agrees to exercise its powers in a manner such that Fort Ord/POM Annex/RC shall be no more severely affected in a proportional sense than the other members of the Zone.

Section 8.1 of the 1996 Annexation Agreement states:

> 8.1. Equal treatment by MCWRA and MCWD. If future litigation, regulation or other unforeseen action diminishes the total water supply available to MCWRA, MCWRA agrees that it will exercise its powers so that MCWD, Armstrong and Lonestar shall be no **more** severely affected in a proportional sense than other lawful users of water from the Zones, based on the right before the imposition of any uniform and generally applicable restrictions as described in paragraph 8.2 to use at least the quantities of water from the Basin described in paragraphs 5.1., 6.9., and 7.2. MCWRA shall not at any time seek to impose greater restrictions on water use from the Basin by MCWD, Armstrong or Lonestar than are imposed on users either supplying water for use or using water within the city limits of the City of Salinas. MCWD, Armstrong and Lonestar will comply with any basin-wide or area-wide water allocation plans established by the MCWRA which indude MCWD, Armstrong and Lonestar, and which do not impose on use of water on the lands described in Exhibits "B", "C", and "D" restrictions greater than are imposed on users either supplying water for use or using water within the City of Salinas, and which satisfy the requirements of paragraph 5.2 of this Agreement and Framework.

Table 4.1 provides the recent groundwater production for the Central Marina and Ord Community service areas. Note that well capacity is not included in the table. MCWD has redundant well pumping capacity to accommodate maintenance shut-downs during peak days.

Table 4.1 Groundwater Production (acre-feet)

Year	Central Marina	Ord Community	Total (ac-ft)
2006	1,786	2,509	4,295
2007	1,622	2,941	4,563
2008	1,833	2,269	4,102
2009	1,962	2,076	4,038
2010	1,744	2,389	4,133
2011	1,698	2,348	4,047
2012	1,814	2,360	4,174
2013	1,467	2,964	4,431
2014	1,619	2,407	4,026
2015	1,420	1,808	3,228

The three water production wells in the Central Marina service area and one in the Ord Community are in the Deep Aquifer, as described in Section 4.2.1. MCWD is currently the only significant user of the Deep Aquifer, although there are Deep Aquifer wells serving the

Monterey Dunes Colony (120 homes) and the Armstrong Ranch. The other four wells in the Ord Community service area are in the 400-foot Aquifer.

Additionally, MCWD has a seawater desalination plant located at its main office adjacent to Marina State Beach. This facility is not currently in use, but has a design capacity of 300 acre-feet per year. It is discussed in Section 4.4.

Energy use by the District is provided in Appendix I.

4.2 Groundwater

4.2.1 Salinas Valley Groundwater Basin

Potable water for MCWD's Marina and Ord Community service areas comes from wells developed in the Salinas Valley Groundwater Basin.[8] This groundwater basin underlies the Salinas Valley from San Ardo to the coast of Monterey Bay. DWR Bulletin 118: California's Groundwater places Marina and Fort Ord in the Seaside Sub-basin (3-4.08, see Figure 4.1) of the Salinas Valley Groundwater Basin. The Bulletin 118 subbasins within the Salinas Valley Groundwater Basin (SVGB) are listed in Table 4.2.

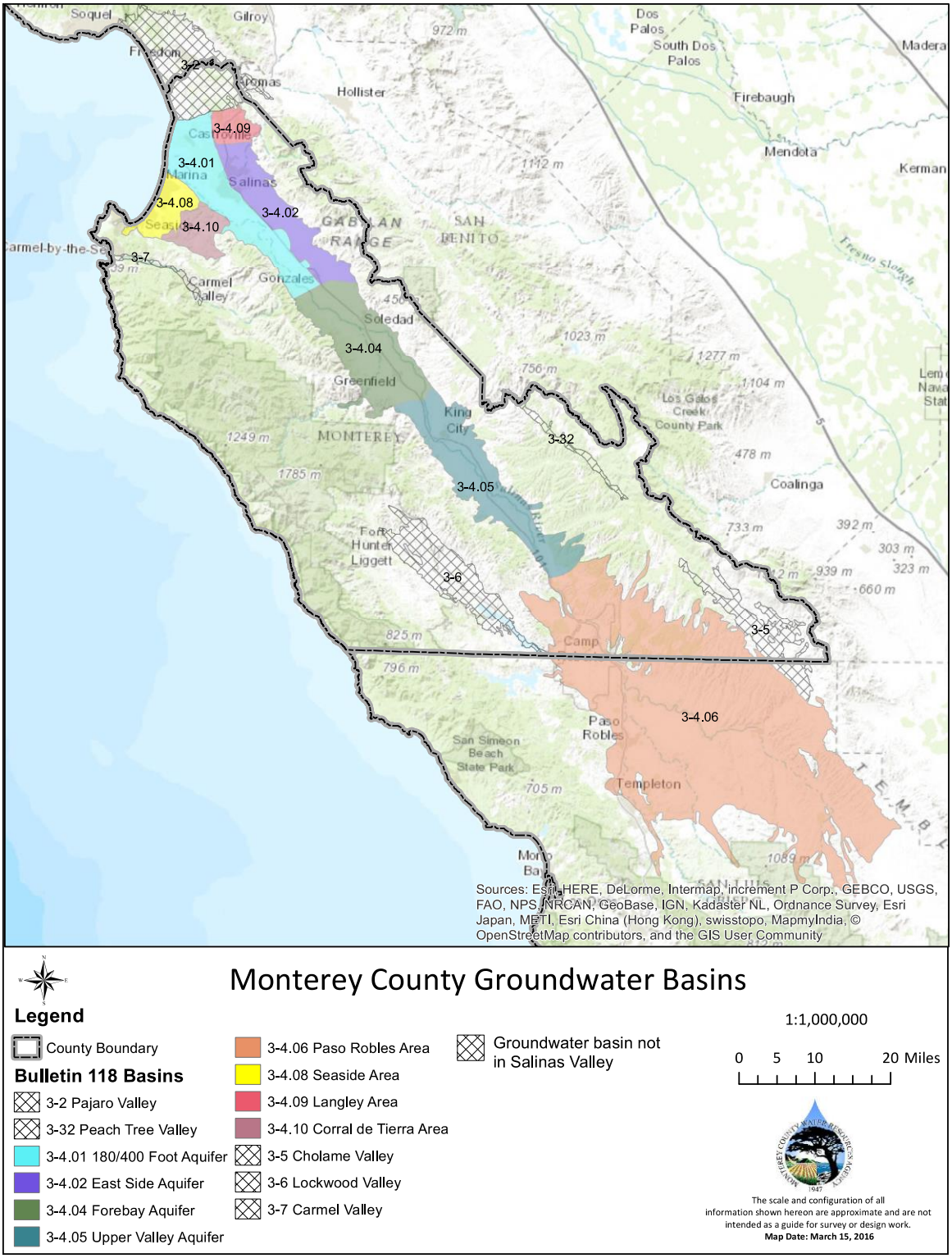
Table 4.2 DWR Subbasins within the Salinas Valley Groundwater Basin

DWR Basin /Subbasin	DWR Designation	Area (acres)	DWR Ranking	DWR CASGEM Overall Ranking
3-4	Salinas Valley Groundwater Basin			
3-4-01	180/400 Foot Aquifer	84,400	High/Critical*	24.0
3-4-02	East Side Aquifer	57,500	High	27.0
3-4-04	Forebay Aquifer	94,100	Medium	17.3
3-4-05	Upper Valley Aquifer	98,200	Medium	15.5
3-4-06	Paso Robles (Monterey & SLO Counties)	597,000	High/Critical*	23.3
3-4-08	Seaside	25,900	Medium	20.8
3-4-09	Langley	15,400	Medium	18.8
3-4-10	Corral De Tierra	15,400	Medium	15.0

*Designated as a Critically Overdrafted Subbasin by DWR January 2016

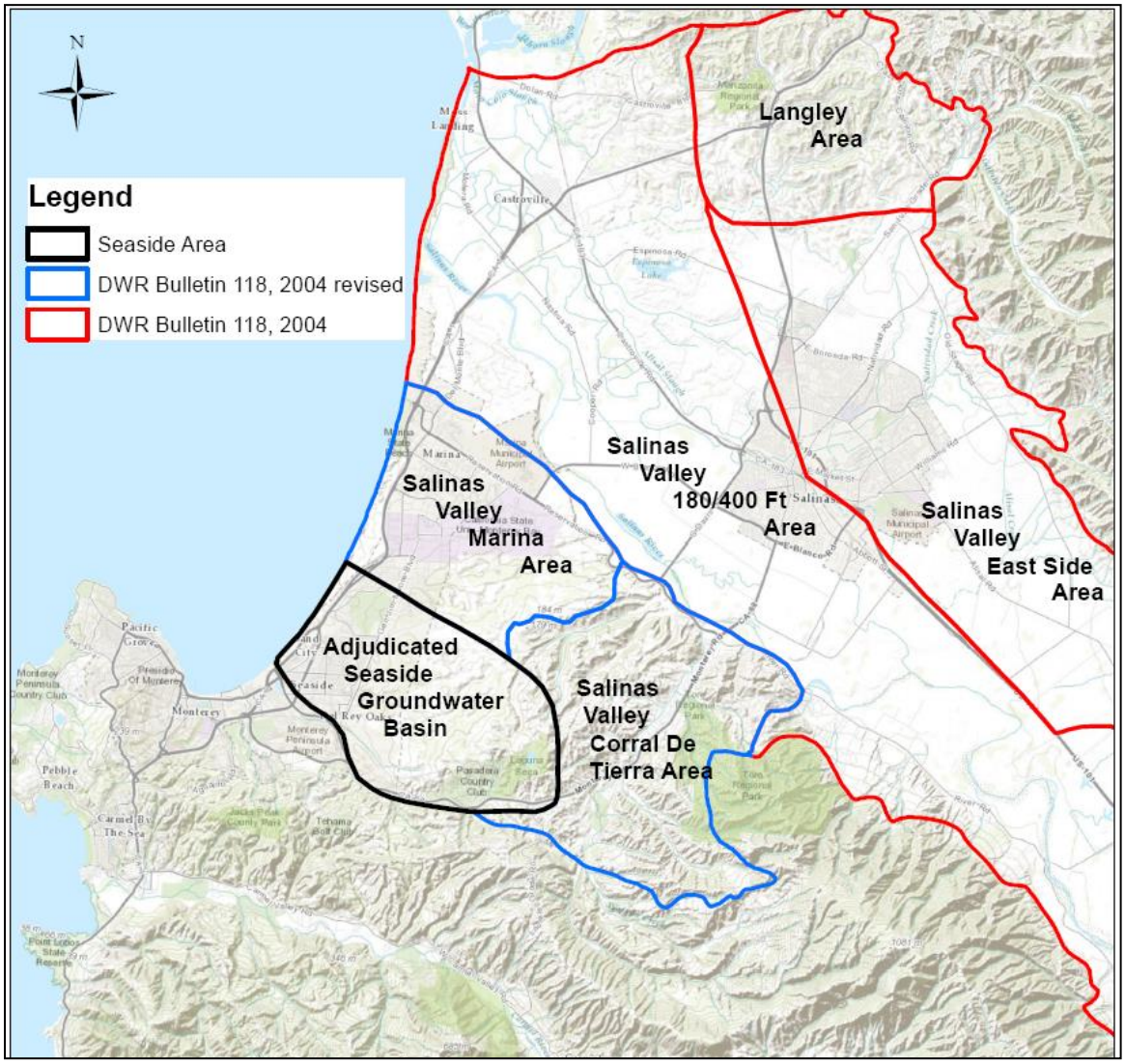
[8] See Figure 2.2 for well locations.

Figure 4.1 Monterey County Groundwater Basins and Sub-Basins[9]



[9] Boundaries from Figure 29, Central Coast Hydrogeologic Region, DWR Bulletin 118, Page 138

Figure 4.2 Proposed Modification to the Seaside Sub-Basin[10]



Separate hydrologic studies of the Marina[11] and Seaside areas have shown that the northern portion of the Seaside Sub-basin is connected to the 180/400 Foot Aquifer Subbasin, while the southern portion is separate from the Salinas Valley due to a ridge in the water-bearing formations. The southern portion of the Seaside Sub-Basin was formally adjudicated in 2006 and is managed by the Seaside Basin Watermaster. A basin boundary modification request has been submitted to DWR to adjust the boundaries of the Seaside and Coral de Tierra Subbasins to match the adjudicated boundary (see Figure 4.2) and to make the Adjudicated Seaside

[10] Plate 1: Regional Map Showing Location of Seaside Groundwater Basin Boundary, from the Basin Boundary Modification Application, prepared by MPWMD, 2016

[11] Harding ESE, Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina

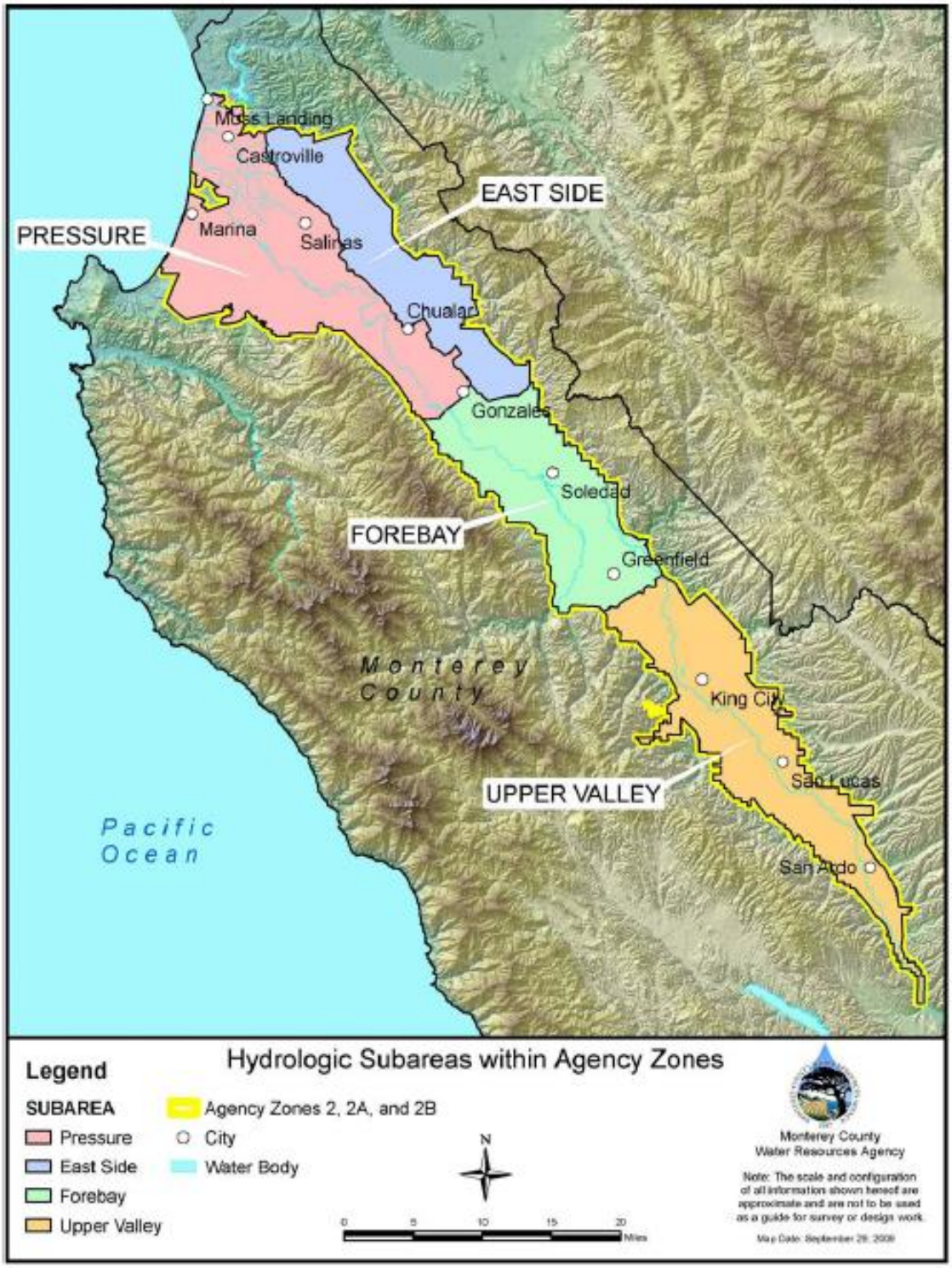
Groundwater Basin a new groundwater basin separate and apart from the Salinas Valley Groundwater Basin. The remaining northern portion of the Seaside Area Subbasin would be designated as the Marina Area Subbasin of the SVGB. A separate basin boundary modification has been submitted to DWR to modify the Paso Robles Area Subbasin. Because that modification does not affect MCWD's service area, it is not discussed in this report.

MCWRA reports and documents generally use Zone 2/2A designated subareas, Pressure, East Side, Forebay and Upper Valley (Figure 4.3), which do not conform with the DWR Bulletin 118 Subbasins. The Pressure Subarea combines three DWR Bulletin 118 Subbasins: the 180/400 Foot Aquifer Subbasin, a portion of the Seaside Subbasin, and a portion the Corral De Tierra Subbasin. The southwest corner of the Pressure Subarea boundary is coincident with the annexation boundary for Fort Ord. Similarly, MCWRA's Forebay Subarea combines the DWR Bulletin 118 Forebay and Arroyo Seco Subareas. To avoid confusion over subbasin and subarea designations and references, this Plan shall use the DWR Bulletin 118 subbasin designations, except that it shall refer to the area north of the adjudicated Seaside Groundwater Basin but within the SVGB as the "Marina Area" and the area adjoining and north of the Marina Area but south of the Salinas River as the "North Marina Area" within the 180/400 Foot Aquifer Subbasin. Portions of MCWD's Central Marina and Ord Community service areas extend into the North Marina Area, but all of the District's current wells are located within the Marina Area.

The 180/400 Foot Aquifer Subbasin is delineated vertically into three distinct aquifer zones, consisting of aerially extensive, largely horizontally continuous, deposits of sand and gravel that exist at various depths below ground surface in the subarea. These three aquifers are commonly referred to as the 180-Foot, 400-Foot and Deep aquifers. The 180-Foot and 400-Foot aquifers derive their names from the average depth below the valley floor at which the water bearing sand and gravel deposits are encountered. The Deep Aquifer consists of an aggregation of all sand and gravel deposits that exist below the 400-Foot Aquifer including aquifers in the Aromas Sand, the Paso Robles Formation and the Purisima Formation, not all of which are hydraulically connected. The shallowest alluvial aquifer in the basin is the A-Aquifer, which is perched on top of the Salinas Valley Aquitard, above the 180-Foot aquifer, and overlies most of the 180/400 Foot Aquifer Subbasin. Toward the coast, the A-Aquifer is comprised of mostly dune sand deposits, which are largely unconfined in the coastal area of the basin.

The 180-Foot Aquifer extends from Monterey Bay to Chualar beneath the Salinas Valley and westward from the valley under northern Ord Community and Central Marina. South of Chualar and in the Forebay area, the distinction between the 180-Foot and 400-Foot aquifers becomes less defined as the aquitards that effectively separate them become increasingly discontinuous.

Figure 4.3 MCWRA-designated Subareas of the Salinas Valley Groundwater Basin[12]



[12] Source: MCWRA 2009 Groundwater Summary Report

The 400-Foot Aquifer is comprised of geological materials assigned to older alluvium deposits and Aromas Sand. The aquifer system is present beneath the northern Salinas Valley and also extends westward beneath the northern portions of the former Fort Ord and Central Marina. In the Forebay area, the 400-Foot Aquifer is hydraulically connected with the 180-Foot Aquifer resulting in both aquifer zones receiving recharge from the Salinas River through the overlying recent alluvial deposits.

The Deep Aquifer System consists of two geologic formations – the Paso Robles and the underlying Purisma Formations. These formations are aerially extensive, and not only underlie the Salinas Basin but continue outside the basin to the north and south. The lowermost unit (Purisima Formation) extends to the north outcropping in Soquel and Santa Cruz, and to the south where it grades into the Santa Margarita Formation, an important aquifer in the Seaside Basin. Although slightly arbitrary in definition, the Deep Aquifer is commonly believed to begin at depths of approximately 600 feet below sea level and extend to depths of up to 2,000 feet or more in some locations. Non-water bearing Monterey Shale that constitutes the bottom of the Salinas Groundwater Basin underlies the Deep Aquifer system.

Studies by the United States Geological Survey indicate that Deep Aquifer water in the vicinity of Marina is not of recent origin. Uncorrected Carbon 14 dating of water from a test well in the vicinity of Marina's Deep Aquifer wells indicates the water is between 22,000 and 31,000 years old. The ancient nature of this water raises the possibility that recharge to this aquifer may be insufficient to sustain current pumping, but monitoring well data at the Marina Airport[13] indicates the aquifer is subject to seasonal variations similar to the upper aquifers. Recent stratigraphic analyses have indicated that these aquifers are connected hydraulically at certain locations with the 180-foot and 400-foot aquifers, which may be recharging the Deep Aquifer.[14]

Because the overlying clay layers isolate the aquifer systems in the 180/400 Foot Aquifer Subbasin from potential surface water recharge, most importantly the Salinas River, the primary mechanism for recharge is from lateral flow from the adjacent subareas. This means that most recharge for the aquifer systems in the 180/400 Foot Aquifer Subbasin comes from lateral flow from either the Eastside or Forebay Subbasins. Additionally, the deeper aquifers are believed to be recharged in whole or in part by water that has moved through the overlying aquifers (i.e., flow from the shallow aquifer partially recharges the 180-Foot Aquifer, which then partially recharges the 400-Foot Aquifer that in turn partially recharges the Deep Aquifer). Most of the recharge for the 180/400 Foot Aquifer Subbasin derives from the Forebay Subbasin due to natural recharge from the Salinas River, which is augmented by MCWRA's active management of Nacimiento and San Antonio reservoir releases to maximize river recharge.

[13] MCWD Well 34 Basis of Design Report, Martin B. Feeney, PG, September 2009

[14] Deep Aquifer Investigation Study, WRIME, 2003.

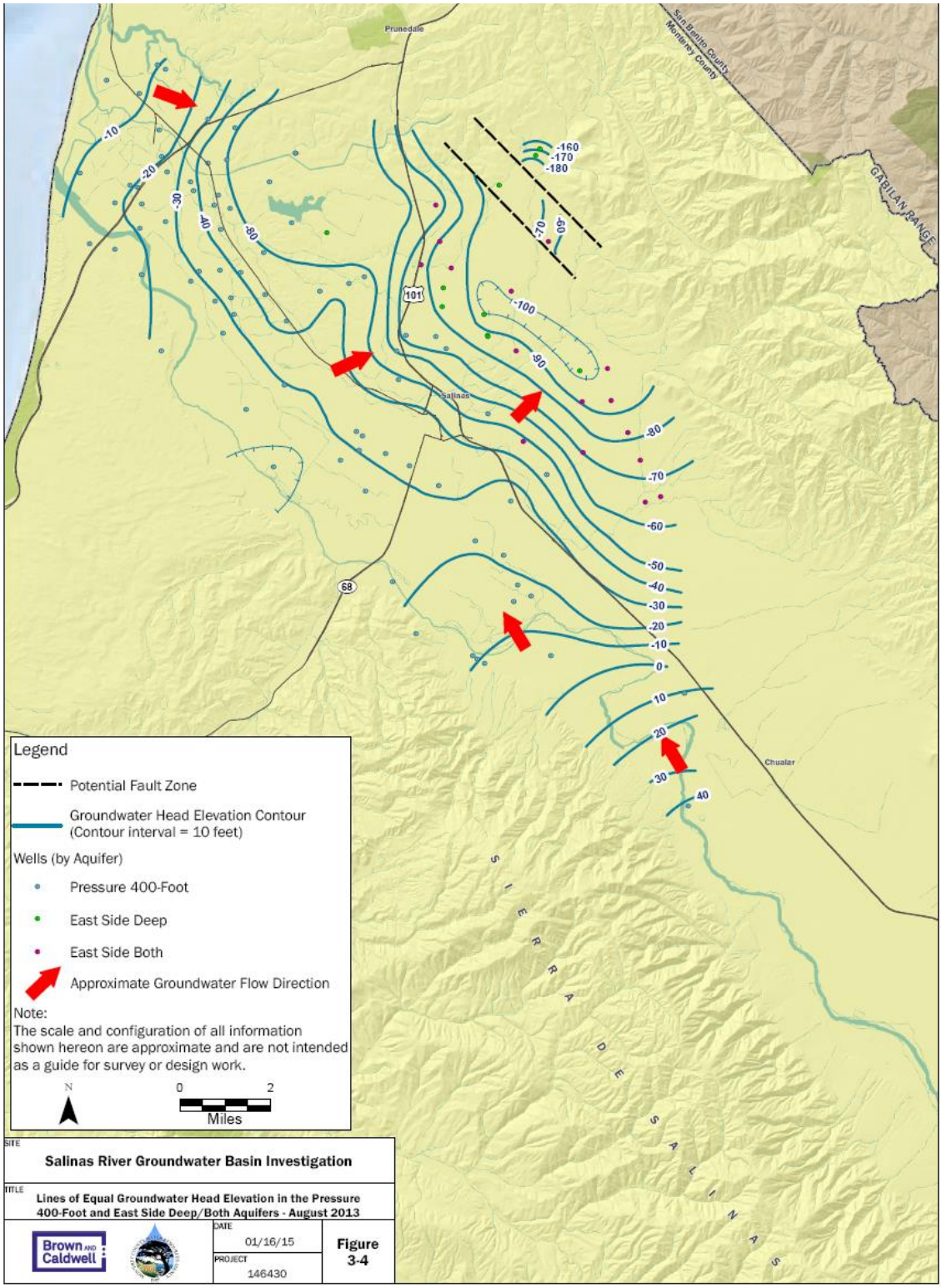
In a balanced condition, Salinas Basin groundwater would move through the basin and into the Monterey Bay through sea floor freshwater aquifer outcrop areas. As a result of basin-wide pumping, water levels in the 180/400 Foot Aquifer and East Side Subbasins have declined over time, contributing to a decrease in the amount of groundwater moving toward and into Monterey Bay and developing a trough or depression in groundwater levels in the East Side sub-basin (see Figure 4.4). The basin currently experiences a landward groundwater gradient of causing seawater intrusion, where the seawater has contaminated coastal aquifers and wells. While historic groundwater pumping throughout the basin contributes to the overdraft, only the basin's coastal areas adjacent or near to the Bay suffer from seawater intrusion. Seawater intrusion is further discussed in Section 4.2.5. The other basin subareas – Forebay and Upper Valley – tend to recharge rapidly and recover historic groundwater levels each year. The result has been a reversal of the seaward gradient.

The Salinas Valley Groundwater Basin has been in an overdraft condition with seawater intruding at an estimated rate of 11,000 to 18,000 afy into the 180/400 Foot Aquifer Subbasin.[15] MCWD's groundwater withdrawals are about 4,200 afy, or less than 1.0 percent of total annual basin withdrawals of about 524,500 afy[16]. Other than MCWD, only a small number of wells tap the deep aquifer, some of which also draw from the 400-Foot aquifer. Prior to receiving recycled water for crop irrigation, some agricultural lands in the Castroville area pumped water from the Deep Aquifer. These agricultural wells are currently used to meet supplemental needs during peak summer demands periods and are also part of the monitoring network overseen by MCWRA. Delivery of recycled water which replaces groundwater pumping has contributed to a recovery in groundwater levels in this area. Completion of the Salinas Valley Water Project in 2010 further reduced groundwater pumping and is anticipated to contribute to further restoration of coastal groundwater conditions.

[15] Salinas Valley Water Project Engineer's Report, RMC, 2003.

[16] Brown & Caldwell, State of the Salinas River Groundwater Basin, 2015

Figure 4.4 Groundwater Isoclines in the Pressure and East Side Basins[17]



[17] Source: Brown & Caldwell, State of the Salinas River Groundwater Basin, Figure 3-4

4.2.2 Sustainable Groundwater Management Act

On September 16, 2014, Governor Edmund G. Brown Jr. signed three bills into law, which are collectively known as the Sustainable Groundwater Management Act (SGMA), effective January 1, 2015. SGMA created a framework for sustainable, local groundwater management for the first time in California history. SGMA's core principles[18] are:

- Groundwater should be locally and collaboratively managed to address unique basin conditions and challenges.
- Groundwater should be managed sustainably.
- The state's role should complement and support the goal of local sustainable groundwater management.
- Water rights should be protected.

Previously adjudicated basins, including the Seaside Groundwater Basin, are exempt from the SGMA except for some minor annual reporting required to be filed with DWR.[19] The Seaside Basin Watermaster will continue to manage that Basin without any state oversight under SGMA. MCWD will continue to work and cooperate with the Watermaster.

SGMA requires the creation of one or more groundwater sustainability agencies (GSA) within each subbasin to develop and implement a local groundwater sustainability plan or coordinated plans allowing 20 years to achieve groundwater sustainability. The GSA is the primary local agency responsible for achieving SGMA's groundwater sustainability goal within that timeframe. SGMA grants the GSA new and additional powers and authorities to those powers and authorities already granted the local agency under its enabling law. For example, a GSA may conduct investigations, measure and limit extraction, require the registration and metering of wells, impose fees for groundwater management, enforce the terms of the groundwater sustainability plan, and construct in-lieu or direct groundwater recharge projects.[20]

SGMA grants local public agencies the authority to manage groundwater within high- and medium-ranked priority subbasins and basins. DWR classifies the existing Seaside Subbasin of which the Marina Area is a part as a medium-ranked priority subbasin. The 180/400 Foot Aquifer Subbasin is classified as a high-ranked priority subbasin and in January 2016 was further designated by DWR as a Critically Overdrafted Subbasin.[21] The Marina Area will have until

[18] CalEPA, DWR, SWRCB, et al., Groundwater Legislation Implementation Fact Sheet, December 4, 2014.
[19] Water Code Section 10720.8(a)(21) and (f).
[20] Water Education Foundation, *The 2014 Sustainable Groundwater Management Act: A Handbook to Understanding and Implementing the Law*, published 2015.
[21] See http://www.water.ca.gov/groundwater/sgm/pdfs/COD_BasinsTable.pdf,

January 31, 2022,[22] to be adopted and managed under a groundwater sustainability plan. However, the 180/400 Foot Aquifer Subbasin as a Critically Overdrafted Subbasin must be managed under a groundwater sustainability plan two years earlier by January 31, 2020.[23]

The "sustainability goal" is defined as "the existence and implementation of one or more groundwater sustainability plans that achieve sustainable groundwater management by identifying and causing implementation of measures targeted to ensure that the applicable basin [or subbasin] is operated within its sustainable yield." (Water Code, § 10721, subd. (t).) The sustainability goal is to be achieved in the subbasin or basin within 20 years of the implementation of the groundwater sustainability plan. (Water Code, § 10727.2, subd. (b).) "Sustainable yield" is defined as "the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result." (Water Code, § 10721, subd. (v), emphasis added.)

The required "base period" for purposes of developing groundwater sustainability plans is the period before January 1, 2015. Water Code Section 10727.2(b)(4) states, "[t]he [groundwater sustainability] plan may, but is not required to address undesirable results that occurred before, and have not been corrected by, January 1, 2015."

"Undesirable result" is defined in Water Code Section 10721(w) as follows:

> (w) "Undesirable result" means one or more of the following effects caused by groundwater conditions occurring throughout the [Sub]basin:
> (1) Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. Overdraft during a period of drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and recharge are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods.
> (2) Significant and unreasonable reduction of groundwater storage.
> (3) Significant and unreasonable seawater intrusion.
> (4) Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies.
> (5) Significant and unreasonable land subsidence that substantially interferes with surface land uses.
> (6) Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

[22] Water Code Section 10720.7(a)(2).
[23] Water Code Section 10720.7(a)(1).

Undesirable Result – Seawater Intrusion. Section 4.2.5 below discusses seawater intrusion in the North Marina Area. The sustainability goal for the 180/400 Foot Aquifer Subbasin must be achieved by 2040, which includes rolling back seawater intrusion within the subbasin to at least the condition and extent which existed on January 1, 2015.

Undesirable Result – Water Quality Degradation. A chloride concentration of 500 milligrams per liter (mg/L) is the short-term California Department of Public Health Secondary Drinking Water Standard for chloride and may be used as a measure of impairment of potable drinking water. The existing 2011 Water Quality Control Plan for the Central Coastal Basin, which must be addressed in a groundwater sustainability plan, incorporates by reference SWRCB Resolution No. 88-63, Adoption of Policy Entitled "Sources of Drinking Water." Resolution No. 88-63 is Appendix A-9 of the Basin Plan and provides that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards with the exception of: 1. Surface and ground waters where: a. The total dissolved solids (TDS) exceed 3,000 mg/L (5,000 uS/cm, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system." The U.S. Environmental Protection Agency ("USEPA") defines "Underground source of drinking water (USDW)" at 40 CFR 144.3 to mean an aquifer or a portion of an aquifer containing fewer than 10,000 mg/l TDS. Water Code Section 10783(g)(2) of the Groundwater Quality Monitoring Act of 2011 specifically cites to the USEPA definition of USDW. While the protection of sources and potential sources of groundwater for drinking is a paramount concern, the water quality necessary for all beneficial uses of groundwater must be protected in the groundwater sustainability plan, including non-potable irrigation and industrial uses.

MCWD is actively participating in the Salinas Valley Groundwater Stakeholder Forum, which is a facilitated process to develop consensus on the formation of GSA or GSAs within the SVGB and the coordinated development of one or more groundwater sustainability plans for the SVGB. Unlike all of the other subbasins within the SVGB, the Marina Area is wholly within MCWD's potable water service area, MCWD and the Army hold the groundwater rights, MCWD already performs water supply planning and groundwater extraction management for the entire Marina Area, and in working with MRWPCA to implement the Pure Water Monterey Project, MCWD has the right to deliver 1,427 afy of advanced treated water within the Ord Community as a major in-lieu groundwater recharge project.

4.2.3 Basin Management

Where groundwater basins are in or projected to be in overdraft, the Water Code[24] requires UWMPs to provide detailed descriptions of efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. The 180/400 Foot Aquifer Subbasin has been

[24] Water Code §10631(b)(2)

declared by DWR to be in Critical Overdraft. MCWD will actively participate in the GSA formed for that subbasin. MCWD is already taking actions to preserve and protect the groundwater aquifers from which MCWD draws potable water and its continuing ability and right to access groundwater. MCWD is also exploring new alternative water sources to augment groundwater supplies. MCWD is developing a Seawater Desalination Project and a Recycled Water Project, as discussed in Section 4.4.

MCWRA has been and is currently working to eliminate basin overdraft and seawater intrusion. The current program builds upon action taken in the 1940s when MCWRA's predecessor agency, the Monterey County Flood Control and Water Conservation District, initiated development of the Nacimiento and San Antonio dams and reservoirs to augment water resources within the County. From the time it was formed, MCWD has cooperated with the MCWRA to further water resources development within the Salinas Valley.

In 1991 and 1992, MCWRA developed and approved the Monterey County Water Recycling Projects to deliver recycled wastewater for irrigation use in the Castroville area, so that groundwater pumping could be reduced in that area. The project is commonly referred to as the Castroville Seawater Intrusion Project (CSIP). In the project, recycled water is produced and used along the coast in lieu of pumping groundwater for agricultural irrigation. The project has operated successfully since 1998, reducing groundwater pumping and the rate of seawater intrusion.

To further address basin overdraft and seawater intrusion, MCWRA's Salinas Valley Water Project (SVWP) was developed (see Section 4.2.6). The project included modifying the spillway at Nacimiento Reservoir, adjusting the operations of Nacimiento and San Antonio reservoirs to increase releases into the Salinas River, and construction of the Salinas River Diversion Facility (SRDF) near Marina. Water diverted from the river is added to the CSIP distribution system, further reducing the volume of coastal groundwater pumped for agriculture. The projects were completed in 2010, and operated from 2010 through 2013, delivering 3,000 to 5,000 AFY for CSIP. Due to the statewide drought and resultant low water levels in the reservoirs, the SRDF was not operated in 2014 and 2015.

The Pure Water Monterey Project is currently being pursued by the Monterey Regional Water Pollution Control Agency (MRWPCA) and the Monterey Peninsula Water Management District (MPWMD). The project will develop new sources of water supply and convey them to the MRWPCA Regional Treatment Plant, where they will be recycled as either Advanced Treated Water for indirect potable reuse in the southern Seaside Groundwater Basin, or as additional Tertiary Treated Water for CSIP. The project is expected to off-set approximately 4,300 AFY of groundwater pumping in the 180/400 Foot Aquifer Subbasin.

4.2.4 Integrated Regional Water Management Plan

In 2005, the Monterey County Water Resource Agency, the Marina Coast Water District and the Castroville Water District formed the Salinas Valley Water Management Group to spearhead regional planning for the Salinas Valley Region of Monterey County. In May 2006, they published the Salinas Valley Integrated Regional Water Management Functionally Equivalent Plan. The plan outlined regional goals, objectives and strategies in the areas of water supply, water quality, flood protection and environmental enhancement. Strategies in the Functionally Equivalent Plan that addressed water supply were the Salinas Valley Water Project, the MCWD Eastern Distribution System and the City of Soledad Water Recycling Project.

In 2012, the Greater Monterey County Integrated Regional Water Management Plan was adopted, replacing the 2006 FEP. That plan included several water supply projects, including stormwater capture for additional CSIP supply, the Inter-Lake Tunnel Project to connect the San Antonio and Nacimiento Reservoirs, the RUWAP Urban Recycled Water Project, and the initial wells for a Regional Seawater Desalination Project.

In 2013, the Monterey Peninsula, Carmel Bay, and South Monterey Bay Integrated Regional Water Management Plan (IRWMP) was adopted, updating the earlier 2007 Monterey Peninsula IRWMP. That plan included water quality enhancement projects, but no water supply projects.

4.2.5 Seawater Intrusion

While sufficient production capacity (versus water availability) to meet the projected ultimate demand within MCWD's service areas can be provided, there is concern that seawater intrusion may eventually degrade water quality in the Marina Area Subbasin where MCWD's wells are located and render all or a number of them unfit for domestic water supplies without further treatment, such as desalination. Similarly, there has been concern that hazardous substance contamination detected at the former Fort Ord might adversely affect the quality of water MCWD is serving within its Marina and Ord Community service areas (discussed in Section 4.2.6).

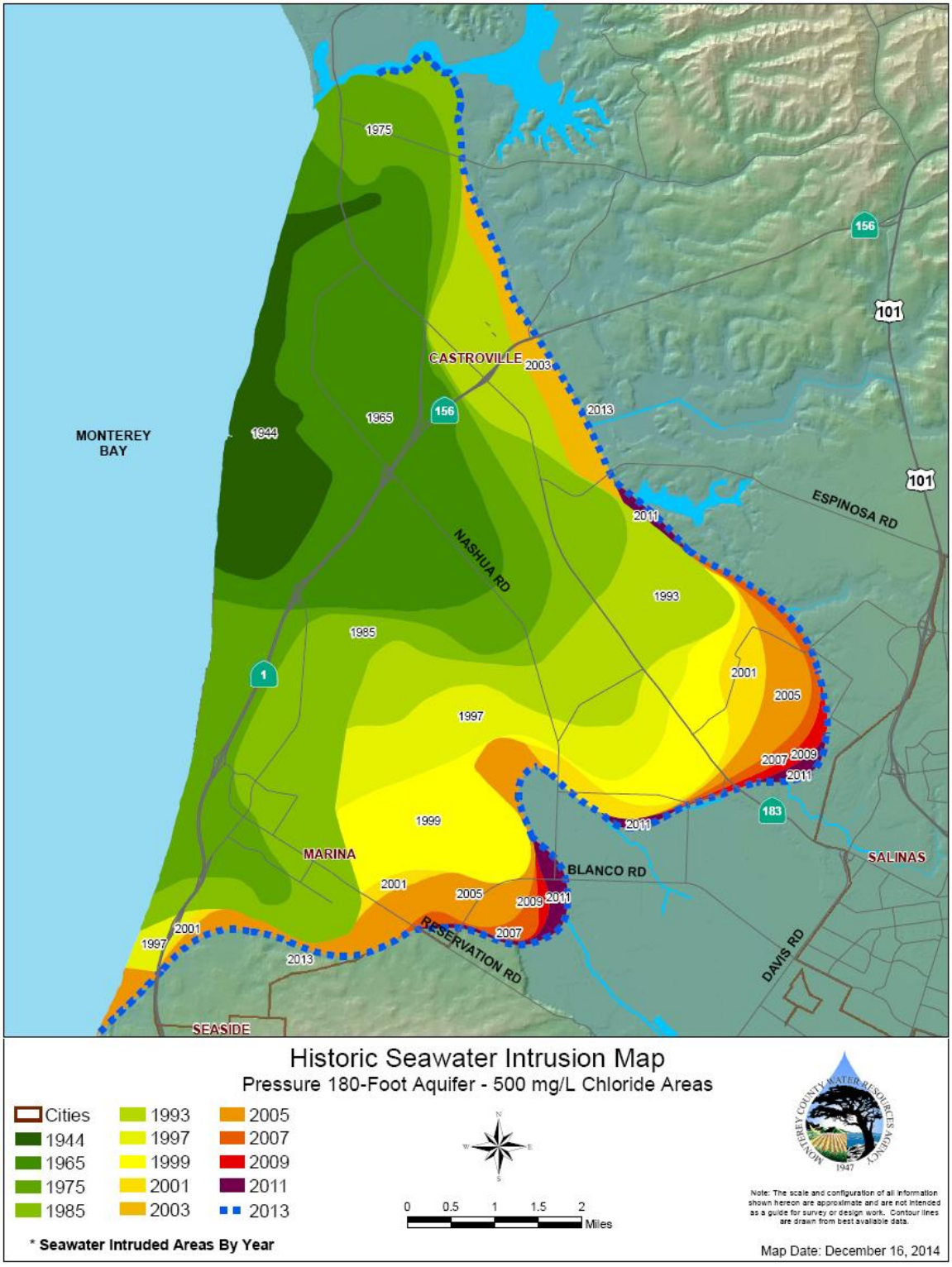
Seawater intrusion into 180-Foot and 400-Foot aquifers was identified along the coast over 50-years ago. The areas of seawater intrusion may be tracked using chloride concentration. A chloride concentration of 500 milligrams per liter (mg/L) is the upper California Department of Public Health Secondary Drinking Water Standard for chloride (250 mg/L is recommended) and is used as a measure of impairment of drinking water (water above 500 mg/L may still be suitable for non-potable uses). The line of chloride concentration (isohaline) of 500 mg/L water is used as the basis for determining the seawater intrusion front as shown on Figure 4.5 and Figure 4.6. Wells within the intruded areas were progressively moved further inland or into deeper aquifers. Note that these maps trace the timing and location of the "intrusion front" and do not reflect the current condition of groundwater behind the intrusion front.

Historically, MCWD supplied its Marina service area with water from 11 wells (MCWD-1 through MCWD-9, and two replacement wells) screened in the 180-Foot and 400-Foot aquifers. Between 1960 and 1992, some of those wells indicated varying degrees of seawater intrusion and were replaced, first moving from the 180-Foot aquifer to the 400-Foot aquifer, and later moving to the Deep Aquifer. The District currently has three Central Marina wells in the Deep Aquifer, MCWD-10, MCWD-11 and MCWD-12, constructed in 1983, 1986 and 1989 respectively. These wells are depicted in Figure 2.2.

The U.S. Army's original wells serving the former Fort Ord were located in the Main Garrison area near Marina. When wells indicated varying degrees of seawater intrusion, the Army in 1985 installed four wells further inland. Located near the intersection of Reservation and Blanco Roads in Marina (Figure 2.2), the wells draw from the 180-Foot and 400-Foot Aquifers (well numbers FO-29, FO-30, FO-31 and FO-32). Well FO-32 suffered a screen failure and was shut down in the late 1990s. The District added Wells 34 (in the Deep Aquifer) and Well 35 (in the 400-ft Aquifer) in 2011.

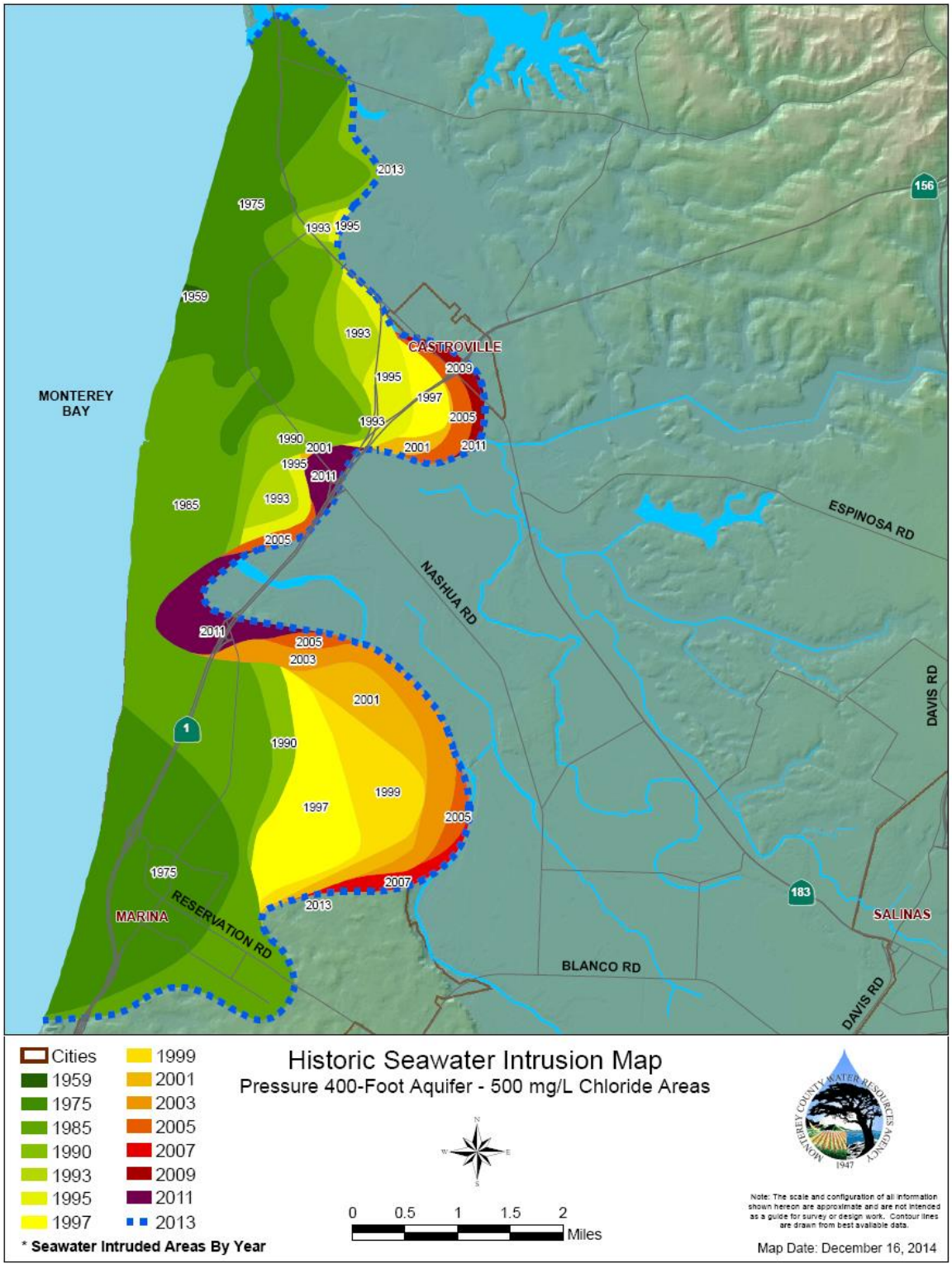
Ongoing monitoring by MCWRA indicates that the seawater intrusion front continues to migrate inland, particularly in the 180-Foot Aquifer, but as discussed below, groundwater conditions behind the front appear to be improving in some areas south of the Salinas River. Based upon the information available at the time, MCWD's 2007 Water System Master Plan identified the need for a phased replacement of wells in the threatened area. Additional data on the migration and extent of seawater contamination can be found in the Final Report Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina, Salinas Valley California, April 2001.

Figure 4.5 Historic Seawater Intrusion in the 180-ft Aquifer[25]



[25] Source: MCWRA website

Figure 4.6 Historic Seawater Intrusion in the 400-ft Aquifer[26]



[26] Source: MCWRA website

Recent investigations being conducted in and around the North Marina Area as part of the Monterey Peninsula Water Supply Project have identified an occurrence of freshwater within the shallow dune sand aquifer and the underlying 180-foot aquifer within the area delineated as first experiencing seawater intrusion between 1975 and 1985. Water level data from wells in the shallow dune sand aquifer appear to show protective water levels that are sufficiently above sea level to prevent seawater intrusion in the shallower sediments. This condition, combined with the reduction in pumping in the 180-Foot aquifer in the North Marina Area, appears to have slowed seawater intrusion in this portion of the coastline. Water quality test results for chloride concentrations in the Dune Sand (A-Aquifer) and the 180-ft Aquifer zones is shown in Figure 4.7[27].

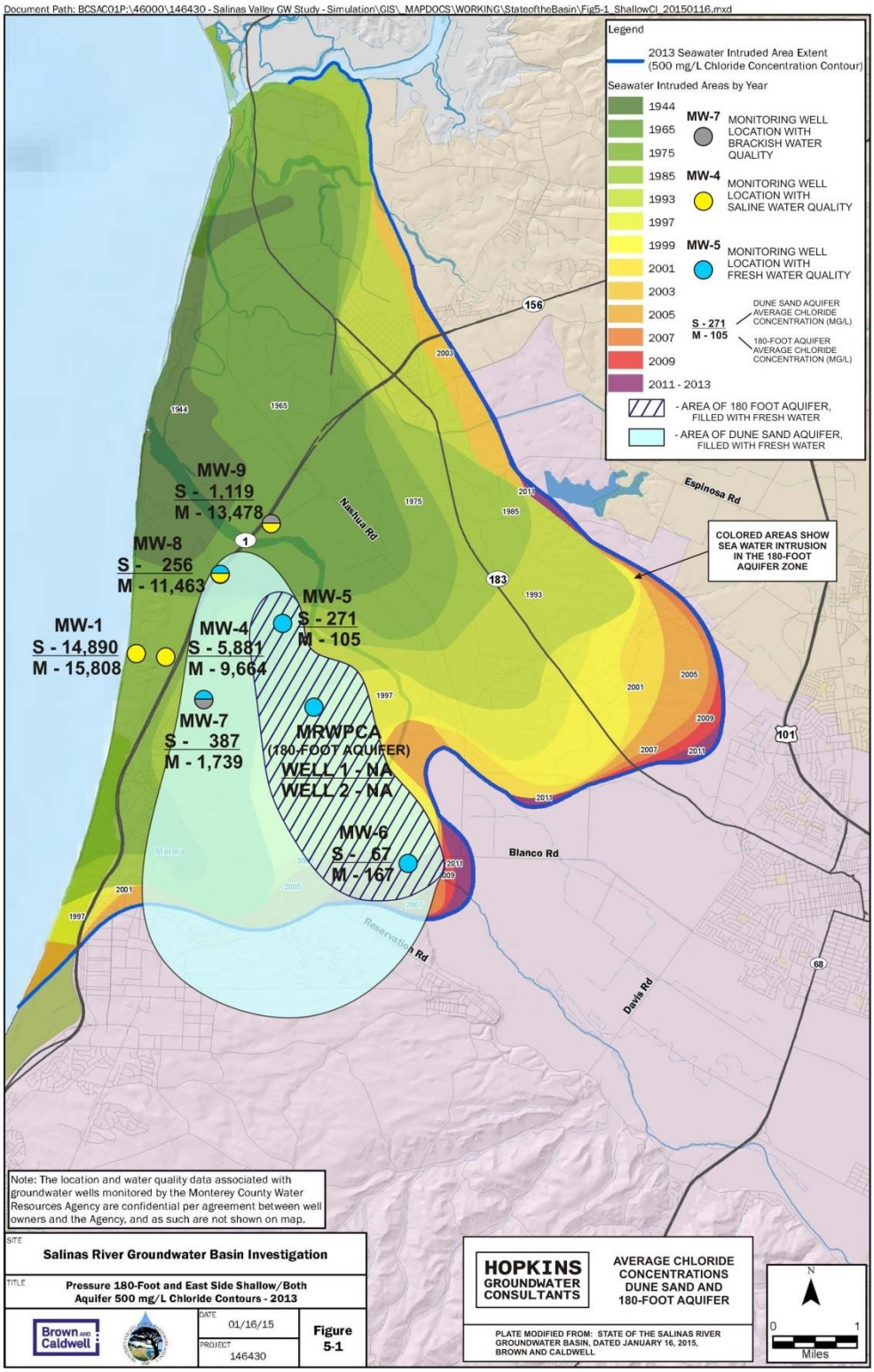
This recent data may suggest a change of groundwater conditions in this coastal section of the 180-ft Aquifer or they may just reveal the groundwater conditions in an area previously lacking in data. While the freshwater in this area contains salts and nutrients that are derived from overlying land uses that include agriculture, landfill, and wastewater treatment plant and composting facilities, the chemical character is not sodium chloride, which is indicative of seawater. Instead, the chemical character of groundwater in these new wells is calcium chloride and calcium bicarbonate[28]. Future use of this area for a potable groundwater supply may be unlikely; however, these conditions do show a retardation of seawater intrusion in these shallower aquifer zones in this coastal portion of the Salinas Valley Groundwater Basin, which provides some protection for inland uses of the 180-ft Aquifer.

There is some concern that the Deep Aquifer may become affected by seawater intrusion. MCWD operates a monitoring well installed between the Monterey Bay and the Marina production wells. That monitoring well serves as an early warning system to identify any seawater intrusion that might later affect MCWD's production wells, located further inland. Once identified, the District can install or begin operating one or more back-up wells to replace any potential future loss of production capacity.

It should be noted that water from the deep wells contains acceptable levels of chloride and total dissolved solids, which should not be misinterpreted as a sign of seawater intrusion. This natural salinity does not prevent the use of this water for municipal demands. The levels of chloride (average 99 mg/L) and total dissolved solids (average 386 mg/L) have not increased in the 25-years MCWD has operated the deep wells.

[27] See Technical Memorandum by Hopkins Groundwater Consultants in Appendix E.
[28] Ibid.

Figure 4.7 Dune Sand Aquifer and 180-Foot Aquifer Chloride Concentration Data[29]



[29] Source: Hopkins Groundwater Consultants, 2016

Another concern is that the Deep Aquifer may be connected to, and affect seawater intrusion in, the upper aquifers. Preliminary findings regarding the Deep Aquifer in the Ord Community area indicate that there is some vertical connectivity between the Deep Aquifer and the overlying aquifers. According to the Deep Aquifer Investigative Study, WRIME, May 2003, increased pumping of the Deep Aquifer would be expected to increase the rate of seawater intrusion in the middle and upper aquifers, but to a lesser extent than if the increased pumping occurred in the middle or upper aquifers. In that report, WRIME modeled the effect of increasing groundwater pumping from the Deep Aquifer by two to five times the baseline rate of 4,800 afy. The model predicted that, in the absence of other actions to control seawater intrusion, the landward flow of groundwater would increase as a result.

MCWD is fully cooperating with the MCWRA's program to actively manage and protect the long-term availability of the Salinas Valley groundwater resource. Existing management efforts, reviewed above, include the successful implementation of the Castroville Seawater Intrusion Project and implementation of the annexation agreements that limit groundwater pumping and provide assessment revenue supporting MCWRA's activities to augment Basin water supplies. Those activities include ongoing operation of Nacimiento and San Antonio reservoirs to maximize groundwater recharge through dry-season storage releases that percolate through the Salinas River's streambed. As described in more detail in Section 4.2.7 below, those activities also include the MCWRA's development, approval and implementation of the Salinas Valley Water Project. Implementation of the Sustainable Groundwater Management Act will also better focus groundwater management activities in the Marina Area Subbasin and the adjoining North Marina Area of the 180/400 Foot Aquifer Subbasin.

4.2.6 Groundwater Contamination and Control

The former Fort Ord was identified by the U.S. Environmental Protection Agency (EPA) as a National Priority List federal Superfund site on the basis of groundwater contamination discovered on the installation in 1990. The facility was listed "fenceline to fenceline," covering all 28,000 acres. Initial investigations pinpointed 39 sites of concern in addition to two Operable Units (the Fritzsche Army Airfield Fire Drill Pit and the Fort Ord landfill) which had been investigated during the 1980s. The sites of concern included motor pools, vehicle maintenance areas, dry cleaners, sewage treatment plants, firing ranges, hazardous waste storage areas, and unregulated disposal areas. An additional two sites were added during the investigation process: one, a defueling area located at Fritzsche Army Airfield; the other, a fire drill burn pit in East Garrison. In all, 43 sites were investigated.[30]

In 2001, trichloroethylene (TCE), a cleaning solvent, was detected by the Army in one of the three water supply wells at the former Fort Ord. Subsequently, upon the transfer of ownership of

[30] www.Fortordcleanup.com Mactec Engineering and Consulting, Inc.

the well to MCWD, MCWD also detected the presence of TCE in June 2002. TCE levels detected are below the Maximum Contaminant Levels (MCL) for potable use. The contamination is coming from an abandoned landfill and a fire training pit that were formerly used by the Army, but are now closed. The Army has responded to the landfill contamination problem by installing extensive groundwater cleanup systems to remove the contamination and prevent its further migration. The Army has also been monitoring groundwater quality at the former Fort Ord for a number of years to better understand the location and movement of groundwater contamination caused by the closed landfills.

State and federal safe drinking water MCL standards for TCE are set at 5.0 parts per billion, or approximately ten times higher than detected. Detection of TCE, even at the low concentration levels, was reported by MCWD, as required by law, to the California Department of Public Health (DPH). No additional action was deemed necessary by DPH because the concentration levels are well below the MCL of 5.0 parts per billion. Both MCWD and the Army regularly monitor the former Fort Ord wells to assess concentration changes. The 2015 TCE detections in the Ord Community wells ranged from non-detect to 1.8 parts per billion[31]. TCE detections have been intermittent since the initial detection in 2001.

MCWD continues to monitor the affected well, and all other wells, for TCE and other contaminants on a regular basis. Any changes in contaminant plume migration due to increased MCWD pumping will be monitored and appropriate actions taken. MCWD maintains close coordination with the U.S. Army Corps of Engineers, who manages groundwater cleanup efforts on the former Fort Ord. The Corps of Engineers recently published an update to their mitigation program, depicted in Figure 4.8.

The Defense Department is required by law to clean up contamination to below allowable contaminant levels set by the State Department of Public Health as a public health protection measure. Groundwater samples are taken quarterly and compiled in annual status reports. Additionally, all data is summarized in documents known as five-year reviews. It is expected that final groundwater cleanup may take another 30 years to complete. Additional information on groundwater cleanup and other base contamination remediation actions can be found at www.fortordcleanup.com.

Because Fort Ord is on the National Priority List, section 9604(i) of the federal Superfund law (Comprehensive Environmental Response Compensation and Liability Act, or "CERCLA") requires the federal Agency for Toxic Substances and Disease Registry ("ATSDR") to complete an assessment of whether any hazardous substances at the site pose a threat to human health. ATSDR analyzed whether hazardous substances released at Fort Ord might threaten human

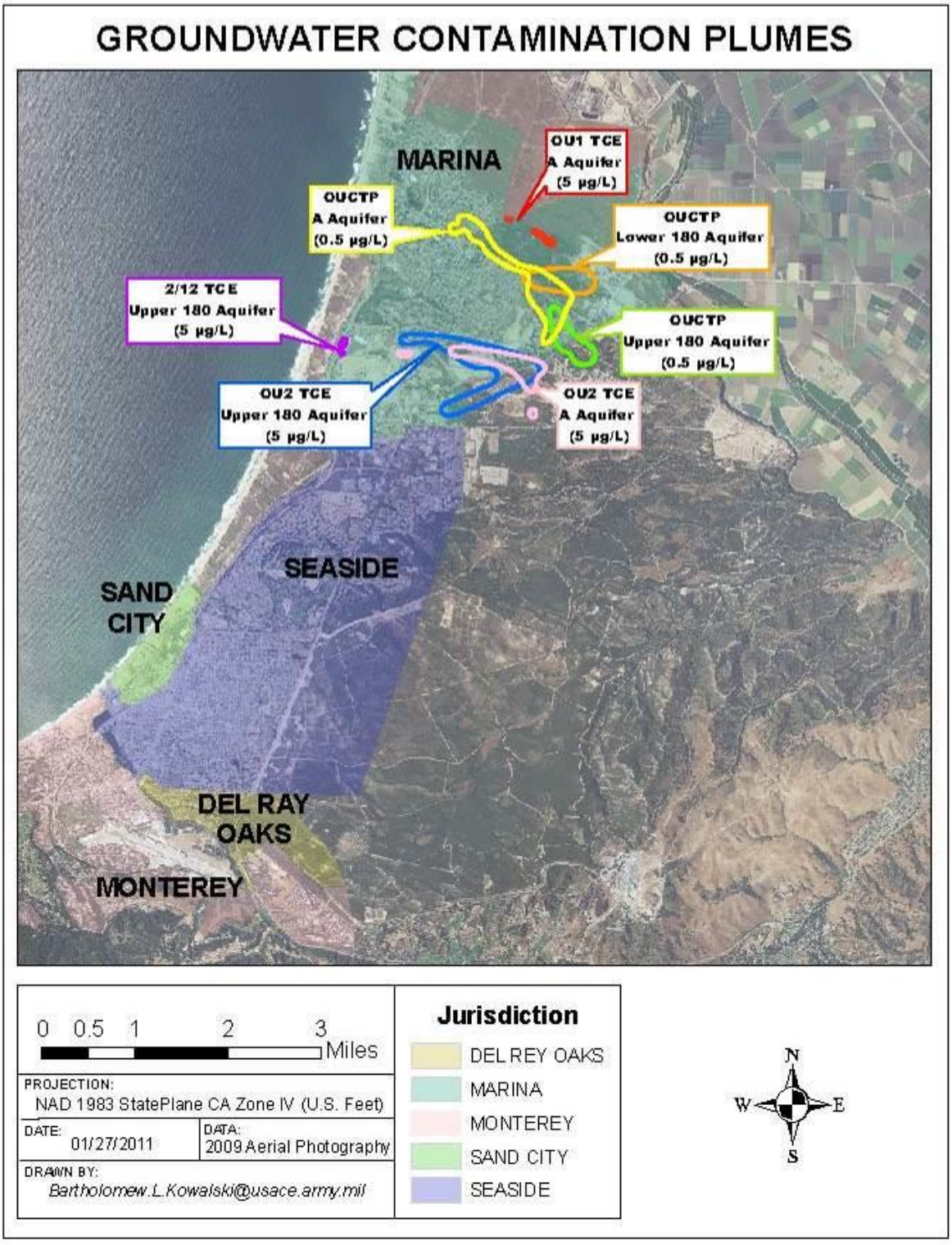
[31] EPA test method 524.2 is accurate to +/- 20%.

health by contaminating drinking water wells serving Marina and Ord Community. ATSDR's final health assessment concludes as follows:

- There are no detections of groundwater contaminants at levels of health concern in the presently "active" drinking water wells on Ord Community. The water at Ord Community is safe to drink. Because the drinking water wells currently in use in the Ord Community are located far from sources of contamination, drilled to deep aquifers that are not likely to be contaminated, and monitored regularly, the Ord Community's drinking water supply should be safe to drink in the future.
- Because the concentration of groundwater contamination detected in the past in the Ord Community and Marina drinking water wells was low and the duration of exposure was short, adverse health effects will not likely result.
- The water supplied by drinking water wells presently used by Marina is safe to drink. Further, because Marina's drinking water wells are drilled to deep aquifers and the quality of the water is monitored regularly, Marina's drinking water should be safe to drink in the future.[32]

[32] See ATSDR Public Health Assessment, Fort Ord, Marina, Monterey County, California (Community Health Concerns and Potential Pathways of Exposure).

Figure 4.8 Groundwater Contamination Plumes[33]



[33] Source: U.S. Army Corps of Engineers, Fort Ord Office

The Salinas Basin has experienced nitrate contamination, a pollutant coming primarily from animal confinement activities (dairies, feedlots) and from irrigated agriculture, sewage treatment plant effluent and septic tanks. This contaminant is a concern, particularly in upper reaches of the 180-Foot Aquifer. Although certain wells in the Salinas Valley have exceeded the state health standard of 45 mg/L of nitrate as NO3, nitrate levels in the 400-Foot Aquifer are low due to intervening clay layers between the 180-Foot and 400-Foot aquifers.

No nitrate contamination is evident in, or in the vicinity of, any of the MCWD's wells. Due to the location of the nitrate sources at or near the ground surface, remote from MCWD's wells, with contamination in only the upper reaches of the shallowest, 180-Foot Aquifer, nitrate contamination does not pose a threat to MCWD's sources of groundwater supply.

4.2.7 Salinas Valley Water Project

MCWRA has maintained and operated Nacimiento and San Antonio reservoirs since they became operational in 1957 and 1967, respectively. The operation of both reservoirs has been, and continues to be, for two primary hydrologic functions: flood control and conservation, i.e. the storage and release of runoff to recharge the Salinas Valley Groundwater Basin via the Salinas River.

On June 4, 2002, the MCWRA adopted a basin-wide program, known as the Salinas Valley Water Project (SVWP or Project), to continue addressing water supply issues in the Salinas Valley Groundwater Basin. MCWRA's adoption of the SVWP followed its certification of a Final Environmental Impact Report / Environmental Impact Statement on June 4, 2002. The Project's documentation including the Final Engineers Report and complete Environmental Impact Report can be accessed at: http://www.mcwra.co.monterey.ca.us/projects/projects.php.

The objectives of the SVWP are:

- Halting seawater intrusion;
- Continuing conservation of winter flows for recharge of the Salinas Valley basin through summer releases;
- Providing flood protection;
- Improving long-term hydrologic balance between recharge and withdrawal; and
- Providing a sufficient water supply to meet water needs through the year 2030.

The SVWP was specifically developed to provide for the long-term management and protection of groundwater resources in the Salinas Valley Groundwater Basin by: (1) providing a source of water to the Basin by reoperating Nacimiento and San Antonio reservoirs and capturing water via a seasonal surface diversion structure to provide water for agriculture; and (2) maintaining present conservation release practices to recharge the groundwater basin. To do that, the SVWP includes the following components:

- Modification of Nacimiento Dam spillway;
- Reoperation of Nacimiento and San Antonio reservoirs;
- Salinas River recharge, conveyance and rediversion;
- Distribution/delivery of water; and
- Delivery area pumping management.

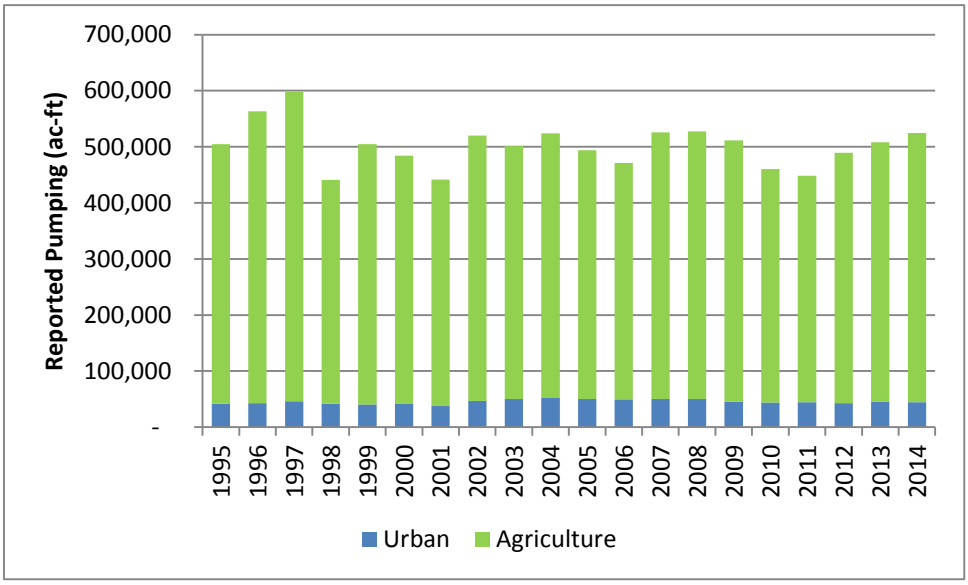
The Project includes operation and maintenance of the Nacimiento and San Antonio reservoirs, modification of the spillway at Nacimiento Dam, and installation of a rubber inflatable dam on the Salinas River near Marina to allow for rediversion of about 10,000 acre-feet of reservoir releases to be made available in lieu of groundwater pumping for irrigation. In total, by 2030 an additional yield of 37,000 afy is expected.

The Salinas Valley Water Project EIR anticipated that water demands on the basin would decline by about 20,000 afy, from 463,000 afy in 1995 to 443,000 in 2030, due to urban and agricultural conservation efforts, conversion of agricultural lands and some crop shifting.[34] This overall decline was expected to occur despite the projected doubling of the population served by the Salinas Valley Groundwater Basin, from 188,949 in 1995 to 355,829 in 2030. The reported SVGB pumping in 2014 was 524,487 ac-ft, with an estimated population of 320,000. Irrigated acreage was approximately equal, with 173,200 acres in 1995 and 179,500 acres in 2014. Water demand for agriculture was above average in 2014 due to the drought (see Figure 4.9). While the anticipated decline in urban water demand has borne out, agricultural demand has remained steady as growers have increased their crop production per acre.

The Project was constructed in 2008 to 2010, and the Salinas River Diversion Facility was placed in operation in April 2010. Due to the state-wide drought that began in 2013, the SRDF was not operated in 2014 or 2015. Given the limited (4-year) period of initial operation, it cannot yet be determined if this project will halt seawater intrusion in the 180/400 Foot Aquifer Subbasin of the Salinas Basin, or if additional measures will be required. MCWRA intends to monitor the effects of the implementation of the Plan and pursue additional remedies as needed if seawater intrusion is not arrested. MCWD will participate in this monitoring and evaluation process, with existing monitoring wells throughout the District.

[34] Salinas Valley Water Project, Draft Master EIR, 1998, p. 3-15

Figure 4.9 Salinas Valley Groundwater Pumping, 1995-2014[35]



The State Water Resources Control Board has also been closely monitoring the MCWRA's ongoing efforts to stop seawater intrusion in the Salinas Valley Groundwater Basin and has provided almost $7 million in funding to the MCWRA for development of this seawater intrusion solution. After reviewing the technical documents assessing the beneficial effect of the Salinas Valley Water Project on seawater intrusion, the SWRCB concluded "that seawater intrusion can be stopped."[36]

4.3 Water Transfer Opportunities

MCWD does not share a boundary with other wholesale or retail water suppliers on its west, north or eastern boundary, but it does share boundaries with Seaside Municipal Water System and the California American Water Company – Monterey Service Area (CAW) along MCWD's southern boundary. Under current law, water supply from the Salinas Valley Groundwater Basin cannot be exported to customers in other basins. Therefore, any connections made must be for emergency use only or of a "zero-balance type" (volume added must equal volume withdrawn).

In 2006, the District investigated the possibility of interconnecting with the Seaside Municipal Water System at a point near Seaside High School. Proposed was an emergency-only connection, for use in the event of large fire demands or catastrophic system failures. Although not constructed at the time, the possibility of a future emergency connection still exists.

In 2008-2009, the District constructed a new water main in General Jim Moore Blvd to serve the southern portion of the Ord Community, particularly Del Rey Oaks which is at the southern end

[35] MCWRA Annual Groundwater Extraction Summary Reports, 1995 to 2014
[36] Salinas Valley Water Project Final EIR at page 2-129

of General Jim Moore Blvd. At that time, CAW was working with the Monterey Peninsula Water Management District to develop an aquifer storage and recovery project for the Seaside Groundwater Basin, with injection wells located at the northern end of General Jim Moore Blvd. A joint-use agreement was entered into by MCWD and CAW for this new pipeline. Under the agreement, both agencies meter the amount of water added to and taken from the pipeline. The system must be managed to a net zero-balance in accordance with current law.

Additional transfer opportunities exist within Zone 2/2A of the Salinas Valley Groundwater Basin. MCWD could purchase the rights to existing groundwater supplies currently used elsewhere in the Salinas Valley and transfer the water to the District service area. This would require curtailment or reduction of well pumping on the donor land to allow increased pumping from District wells. Such transfers would have to be performed on a willing-seller, willing-buyer basis and with the cooperation of the Monterey County Water Resources Agency.

4.4 Future Water Supply

Looking at the projected demands in Table 4.3, the total Ord Community groundwater supply of 6,600 afy falls short of the total 2030 Ord Community demand of 8,293 afy by 1,693 afy. Considering only those jurisdictions with shortfalls, the Ord Community shortfall becomes 2,901 afy (calculated as the sum of the jurisdictional shortfalls). That shortfall may be reduced by up to 171 afy, if water supply from Monterey County is provided to the Monterey Downs Specific Plan area, which is located in unincorporated Monterey County but planned for annexation into Seaside. In the 2010 UWMP, the 20-year projected demand for the Ord Community exceeded the available groundwater supply by 1,572 afy (= 8,172 - 6,600). As in the 2010 UWMP, the Central Marina service area is not projected to exceed its current SVGB groundwater allocation within the planning period.

Table 4.3 Ord Community Groundwater Shortfalls

Jurisdiction	2035 Demand	Allocation	Shortage*
U.S. Army	825	1,577	0
CSUMB	779	1,035	0
Del Rey Oaks	551	243	308
City of Monterey	130	65	65
County of Monterey	539	710	0
UCMBEST	515	230	285
City of Seaside (Ord Portion)	2,876	1,012	1,864
State Parks and Rec.	25	45	0
City of Marina (Ord Portion)	1,704	1,325	379
Assumed Line Loss	348	348	0
Total	**8,293**	**6,600**	**2,901**

* Jurisdictions with surpluses are shown with 0 shortage.

As discussed in the following subsections, MCWD has been actively working towards developing additional water supplies to meet the needs of the Ord Community. This new supply

will come in the form of recycled water for urban landscape irrigation and desalinated water for potable demand. Table 4.4 shows the projected use of recycled water, as described in the Environmental Impact Report for the Regional Urban Water Augmentation Project. In the table, the desalination supply is the net potable shortfall after recycled water is supplied. Expanded tables showing demands by jurisdiction are in Appendix C.

Table 4.4 Projected Demand by Source (afy)

	2015	2020	2025	2030	2035
Groundwater	4,204	5,605	8,089	8,428	9,075
Recycled Water	0	600	1,359	1,359	1,359
Desalinated Water	0	0	489	1,332	1,763
Total Demand	4,204	6,205	9,937	11,119	12,197

4.4.1 Regional Urban Water Augmentation for the Ord Community

FORA's 1997 Final EIR, Reuse Plan and Master Resolution projected that redevelopment of the former Fort Ord would add approximately 8,700 new residential dwelling units and 4.9 million square feet of commercial/industrial development by the year 2015. Total water demand on the base was projected to be 9,000 afy. The water supply mitigation target in the Final EIR is 2,400 afy, calculated as the difference between the total demand and the 6,600 afy of existing groundwater supply (9,000 – 6,600 = 2,400). That original estimation assumed that the Bayonet/Blackhorse Golf Course would continue to be supplied by wells in the Seaside Groundwater Basin.

From 1998 to 2015, there have been 730 new dwelling units constructed and just under 1.0 million square feet of commercial development within the Ord Community (in addition to renovation of existing facilities and construction of over 500 replacement dwelling units). The development projections in this plan show an additional 10,400 dwelling units and 6.8 million square feet of commercial development being added over the next 20 years. The projected total water demand in the Ord Community is 8,300 afy in the year 2035. However, the sum of the projected supply shortfalls of the separate jurisdictions is about 2,900 afy. A portion of this projected future development will be considered above the amount mitigated under the Base Reuse Plan Final EIR.

MCWD's water supply plans include utilizing a combination of recycled water and desalination to meet the Ord Community's future demands as identified in the Fort Ord Base Reuse Plan. These plans are further described in MCWD's Environmental Impact Report for the Regional Urban Water Augmentation Project (RUWAP), certified in October 2004, and later amended in October 2006, February 2007 and April 2016. The RUWAP proposes to provide an additional water supply of 2,400 afy for the Ord Community area (also known as the former Fort Ord military base) as identified in the Fort Ord Reuse Plan. When the RUWAP EIR was prepared, it

included the golf course in the list of potential recycled water customers, but did not increase the project size to account for the additional demand (approximately 400 afy).

The Water Augmentation Project as evaluated in the RUWAP EIR consisted of two distinct alternatives and one hybrid alternative. One alternative considered was wastewater recycling, and the other was desalination of seawater-intruded groundwater. The hybrid alternative was equal amounts of recycled and desalinated water (1,500 afy desalination, including incorporation of the currently idle desalination plant producing 300 afy and 1,500 afy of recycled supply).

On June 10, 2005, the MCWD and FORA boards of directors endorsed the "hybrid alternative" from the October 2004 Regional Urban Water Augmentation Project EIR and directed the staffs to begin scoping to develop specific plans for the additional 2,400 afy of supply to MCWD, with 300 afy of recycled water available to the Monterey Peninsula. The hybrid alternative includes a recycled water component and a desalinated water component. In 2007, the EIR was amended to increase the recycled water component to a maximum of 1,727 afy (1,427 for the Ord Community plus 300 afy for the Monterey Peninsula), with the total project remaining at 2,400 afy. Also in 2007, the Fort Ord Reuse Authority allocated the project's recycled water component among the land use jurisdictions in the Ord Community, as shown in Table 4.5.

Table 4.5 Recycled Water Allocations (afy)

Jurisdiction	Allocation
U.S. Army	0
CSUMB	87
Del Rey Oaks	280
City of Monterey	0
County of Monterey	134
UCMBEST	60
City of Seaside (Ord Portion)	453
State Parks and Rec.	0
City of Marina (Ord Portion)	345
Assumed Line Loss	68
Total	1,427

In 2012, the Monterey Regional Water Pollution Control Agency and the Monterey Peninsula Water Management District began planning the Pure Water Monterey Groundwater Replenishment Project, as described in Section 4.5.3, which includes the advanced treatment of recycled water for indirect potable reuse.

On April 8, 2016, MCWD and MRWPCA entered into an agreement which would provide up to 1,427 AFY of advanced treated water for urban landscape irrigation instead of the tertiary treated recycled water planned under the RUWAP. To address the remaining (potable) water augmentation under the Base Reuse Plan, MCWD, FORA, and MRWPCA entered into a memorandum of understanding on May 13, 2016, to explore the most cost effective and

technically efficient mix of advance treated water, conservation, desalination, groundwater recharge and recovery, and other water sources, options, and alternatives to provide the additional 973 afy for the Ord Community.

4.4.2 Surface Water Supplies

The District is located along the Salinas River, and MCWD Board of Directors has considered purchasing surface water rights in the Salinas River Basin as a means of meeting long-term (beyond 2030) demands. MCWD has previously been in negotiations with a senior (pre-1914) water right holder but no purchase has been consummated. MCWD has also studied the possibility of constructing a surface water treatment plant, which would utilize surplus Salinas River water. That option potentially is available to meet additional demands beyond the 20-year planning horizon. Also, Phase II of the Salinas Valley Water Project, examined at a programmatic level in the SVWP EIR, calls for surface water to be made available to coastal urban water agencies in the future. MCWRA holds an undeveloped water right permit 11043 with a priority date of July 11, 1949, for diversion of up to 400 cfs of peak flows from the Salinas River. The State Water Resources Control Board amended the permit in 2013, setting a deadline of July 1, 2026, for completing the planning, permitting and construction of the intake and initiating diversions under the permit.

4.4.3 Stormwater Capture

The surface geology within the District service area is predominantly coastal dune sands, and stormwater disposal is primarily through the use of percolation basins. Within portions of the former Fort Ord there were stormwater collection systems that conveyed runoff to the Monterey Bay. These outfalls have been converted to on-shore percolation basins, and most of the areas served have been converted to local percolation ponds. Local percolation recharges the shallow, unconfined aquifer, with a portion of that reaching the 180-ft aquifer.

Because the existing stormwater systems are decentralized, terminating at numerous small percolation lots, stormwater capture for municipal use is not currently planned as a water source. In neighboring communities such as Pacific Grove, summer urban runoff is diverted to the sanitary sewer system to reduce discharges to the Monterey Bay, which also increases the amount of recycled water produced at the regional wastewater treatment plant. Capture of peak urban runoff during the winter months has the potential to cause sanitary sewer system overflows, so diversions are not made in the wet season.

4.4.4 Future Water Supply Assessments and Written Verifications of Supply

In the Ord Community the FORA Final EIR, Reuse Plan and Master Resolution provide mitigation for the initial redevelopment of the former Fort Ord. The 2,400 afy of new water supply mitigation was intended to meet the additional water demands projected to occur by the year 2015. On June 10, 2005, the MCWD and FORA board of directors endorsed the "hybrid alternative" from the September 2004 Regional Urban Water Augmentation Project EIR. This

Project need is consistent with water required by the existing Fort Ord Base Reuse Plan. Additional development above the amount addressed in the Base Reuse Plan EIR will require separate environmental review and potentially additional water supply, which must be funded by the project proponent. The 2035 net supply imbalance is 2,901 afy, of which 2,400 afy may be met under the RUWAP EIR. The potable component of the Augmentation Project will be allocated by FORA among its member land-use jurisdictions, just as FORA allocated the 6,600 ac-ft of Salinas Valley groundwater and Phase 1 recycled water among its member land-use jurisdictions. No assumption is made here regarding reallocation of groundwater within the Ord Community, as each jurisdiction may foresee development beyond the 20-year planning horizon of this report. MCWD will continue to track actual development's consumption of water against estimates in order to plan supplemental supplies as may be necessary.

The water augmentation recycled supply is expected to be on-line by 2020. MCWD has not considered this supply to be "available" in its written verifications of supply because it does not meet the legal requirements to support tract map approvals, building permits or will-serve letters under SB 221. MCWD currently issues water supply verifications under the requirements of SB 221 and will-serve letters based on final subdivision map phases considering only that water which is currently available (SVGB and Marina desalination supply), up to the point where a given land use jurisdiction's allocation is fully allocated to projects. For purposes of this UWMP and requirements of SB 610 water supply assessments, the water augmentation supply is considered available for planning purposes within the 20 year time frame of the UWMP.

4.5 Recycled Water

4.5.1 Existing Water Recycling Systems

MCWD collects wastewater in its two wastewater collection systems serving the City of Marina and the Ord Community, and conveys it to an interceptor pipeline operated by the Monterey Regional Water Pollution Control Agency (MRWPCA). The wastewater is then conveyed to the MRWPCA Regional Treatment Plant (RTP) north of Marina. Wastewater is treated to secondary treatment standards at the RTP facilities and that water not designated for further treatment and recycling is discharged via an ocean outfall. Water designated for further treatment is conveyed to the adjacent Salinas Valley Reclamation Plant (SVRP) that currently produces about 14,000 AFY of tertiary-treated recycled water meeting the standards of Title 22 of the California Code of Regulations. The recycled water is delivered to the Castroville Seawater Intrusion Project (CSIP), irrigating farmland in the greater Castroville area, reducing demands on Salinas Valley groundwater and retarding seawater intrusion in that area. In 2015, 14,250 acre-feet of tertiary-treated water was delivered for crop irrigation. While MCWD has senior rights to recycled water through its agreement with the MRWPCA, MCWD does not currently use recycled water within

its two service areas.[37] The existing CSIP system and two proposed water recycling projects are shown on Figure 4.11, which is at the end of the recycled water section.

The Marina Coast Water District has two points of connection to the regional wastewater collection system. Central Marina connects via a dedicated pump station. The total flow at that station was approximately 1,200 afy in 2015. The Ord Community connects via a gravity pipeline with a metering flume. The total flow at the flume was just under 900 afy in 2015. In 2015, municipal wastewater flows to the RTP were 19,700 afy, with MCWD contributing about 11%. As redevelopment occurs and water use increases, a portion of the increased wastewater flows may be made available as recycled water for urban use. The SVRP is capable of producing an average of 29.6 mgd of recycled water or about 33,000 afy. However, as agricultural demands are seasonal, this capacity cannot be fully utilized year round. To increase recycled water yield based on current wastewater flows, storage capacity to capture winter flows for summertime use would be required. As wastewater flows increase due to urban development, additional recycled water may be produced.

In 1989, MCWD entered into an annexation agreement with MRWPCA. This agreement established MCWD's first right to receive tertiary treated wastewater from the SVRP. MCWD has the right to obtain treated wastewater from MRWPCA's regional treatment plan equal in volume to that of the volume of MCWD wastewater treated by MRWPCA and additional quantities not otherwise committed to other uses. Although several methods of delivering recycled water from MRWPCA to Central Marina have been studied, none has yet been constructed. Detailed plans for the Ord Community recycled water delivery have been developed, as discussed below.

MCWD operated its own water reclamation facility from 1994 to 1997 under the California Regional Water Quality Control Board (RWQCB) Waste Discharge Requirement (WDR) No 91-95 and Monitoring Report No. 92-95. These water reclamation requirements specify the user sites, water quantity, water quality, and a monitoring and reporting program. In 1997 MCWD discontinued production at its water reclamation facility and directed the raw wastewater flow to the MRWPCA RTP under the annexation agreement.

4.5.2 RUWAP Recycled Water System

MCWD and MRWPCA have been jointly pursuing an urban recycled water project,[38] which forms the recycled water alternative in the Regional Urban Water Augmentation Project. Planning for this project found that a total of 1,727 afy could be made available for urban use without adding seasonal recycled water storage (Phase 1 Project). 1,427 afy of recycled water

[37] MCWD was the first agency to contract for recycled water with the MRWPCA, preceding subsequent contracts by others for recycled water supply.

[38] Regional Urban Recycled Water Distribution Project Report, RBF, 2003.

would be supplied for urban irrigation within the Ord Community, and the remaining 300 afy could be used in other jurisdictions on the Monterey Peninsula. MCWD's right to purchase recycled water has a contractual upper limit in the summer months, so providing this volume of recycled water supply requires the commitment of summertime flows from MRWPCA and MCWRA. Seasonal storage would allow recycled water, for which there would otherwise be little demand during the winter, to be made available for irrigation demands in warmer months, rather than discharging treated wastewater to the ocean. Projected Phase II demands that could be served through additional distribution lines and seasonal storage facilities could bring the total recycled water demand to about 3,000 afy, with 2,171 afy of demand that could be served within MCWD.

In 2006, the District began design of the recycled water system. In the Basis of Design Report, the projected non-potable water demands were recalculated, as shown in Table 4.6. Potential Phase 1 uses generally included planned or existing landscapes along the recycled trunk main alignment, such as the existing Bayonet/Blackhorse Golf Course in Seaside, the sports fields at CSUMB, and the proposed golf resort in Del Rey Oaks. The total of existing irrigation demands (1,935 afy, see Table 4.6) exceeds the size of the Phase 1 project (1,427 afy, see Table 4.5), which targets customers along the main pipeline route. Potential Phase 2 uses generally included planned or existing landscapes that required construction of lateral pipelines from the trunk main. Potential customers identified but not included in the Phase 1 project may be included in the future Phase 2.

Construction of a recycled water distribution system was estimated to cost $34 million in the 2006 Basis of Design Report. Therefore, full use of the project capacity is required to minimize the per customer costs.

Table 4.6 Non-Potable Water Demand Projections (ac-ft/yr)

Jurisdiction	Phase 1	Phase 2	Total
U.S. Army		38	38
CSUMB	202	109	311
Del Rey Oaks	338		338
City of Monterey			0
County of Monterey	47	614	661
UCMBEST	55		55
City of Seaside (Ord Portion)	806	140	946
State Parks and Rec.		5	5
City of Marina (Ord Portion)	435	391	826
Marina Sphere			0
Marina Central	52	87	139
Subtotal	1,935	1,384	3,319
Outside MCWD	300	59	359
Total	2,235	1,443	3,678

Under the RUWAP EIR, the Recycled Water Project was resized to 1,727 afy, with 1,427 afy going to the Ord Community and 300 afy going to the Monterey Peninsula. Phase 2 of the project was not addressed in the EIR, but remains an available demand management strategy for both MCWD and California American Water.

MCWD, in coordination with the MRWPCA and MCWRA as part of its Water Augmentation Project, has designed a transmission line through Marina, the Ord Community, and into the City of Seaside. MCWD has constructed approximately four miles of recycled pipeline to date, taking advantage of opportunities to install pipelines while roads were being reconstructed by the Fort Ord Reuse Authority. MCWD has designed the remainder of the recycled water distribution system, and is awaiting funding and redevelopment water demands before proceeding with the construction.

Subject to Monterey County Department of Environmental Health and State Department of Public Health approval, MCWD requires the installation of recycled water pipelines to serve all recreational and common irrigated open space areas within new developments (MCWD Code § 4.28.030, Recycled Water Service Availability). This requirement is waived only when the land use jurisdiction indicates that future recycled water will not be allocated to a project. The City of Seaside has adopted a more restrictive standard, requiring residential front yards to be plumbed for future recycled water in addition to recreational and common areas.

4.5.3 Pure Water Monterey Project

The Pure Water Monterey Groundwater Replenishment Project is currently being pursued by the Monterey Regional Water Pollution Control Agency (MRWPCA) and the Monterey Peninsula Water Management District (MPWMD), with cooperation from MCWD, MCWRA and the City of Salinas. The project will develop new sources of water supply and convey them to the MRWPCA Regional Treatment Plant, where they will be recycled as either Advanced Treated Water for indirect potable reuse in the Seaside Groundwater Basin, or as additional Tertiary Treated Water for CSIP. The project is expected to off-set approximately 4,300 AFY of groundwater pumping for irrigation in the 180/400 Foot Aquifer. The adopted EIR for the project is available at: http://purewatermonterey.org/reports-docs/cfeir/. The groundwater replenishment component replaces the MRWPCA's previously planned urban recycled water deliveries to the Monterey Peninsula under RUWAP.

The sources of supply identified in the Pure Water Monterey project include: secondary-treated municipal wastewater which is currently discharged to the ocean outfall (i.e., winter flows); agricultural wash water from vegetable processing, which is currently treated at the Salinas Industrial Wastewater Treatment Facility (SIWTF); urban run-off from the City of Salinas and City of Monterey; and surface water diversions from the Blanco Drain, Reclamation Ditch and Tembladero Slough, which primarily carry agricultural tile drainage during the summer months. All of these flows would be conveyed to the regional treatment plant, most using available

capacity in the existing wastewater interceptor system and at the Salinas Pump Station (SAPS). A new Advanced Water Treatment Facility (AWTF) would be constructed within the MRWPCA property north of Marina. Advanced Treated Water for indirect potable reuse would be conveyed to the Seaside Groundwater Basin in a new pipeline, and the additional tertiary-treated recycled water would be conveyed to irrigators using the existing CSIP system. A simplified diagram of the project is provided in Figure 4.10.

The proposed alignment for the Pure Water Monterey advanced treated water pipeline is the same as for the MCWD RUWAP recycled water trunk main. The two agencies have agreed to share a single pipeline, and to deliver advanced treated water for urban irrigation instead of tertiary-treated recycled water as originally planned. Due to the size and length of the trunk main, combining the two projects results in a significant cost savings. The source water for the MCWD portion of the project is the municipal wastewater which was originally slated for tertiary treatment.

On April 8, 2016, MCWD and MRWPCA entered into the Pure Water Delivery and Supply Project Agreement wherein the Product Water Conveyance Facilities will be designed, constructed, owned, and operated by MCWD with a capacity sufficient to convey the 5,127 afy of advance treated water and wherein MCWD will have the right to utilize up to and including a net 1,427 afy of the AWTF's treatment capacity to serve the Ord Community and to implement the recycled water portion of the Regional Urban Water Augmentation Program. As shown in Table 3.10, the project is expected to provide 600 afy in 2020, and increase to 1,359 afy in 2025. The project functions as an in-lieu groundwater recharge project and will be a major component of any groundwater sustainability plan for the Marina Area.

On April 18, 2016, the MCWD Board of Directors adopted Amendment 3 to the RUWAP EIR, evaluating shared use of the trunk main and delivering advanced treated water. This completed the CEQA process covering MCWD's work under the Pure Water Delivery and Supply Project Agreement.

Figure 4.10 Pure Water Monterey Schematic (partial)

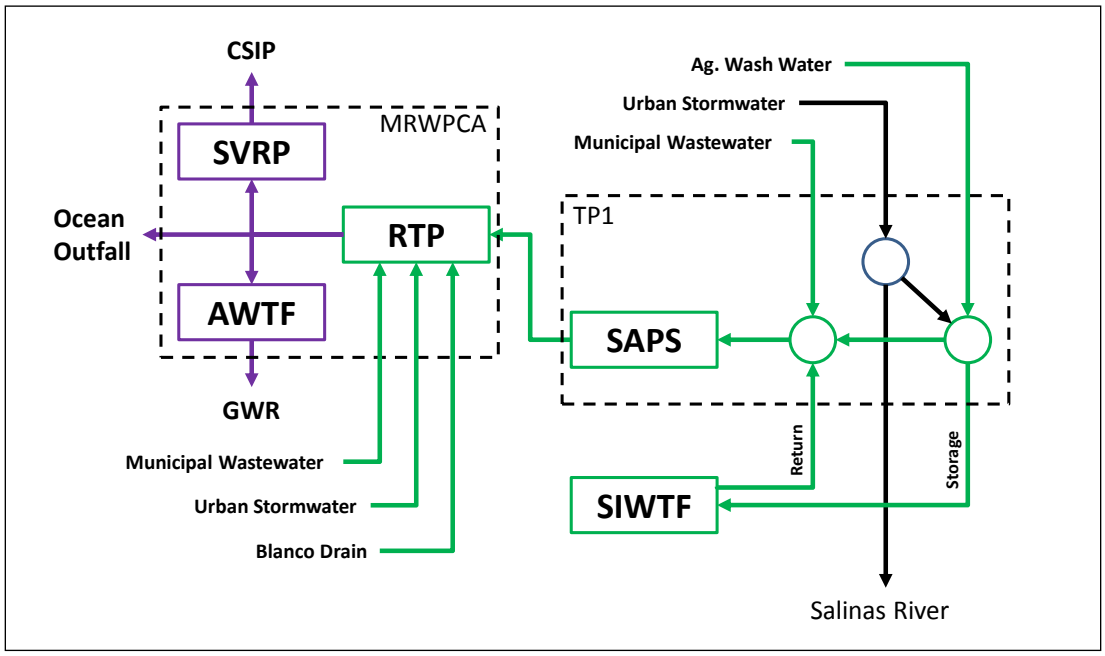
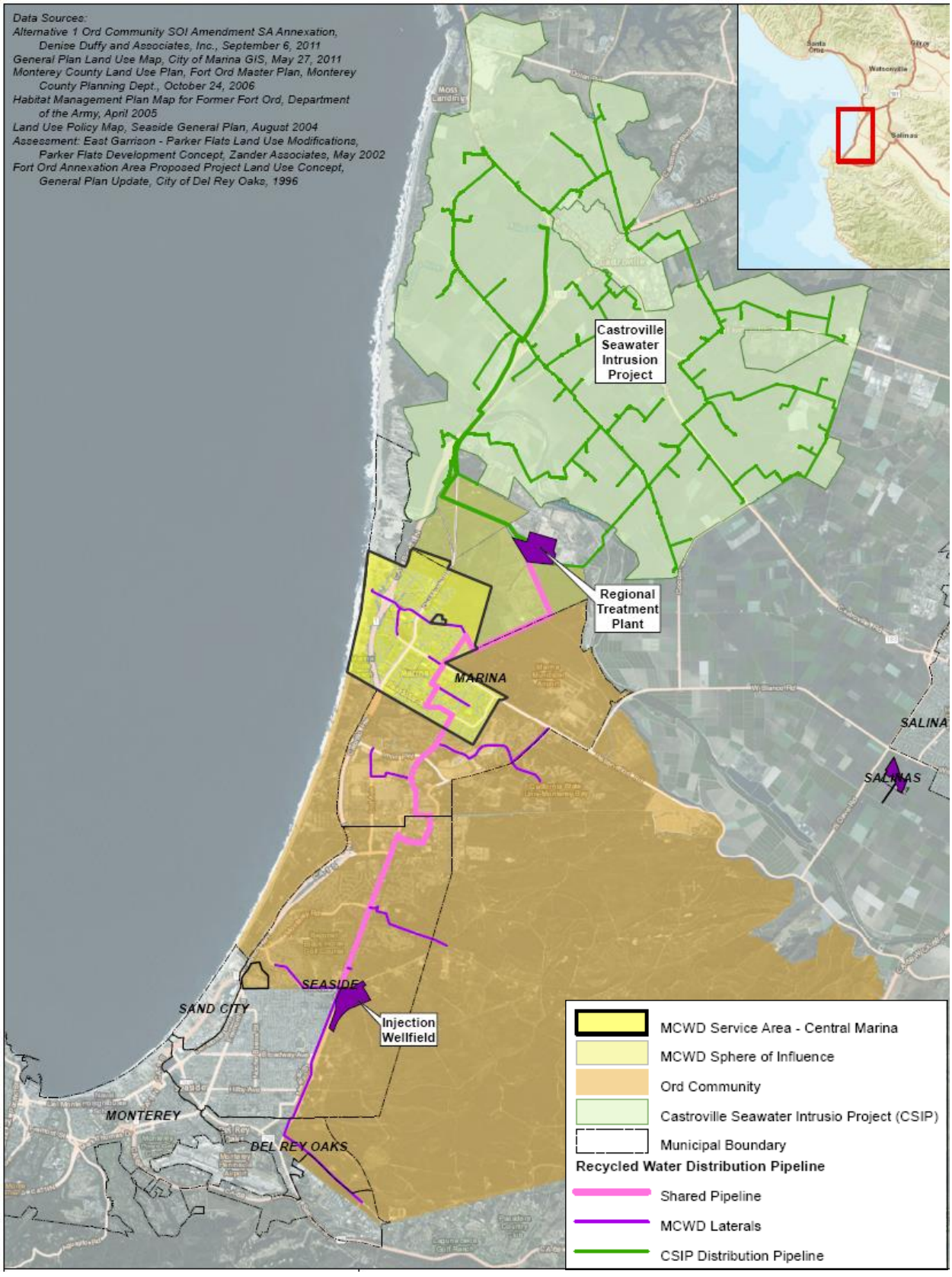


Figure 4.11 Planned and Existing Recycled Water Systems



4.6 Desalinated Water

4.6.1 Existing Desalination Facilities

In 1996, MCWD constructed a seawater desalination facility to explore the feasibility of extracting seawater through shallow wells along the beach. This small seawater desalination plant is located at the former wastewater treatment plant site on Reservation Road between Dunes Drive and the Monterey Bay. The source water for the plant comes from a shallow well located on Marina State Beach. This was constructed as a pilot facility, used to verify that adequate seawater supply could be produced from beach wells, and to test the use of beach injection wells for the disposal of brine (the salty water that remains after potable supply is separated from seawater using reverse osmosis). The Monterey Bay is a national marine sanctuary, so open ocean intakes and discharges were not allowed.

This plant is considered an available supply in the context of this UWMP, and SB 610 and 221. It is currently idle; however, the supply from the plant could be restored to function, if necessary[39]. The plant capacity is scheduled to be replaced as part of a larger future desalination facility, as described below. The 300 AFY supply was allocated to the Ord Community under a 2006 agreement with three developers for specified new developments in the Marina portion of the Ord Community. In 2009, MCWD issues notices of default to all three developers.

A similarly-sized desalination plant (300 afy) was constructed in Sand City in 2010, using multiple wells for groundwater extraction and brine disposal. This is the first coastal desalination facility permitted since the Monterey Bay was designated a national marine sanctuary. The plant is operated by California American Water Company as part of their Monterey Service Area. These plants, along with the locations of proposed desalination facilities, are shown on Figure 4.12, which appears at the end of the desalination section.

4.6.2 Planned Desalination Facilities

Under the Regional Urban Water Augmentation Project, MCWD evaluated replacing the pilot plant with a larger facility capable of producing up to 3,000 afy of potable water per year. Of the 3,000 afy, 2,400 afy was proposed to augment the future needs of Ord Community, 300 afy was replacement for the current plant's capacity; and an additional 300 afy was considered to help satisfy demands on the Monterey Peninsula, outside of MCWD's service area. In the final EIR for the Regional Urban Water Augmentation Project, the desalination portion was reduced to 1,500 afy, with 1,200 afy for the Ord Community and 300 afy to replace the existing Central Marina plant.

[39] In the 2007 MCWD Desalting Plant Condition Assessment prepared by CH2M-Hill, the time required to rehabilitate the existing plant was estimated at 12 to 16 months. Due to coastal erosion around the intake well, that estimate should be increased to 24 to 30 months.

In 2007, a Desalination Facility Basis of Design Report was published for the RUWAP desalination component. That study analyzed locating the 1,500 afy plant at the former Fort Ord Main Garrison Wastewater Treatment Plant. That facility, located on the coastal side of Highway 1, has been inactive since the sewer system was connected to the MRWPCA regional interceptor in 1990. Aside from reusing an existing disturbed site, the proposed location was preferred over the existing desalination plant location due to its set-back from the coastal bluff. The coastal bluff along that portion of the Monterey Bay experiences an average of 1-foot of erosion per year, so locating the facility further extends its estimated service life. Vertical water wells would be drilled into the 180-ft aquifer and/or the shallow aquifer to supply seawater-intruded groundwater. Water treatment would consist of desalination using reverse-osmosis (RO), followed by conventional disinfection. Product water would be pumped into the existing municipal distribution system. The brine from the RO treatment system would be blended with additional water from the source wells, and then disposed of using wells or infiltration galleries in the coastal dune.

In 2006, California American Water Company (CAW) began the preliminary design of their Coastal Water Project (CWP), which would provide up to 11 million gallons per day (12,320 afy) of desalinated water for their Monterey Service Area, in order to reduce withdrawals from the Carmel River and the Seaside groundwater basin. CAW had been ordered to reduce pumping from the river under State Water Resources Control Board Order 95-10. Two plant sites were considered, one in Moss Landing at the former National Refractory site, and one in North Marina adjacent to the Monterey Regional Water Pollution Control Agency regional wastewater treatment plant. The MRWPCA site was preferred because of the existing deep ocean outfall that may be used for brine disposal. Seeing an opportunity for efficiency through combined efforts, MCWD, CAW, MCWRA and CPUC worked cooperatively to study and include a regional desalination facility in the CWP EIR as an alternative project to the CAW-only desalination facility. MCWD had a pre-existing purchase option for land adjacent to the MRWPCA plant, which facilitated an agreement between the two agencies. The shared Regional Desalination Facility was certified as the environmentally superior alternative in the Final Coastal Water Project EIR adopted by the California Public Utilities Commission – Division of Ratepayer Advocates (CPUC-DRA). MCWD subsequently purchased the land for the plant.

In 2010, MCWD entered into an agreement with the MCWRA and CAW to jointly develop the Regional Desalination Facility, to be located adjacent to the MRWPCA treatment plant with an initial capacity of 10 mgd. The source water for the plant was to be seawater-intruded groundwater from the 180-Foot Aquifer. This provides a source of supply that does not involve an open ocean intake. Under that agreement, MCWRA would construct and operate the well-field, MCWD would construct and operate the treatment plant and a portion of the transmission pipeline, and CAW would construct the remainder of the transmission main. Because a portion

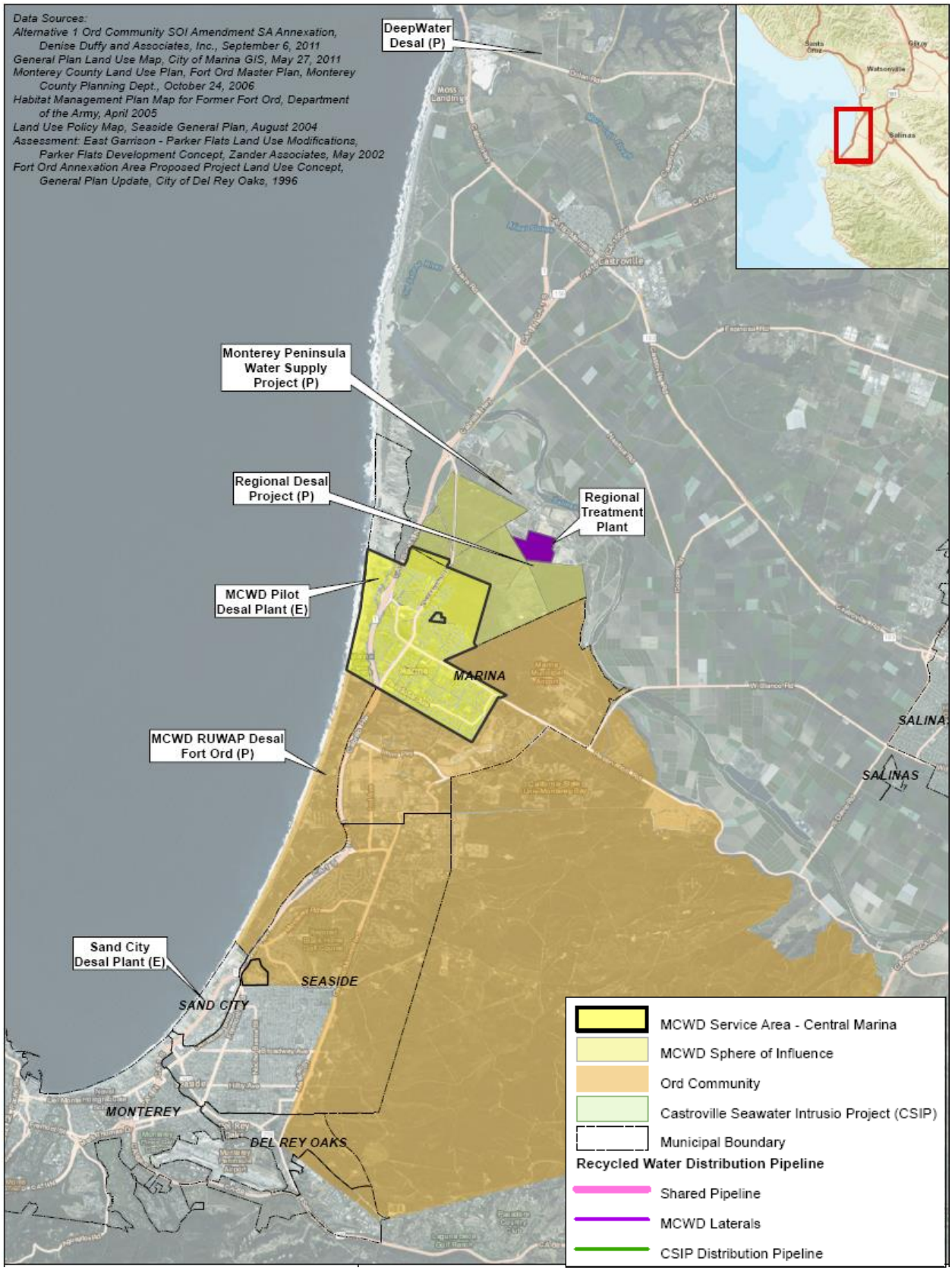
of this supply is Salinas Valley groundwater which cannot be provided to customers outside MCWRA Zones 2/2A, MCWD would to take that portion of the plant yield and reduce pumping from their existing wells. CAW would initially take the full desalinated seawater yield. When the potable demands in the Ord Community exceed the available groundwater allocation, MCWD may take desalinated seawater (in addition to the groundwater component), up to the limits established in the CWP EIR. Due to litigation over the validity of inter-agency agreements, the parties are no longer jointly pursuing the Regional Desalination Project.

The evaluation of a RUWAP desalination facility option is part of the May 2016 MCWD-FORA-MRWPCA study of alternatives to supply additional potable water for the Ord Community.

CAW is currently pursuing the Monterey Peninsula Water Supply Project, which includes a 9.6 mgd seawater desalination facility located near the MRWPCA regional plant. CAW is proposing that the source water for this facility would come from slant wells on the CEMEX property within the North Marina Area. Water treatment would be by reverse osmosis, and brine disposal would be through the MRWPCA ocean outfall, just as in the Regional Desalination Facility. A test slant well was constructed in 2015, and has been operated, but not continuously, from April 2015 through March 2016. The operational test is scheduled to run for an additional year to assess the response of the aquifer, which is difficult with the test coinciding with the extended drought. The CPUC Draft EIR for the Monterey Peninsula Water Supply Project was issued for public comment in April 2015, but later withdrawn due to concerns regarding the DEIR's groundwater analysis, among other concerns. MCWD has expressed concerns that the project as proposed will adversely impact water levels and water quality in the North Marina Area and Marina Area Subbasin, resulting in potential adverse impacts to MCWD's wells. The revised combined Draft EIR/EIS is currently scheduled for public release in late 2016.

One additional project being considered in Monterey County is DeepWater Desal LLC's Monterey Bay Regional Water Project, located in Moss Landing. The project does not have a local public agency as a sponsor, so the State Lands Commission is the CEQA lead agency for the environmental review. The June 2015 notice of preparation for the EIR includes this description: "A proposed 25,000 acre-feet per year seawater reverse osmosis desalination facility and co-located seawater-cooled 150-megawatt computer data center campus located on a 110-acre site approximately 1.5 miles east of Moss Landing in Monterey County, California. The Project would also include seawater intake and brine discharge pipelines that would extend west from Moss Landing Harbor to the upper reaches of the submarine Monterey Canyon and the north shelf, respectively, within Monterey Bay National Marine Sanctuary." The project is intended to provide wholesale water supply to cities and agencies in both Monterey and Santa Cruz Counties. The Draft EIR has not yet been issued for public review and comment.

Figure 4.12 Existing and Potential Desalination Facilities



Section 5 - Water Supply Reliability and Water Shortage Contingency Planning

5.1 Water Supply Reliability - Single and Multiple Dry Years

The Urban Water Management Planning Act requires a description of a water provider's supply reliability and vulnerability to shortage for an average water year, a single dry year or multiple dry years. Such analysis is most clearly relevant to water systems that are supplied by surface water. Since the bulk of MCWD's supply is groundwater and the remainder will come from recycled and desalinated supply, short- and medium-term hydrologic events over a period of less than five years usually have little bearing on water availability. The Salinas Valley Groundwater Basin has about 19.8 million acre-feet of storage capacity, and was estimated to hold 16.4 million acre-feet in 2013[40]. Annual water use from the SVGB is approximately 0.5 million AFY. Within the 180/400 Foot Aquifer Subbasin, storage was estimated to be 6.8 million acre-feet. The Salinas Basin is aided by two large storage reservoirs, Nacimiento and San Antonio, providing about 700,000 ac-ft of storage. These reservoirs regulate surface water inflow to the basin shifting winter flows into spring and summer releases for consumptive use, which also allows for increased basin recharge. The Salinas Valley Water Project has reduced groundwater pumping in the 180/400 Foot Aquifer Subbasin. Therefore, MCWD's groundwater supply is fully available in annual average, single dry year and multiple dry years.

Water demands within the District do vary with weather changes and under drought-year restrictions. The single driest year on record is 2013, with a record low rainfall of 3.3 inches at the Salinas Airport rain gage. Water use within the District increased from 4,173 afy in 2012 to 4,431 afy in 2013 (drought restrictions were not implemented until 2014). Adjusting for the population increase, the water use increased by 5.5% over an average weather year.

The driest three-year period on record was 1988-1990, with 21.7 inches of rainfall recorded at the Salinas Airport. Water usage records for that period were not available, so the second-driest period of record was used for the multiple dry year analysis: 2013-2015, with 23.2 inches of recorded rainfall. In 2013, the Governor and the State Water Resources Control Board identified the start of an extended drought, and in 2014 they mandated state-wide water conservation measures. As a result of the mandated conservation, the District's water demand declined to 4,026 afy in 2014, and 3,228 afy in 2015. A portion of that demand reduction was due to the Bayonet/Blackhorse Golf Course transitioning from MCWD supply to Seaside Groundwater Basin wells in 2015.

To estimate the water demand changes during a three-year drought, the actual water use was compared to the projected water demand, assuming the same per-person usage rate as in 2012

[40] Brown & Caldwell, State of the Salinas River Groundwater Basin, 2015

(see Table 5.1). Water usage for the golf course was removed from the system total, since that high-volume customer was not supplied by the District for the full analysis period, and in the future will be supplied using recycled water. The remaining water use was compared to the projected water use to develop a demand adjustment factor for the first, second and third years of a drought. As shown below, water demand increased by 1% over average in the first year, declined by 12% in the second year and by 25% in the third year.

Table 5.1 Multiple Dry-Year Demand Adjustment Factors

Year	2012	2013	2014	2015	Units
Year Type	Average	1st Dry*	2nd Dry	3rd Dry	
Population	30,767	30,961	31,325	32,375	persons
Water Use	4,174	4,431	4,026	3,228	AF
Golf Course Irrig.	264	456	524	138	AF
Net w/o Golf Irrig.	3,909	3,975	3,502	3,090	AF
Projected Use		3,934	3,980	4,114	AF
Factor		101%	88%	75%	

* 2013 is also the single driest year on record

Using the above factors, the District's projected water demands can be scaled to estimate drought response. The total projected demands are shown in Table 5.2. Because the demand is projected to decline under a multiple-year drought and the available groundwater storage greatly exceeds even a three-year demand, the available water supply is considered reliable in all years.

Table 5.2 Water Demands in Single and Multiple Dry Years

Year-Type	2015	2020	2025	2030	2035
Average	4,204	6,205	9,937	11,119	12,197
Single-Dry	4,246	6,267	10,036	11,230	12,319
Multiple Dry 1st Year	4,246	6,267	10,036	11,230	12,319
Multiple Dry 2nd Year	3,700	5,460	8,744	9,785	10,734
Multiple Dry 3rd Year	3,153	4,654	7,453	8,339	9,148

5.2 Water Quality Impacts on Reliability

The reliability of MCWD's water supplies relative to seawater intrusion and groundwater contamination are discussed at length in Section 4.2.5. Water quality and contamination monitoring programs are discussed in Section 4.2.6. While neither seawater intrusion nor groundwater contamination pose an immediate threat to water supply reliability, MCWD maintains active monitoring of intrusion and contamination status and participates in the analytical and management efforts undertaken by the Monterey County Water Resources Agency with respect to seawater intrusion remediation actions and by the U. S. Army Corps of Engineers relative to groundwater cleanup on the Former Fort Ord.

5.3 Water Quality Monitoring

Water quality monitoring and lab analysis is performed by Marina Coast Water District by its lab staff and under contract with state certified laboratories. Water samples from wells, water treatment plants, and point-of-use locations are collected and tested to assure water delivered to customers meets both state and federal standards. Results from water quality testing are published annually in MCWD's annual Consumer Confidence Report.[41] The quality of MCWD's water supplies meets the requirements of all current state and federal drinking water quality regulations.

Groundwater from the Marina and Ord water supply wells is disinfected with chlorine as a safeguard against microorganisms. In Marina, chlorine is also used to treat the naturally occurring sulfides at Well 12 that can cause odors.

MCWD's state-certified laboratory performs extensive water quality monitoring of the Marina and Ord drinking water supply. Regulations require weekly monitoring for coliform bacteria in the distribution system. The presence of coliform bacteria may indicate the presence of disease-causing organisms. One water sample from each of five sampling sites in Marina and from each of five in Ord is collected and analyzed each week. A different set of five is analyzed each week in a month for each water system. There are a total of 20 different sample sites in Marina and 20 different sample sites in the Ord Community from which water samples are collected.

To make sure that water quality is maintained from source to delivery, MCWD's laboratory also performs weekly monitoring of general physical and chemical parameters. Each week five water samples are collected from the Marina and Ord coliform sampling sites, from the Marina and Ord source wells and from the water reservoir in Marina. The water samples are tested for color, odor, turbidity, temperature, pH, conductivity, free chlorine residual and sulfides.

In addition, the Marina and Ord source wells are also tested for chloride, fluoride, nitrate, bromide and sulfate. The purpose of this monitoring is to detect any abnormal concentrations that might indicate problems within the system.

When in operation, the State requires the MCWD to monitor water quality at different stages of the Marina Desalination Plant treatment processes. Water samples are collected from the ocean (Monterey Bay), at the plant's seawater intake well and from its finished product water on a daily, weekly, monthly and quarterly schedule. Water samples are tested for coliform organisms, free chlorine residual, pH, turbidity, conductivity, total dissolved solids, temperature, chloride, sulfate, alkalinity, hardness and corrosive index. This monitoring program ensures that the desalination plant is operating properly and is producing water that meets or exceeds state and federal standards. As mentioned in Section 4.5, this plant is not currently in operation.

[41] See www.mcwd.org/water_quality.html.

MCWD monitors for compliance over 110 constituents in drinking water in varying schedules. Many of these constituents are naturally occurring substances. The Marina and Ord source wells, Marina's reservoir and the desalination plant are tested for general minerals such as calcium, magnesium, hardness; inorganic chemicals such as arsenic, chromium and other metals; organic chemicals such as solvents, pesticides and herbicides; radioactivity including radon; asbestos and other chemicals that are still not regulated and have no state or federal standards. Regulations also require that MCWD test for disinfection (chlorination) by-products such as total trihalomethanes and haloacetic acids in the distribution system. Lead and copper are tested from indoor water samples to check if materials used in home or building plumbing contribute to levels of lead and copper.

5.4 Water Production System Reliability

MCWD has undertaken specific measures to ensure its ability to supply water in the event that groundwater production is impaired by mechanical failure or any other potential problem, including water quality impairment.

In 2005, MCWD completed installation of the Ord/Marina Inter-Tie Project connecting the Ord Community water production and distribution system to the Central Marina water production and distribution system. The Ord/Marina Inter-Tie Project connected these two water systems that had been operated separately (each with three wells) into a single, six-well system that can be operated in an integrated manner to ensure physical production reliability for the system as a whole. The wells in Central Marina are in the Deep Aquifer, while the wells in the Ord Community were in the 180-Foot and 400-Foot aquifers. The connection added system redundancy, a basic emergency-response feature of many water systems. In 2007, MCWD combined the two water systems under a single permit from the California Department of Public Health.

Each of the five inter-ties connecting the Ord Community and Marina water systems is fitted with a bi-directional flow meter that continuously monitors and records the volume of water moving through each inter-tie, when it is being operated. These meters, combined with the existing meters on the wells, ensure a full accounting for all water produced by MCWD. The Supervisory Control and Data Acquisition (SCADA) system ensures that production of Salinas Valley groundwater delivered to the Ord Community remains within the 6,600 afy limitation imposed by the 1993 annexation agreement with the MCWRA, and that production of Salinas Valley groundwater delivered to Central Marina remains within the 3,020 afy limitation imposed by the 1996 annexation agreement with the MCWRA.

In 2007, MCWD completed the Marina Water System Master Plan for the combined system, which identified capital improvement projects required to improve reliability and meet the projected development demands. In 2008-09, MCWD replaced the D-Zone water tank with a larger reservoir, and replaced the E-Zone reservoir with a hydropneumatic booster pump station.

The preliminary designs have been completed for new storage tanks in the A- and B- pressure zones. MCWD is awaiting the resumption of development activity to complete those projects.

MCWD recently replaced Well 32 in the Ord Community with a new Well 34 on the same site, completed in the Deep Aquifer. The District also added a new Well 35 further east along Reservation Road at Watkins Gate Road.

5.5 Water Shortage Contingency Plan

To prepare a water supplier for the event of a water shortage, including a drought or an emergency shortage, the Act requires an UWMP to include a Water Shortage Contingency Plan (WSCP). The WSCP needs to include the following specific elements:

- Actions to be undertaken by the water supplier to prepare for, and implement during, a catastrophic interruption of water suppliers (e.g., a regional power outage, an earthquake, or other disaster).
- Stages of action, including up to a 50-percent supply reduction, and an outline of specific supply conditions at each stage.
- Additional, mandatory provisions against specific water use practices during water shortages (e.g., street cleaning).
- Consumption reduction methods in the most restrictive (drought) stages for up to a 50 percent reduction in demand.
- Penalties or charges for excessive use, where applicable.
- An analysis of the impacts of each of the actions and conditions described in the WSCP on the revenues and expenditures of the urban water supplier and proposed measures to overcome those impacts.
- A draft water shortage contingency resolution or ordinance.
- Description of a mechanism for determining actual water use reductions pursuant to the WSCP.

The District Board of Directors adopted an updated Water Shortage Contingency Plan on July 6, 2015, in Resolution No. 2015-33. The updated WSCP adds specific restrictions on water use that may be implemented at the time of a water shortage. Stages of action and triggers were not changed from the previously adopted WSCP. The Resolution and WSCP are included in Appendix F. Article 3.36.050 of MCWD Code of Ordinances allows for enforcement of the WSCP.

5.5.1 Actions in the Event of a Catastrophic Interruption

MCWD developed and adopted an Emergency Response Plan (ERP) in 2007 for emergency and disaster occurrences with guidelines and agreements for cooperative efforts with other State and

local agencies, as required by the State Department of Public Health. The ERP contains actions MCWD would initiate in the event of a catastrophic reduction in its water supply. Article 2.09, Local Emergency, of the District Code of Ordinances details the procedure for declaring an emergency and the procedures authorized for immediate response. MCWD conducts periodic table-top exercises with the emergency response offices of the jurisdictions it serves, and annual reviews of its emergency response plan.

5.5.2 Stages of Action, Mandatory Provisions, Reduction Methods

The District's Water Shortage Contingency Plan includes stages of action, mandatory provisions, and consumption reduction methods. Because the Salinas Valley Groundwater Basin supply is not drought susceptible, the triggers for the Stages of Action listed in Table 5.3reflect mechanical failures and/or water quality concerns, which are more likely to impact MCWD. The mandatory provisions and consumption reduction methods for each stage are detailed in the Water Shortage Contingency Plan at Appendix F.

Table 5.3 Water Shortage Contingency Plan - Stages of Action

Stage No.	Water Supply Conditions			% Shortage
	System Malfunction	Exceed Chloride Standard?	VOC Standards	
1	10% shortage	Not threatened	Not exceeded w/blending	0 - 10
2	10% - 25% shortage	May be threatened	Not exceeded w/blending	10 - 25
3	25% - 35% shortage	Expected	Not exceeded w/blending or remaining capacity reduced by up to 25%	25 - 35
4	35% - 50% shortage	Expected	Not exceeded w/blending or remaining capacity reduced by up to 35%	35 - 50
5	>50% shortage	Expected	Not exceeded w/blending or remaining capacity reduced by up to 50%	>50
Stages 1-5 may also be declared upon directive from the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions				

5.5.3 Penalties or Charges for Excessive Use

Article 3.36.050 of District Code of Ordinances provides for a system of notices and fees for violations. Article 3.36.060 also allows for recovery of costs incurred abating a violation. Violation of provisions of the WSCP shall be enforced under these parts of the MCWD Code.

Table 5.4 summarizes the penalties and charges detailed in Article 3.36.050. The Code does not currently include more stringent penalties or charges for higher stages of a water shortage, but the Board of Directors may consider additional penalties if an extended shortage should occur.

Section 4 of the WSCP includes procedures for making appeals to the Board for relaxation of water use restrictions.

Table 5.4 Water Shortage Contingency – Penalties and Charges

Penalties or Charges	Stage When Penalty Takes Effect
Penalty for excess use: Written notice, date for correction	Applicable to all stages (i.e., not stage-specific)
Charge for excess use: $100 administrative fee for 1st notice; $200 for 2nd notice; $500 for each additional violation within one (1) year.	
Other: Costs of abatement	
Other: Costs of enforcement	
Other: Civil penalty of 50% of abatement and enforcement costs.	

5.5.4 Revenue and Expenditure Impacts

Enforcement of the Water Shortage Contingency Plan is assumed to be covered by enhanced revenues from application of excess use charges and penalties. District reserves may be used temporarily should revenues remain below expectations. MCWD's rate structure is based upon adopted rate ranges and allows for modification of rates on short notice within those ranges. MCWD retains the ability to modify rates to meet all legitimate District needs. Revenue impacts from water sales losses are estimated as follows, based upon Tier 2 rates of $2.79/hundred cubic feet (hcf) in Central Marina and $3.27/hcf in the Ord Community, and recognizing approximately 10% of MCWD's customers are not metered as of 2013.

Table 5.5 Potential Revenue Impacts of Implementation of WSCP

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Assumed Reduction	10 percent	20 percent	30 percent	40 percent	50 percent
Water Sales Loss	$579,804	$1,159,607	$1,739,411	$2,319,215	$2,899,018
Revenue Source: Pumping savings at $135/af	$57,807	$115,614	$173,421	$231,228	$289,035
Net Revenue Reduction	$521,997	$1,043,993	$1,565,990	$2,087,987	$2,609,983
Percent of Total Annual Water System Revenue	6%	12%	18%	24%	30%

* Table based on FY2012-2013 water sales, $8,839,268 for 4,282 acre-feet

5.5.5 Mechanism to Determine Actual Water Use Reductions

Implementing the WSCP is intended to reduce water use to levels specified by stage. Crucial to the implementation is determining how effective any enacted measures are in actually reducing water use.

The WSCP includes increasingly frequent reporting of water usage, based on daily O&M recording of production figures, to the MCWD Board per increasingly severe stages. The monitoring, reporting, and subsequent analyses are meant to determine the extent of water use reductions. Furthermore, the WSCP includes provisions for the MCWD Board to alter WSCP actions at each stage (i.e., tighten restrictions) if usage reduction targets are not being met. Essentially, a feedback loop of monitoring, reporting, and action will be used to effectively implement the WSCP.

5.6 Drought Planning

As discussed in Section 5.1, the Salinas Valley Groundwater Basin is managed by MCWRA so as not to be susceptible to drought. However, the District is pursuing two sources of new water supply that are not drought susceptible: desalination of seawater-intruded groundwater and urban use of recycled water. Both of these projects are discussed in Section 4.

5.7 Minimum Supply Next Three Years

Water Code §10632(a)(2) requires water suppliers to report the minimum available water supply for the next three years. As discussed in Section 5.1, the Salinas Valley Groundwater Basin has a large storage volume which provides a buffer during periods of drought. The District could therefore reliably supply their full groundwater allocation of 9,620 afy in each of the following three years, which is more than twice the current water demand rate within the District.

Section 6 - Conservation and Demand Management Measures

6.1 Introduction

Water conservation is defined as any action taken to reduce water consumption or loss of available supply for use, such as leaks in the production and delivery system prior to the customer's meter. Demand management refers to a subset of conservation methods a water supplier may undertake to reduce demand on the water system. The Urban Water Management Planning Act was modified in 2014 based on recommendations from the Independent Technical Panel (ITP). Previously, UWMP were required to report on 14 specified conservation and demand management measures. The new Act requires that Retail Agencies report on six more general requirements plus an "other" category.

6.2 Demand Management Measures Implementation

The Urban Water Management Planning Act under California Water Code Section 10631 (f)(1) requires a description of a water supplier's water demand management measures that are being implemented or are scheduled for implementation. MCWD is continually seeking to improve its conservation program and features that are cost-effective or otherwise are a wise investment in resource management. The District completed its Urban Water Conservation Feasibility Study in 2004, and has been implementing the recommendations by phases. In 2015, The District added an additional Water Conservation Specialist position to the staff, which greatly increased their capacity for customer assistance.

MCWD signed the California Urban Water Conservation Council (CUWCC) MOU in 1991 and began implementing water conservation and demand management practices as part of its overall integrated water management program. Due to staffing changes, the District is behind on submitting CUWCC BMP Reports, with the last report submission made in 2010. Table 6.1 summarizes MCWD's water conservation program over the past 5 years and highlights the 2015 activities. Figure 6.1 shows the conservation program spending over the past five fiscal years and the indoor water usage during those years. Figure 6.2 shows spending and outdoor water usage over that same time period. Note that most residential irrigation is through domestic meters and therefore reflected in Figure 6.1. Also, conservation education spending appears in both graphs.

Mandatory restrictions on water use were implemented in 2014 in response to the state-wide drought. MCWD focused on education and outreach as it pertains to drought restrictions and was able to reduce outdoor water usage to below pre-drought levels. The primary programs contributing to this were landscape watering restrictions, the state requirement to let roadway medians to go fallow, and increased toilet and fixture retrofits. When the drought restrictions are removed, it is likely that outdoor water use will increase, but indoor use will remain low due to the infrastructure changes and the community's learned behavioral changes.

Table 6.1 Summary of DMM Implementation

Demand Management Measure	5-Year Program	2015 Activity
Water Waste Prohibition	On-going monitoring for violations	10 water wasters identified
Metering with Commodity Rates	Maintenance of existing AMR meters/ Working with final jurisdiction to meter older housing areas.	66 un-metered accounts converted
Conservation Pricing	Tiered commodity rates adopted annually as part of annual budget process.	Conservation staff responded to increased requests for on-site surveys due to drought and higher water bills.
Public Information	Water conservation commission meets monthly. E-flyers are distributed monthly. Brochures are included with monthly billing	Printing budget increased for education materials. Increased usage of E-flyers due to drought restrictions.
School Education	Funded in-school program for K-3 students through MPUSD	Provided $25,800 in funding, plus classroom materials
System Water Audits, Leak Detection, Repair	Annual prescreening system audit. Staff contacts customers when alerted by AMR loss detectors.	FY 2014/15 loss at 2%.
Conservation Staffing	Two positions funded in FY10/11 and FY11/12. Reduced to one position in FY11/12 to FY14/15	Increased staffing to 2 positions in FY15/16
Water Survey Programs for Residential Water Customers	On-site surveys performed by request. Compliance inspections are required upon transfer of property.	132 residential surveys completed, a 20% increase over 2014. 142 compliance inspections completed.
Residential Plumbing Retrofits	Residential plumbing retrofits program included in annual budget (shower heads, leak detector kits, rebate budgets).	Program revised to reduce toilets down to 1.28 gallons and showers heads down to 2.0gpm.
Residential Ultra Low Flow Toilet Replacement	MCWD continues to increase the budget to meet increasing demand for rebates.	288 rebates approved
High-Efficiency Washing Machine Financial Incentives	MCWD continues to increase the budget to meet increasing demand for rebates.	163 rebates approved
Commercial Industrial and Institutional Water Conservation	On-site surveys performed by request. All rebate programs available to CII customers.	2 hotels surveys completed.
Large Landscape Conservation	On-site surveys performed by request. Rebate programs for controllers, drip systems, and turf replacement.	12 school sites retrofitted. 42 site surveys completed.

Figure 6.1 Conservation Spending and Indoor Water Demand

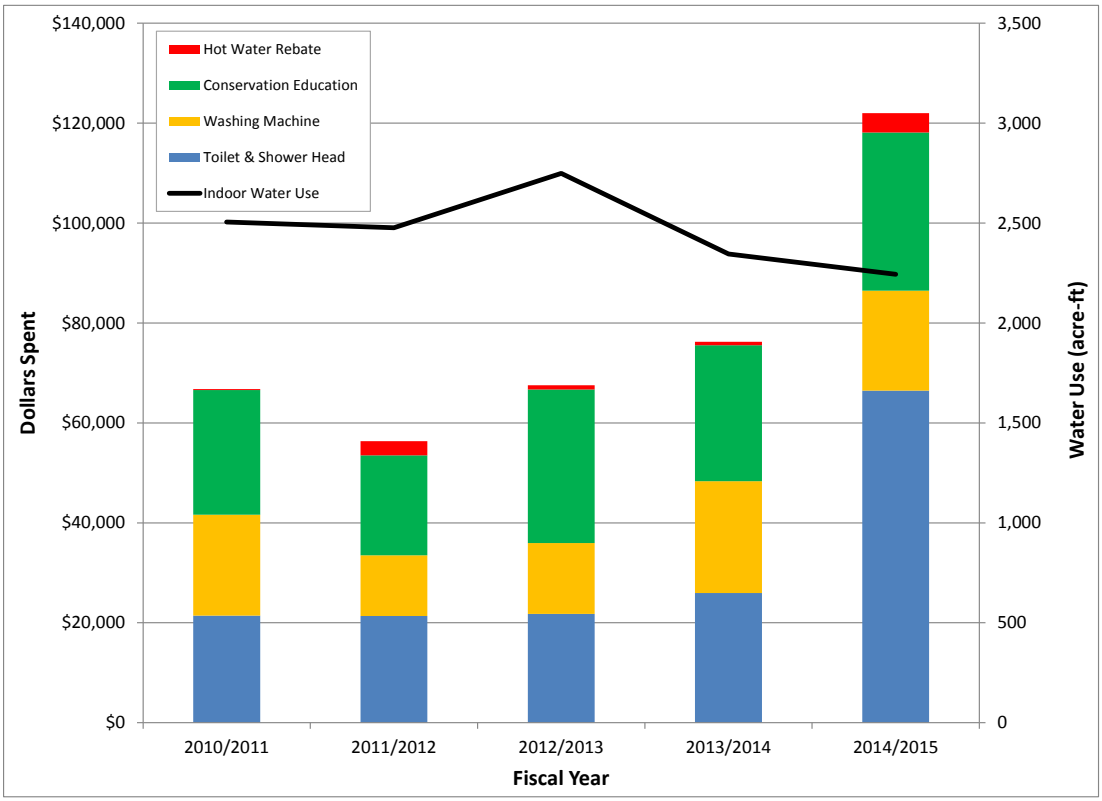
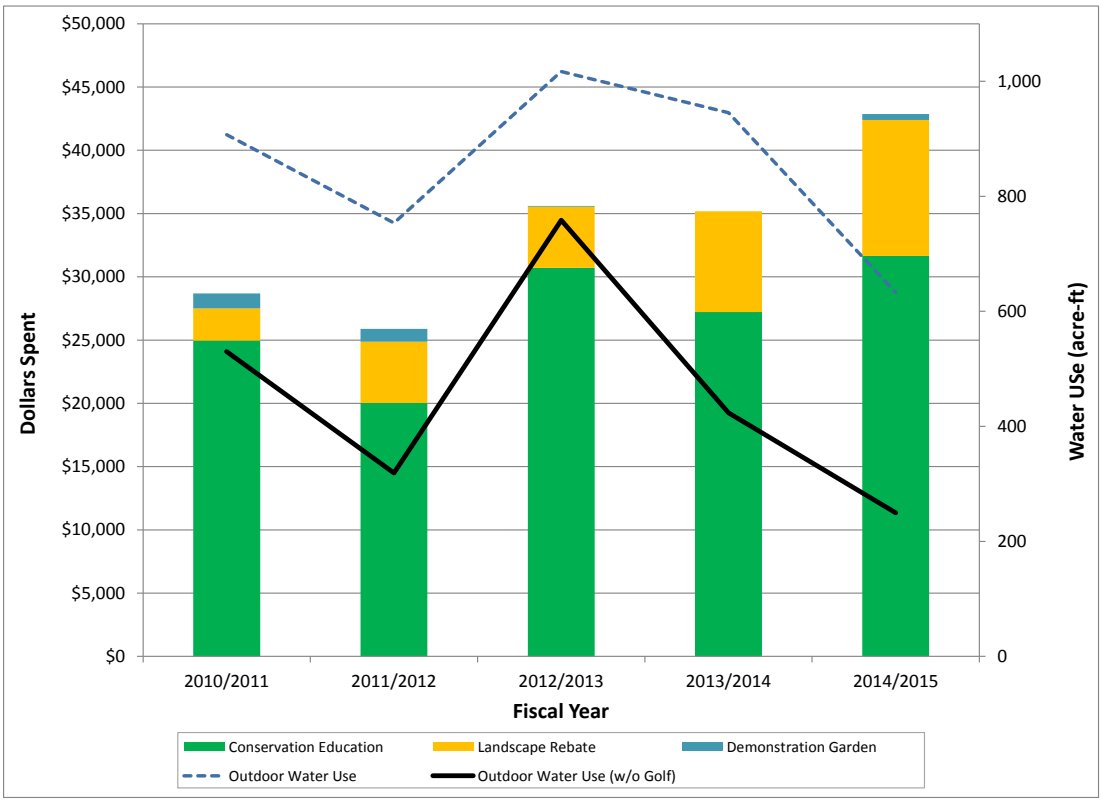


Figure 6.2 Conservation Spending and Outdoor Water Demand



6.2.1 Water Waste Prevention Ordinances

In 1993 MCWD enacted an ordinance addressing water waste and establishing limitations on how and when watering/irrigation can occur, and how water can be used outside (Section 3.36.030 of the District Code of Ordinances). This section of District Code was updated in 2004 and 2005 to add additional restrictions and incorporate the Model Water Efficient Landscape Ordinance. The 2015 update to the Model Water Efficient Landscape Ordinance adopted by the Legislature is incorporated by reference into the District Code.

Sections 3.36.040 through 3.36.060 of the District Code address enforcement of the waste prevention ordinances.

6.2.2 Metering

Meters are required as a matter of state law and urban water providers such as the MCWD have until January of 2025 to be fully metered. Meters with automatic meter reading (AMR) are being installed throughout MCWD in a phased program, and required for all new customers. A feature of the AMR equipment is that each meter will identify if water is used for continuous periods in excess of two hours. Once alerted, District staff contacts the customer, informs them of the possible leak and schedules a follow-up assistance visit, if requested. This has reduced the cost of water losses on the customer's side of the meter. Currently, the Central Marina service area is fully metered, but the Ord Community is not. All metered accounts are billed on a fixed cost plus volume usage basis.

The remaining units are within the Ord Military Community, which is replacing housing units in phases, and installing meters in all new units. 1,012 units of Army housing are still unmetered. Of this, approximately 735 are occupied and on flat-rate billing. MCWD is coordinating with the Housing Manager to identify opportunities to install meters in the existing housing areas. In 2015, 66 un-metered accounts were converted to metered accounts. The District will need to install up to 100 meters per year to meet the 2025 target.

6.2.3 Conservation Pricing

Water conservation is encouraged through a pricing system that rewards customers who use less water with financial incentives, while high water users are charged a higher rate. MCWD charges customers a fixed monthly fee (meter or ready-to-serve fee) and a commodity charge for water used. The commodity rates are on a tiered scale, as shown in Table 6.2. The Central Marina and Ord Community service areas are operated as separate cost centers, and have different customer fee schedules. The water rate tiers and prices are reviewed annually during the budget review and approval process.

Table 6.2 Conservation Pricing Tiers (2016)

Tier	Consumption (hcf)	Ord Rate (per hcf)	Marina (per hcf)
First Tier	0-8	2.97	2.62
Second Tier	8-16	4.56	3.01
Third Tier	16+	6.14	5.31

Hcf = hundred cubic feet

Conservation pricing is often cited as a way to use market mechanisms to provide incentives for conservation. Water consumption, however, has a relatively inelastic demand relative to price, meaning as unit prices go up, unit demand does not correspond in a 1:1 linear fashion. This is due to a variety of factors. Only a portion of water use for a residence can be considered discretionary, generally a portion of landscape irrigation, excess showering periods and the like. At the point discretionary use has been wrung out of the system due to marginal costs of water, another rate tier is unlikely to reap much conservation savings. Additionally, California's Proposition 218 requires water rates to be developed on a cost of service basis. In other words, the top tier of the water rate must have a reasonable relationship to the avoided cost of service for marginal supply. Since MCWD is contemplating relatively expensive marginal supplies to meet new demands, meeting this test is not a concern at this point.

6.2.4 Public Education and Outreach

MCWD provides water conservation information to the public through a wide variety of public outreach tools: information booths at conferences, fairs and community events; flyers, newsletters and billing inserts; e-mailed announcements; video; website; and printed material to the media. In 2015-2016 the printing budget was increased for conservation outreach materials. MCWD has also partnered with the Water Awareness Committee of Monterey, California American Water Company and the Monterey Peninsula Water Management District to develop and distribute outreach material. More details can be viewed on the MCWD's webpage:

http://www.mcwd.org/conserve.html

The District Board appoints a standing Water Conservation Commission, made up of six members of the public, one Board member and one member of Marina City Council. The commission meets monthly to review water conservation ordinances and policies, refinements/adjustments to the water conservation program, specifically conservation Best Management Practice implementation, outreach and educational programs, the conservation budget, and overall District conservation resources; equipment and technologies that promote water conservation; periodic newsletters, Consumer Confidence Reports, and other conservation outreach activities. Recommendations by the commission are presented to the Board of Directors for implementation and action. The commission plays a key role in informing the public about the District's conservation activities.

In addition, MCWD promotes water conservation within the local schools. The Water Conservation Educator position within the Monterey Peninsula Unified School District has been funded by MCWD, CAW and other water providers within the school district for the past 13 years. The program covered all students in grades K-3. That teacher retired in the past year, and the School District is working to hire a replacement. In the interim, MCWD still provides educators with handouts, Internet links and classroom activities when requested. Current staff has visited science classes upon invitation from teachers.

In 2015, much of the education and outreach was geared towards educating the public on State mandated drought restrictions. MCWD worked closely with commercial clients on drought restriction actions such as serving water at restaurants and offering reduced linen washing.

6.2.5 Programs to Assess and Manage Distribution System Real Loss

MCWD performs an annual prescreening system audit and responds to leaks or known trouble spots to make repairs and replacements as needed. A detailed audit for FY 2014/15 (Appendix J) showed that system losses are about 2%. This is primarily due to the District policy of tracking unmetered water use within the work order management system, so that activities such as line flushing, hydrant testing and fire department training are accounted for. There are three fire jurisdictions within the District's water service area (City of Marina, City of Seaside, and Presidio of Monterey) so accounting for hydrant use is an on-going effort.

MCWD also uses its Supervisory Control and Data Acquisition (SCADA) system to identify main breaks and system leaks in real time. The District's service area is predominantly coastal dune with sandy soils. Small water leaks percolate easily and can go unnoticed for long periods of time. Alarms alert the staff to overflowing water tanks and/or failing equipment. System operators monitor the operational patterns of wells, booster pumps and water tanks, and investigate when water use exceeds typical norms.

6.2.6 Water Conservation Program Coordination and Staffing Support

The MCWD water conservation staff consisted of two positions until 2011, a water conservation coordinator and a water conservation specialist. When the coordinator retired in 2012, that position was left unfilled. In 2015, the District added an additional full-time water conservation specialist, increasing dedicated staff from one to two people. The two staff are responsible for oversight and implementation of water conservation practices. MCWD's water conservation specialists work closely with local, regional and state boards as well as the neighboring water districts to implement the DMMs that are effective for the community and to foster an effective working relationship and provide continuity among the programs.

6.2.7 Water Survey Programs for Residential Customers

MCWD sends a qualified water auditor to single-family and multi-family customer locations to audit water use. The survey includes both indoor and outdoor components. The indoor

component includes checks for leaks, including toilets, faucets and meters; checking showerhead, toilet, aerator flow rates and offering/suggesting replacement of high-flow devices. The outdoor survey includes checks of the irrigation system and control timers, and review or development of a customer's irrigation schedule. MCWD requires a survey to be conducted upon transfer of property ownership. MCWD also provides residential customer surveys on an "as-requested" basis, in addition to directly contacting the highest residential users and offering a survey. Any customer who is concerned about high water bills can request an on-site survey. Demand for surveys has increased in the past years due to the drought and increased water rates. Staff completed 132 customer surveys in 2015.

6.2.8 Residential Plumbing Retrofits

MCWD requires single and multi-family residences constructed prior to 1992 to be retrofitted with high-efficiency water fixtures, such as showerheads, faucets and toilets, if needed, upon resale (Article 3.36 of the Code of Ordinance)s. MCWD also requires low-flow fixtures in new construction and renovations. A walk-through inspection and conservation certification is required before occupancy by the new owner. In 2015, staff performed 142 such walk-throughs. In that year, Preston Park housing area within the former Fort Ord changed ownership from the Fort Ord Reuse Authority to the City of Marina, triggering neighborhood-wide retrofits.

MCWD currently provides low-flow showerheads free of charge, and offers installation assistance. Article 3.36 of MCWD Code of Ordinances requires the installation of hot-water recirculation systems or point-of-use water heaters for new construction and renovation, which is an additional water saving measure not required in the State Plumbing Code. The District offers rebates for those adding a hot-water recirculation pump as part of a renovation.

6.2.9 Residential Ultra-Low Flow Toilet Replacement Programs

MCWD's toilet replacement program offers a $125 rebate for each toilet replaced with a high efficiency (1.28 gallon/flush) toilet. Over 3,000 toilets have been replaced under the program. Under the MCWD water waste ordinance, a residence must be completely retrofitted with ultra-low flow toilets (ULFTs) at the time of sale, and all new construction must install high efficiency toilets (HET) (1.28 gpf or dual flush). This program includes CII customers.

Toilet replacement programs have generally been the most successful of demand management measures statewide. Savings for these programs have been shown to be 35-45 gallon per replacement per day, when retrofitting with 1.6 gal/flush units. Higher savings are found in higher density housing and commercial/industrial settings. Savings also persist as toilet life is generally about 25 years. The updated plumbing code allows for only 1.28 gal/flush toilet models to be purchased, which will result in further savings over the 1.6 gal/flush retrofits of the last two decades.

In 2015, MCWD approved 288 HET rebates. Many of these were in Preston Park, as discussed in the previous section.

6.2.10 High-Efficiency Washing Machine Rebate Programs

MCWD provides a $125 rebate to customers who purchase high-efficiency (HE) clothes washers. The program is very successful, averaging 120 conversions each year. MCWD requires all new residential construction to include high efficiency washing machines in each unit, when washers are provided. The incremental cost of high efficiency washers (front loading, horizontal axis) has been about $400 per unit over that of traditional, top load models. Typical customers can save from $50 to $100 per year in energy, water and waste water costs. Water savings range from 14 gallons per day in small single-family households up to over 100 gallons per day per unit in multi-family housing applications.[42] In 2015, MCWD approved 163 HE washing machine rebates.

6.2.11 Commercial, Industrial, and Institutional Accounts

MCWD conducts water use surveys for Commercial, Industrial, and Institutional (CII) customers' indoor and outdoor water uses and the customer is provided with an evaluation of water using apparatus and processes and recommended efficiency measures, expected payback period and available agency incentives. CII customers are contacted within a year of the survey to discuss water use and water saving improvements based on the recommendations of the survey. All of MCWD rebate programs (toilet, landscape, clothes washer) are available to commercial as well as residential customers.

MCWD has seen an increased demand for these surveys from hotels, schools, restaurants, and the courthouse due to drought awareness.

6.2.12 Landscape Conservation Programs and Incentives

The purpose of this DMM is to provide customers with a determination of how much water should be used to irrigate the land appropriately while maintaining conservation practices. The program is oriented toward three groups of customers who irrigate landscapes: those with dedicated irrigation meters, those with meters who serve a mix of irrigation and non-landscape uses, and new accounts with irrigation use. Conservation staff conducts site reviews and assistance visits with property owners/property managers. MCWD has adopted the Model Water Efficient Landscape Ordinance, and requires formal review and approval of all landscapes 500 square-feet or larger.

MCWD has several programs for landscapes, including rebates for evapo-transpiration controllers, turf removal, moisture sensors, rain shut-off switches and drip irrigation systems. MCWD has two demonstration gardens with native drought-tolerant species, one in each service area.

[42] California Urban Water Conservation Council, 2003.

The general public often views large landscapes as water conservation targets. Generally, however, and especially where dedicated irrigation meters exist, large landscapes are more efficiently managed than landscapes that are part of a mixed use setting. Large landscapes usually benefit from professional management and the owner's recognition of a direct correlation between the water bill and irrigation practices, which creates a financial incentive for conservation. Opportunity still exists to improve irrigation efficiency. The California Irrigation Management Information System (CIMIS) operated by the California Department of Water Resources provides real-time evapo-transpiration (ET) and other climatic data available on the Internet to help manage irrigation demands. CIMIS data can be combined with water budgets for each landscape to allow irrigation managers to apply only the amount of water needed. Newer irrigation controllers can either be programmed to modify irrigation schedules based on programmable ET factors, or query CIMIS stations for real-time data and be linked to soil moisture sensors and rain shut-off devices that can precisely provide only the amount of irrigation needed. These devices are now required per MCWD's design guidelines, and have been shown to produce from 25-45 percent in landscape water savings over traditional irrigation timers, which are often not reset to follow seasonal climate changes. Savings also accrue from the system's ability to automatically shut off irrigation zones when lines or sprinkler heads break or when there is significant rain. Such systems can also provide commercial or institutional customers with tremendous labor savings as they do not require human intervention to reset irrigation schedules to follow climate patterns or adjust for variations in precipitation. Savings can also accrue from lower fertilizer cost as off-site runoff can be eliminated.

Due to the state-wide drought restrictions, the District has limited landscape watering to two days per week, and the municipalities within the District have shut off all the median irrigation. In FY 2015/16, MCWD conducted 42 site surveys and provided rebates for the retrofit of 12 school sites. Many of the site surveys are being requested in the newer residential developments.

6.3 Planned Implementation to Achieve Water Use Targets

MCWD has been active in promoting conservation and taking action to assure its implementation. Review of per capita demands for water indicates these efforts and resulting behavior of MCWD customers is having an effect. Per capita demand rates have been on a nearly consistent decline from an average of 144 gpcd in 1999 to 115 gpcd in 2014, which meets the District's 2020 water conservation target. As discussed in Section 3.4.1, per capita demand is projected to increase as commercial uses increase in the Ord Community. However, the planned addition of recycled water for urban landscape irrigation will address a portion of that increase.

The District will continue to track per capita demand rates to assess overall savings, in addition to comparing water consumption of new residential development against older households and households which have been retrofitted with conservation devices. The District will continually reassess rebate programs to address saturation rates and emerging technologies.

Conservation reductions have come primarily from improvements in water use technologies (low flow devices, irrigation controllers, etc.) and some from behavioral changes driven by increasing water rates, drought awareness, and public education programs. These long-term savings reduce the ability of the MCWD to call upon water use reductions if necessary due to curtailment of supply from groundwater. This is known as demand hardening. As demonstrated over the past two years, mandatory reductions in landscape irrigation will remain as the primary means of achieving short-term usage reductions during shortages.

Section 7 - Completed UWMP Checklist

As a verification of plan completeness, the DWR Urban Water Management Plan checklist has been completed and included at Appendix G.

MARINA COAST WATER DISTRICT

2015 URBAN WATER MANAGEMENT PLAN

APPENDICES

Prepared by

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

June 2016

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Appendix A: Resolution Adopting the 2010 Urban Water Management Plan

June 6, 2016

Resolution No. 2016-33
Resolution of the Board of Directors
Marina Coast Water District
Approving and Adopting the District's 2015 Urban Water Management Plan

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District ("District"), at a regular meeting duly called and held on June 6, 2016, at 211 Hillcrest Avenue, Marina, California as follows:

WHEREAS, the California Legislature enacted Assembly Bill 797 (Water Code Section 10610 et seq, known as the Urban Water Management Plan Act) during the 1983-84 Regular session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare an Urban Water Management Plan (UWMP), the primary objective of which is to plan for conservation and efficient use of water; and,

WHEREAS, the District is an urban supplier of water providing water to more than 3,000 customers; and,

WHEREAS, the Plan must be adopted, after a public review and hearing, and must be filed with the California Department of Water Resources within thirty days of adoption; and,

WHEREAS, pursuant to Water Code §10642 the District mailed notices to affected cities and to Monterey County Water Resources Agency in February 2016, solicited input from affected land use jurisdictions in which the District serves water, prepared and circulated a draft 2015 UWMP in May 2016, publicly noticed and conducted a public hearing on the draft 2015 UWMP on June 6, 2016; and,

WHEREAS, pursuant to Water Code §10632, the UWMP must also contain a Water Shortage Contingency Plan, which the Board of Directors has adopted by separate resolution; and,

WHEREAS, copies of the adopted 2015 UWMP will be transmitted to land use jurisdictions in which the District serves water as well as the Monterey County Water Resources Agency, and the plan shall be made available on the District's website.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Marina Coast Water District does hereby:

1. Approves and adopts the 2015 Urban Water Management Plan, and,
2. Authorizes and directs the General Manager to file the 2015 Urban Water Management Plan with the California Department of Water Resources within 30 days after this date.

PASSED AND ADOPTED on June 6, 2016, by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes: Directors Lee, Shriner, Moore, Gustafson

Noes: Directors None

Absent: Directors None

Abstained: Directors None

Howard Gustafson, President

ATTEST:

Keith Van Der Maaten, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2016-33 adopted June 6, 2016.

Keith Van Der Maaten, Secretary

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Appendix C: Land Use Forecast and Water Demand Projections by Jurisdiction

The following tables present the water demand projects for the Marina Coast Water District, based upon the development and redevelopment projections provided by the various jurisdictions. Water demands are estimated as a function of the size (acreage/square footage) or number of units of a development, depending on the type of land use, and a water demand unit factor that corresponds to that use. For each type of land use, Demand = Size x Unit Factor.

- Existing demands are estimated from MCWD's 2012 water usage records for each jurisdictional area. 2012 was used as the basis because it was an average water usage year.
- For developments that have approved Specific Plans, the water demand factors and total water demand estimates have been taken from the respective Water Supply Assessments (WSAs) for these Specific Plan areas.
- For in-fill development under approved General Plans or Master Plans (e.g., the City of Marina, CSUMB), MCWD's standard water demand factors have been used with the in-fill land use projections provided by the jurisdiction.
- For the Ord Community, the initial development forecast was based upon the Fort Ord Reuse Authority's latest annual growth forecast, which is developed for CIP planning. The projected developments, generally by square footage or units, are then multiplied by the appropriate unit demand factors.
- For areas not reflected in the Fort Ord Reuse Authority growth forecast (Central Marina, the Army and State Parks), the initial projections reflected those in the 2010 UWMP.

Based upon the housing projections in the water demand tables, population projections were then developed. In-fill development was assumed to have the same number of persons per dwelling unit as the existing area. For new development, if the specific plan, the water supply assessment or the associated Environmental Impact Report projected a number of persons per housing unit, that factor was used. If a persons-per-dwelling-unit estimate did not exist, the new development was assumed to have the same occupancy as the city average.

Tables:

Table C1: 2015 Draft Water Demand by Jurisdiction (AFY)

	Jurisdiction	2012*	2015**	2020	2025	2030	2035	Notes	Allocation
Ord	U.S. Army	620	633	663	825	825	825		1,577
	CSUMB	404	404	442	632	755	779		1,035
	Del Rey Oaks	0	0	186	551	551	551		243
	City of Monterey	0	0	0	130	130	130		65
	County of Monterey	8	52	377	539	539	539		720
	UCMBEST	3	3	94	299	515	515	3	230
	City of Seaside	657	657	997	1,852	2,447	2,876	1	1,012
	State Parks and Rec.	0	0	12	18	20	25		45
	Marina Ord Comm.	264	285	901	1,572	1,702	1,704	2	1,625
	Assumed Line Loss	395	348	348	348	348	348		348
Marina	Armstrong Ranch	0	0	0	680	680	680		920
	Cemex	0	0	0	0	0	500		500
	Marina Central	1,823	1,823	2,184	2,491	2,606	2,725		3,020
	Subtotal - Ord	2,351	2,382	4,021	6,766	7,833	8,293	4	6,900
	Subtotal - Marina	1,823	1,823	2,184	3,171	3,286	3,905		4,440
	Total	4,174	4,204	6,205	9,937	11,119	12,197		11,340

*Actual demands from calendar year 2012 used to represent a non-drought year.

** Projected demands. Actual use was lower due to mandatory drought restrictions.

1 Seaside includes Seaside Resort Golf Course (250 AFY temp use).

2. Allocation includes 1325 AFY groundwater and 300 AFY existing pilot desalination plant

3. MBEST commented that they may develop up to 230 AFY as soon as the market allows it.

4. Allocation includes 6600 AFY groundwater and 300 AFY existing pilot desalination plant.

Table C2: 2010 UWMP Water Demands by Jurisdiction (AFY)

	Jurisdiction	2010	2015	2020	2025	2030			Allocation
Ord	U.S. Army	752	792	838	997	997			1,577
	CSUMB	403	441	631	754	778			1,035
	Del Rey Oaks	0	326	527	527	527			243
	City of Monterey	0	0	92	92	92			65
	County of Monterey	4	627	1,087	1,087	1,087			710
	UCMBEST	2	93	276	474	474			230
	City of Seaside	792	1,130	1,351	1,664	2,093			1,012
	State Parks and Rec.	0	12	18	20	25			45
	Marina Ord Comm.	281	812	1,537	1,738	1,739			1,625
	Marina Sphere	10	10	10	10	10		5	10
	FORA Strategic Res.	0	0	0	0	0		6	-230
	Assumed Line Loss	348	348	348	348	348			578
Marina	Armstrong Ranch	0	0	550	680	680			920
	Cemex	0	0	0	0	500			500
	Marina Central	1,962	2,324	2,630	2,746	2,864			3,020
	Subtotal - Ord	2,592	4,591	6,715	7,712	8,172			6,900
	Subtotal - Marina	1,962	2,324	3,181	3,426	4,044			4,440
	Total	4,554	6,915	9,896	11,137	12,216			11,340

5. Marina Sphere merged in Monterey County totals.

6. FORA Strategic Reserve allocated out to juridictions in 2007.

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Marina Ord	Jurisd	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
New Residential																							
Marina Heights																							
Townhome	MAR	Dwelling Units			-	-	12	13	13	13	13	13	13	12									
Cluster Market/Bridge	MAR	Dwelling Units			4	5	47	19	19	19	19	19	19	18									
Market A	MAR	Dwelling Units			10	15	105	29	29	29	29	29	29	33									
Market B	MAR	Dwelling Units			6	10	85	34	34	34	34	34	34	33									
Estates	MAR	Dwelling Units		-	-	-	-	13	12	12	12	12	12	12	-								
Landscaping (Turf)	MAR	Acres			0.1	0.1	0.7	0.3	0.3	0.3	0.3	0.3	0.3	0.3									
Landscaping (Non-Turf)	MAR	Acres					0.5	0.2	0.2	0.2	0.1	0.1	0.1	0.1									
Cypress Knolls																							
SF Home / Townhome	MAR	Dwelling Units								255	200		141										
Apartments	MAR	Dwelling Units								85			31										
Assisted Living	MAR	Dwelling Units											60										
Open Space	MAR	Acres								28.57													
Parklands	MAR	Acres								2.17													
Right of Way	MAR	Acres								27.79			5.51										
Dunes on Monterey Bay																							
Alley (small lot)	MAR	Dwelling Units		20	24	48	54	59	37														
Carriage	MAR	Dwelling Units		10	21	6	12	30	47														
Standard	MAR	Dwelling Units	23	10	12	20	44	6															
Standard (small lot)	MAR	Dwelling Units		20	15	25	48	23															
Duets	MAR	Dwelling Units			34	38	78	98	40	60	4												
Townhome (live-work)	MAR	Dwelling Units			16	52	50	21															
Townhome (mixed use)	MAR	Dwelling Units			4	8	8	4															
Apartments (completed)	MAR	Dwelling Units	108																				
Landscaping (MCP)	MAR	Acres	1	1	3.00	5.00	5.00	4.20															
Landscaping (other)	MAR	Acres		1	1.00	4.00	2.10																
Promontory	MAR	Dwelling Units		176																			
TAMC TOD	MAR	Dwelling Units					100	100															
Existing/Replacement Residential																							
Patton Park (complete)	MAR	Dwelling Units																					
Shelter Outreach Plus (complete)	MAR	Dwelling Units																					
Interim Housing (complete)	MAR	Dwelling Units																					
Non Residential																							
SVMHS Development	MAR	Square Feet			10,000	15,000	15,000	16,000															
TAMC TOD (office/public facilities)	MAR	Square Feet					20,000	20,000															
Airport Economic Development Area	MAR	Square Feet					30,357	30,357	30,357	60,714	60,714	66,786	66,786	66,786	66,786	66,786							
Cypress Knolls Community Center	MAR	Square Feet								16,525													
Cypress Knolls Support Services	MAR	Square Feet								6,300													
TAMC TOD (retail)	MAR	Square Feet					37,500	37,500															
Marina Airport Hotel/Golf	MAR	Rooms																					
Marina High School	MAR	Square Feet							15,000	10,000													
Imjin Office Park	MAR	Square Feet		9,000	12,000																		
Monterey Peninsula College	MAR	Square Feet																					
Institute of Canine Studies	MAR	Square Feet					24,000		4,100		5,400		4,800		9,700		11300		12470				
UV - Planning Area A	MAR	Square Feet			20,000	16,000																	
UV - Planning Area J	MAR	Square Feet						3,000	55,000	8,000	17,000												
UV - Planning Area B1	MAR	Square Feet		25,000					114,000	15,000	10,000	35,000	10,000										
UV - Planning Area V	MAR	Square Feet								12,000	5,000	2,000	5,500										
UV - Planning Area OP (1-5)	MAR	Square Feet		150,000							300,000	253,000	82,000	170,000	95,000								
UV - Planning Area T	MAR	Rooms		108																			
UV - Planning Area Z	MAR	Square Feet											8,500	5,000	5,000	1,500							

Land Use Type	Land Use	Total	Units	Multiplier	Notes	Jurisdiction	Incremental Demand (AFY) 2015	2020	2025	2030	2035	Cumulative Demand (AFY) 2015	2020	2025	2030	2035
New Residential																
Marina Heights																
Townhome	Residential (8-15 units / acre)	102	Dwelling Units	0.25			0.00	6.25	16.25	3.00	0.00	0.00	6.25	22.50	25.50	25.50
Cluster Market/Bridge	Residential (8-15 units / acre)	188	Dwelling Units	0.25			0.00	18.75	23.75	4.50	0.00	0.00	18.75	42.50	47.00	47.00
Market A	SF Residential (5-8 units / acre)	337	Dwelling Units	0.33			0.00	52.47	47.85	10.89	0.00	0.00	52.47	100.32	111.21	111.21
Market B	SF Residential (5-8 units / acre)	338	Dwelling Units	0.33			0.00	44.55	56.10	10.89	0.00	0.00	44.55	100.65	111.54	111.54
Estates	SF Residential (< 5 units / acre)	85	Dwelling Units	0.5			0.00	6.50	30.00	6.00	0.00	0.00	6.50	36.50	42.50	42.50
Landscaping (Turf)	Landscape (turf)	3.0	Acres	2.5			0.00	3.00	3.75	0.75	0.00	0.00	3.00	6.75	7.50	7.50
Landscaping (Non-Turf)	Landscape (non-turf)	1.5	Acres	1.5	1		0.00	1.05	1.05	0.15	0.00	0.00	1.05	2.10	2.25	2.25
						Marina Ord Comm.	0.00	132.57	178.75	36.18	0.00	0.00	132.57	311.32	347.50	347.50
Cypress Knolls																
SF Home / Townhome	SF Residential (5-8 units / acre)	596	Dwelling Units	0.1319	1		0.00	0.00	78.62	0.00	0.00	0.00	0.00	78.62	78.62	78.62
Apartments	Multi family (> 15 units / acre)	116	Dwelling Units	0.1507	1		0.00	0.00	17.48	0.00	0.00	0.00	0.00	17.48	17.48	17.48
Assisted Living	Multi family (> 15 units / acre)	60	Dwelling Units	0.1672	1		0.00	0.00	10.03	0.00	0.00	0.00	0.00	10.03	10.03	10.03
Open Space	Landscape (non-turf)	28.57	Acres	0.5849	1		0.00	0.00	16.71	0.00	0.00	0.00	0.00	16.71	16.71	16.71
Parklands	Landscape (turf)	2.17	Acres	1.1244	1		0.00	0.00	2.44	0.00	0.00	0.00	0.00	2.44	2.44	2.44
Right of Way	Landscape (non-turf)	33.3	Acres	0.4586	1		0.00	0.00	15.27	0.00	0.00	0.00	0.00	15.27	15.27	15.27
						Marina Ord Comm.	0.00	0.00	140.55	0.00	0.00	0.00	0.00	140.55	140.55	140.55
Dunes on Monterey Bay																
Alley (small lot)	Residential (8-15 units / acre)	242	Dwelling Units	0.16491736	1		0.00	33.81	6.10	0.00	0.00	0.00	33.81	39.91	39.91	39.91
Carriage	Residential (8-15 units / acre)	126	Dwelling Units	0.25706349	1		0.00	20.31	12.08	0.00	0.00	0.00	20.31	32.39	32.39	32.39
Standard	SF Residential (5-8 units / acre)	115	Dwelling Units	0.29869565	1		6.87	27.48	0.00	0.00	0.00	6.87	34.35	34.35	34.35	34.35
Standard (small lot)	Residential (8-15 units / acre)	131	Dwelling Units	0.23877863	1		0.00	31.28	0.00	0.00	0.00	0.00	31.28	31.28	31.28	31.28
Duets	SF Residential (5-8 units / acre)	352	Dwelling Units	0.12392045	1		0.00	30.73	12.89	0.00	0.00	0.00	30.73	43.62	43.62	43.62
Townhome (live-work)	Residential (8-15 units / acre)	139	Dwelling Units	0.12791367	1		0.00	17.78	0.00	0.00	0.00	0.00	17.78	17.78	17.78	17.78
Townhome (mixed use)	Residential (8-15 units / acre)	24	Dwelling Units	0.16375	1		0.00	3.93	0.00	0.00	0.00	0.00	3.93	3.93	3.93	3.93
Apartments (completed)	Multi family (> 15 units / acre)	108	Dwelling Units	0.12185185	1		13.16	0.00	0.00	0.00	0.00	13.16	13.16	13.16	13.16	13.16
Landscaping (MCP)	Landscape (non-turf)	19.2	Acres	1.22916667	1		1.23	22.37	0.00	0.00	0.00	1.23	23.60	23.60	23.60	23.60
Landscaping (other)	Landscape (non-turf)	8.1	Acres	1.11111111	1		0.00	9.00	0.00	0.00	0.00	0.00	9.00	9.00	9.00	9.00
						Marina Ord Comm.	21.26	196.69	31.07	0.00	0.00	21.26	217.95	249.02	249.02	249.02
Promontory	Multi family (> 15 units / acre)	176	Dwelling Units	0.07477273	1	Marina Ord Comm.	0.00	13.16	0.00	0.00	0.00	0.00	13.16	13.16	13.16	13.16
TAMC TOD	Multi family (> 15 units / acre)	200	Dwelling Units	0.25		Marina Ord Comm.	0.00	50.00	0.00	0.00	0.00	0.00	50.00	50.00	50.00	50.00
Existing/Replacement Residential																
Patton Park (complete)	Residential (8-15 units / acre)		Dwelling Units	0.25		Marina Ord Comm.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shelter Outreach Plus (complete)	Residential (8-15 units / acre)		Dwelling Units	0.25		Marina Ord Comm.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interim Housing (complete)	Residential (8-15 units / acre)		Dwelling Units	0.25		Marina Ord Comm.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non Residential																
SVMHS Development	Office / R&D	56000	Square Feet	0.000135		Marina Ord Comm.	0.00	7.56	0.00	0.00	0.00	0.00	7.56	7.56	7.56	7.56
TAMC TOD (office/public facilities)	Office / R&D	40000	Square Feet	0.000135		Marina Ord Comm.	0.00	5.40	0.00	0.00	0.00	0.00	5.40	5.40	5.40	5.40
Airport Economic Development Area	Light Industrial	546429	Square Feet	0.00015		Marina Ord Comm.	0.00	9.11	42.80	30.05	0.00	0.00	9.11	51.91	81.96	81.96
Cypress Knolls Community Center	Various	16525	Square Feet	0.001	1	Marina Ord Comm.	0.00	0.00	9.22	0.00	0.00	0.00	0.00	9.22	9.22	9.22
Cypress Knolls Support Services	Office / R&D	6300	Square Feet	0.001	1	Marina Ord Comm.	0.00	0.00	6.31	0.00	0.00	0.00	0.00	6.31	6.31	6.31
TAMC TOD	Retail	75000	Square Feet	0.00021		Marina Ord Comm.	0.00	15.75	0.00	0.00	0.00	0.00	15.75	15.75	15.75	15.75
Marina Airport Hotel/Golf	Hotel, Motel and Timeshares		Rooms	0.17	1	Marina Ord Comm.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Marina High School	Schools (K-12)	25000	Square Feet	0.0003		Marina Ord Comm.	0.00	0.00	7.50	0.00	0.00	0.00	0.00	7.50	7.50	7.50
Imjin Office Park	Office / R&D	21000	Square Feet	0.000135		Marina Ord Comm.	0.00	2.84	0.00	0.00	0.00	0.00	2.84	2.84	2.84	2.84
Monterey Peninsula College	Higher Education		Square Feet	0.0003		Marina Ord Comm.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Institute of Canine Studies	Office / R&D	71770	Square Feet	0.000135		Marina Ord Comm.	0.00	3.24	1.93	2.84	1.68	0.00	3.24	5.17	8.01	9.69
UV - Planning Area A	Various	36000	Square Feet	0.00298361	1	Marina Ord Comm.	0.00	107.41	0.00	0.00	0.00	0.00	107.41	107.41	107.41	107.41
UV - Planning Area J	Various	83000	Square Feet	0.00040458	1	Marina Ord Comm.	0.00	1.21	32.37	0.00	0.00	0.00	1.21	33.58	33.58	33.58
UV - Planning Area B1	Various	209000	Square Feet	0.00037813	1	Marina Ord Comm.	0.00	9.45	69.58	0.00	0.00	0.00	9.45	79.03	79.03	79.03
UV - Planning Area V	Various	24500	Square Feet	0.00067102	1	Marina Ord Comm.	0.00	0.00	16.44	0.00	0.00	0.00	0.00	16.44	16.44	16.44
UV - Planning Area OP (1-5)	Various	1050000	Square Feet	0.00020227	1	Marina Ord Comm.	0.00	30.34	128.44	53.60	0.00	0.00	30.34	158.78	212.38	212.38
UV - Planning Area T	Various	108	Rooms	0.28703704	1	Marina Ord Comm.	0.00	31.00	0.00	0.00	0.00	0.00	31.00	31.00	31.00	31.00
UV - Planning Area Z	Various	20000	Square Feet	0.000683	1	Marina Ord Comm.	0.00	0.00	5.81	7.85	0.00	0.00	0.00	5.81	13.66	13.66

Armstrong Ranch	Jurisd	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
New Residential																							
Marina Station																							
Single Family Homes (15,000)	MAR	Dwelling Units								23	87	37											
Single Family Homes (6,500)	MAR	Dwelling Units								100	250	220	99										
Apartments	MAR	Dwelling Units								100	250	220	78										
Irrigated parkland	MAR	Acres								6.0	6.5												
Open Space (turf)	MAR	Acres								4.3													
Non Residential																							
Marina Station																							
Mixed Use Retail	MAR	Square Feet									15,000	30,000	15,000										
Office Uses	MAR	Square Feet									40,000	60,000	43,808										
Light Industrial	MAR	Square Feet										300,000	351,624										
Landscape (15% of indoor consumption)	MAR	Square Feet																					
System Loss (5%)	MAR	Square Feet																					

CEMEX	Jurisd	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
Non Residential																							
CEMEX (formerly RMC Lonestar)	MAR	Square Feet																	666667	666667	666667	666667	666667

Marina Central	Jurisd	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
New Residential																							
In-Fill Development MF	MAR	Dwelling Units						182					167										
In-Fill Development SF	MAR	Dwelling Units						9					24										
Downtown Specific Plan	MAR	Dwelling Units		80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Non Residential																							
Hotel / Motel	MAR	Rooms						400															
Retail and Restaurants	MAR	Square Feet						46000					46000										
Other Commercial	MAR	Square Feet						60000															
Institutional	MAR	Square Feet						5000					5000										
Schools	MAR	Square Feet						77760					110500										
Landscape (turf)	MAR	Acres						8					16						1.2				
Downtown Specific Plan - Office	MAR	Square Feet		4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200
Downtown Specific Plan - Retail / Comemrcial	MAR	Square Feet		8470	8470	8470	8470	8470	8470	8470	8470	8470	8470	8470	8470	8470	8470	8470	8470	8470	8470	8470	8470

Land Use Type	Land Use	Total	Units	Multiplier	Notes		Incremental Demand (AFY) 2015	2020	2025	2030	2035	Cumulative Demand (AFY) 2015	2020	2025	2030	2035
New Residential																
Marina Station																
Single Family Homes (15,000)	SF Residential (< 5 units / acre)	147	Dwelling Units	0.5			0.00	0.00	73.50	0.00	0.00	0.00	0.00	73.50	73.50	73.50
Single Family Homes (6,500)	SF Residential (5-8 units / acre)	669	Dwelling Units	0.33			0.00	0.00	220.77	0.00	0.00	0.00	0.00	220.77	220.77	220.77
Apartments	Multi family (> 15 units / acre)	648	Dwelling Units	0.25			0.00	0.00	162.00	0.00	0.00	0.00	0.00	162.00	162.00	162.00
Irrigated parkland	Landscape (turf)	12.5	Acres	2.5			0.00	0.00	31.25	0.00	0.00	0.00	0.00	31.25	31.25	31.25
Open Space (turf)	Landscape (turf)	4.3	Acres	2.5			0.00	0.00	10.75	0.00	0.00	0.00	0.00	10.75	10.75	10.75
						Armstrong Ranch	0.00	0.00	498.27	0.00	0.00	0.00	0.00	498.27	498.27	498.27
Non Residential																
Marina Station																
Mixed Use Retail	Retail	60000	Square Feet	0.00021		Armstrong Ranch	0.00	0.00	12.60	0.00	0.00	0.00	0.00	12.60	12.60	12.60
Office Uses	Office / R&D	143808	Square Feet	0.000135		Armstrong Ranch	0.00	0.00	19.41	0.00	0.00	0.00	0.00	19.41	19.41	19.41
Light Industrial	Light Industrial	651624	Square Feet	0.00015		Armstrong Ranch	0.00	0.00	97.74	0.00	0.00	0.00	0.00	97.74	97.74	97.74
Landscape (15% of indoor consumption)	Landscape (non-turf)		Square Feet	2.1	1	Armstrong Ranch	0.00	0.00	19.46	0.00	0.00	0.00	0.00	19.46	19.46	19.46
System Loss (5%)			Square Feet		1	Armstrong Ranch	0.00	0.00	32.37	0.00	0.00	0.00	0.00	32.37	32.37	32.37

Land Use Type	Land Use	Total	Units	Multiplier	Notes		Incremental Demand (AFY) 2015	2020	2025	2030	2035	Cumulative Demand (AFY) 2015	2020	2025	2030	2035
Non Residential																
RMC Lonestar (added to FORA table)	Light Industrial	3333333.3	Square Feet	0.00015		CEMEX	0.00	0.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	500.00

Land Use Type	Land Use	Total	Units	Multiplier	Notes		Incremental Demand (AFY) 2015	2020	2025	2030	2035	Cumulative Demand (AFY) 2015	2020	2025	2030	2035
New Residential																
In-Fill Development MF	Multi family (> 15 units / acre)	349	Dwelling Units	0.25	6	Marina Central	0.00	45.50	41.75	0.00	0.00	0.00	45.50	87.25	87.25	87.25
In-Fill Development SF	SF Residential (5-8 units / acre)	33	Dwelling Units	0.33	6	Marina Central	0.00	2.97	7.92	0.00	0.00	0.00	2.97	10.89	10.89	10.89
Downtown Specific Plan	Multi family (> 15 units / acre)	1600	Dwelling Units	0.25	9	Marina Central	0.00	100.00	100.00	100.00	100.00	0.00	100.00	200.00	300.00	400.00
Non Residential																
Hotel / Motel	Hotel, Motel and Timeshares	400	Rooms	0.17		Marina Central	0.00	68.00	0.00	0.00	0.00	0.00	68.00	68.00	68.00	68.00
Retail and Restaurants	Restaurant	92000	Square Feet	0.00145		Marina Central	0.00	66.70	66.70	0.00	0.00	0.00	66.70	133.40	133.40	133.40
Other Commercial	Other Commercial	60000	Square Feet	0.0003		Marina Central	0.00	18.00	0.00	0.00	0.00	0.00	18.00	18.00	18.00	18.00
Institutional	Institutional	10000	Square Feet	0.0003		Marina Central	0.00	1.50	1.50	0.00	0.00	0.00	1.50	3.00	3.00	3.00
Schools	Schools (K-12)	188260	Square Feet	0.0003		Marina Central	0.00	23.33	33.15	0.00	0.00	0.00	23.33	56.48	56.48	56.48
Landscape (turf)	Landscape (turf)	25.2	Acres	2.5		Marina Central	0.00	20.00	40.00	0.00	3.00	0.00	20.00	60.00	60.00	63.00
Downtown Specific Plan - Office	Office / R&D	84000	Square Feet	0.000135	9	Marina Central	0.00	2.84	2.84	2.84	2.84	0.00	2.84	5.67	8.51	11.34
Downtown Specific Plan - Retail / Comemrcial	Other Commercial	169400	Square Feet	0.0003	9	Marina Central	0.00	12.71	12.71	12.71	12.71	0.00	12.71	25.41	38.12	50.82

Monterey County	Jurisd	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
New Residential																							
East Garrison I																							
Market Rate	MCO	Dwelling Units	104	149	160	140	120	100	100	100	77												
Affordable	MCO	Dwelling Units	66	-	-	8	43	75	100	105	23												
Monterey Horse Park (see City of Seaside)	MCO	Dwelling Units																					
Non Residential																							
Monterey County Office																							
Horse Park (see City of Seaside)	MCO	Square Feet																					
~~Whispering Oaks Business Park~~	MCO	Square Feet																					
Intergarrison Rd Office Park	MCO	Square Feet				127,200	127,200	127,200	127,200	127,000													
East Garrison I Office Development	MCO	Square Feet			14,000	-	10,000	-	11,000														
~~MST Bus Maint & Opns Facility~~	MCO	Square Feet																					
Monterey County Light Ind.																							
Horse Park (see City of Seaside)	MCO	Square Feet																					
~~Whispering Oaks Business Park~~	MCO	Square Feet																					
~~MST Bus Maint & Opns Facility~~	MCO	Square Feet																					
Monterey County Retail	MCO																						
~~Whispering Oaks Business Park~~	MCO	Square Feet																					
East Garrison I Retail	MCO	Square Feet			20,000	20,000																	
East Garrison I Arts Complex	MCO	Square Feet																					
East Garrison I Public Facilities	MCO	Square Feet																					
Ord Market (existing)	MCO	Square Feet																					
Horse Park (see City of Seaside)	MCO	Square Feet																					
Horse Park Hotel (see City of Seaside)	MCO	Rooms																					
East Garrison Landscaping	MCO	Acres				10.44	4.94																

CSUMB	Jurisd	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
New Residential																							
CSUMB Housing	CSU/MAR	Dwelling Units						95	95	95	95	48	48	48	48	48	48	48	48				
Non Residential																							
CSUMB Academic and Administrative Buildings	CSUMB	Square Feet						101,852	101,852	101,852	101,852				88,888	88,888	88,888	88,888	88,888				
CSUMB Landscaping	CSUMB	Acres								5.00	10.00	11			7								

UCMBEST	Jurisd	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
New Residential																							
UC 8th Street	UC/MCO	Dwelling Units				33	33	33	33	33	33	33	33	33	33								
UC East Campus - SF	UC/MCO	Dwelling Units							67					67	66								
UC East Campus - MF	UC/MCO	Dwelling Units																					
Non Residential																							
UC Eight Street	UC/MCO	Square Feet				19,602	19,602	19,602	19,602	19,602	19,602	19,602	19,602	19,602	19,602								
UC Central South Campus	UC/MAR	Square Feet							16,196	16,196	16,196	16,196	16,196	16,196	16,196	16,196	16,196						
UC Central South Campus	UC/MAR	Square Feet							7,799	7,799	7,799	7,799	7,799	7,799	7,799	7,799	7,799						
UC Central North & West Campuses	UC/MAR	Square Feet	-	-	40,000	61,417	61,417	61,417	61,417	67,559	67,559	67,559	67,559	67,559	67,559								
UC Central North & West Campuses	UC/MAR	Square Feet				6,346	6,346	6,346	6,346	6,981	6,981	6,981	6,981	6,981	6,981								
UC Central North & West Campuses	UC/MAR	Square Feet	-	-	20,000	20,408	20,408	20,408	20,408	22,448	22,448	22,448	22,448	22,448	22,448								
UC South Campus	UC/MAR	Square Feet																					
UC East Campus	UC/MCO	Square Feet							26,000					26,000									
UC Eight Street	UC/MCO	Square Feet				19,602	19,602	19,602	19,602	19,602	19,602	19,602	19,602	19,602	19,602								
UC East Campus	UC/MCO	Rooms												250									
UC Central North & West Campuses	UC/MAR	Rooms		-	-	-	-	-	-	-	-	-	-	150	-								

Land Use Type	Land Use	Total	Units	Multiplier	Notes		Incremental Demand (AFY) 2015	2020	2025	2030	2035	Cumulative Demand (AFY) 2015	2020	2025	2030	2035
New Residential																
East Garrison					1											
Market rate	SF Residential (< 5 units / acre)	1050	Dwelling Units	0.3	1		31.20	200.70	83.10	0.00	0.00	31.20	231.90	315.00	315.00	315.00
Affordable	SF Residential (5-8 units / acre)	420	Dwelling Units	0.186	1		12.28	23.44	42.41	0.00	0.00	12.28	35.71	78.12	78.12	78.12
Monterey Horse Park (see City of Seaside)	SF Residential (5-8 units / acre)		Dwelling Units	0.33	3		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						County of Monterey	43.48	224.14	125.51	0.00	0.00	43.48	267.61	393.12	393.12	393.12
Non Residential																
Monterey County Office																
Horse Park (see City of Seaside)	Office / R&D		Square Feet	0.000135	3	County of Monterey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
~~Whispering Oaks Business Park~~	Office / R&D		Square Feet	0.000166	8	County of Monterey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Intergarrison Rd Office Park	Office / R&D	635800	Square Feet	0.000135		County of Monterey	0.00	51.52	34.32	0.00	0.00	0.00	51.52	85.83	85.83	85.83
East Garrison I Office Development	Office / R&D	35000	Square Feet	0.000135		County of Monterey	0.00	3.24	1.49	0.00	0.00	0.00	3.24	4.73	4.73	4.73
~~MST Bus Maint & Opns Facility~~	Office / R&D		Square Feet	0.000124	8	County of Monterey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Monterey County Light Ind.																
Horse Park (see City of Seaside)	Light Industrial		Square Feet	0.00015	3	County of Monterey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
~~Whispering Oaks Business Park~~	Light Industrial		Square Feet	0.000166	8	County of Monterey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
~~MST Bus Maint & Opns Facility~~	Light Industrial		Square Feet	0.000124	8	County of Monterey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Monterey County Retail																
~~Whispering Oaks Business Park~~	Retail		Square Feet	0.000166	8	County of Monterey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East Garrison I Retail	Retail	40000	Square Feet	0.00021		County of Monterey	0.00	8.40	0.00	0.00	0.00	0.00	8.40	8.40	8.40	8.40
East Garrison I Arts Complex	Retail		Square Feet	0.0001406	1	County of Monterey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East Garrison I Public Facilities	Retail		Square Feet	0.0003	1	County of Monterey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ord Market (existing)	Retail		Square Feet	0.00021		County of Monterey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Horse Park (see City of Seaside)	Retail		Square Feet	0.00021	3	County of Monterey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Horse Park Hotel (see City of Seaside)	Hotel, Motel and Timeshares		Rooms	0.17		County of Monterey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East Garrison Landscaping	Landscape (turf)	15.38	Acres	2.5		County of Monterey	0.00	38.45	0.00	0.00	0.00	0.00	38.45	38.45	38.45	38.45

Land Use Type	Land Use	Total	Units	Multiplier	Notes		Incremental Demand (AFY) 2015	2020	2025	2030	2035	Cumulative Demand (AFY) 2015	2020	2025	2030	2035
New Residential																
CSUMB Housing	Multi family (> 15 units / acre)	764	Dwelling Units	0.25	2	CSUMB	0.00	23.75	95.25	60.00	12.00	0.00	23.75	119.00	179.00	191.00
CSUMB Academic and Administrative Bldgs	Office / R&D	851848	Square Feet	0.000135	2	CSUMB	0.00	13.75	41.25	48.00	12.00	0.00	13.75	55.00	103.00	115.00
CSUMB Landscaping	Landscape (non-turf)	32.85	Acres	2.1	2	CSUMB	0.00	0.00	53.97	15.02	0.00	0.00	0.00	53.97	68.99	68.99

Land Use Type	Land Use	Total	Units	Multiplier	Notes		Incremental Demand (AFY) 2015	2020	2025	2030	2035	Cumulative Demand (AFY) 2015	2020	2025	2030	2035
New Residential																
UC 8th Street	Multi family (> 15 units / acre)	330	Dwelling Units	0.25		UCMBEST	0.00	24.75	41.25	16.50	0.00	0.00	24.75	66.00	82.50	82.50
UC East Campus - SF	SF Residential (< 5 units / acre)	200	Dwelling Units	0.5		UCMBEST	0.00	0.00	33.50	66.50	0.00	0.00	0.00	33.50	100.00	100.00
UC East Campus - MF	Multi family (> 15 units / acre)		Dwelling Units	0.25		UCMBEST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UC Eight Street	Office / R&D	196020	Square Feet	0.000135		UCMBEST	0.00	7.94	13.23	5.29	0.00	0.00	7.94	21.17	26.46	26.46
UC Central South Campus	Office / R&D	145764	Square Feet	0.000135		UCMBEST	0.00	0.00	10.93	8.75	0.00	0.00	0.00	10.93	19.68	19.68
UC Central South Campus	Other Commercial	70191	Square Feet	0.0003		UCMBEST	0.00	0.00	11.70	9.36	0.00	0.00	0.00	11.70	21.06	21.06
UC Central North & West Campuses	Office / R&D	691022	Square Feet	0.000135		UCMBEST	0.00	30.27	44.77	18.24	0.00	0.00	30.27	75.05	93.29	93.29
UC Central North & West Campuses	Retail	67270	Square Feet	0.00021		UCMBEST	0.00	4.00	7.20	2.93	0.00	0.00	4.00	11.19	14.13	14.13
UC Central North & West Campuses	Light Industrial	236320	Square Feet	0.00015		UCMBEST	0.00	12.18	16.53	6.73	0.00	0.00	12.18	28.71	35.45	35.45
UC South Campus	Retail		Square Feet	0.00021		UCMBEST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UC East Campus	Retail	52000	Square Feet	0.00021		UCMBEST	0.00	0.00	5.46	5.46	0.00	0.00	0.00	5.46	10.92	10.92
UC Eight Street	Retail	196020	Square Feet	0.00021		UCMBEST	0.00	12.35	20.58	8.23	0.00	0.00	12.35	32.93	41.16	41.16
UC East Campus	Hotel, Motel and Timeshares	250	Rooms	0.17		UCMBEST	0.00	0.00	0.00	42.50	0.00	0.00	0.00	0.00	42.50	42.50
UC Central North & West Campuses	Hotel, Motel and Timeshares	150	Rooms	0.17		UCMBEST	0.00	0.00	0.00	25.50	0.00	0.00	0.00	0.00	25.50	25.50

Seaside	Jurisd	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
Residential																							
Seaside Resort Housing	SEA	Dwelling Units		2	2	2	4	6	53	53													
Seaside Housing (Eastside)	SEA	Dwelling Units																	110	110	110	110	110
Seaside Affordable Housing Obligations	SEA	Dwelling Units			36	36																	
Workforce Housing (Army to Build)	SEA	Dwelling Units							26														
Market Rate Housing (Army to Build)	SEA	Dwelling Units							150														
State Parks Housing (Workforce housing)	SEA	Dwelling Units																					
Workforce Housing (Seaside)	SEA	Dwelling Units				29		-	-														
Seaside-Fort Ord Project Area	SEA	Dwelling Units											97	100	100	100	100	100	100	100	100	100	100
Seaside Housing (Eucalyptus)	SEA	Dwelling Units														190	190	190	190	182			
Monterey Downs																							
Affordable Rentals (34 du/ac)	SEA	Dwelling Units								32	32	32	32	32	32	32	32						
Apartments (20 du/ac)	SEA	Dwelling Units								50	50	50	50	50	50	50	50						
Court Yard Homes (9 du/ac)	SEA	Dwelling Units								12	10	10	10	10	10	10	10						
Single Family Homes (9 du/ac)	SEA	Dwelling Units								100	100	100	100	100	100	100	98						
Horse Park staff	SEA	Dwelling Units										12											
Non Residential																							
Main Gate																							
Conference	SEA	Square Feet					27,000																
Spa	SEA	Square Feet						24,000															
Large Format Retail	SEA	Square Feet					87,000																
In-Line Shops	SEA	Square Feet					281,000																
Movie Theater	SEA	Square Feet					51,500																
In-Line Food Service	SEA	Square Feet					10,000																
Restaurants	SEA	Square Feet					61,000																
Landscaping	SEA	Acres						10.41															
Hotel	SEA	Rooms						250															
Seaside Resort																							
Seaside Resort Golf Buildings	SEA	Square Feet		10,000																			
Seaside Resort Golf Clubhouse	SEA	Square Feet						16,300															
Seaside Golf Course Hotel	SEA	Rooms						330															
Seaside Golf Course Timeshares	SEA	Rooms							120	50													
Monterey Downs																							
Training Track and Arena	SEA	Acres										139											
Horse Park	SEA	Acres										111											
Commercial	SEA	Square Feet								5,000	5,000	5,000	5,000	5,000	5,000								
Restaurants	SEA	Square Feet								5,000	5,000	5,000	5,000										
Retail	SEA	Square Feet								10,000	10,000	10,000	10,000	10,000	10,000	10,000	15,000						
Office	SEA	Square Feet								20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000						
Theater	SEA	Square Feet										35,000											
Hotel	SEA	Rooms										400											
Tennis and Swim Club	SEA	Square Feet										10,848	10,000										
Fire Station	SEA	Square Feet										11,000											
Landscape	SEA	Acres								8	8	8	8	8	8	8	8						
Seaside Office (Monterey Blues)	SEA	Square Feet				60,000																	
Chartwell School (existing)	SEA	Square Feet																					
Monterey College of Law (existing)	SEA	Square Feet																					
Fitch Middle School (existing)	SEA	Square Feet																					
Marshall Elementary School (existing)	SEA	Square Feet																					
International School (former Hayes Elem)(existing)	SEA	Square Feet																					
Veterans' Cemeterey	SEA	Square Feet			9,000	7,500		11,200															
Monterey Peninsula Trade & Conf Cntr	SEA	Square Feet							250,000														
Seaside Corp Yard	SEA	Square Feet						25,000	27,200														
Conference Facility	SEA	Square Feet						27,000															
Luxury Auto Mall	SEA	Square Feet																					

Land Use Type	Land Use	Total	Units	Multiplier	Notes		Incremental Demand (AFY) 2015	2020	2025	2030	2035	Cumulative Demand (AFY) 2015	2020	2025	2030	2035
New Residential																
Seaside Resort Housing	SF Residential (< 5 units / acre)	122	Dwelling Units	0.5		City of Seaside	0.00	8.00	53.00	0.00	0.00	0.00	8.00	61.00	61.00	61.00
Seaside Housing (Eastside)	SF Residential (5-8 units / acre)	550	Dwelling Units	0.33	7	City of Seaside	0.00	0.00	0.00	0.00	181.50	0.00	0.00	0.00	0.00	181.50
Seaside Affordable Housing Obligations	Residential (8-15 units / acre)	72	Dwelling Units	0.25		City of Seaside	0.00	18.00	0.00	0.00	0.00	0.00	18.00	18.00	18.00	18.00
Workforce Housing (Army to Build)	Residential (8-15 units / acre)	26	Dwelling Units	0.25		City of Seaside	0.00	0.00	6.50	0.00	0.00	0.00	0.00	6.50	6.50	6.50
Market Rate Housing (Army to Build)	SF Residential (< 5 units / acre)	150	Dwelling Units	0.5		City of Seaside	0.00	0.00	75.00	0.00	0.00	0.00	0.00	75.00	75.00	75.00
State Parks Housing (Workforce housing)	SF Residential (5-8 units / acre)		Dwelling Units	0.33		City of Seaside	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Workforce Housing (Seaside)	SF Residential (5-8 units / acre)	29	Dwelling Units	0.33		City of Seaside	0.00	9.57	0.00	0.00	0.00	0.00	9.57	9.57	9.57	9.57
Seaside-Fort Ord Project Area	Multi family (> 15 units / acre)	1097	Dwelling Units	0.25	7	City of Seaside	0	0.00	24.25	125.00	125.00	0.00	0.00	24.25	149.25	274.25
Seaside Housing (Eucalyptus)	SF Residential (5-8 units / acre)	942	Dwelling Units	0.33	7	City of Seaside	0.00	0.00	0.00	188.10	122.76	0.00	0.00	0.00	188.10	310.86
Monterey Downs																
Affordable Rentals (34 du/ac)	Multi family (> 15 units / acre)	256	Dwelling Units	0.25	5	City of Seaside	0.00	0.00	32.00	32.00	0.00	0.00	0.00	32.00	64.00	64.00
Apartments (20 du/ac)	Multi family (> 15 units / acre)	400	Dwelling Units	0.25	5	City of Seaside	0.00	0.00	50.00	50.00	0.00	0.00	0.00	50.00	100.00	100.00
Court Yard Homes (9 du/ac)	Residential (8-15 units / acre)	82	Dwelling Units	0.25	5	City of Seaside	0.00	0.00	10.50	10.00	0.00	0.00	0.00	10.50	20.50	20.50
Single Family Homes (9 du/ac)	Residential (8-15 units / acre)	798	Dwelling Units	0.25	5	City of Seaside	0.00	0.00	100.00	99.50	0.00	0.00	0.00	100.00	199.50	199.50
Horse Park staff	Residential (8-15 units / acre)	12	Dwelling Units	0.25	5	City of Seaside	0.00	0.00	3.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00
Main Gate Conference	Office / R&D	27000	Square Feet	0.000135		City of Seaside	0.00	3.65	0.00	0.00	0.00	0.00	3.65	3.65	3.65	3.65
Main Gate Spa	Other Commercial	24000	Square Feet	0.0003	1	City of Seaside	0.00	7.20	0.00	0.00	0.00	0.00	7.20	7.20	7.20	7.20
Main Gate Large Format Retail	Retail	87000	Square Feet	0.00005	1	City of Seaside	0.00	4.35	0.00	0.00	0.00	0.00	4.35	4.35	4.35	4.35
Main Gate In-Line Shops	Retail	281000	Square Feet	0.00005	1	City of Seaside	0.00	14.05	0.00	0.00	0.00	0.00	14.05	14.05	14.05	14.05
Main Gate Movie Theater	Other Commercial	51500	Square Feet	0.0002	1	City of Seaside	0.00	11.20	0.00	0.00	0.00	0.00	11.20	11.20	11.20	11.20
Main Gate In-Line Food Service	Restaurant	10000	Square Feet	0.00247	1	City of Seaside	0.00	24.70	0.00	0.00	0.00	0.00	24.70	24.70	24.70	24.70
Main Gate Restaurants	Restaurant	61000	Square Feet	0.0011	1	City of Seaside	0.00	68.60	0.00	0.00	0.00	0.00	68.60	68.60	68.60	68.60
Main Gate Landscaping	Landscape (turf)	10.41	Acres	2.5		City of Seaside	0.00	26.03	0.00	0.00	0.00	0.00	26.03	26.03	26.03	26.03
Main Gate Hotel	Hotel, Motel and Timeshares	250	Rooms	0.17		City of Seaside	0.00	42.50	0.00	0.00	0.00	0.00	42.50	42.50	42.50	42.50
Seaside Resort Golf Buildings	Office / R&D	10000	Square Feet	0.000135		City of Seaside	0.00	1.35	0.00	0.00	0.00	0.00	1.35	1.35	1.35	1.35
Seaside Resort Golf Clubhouse	Restaurant	16300	Square Feet	0.00145		City of Seaside	0.00	23.64	0.00	0.00	0.00	0.00	23.64	23.64	23.64	23.64
Seaside Golf Course Hotel	Hotel, Motel and Timeshares	330	Rooms	0.17		City of Seaside	0.00	56.10	0.00	0.00	0.00	0.00	56.10	56.10	56.10	56.10
Seaside Golf Course Timeshares	Hotel, Motel and Timeshares	170	Rooms	0.17		City of Seaside	0.00	0.00	28.90	0.00	0.00	0.00	0.00	28.90	28.90	28.90
Monterey Downs					5											
Training Track and Arena	Various	138.7	Acres	0.7859	1, 5	City of Seaside	0.00	0.00	109.00	0.00	0.00	0.00	0.00	109.00	109.00	109.00
Horse Park	Various	110.7	Acres	1.1462	1, 5	City of Seaside	0.00	0.00	126.88	0.00	0.00	0.00	0.00	126.88	126.88	126.88
Commercial	Other Commercial	30000	Square Feet	0.0003	5	City of Seaside	0.00	0.00	6.00	3.00	0.00	0.00	0.00	6.00	9.00	9.00
Restaurants	Restaurant	20000	Square Feet	0.00145	5	City of Seaside	0.00	0.00	29.00	0.00	0.00	0.00	0.00	29.00	29.00	29.00
Retail	Retail	85000	Square Feet	0.00021	5	City of Seaside	0.00	0.00	8.40	9.45	0.00	0.00	0.00	8.40	17.85	17.85
Office	Office / R&D	160000	Square Feet	0.000135	5	City of Seaside	0.00	0.00	10.80	10.80	0.00	0.00	0.00	10.80	21.60	21.60
Theater	Other	35000	Square Feet	0.00004	1, 5	City of Seaside	0.00	0.00	1.40	0.00	0.00	0.00	0.00	1.40	1.40	1.40
Hotel	Hotel, Motel and Timeshares	400	Rooms	0.17	5	City of Seaside	0.00	0.00	68.00	0.00	0.00	0.00	0.00	68.00	68.00	68.00
Tennis and Swim Club	Various	20848	Square Feet	0.000190	1, 5	City of Seaside	0.00	0.00	3.95	0.00	0.00	0.00	0.00	3.95	3.95	3.95
Fire Station	Governmental	11000	Square Feet	0.0003	5	City of Seaside	0.00	0.00	3.30	0.00	0.00	0.00	0.00	3.30	3.30	3.30
Landscape	Landscape (non-turf)	64	Acres	2.1	5	City of Seaside	0.00	0.00	67.20	67.20	0.00	0.00	0.00	67.20	134.40	134.40
Seaside Office (Monterey Blues)	Office / R&D	60000	Square Feet	0.000135		City of Seaside	0.00	8.10	0.00	0.00	0.00	0.00	8.10	8.10	8.10	8.10
Chartwell School	Schools (K-12)		Square Feet	0.0003		City of Seaside	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Monterey College of Law	Institutional		Square Feet	0.0003		City of Seaside	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fitch Middle School	Schools (K-12)		Square Feet	0.0003		City of Seaside	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Marshall Elementary School	Schools (K-12)		Square Feet	0.0003		City of Seaside	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
International School (former Hayes Elem)	Schools (K-12)		Square Feet	0.0003		City of Seaside	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Veterans' Cemeterey	Various	27700	Square Feet	0.000141	1	City of Seaside	0.00	3.90	0.00	0.00	0.00	0.00	3.90	3.90	3.90	3.90
Monterey Peninsula Trade & Conf Cntr	Office / R&D	250000	Square Feet	0.000135		City of Seaside	0.00	0.00	33.75	0.00	0.00	0.00	0.00	33.75	33.75	33.75
Seaside Corp Yard	Various	52200	Square Feet	0.00015709	1	City of Seaside	0.00	3.93	4.27	0.00	0.00	0.00	3.93	8.20	8.20	8.20
Conference Facility	Office / R&D	27000	Square Feet	0.0002	1	City of Seaside	0.00	5.40	0.00	0.00	0.00	0.00	5.40	5.40	5.40	5.40
Luxury Auto Mall	Retail		Square Feet	0.00021		City of Seaside	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Del Rey Oaks	Jurisd	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
New Residential																							
Del Rey Oaks																							
Golf Villas	DRO	Dwelling Units						37	13														
Patio Homes	DRO	Dwelling Units						32	4														
Condos	DRO	Dwelling Units						40	160	176													
Workforce	DRO	Dwelling Units							70	68													
Townhomes/Senior Casitas	DRO	Dwelling Units						21	40	30													
RV Resort (Manager)	DRO	Dwelling Units																					
Non Residential																							
Del Rey Oaks Office	DRO	Square Feet				100,000	100,000	100,000	100,000														
Del Rey Oaks Retail	DRO	Square Feet				5,000																	
Del Rey Oaks Hotel	DRO	Rooms				104	250	100															
Del Rey Oaks Timeshare	DRO	Rooms				48	48																
Resort Golf Course	DRO	Acres									92												
RV Resort	DRO	Square Feet																					

Monterey City	Jurisd	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
Non Residential																							
Monterey City Office	MRY	Square Feet								721,524													
Industrial -- City Corp. Yard	MRY	Square Feet								100,000													
Industrial -- Public/Private	MRY	Square Feet								116,275													

US Army	Jurisd	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
Residential																							
Doe Park (Stilwell) Single Family	ARMY	Dwelling Units	20		28						-20												
Doe Park (Stilwell) Duplex	ARMY	Dwelling Units	20		27						-20												
Non Residential																							
Recreation Center	ARMY	Square Feet							8,340														
VA Medical Clinic (part of Marina - UV Area OP)	ARMY	Square Feet																					
Child Development Center	ARMY	Square Feet								24,000													
Emergency Services Center	ARMY	Square Feet				40,000																	

CA State Parks	Jurisd	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
Non Residential																							
Fort Ord Dunes State Park	SP																						
Fort Ord Dunes State Park	SP	Square feet						75,000					33,333					16667					41667
American Youth Hostel (Seaside)	SP	Units			18					12	2												

Land Use Type	Land Use	Total	Units	Multiplier	Notes		Incremental Demand (AFY) 2015	2020	2025	2030	2035	Cumulative Demand (AFY) 2015	2020	2025	2030	2035
New Residential																
Del Rey Oaks																
Golf Villas	SF Residential (< 5 units / acre)	50	Dwelling Units	0.5			0.00	18.50	6.50	0.00	0.00	0.00	18.50	25.00	25.00	25.00
Patio Homes	SF Residential (< 5 units / acre)	36	Dwelling Units	0.5			0.00	16.00	2.00	0.00	0.00	0.00	16.00	18.00	18.00	18.00
Condos	Multi family (> 15 units / acre)	376	Dwelling Units	0.25			0.00	10.00	84.00	0.00	0.00	0.00	10.00	94.00	94.00	94.00
Workforce	Multi family (> 15 units / acre)	138	Dwelling Units	0.25			0.00	0.00	34.50	0.00	0.00	0.00	0.00	34.50	34.50	34.50
Townhomes/Senior Casitas	SF Residential (5-8 units / acre)	91	Dwelling Units	0.33			0.00	6.93	23.10	0.00	0.00	0.00	6.93	30.03	30.03	30.03
RV Resort (Manager)	Residential (8-15 units / acre)		Dwelling Units	0.25			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						Del Rey Oaks	0.00	51.43	150.10	0.00	0.00	0.00	51.43	201.53	201.53	201.53
Del Rey Oaks Office	Office / R&D	400000	Square Feet	0.000135		Del Rey Oaks	0.00	40.50	13.50	0.00	0.00	0.00	40.50	54.00	54.00	54.00
Del Rey Oaks Retail	Retail	5000	Square Feet	0.00021		Del Rey Oaks	-	1.05	0.00	0.00	0.00	0.00	1.05	1.05	1.05	1.05
Del Rey Oaks Hotel	Hotel, Motel and Timeshares	454	Rooms	0.17		Del Rey Oaks	-	77.18	0.00	0.00	0.00	0.00	77.18	77.18	77.18	77.18
Del Rey Oaks Timeshare	Hotel, Motel and Timeshares	96	Rooms	0.17		Del Rey Oaks	0.00	16.32	0.00	0.00	0.00	0.00	16.32	16.32	16.32	16.32
Resort Golf Course	Landscape (turf)	92.4	Acres	2.16991342	1	Del Rey Oaks	0.00	0.00	200.50	0.00	0.00	0.00	0.00	200.50	200.50	200.50
RV Resort	Other Commercial		Square Feet	0.0003	1	Del Rey Oaks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Land Use Type	Land Use	Total	Units	Multiplier	Notes		Incremental Demand (AFY) 2015	2020	2025	2030	2035	Cumulative Demand (AFY) 2015	2020	2025	2030	2035
New Residential																
Monterey City Office	Office / R&D	721524	Square Feet	0.000135		City of Monterey	0.00	0.00	97.41	0.00	0.00	0.00	0.00	97.41	97.41	97.41
Industrial -- City Corp. Yard	Light Industrial	100000	Square Feet	0.00015		City of Monterey	0.00	0.00	15.00	0.00	0.00	0.00	0.00	15.00	15.00	15.00
Industrial -- Public/Private	Light Industrial	116275	Square Feet	0.00015		City of Monterey	0.00	0.00	17.44	0.00	0.00	0.00	0.00	17.44	17.44	17.44

Land Use Type	Land Use	Total	Units	Multiplier	Notes		Incremental Demand (AFY) 2015	2020	2025	2030	2035	Cumulative Demand (AFY) 2015	2020	2025	2030	2035
New Residential																
Doe Park (Stilwell) Single Family	SF Residential (5-8 units / acre)	28	Dwelling Units	0.33	4	U.S. Army	6.60	9.24	-6.60	0.00	0.00	6.60	15.84	9.24	9.24	9.24
Doe Park (Stilwell) Duplex	Residential (8-15 units / acre)	27	Dwelling Units	0.33	4	U.S. Army	6.60	8.91	-6.60	0.00	0.00	6.60	15.51	8.91	8.91	8.91
Non Residential																
Recreation Center	Institutional	8340	Square Feet	0.0003		U.S. Army	0.00	0.00	2.50	0.00	0.00	0.00	0.00	2.50	2.50	2.50
VA Medical Clinic	Institutional		Square Feet	0.00018	1	U.S. Army	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Child Development Center	Institutional	24000	Square Feet	0.0072	1	U.S. Army	0.00	0.00	172.80	0.00	0.00	0.00	0.00	172.80	172.80	172.80
Emergency Services Center	Governmental	40000	Square Feet	0.0003		U.S. Army	0.00	12.00	0.00	0.00	0.00	0.00	12.00	12.00	12.00	12.00

Land Use Type	Land Use	Total	Units	Multiplier	Notes		Incremental Demand (AFY) 2015	2020	2025	2030	2035	Cumulative Demand (AFY) 2015	2020	2025	2030	2035
New Residential																
Fort Ord Dunes State Park	Governmental			0.0676		State Parks and Rec.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fort Ord Dunes State Park	Governmental	166667	Square Feet	0.00012		State Parks and Rec.	0.00	9.00	4.00	2.00	5.00	0.00	9.00	13.00	15.00	20.00
American Youth Hostel (Seaside)	Hotel, Motel and Timeshares	32	Units	0.17		State Parks and Rec.	0.00	3.06	2.38	0.00	0.00	0.00	3.06	5.44	5.44	5.44

NOTES:

1 Unique water demand multiplier based on the quantity of units (square feet, acres, dwelling units) and total expected water demand, from Water Supply Supply Assessment.
2 Derived from Table 4-1 of the CSUMB Master Plan (December 2007)
3 Horse Park projections moved to Monterey Downs Specific Plan (Seaside)
4 OMC housing is being rennovated and replaced. The entry in 2022 reflects the net removal of 40 DU over the project life.
5 Monterey Downs WSA adopted in 2012. Specific Plan is still pending approval.
6 Per Marina 2009 Certified Housing Element, Table 3-1
7 Projections taken from Seaside-Fort Ord Redevelopment Project Area Implementation Plan 2007-2012
8 Whispering Oaks Specific Plan revoked by County, 2012.
9 Draft Marina DVSP projects build-out by 2040. Annual values reflect 1/30th of total. 2040 totals will be 2,400 DU; 126,000 SF Office; 254,000 SF Commercial; 1.2 AC Landscape.

Table C4: 2015 Population Growth by Jurisdiction

	Jurisdiction	Existing*	2015	2020	2025	2030	2035
Ord	U.S. Army		0	285	165	165	165
	CSUMB		0	285	1,428	2,148	2,292
	Del Rey Oaks		0	340	1,487	1,487	1,487
	City of Monterey		0	0	0	0	0
	County of Monterey		741	1,979	3,015	3,015	3,015
	UCMBEST		0	257	861	1,378	1,378
	City of Seaside		0	351	3,642	8,958	13,224
	State Parks and Rec.		0	0	0	0	0
	Marina Ord Comm.		285	4,551	7,901	8,219	8,219
	Assumed Line Loss						
Marina	Armstrong Ranch		0	0	4,085	4,085	4,085
	RMC Lonestar		0	0	0	0	0
	Marina Central		582	1,649	3,298	4,414	5,530

Subtotal - Ord	13,646	14,672	21,694	32,144	39,015	43,425
Subtotal - Marina	17,121	17,703	18,770	24,504	25,620	26,736
Total	30,767	32,375	40,464	56,648	64,635	70,161

*2012 DOF hybrid population

Note: The existing (current) population is aggregated by service area (Ord and Marina) and not shown by jurisdiction.

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Marina Ord	Jurisd	Land Use	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
New Residential																								
Marina Heights																								
Townhome	MAR	Residential (8-15 units / acre)	Dwelling Units			0	0	12	13	13	13	13	13	13	12									
Cluster Market/Bridge	MAR	Residential (8-15 units / acre)	Dwelling Units			4	5	47	19	19	19	19	19	19	18									
Market A	MAR	SF Residential (5-8 units / acre)	Dwelling Units			10	15	105	29	29	29	29	29	29	33									
Market B	MAR	SF Residential (5-8 units / acre)	Dwelling Units			6	10	85	34	34	34	34	34	34	33									
Estates	MAR	SF Residential (< 5 units / acre)	Dwelling Units		0	0	0	0	13	12	12	12	12	12	12	0								
Cypress Knolls																								
SF Home / Townhome	MAR	SF Residential (5-8 units / acre)	Dwelling Units								255	200		141										
Apartments	MAR	Multi family (> 15 units / acre)	Dwelling Units								85			31										
Assisted Living	MAR	Multi family (> 15 units / acre)	Dwelling Units											60										
Dunes on Monterey Bay																								
Alley (small lot)	MAR	Residential (8-15 units / acre)	Dwelling Units		20	24	48	54	59	37														
Carriage	MAR	Residential (8-15 units / acre)	Dwelling Units		10	21	6	12	30	47														
Standard	MAR	SF Residential (5-8 units / acre)	Dwelling Units	23	10	12	20	44	6															
Standard (small lot)	MAR	Residential (8-15 units / acre)	Dwelling Units		20	15	25	48	23															
Duets	MAR	SF Residential (5-8 units / acre)	Dwelling Units			34	38	78	98	40	60	4												
Townhome (live-work)	MAR	Residential (8-15 units / acre)	Dwelling Units			16	52	50	21															
Townhome (mixed use)	MAR	Residential (8-15 units / acre)	Dwelling Units			4	8	8	4															
Apartments (completed)	MAR	Multi family (> 15 units / acre)	Dwelling Units	108																				
Promontory	MAR	Multi family (> 15 units / acre)	Dwelling Units		176																			
TAMC TOD	MAR	Multi family (> 15 units / acre)	Dwelling Units					100	100															
Existing/Replacement Residential																								
Patton Park (complete)	MAR	Residential (8-15 units / acre)	Dwelling Units																					
Shelter Outreach Plus (complete)	MAR	Residential (8-15 units / acre)	Dwelling Units																					
Interim Housing (complete)	MAR	Residential (8-15 units / acre)	Dwelling Units																					

Armstrong Ranch	Jurisd	Land Use	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
New Residential																								
Marina Station																								
Single Family Homes (15,000)	MAR	SF Residential (< 5 units / acre)	Dwelling Units								23	87	37											
Single Family Homes (6,500)	MAR	SF Residential (5-8 units / acre)	Dwelling Units								100	250	220	99										
Apartments	MAR	Multi family (> 15 units / acre)	Dwelling Units								100	250	220	78										

Marina Central	Jurisd	Land Use	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
New Residential																								
In-Fill Development MF	MAR	Multi family (> 15 units / acre)	Dwelling Units						182					167										
In-Fill Development SF	MAR	SF Residential (5-8 units / acre)	Dwelling Units						9					24										
Downtown Specific Plan	MAR	Multi family (> 15 units / acre)	Dwelling Units		80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80

Marina Ord

New Residential

	Multiplier	Incremental Increase (Persons)					Cumulative Increase (Persons)					Incremental Increase (EDU)				
Marina Heights		**2015**	**2020**	**2025**	**2030**	**2035**	**2015**	**2020**	**2025**	**2030**	**2035**	**2015**	**2020**	**2025**	**2030**	**2035**
Townhome	1.5	0	37.5	97.5	18	0	0	37.5	135	153	153		25	65	12	0
Cluster Market/Bridge	3.0	0	225	285	54	0	0	225	510	564	564		75	95	18	0
Market A	3.0	0	477	435	99	0	0	477	912	1011	1011		159	145	33	0
Market B	3.0	0	405	510	99	0	0	405	915	1014	1014		135	170	33	0
Estates	4.0	0	52	240	48	0	0	52	292	340	340		13	60	12	0
		0	**1196.5**	**1567.5**	**318**	**0**	**0**	**1196.5**	**2764**	**3082**	**3082**	**0**	**407**	**535**	**108**	**0**
Cypress Knolls																
SF Home / Townhome	1.8	0	0	1072.8	0	0	0	0	1072.8	1072.8	1072.8		0	596	0	0
Apartments	2.4	0	0	278.4	0	0	0	0	278.4	278.4	278.4		0	116	0	0
Assisted Living	1.0	0	0	60	0	0	0	0	60	60	60		0	60	0	0
		0	**0**	**1411.2**	**0**	**0**	**0**	**0**	**1411.2**	**1411.2**	**1411.2**	**0**	**0**	**772**	**0**	**0**
Dunes on Monterey Bay																
Alley (small lot)	2.0	0	410	74	0	0	0	410	484	484	484		205	37	0	0
Carriage	3.0	0	237	141	0	0	0	237	378	378	378		79	47	0	0
Standard	3.0	69	276	0	0	0	69	345	345	345	345	23	92	0	0	0
Standard (small lot)	3.0	0	393	0	0	0	0	393	393	393	393		131	0	0	0
Duets	1.5	0	372	156	0	0	0	372	528	528	528		248	104	0	0
Townhome (live-work)	1.5	0	208.5	0	0	0	0	208.5	208.5	208.5	208.5		139	0	0	0
Townhome (mixed use)	1.5	0	36	0	0	0	0	36	36	36	36		24	0	0	0
Apartments (completed)	2.0	216	0	0	0	0	216	216	216	216	216	108	0	0	0	0
Promontory	3.3	0	579	0	0	0	0	579	579	579	579		176	0	0	0
TAMC TOD	2.8	0	558	0	0	0	0	558	558	558	558		200	0	0	0
		285	3069.5	371	0	0	285	3354.5	3725.5	3725.5	3725.5	131	1294	188	0	0

Existing/Replacement Residential

	Existing															
Patton Park (complete)	2.6	0	0	0	0	0	0	0	0	0	0		0	0	0	0
Shelter Outreach Plus (complete)	2.6	0	0	0	0	0	0	0	0	0	0		0	0	0	0
Interim Housing (complete)	2.6	0	0	0	0	0	0	0	0	0	0		0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Armstrong Ranch

New Residential

	Marina Station	2015	2020	2025	2030	2035	2015	2020	2025	2030	2035	2015	2020	2025	2030	2035
Marina Station																
Single Family Homes (15,000)	2.8	0	0	410	0	0	0	0	410	410	410		0	147	0	0
Single Family Homes (6,500)	2.8	0	0	1867	0	0	0	0	1867	1867	1867		0	669	0	0
Apartments	2.8	0	0	1808	0	0	0	0	1808	1808	1808		0	648	0	0
		0	0	4085	0	0	0	0	4085	4085	4085	0	0	1464	0	0

Marina Central

New Residential

	Marina Central	2015	2020	2025	2030	2035	2015	2020	2025	2030	2035	2015	2020	2025	2030	2035
In-Fill Development MF	2.8	0	508	466	0	0	0	508	974	974	974		182	167	0	0
In-Fill Development SF	2.8	0	25	67	0	0	0	25	92	92	92		9	24	0	0
Downtown Specific Plan	2.8	0	1116	1116	1116	1116	0	1116	2232	3348	4464		400	400	400	400
		0	1649	1649	1116	1116	0	1649	3298	4414	5530	0	591	591	400	400

Monterey County	Jurisd	Land Use	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
New Residential																								
East Garrison I																								
Market Rate	MCO	SF Residential (< 5 units / acre)	Dwelling Units	104	149	160	140	120	100	100	100	77												
Affordable	MCO	SF Residential (5-8 units / acre)	Dwelling Units	66	0	0	8	43	75	100	105	23												
Monterey Horse Park (see City of Seaside)	MCO	SF Residential (5-8 units / acre)	Dwelling Units																					

CSUMB	Jurisd	Land Use	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
New Residential																								
CSUMB Housing	CSU/MAR	Multi family (> 15 units / acre)	Dwelling Units						95	95	95	95	48	48	48	48	48	48	48	48				

UCMBEST	Jurisd	Land Use	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
New Residential																								
UC 8th Street	UC/MCO	Multi family (> 15 units / acre)	Dwelling Units				33	33	33	33	33	33	33	33	33	33								
UC East Campus - SF	UC/MCO	SF Residential (< 5 units / acre)	Dwelling Units							67					67	66								
UC East Campus - MF	UC/MCO	Multi family (> 15 units / acre)	Dwelling Units																					

Seaside	Jurisd	Land Use	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
Residential																								
Seaside Resort Housing	SEA	SF Residential (< 5 units / acre)	Dwelling Units		2	2	2	4	6	53	53													
Seaside Housing (Eastside)	SEA	SF Residential (5-8 units / acre)	Dwelling Units																	110	110	110	110	110
Seaside Affordable Housing Obligations	SEA	Residential (8-15 units / acre)	Dwelling Units			36	36																	
Workforce Housing (Army to Build)	SEA	Residential (8-15 units / acre)	Dwelling Units							26														
Market Rate Housing (Army to Build)	SEA	SF Residential (< 5 units / acre)	Dwelling Units							150														
State Parks Housing (Workforce housing)	SEA	SF Residential (5-8 units / acre)	Dwelling Units																					
Workforce Housing (Seaside)	SEA	SF Residential (5-8 units / acre)	Dwelling Units				29		0	0														
Seaside-Fort Ord Project Area	SEA	Multi family (> 15 units / acre)	Dwelling Units											97	100	100	100	100	100	100	100	100	100	100
Seaside Housing (Eucalyptus)	SEA	SF Residential (5-8 units / acre)	Dwelling Units														190	190	190	190	182			
Monterey Downs																								
Affordable Rentals (34 du/ac)	SEA	Multi family (> 15 units / acre)	Dwelling Units								32	32	32	32	32	32	32	32						
Apartments (20 du/ac)	SEA	Multi family (> 15 units / acre)	Dwelling Units								50	50	50	50	50	50	50	50						
Court Yard Homes (9 du/ac)	SEA	Residential (8-15 units / acre)	Dwelling Units								12	10	10	10	10	10	10	10						
Single Family Homes (9 du/ac)	SEA	Residential (8-15 units / acre)	Dwelling Units								100	100	100	100	100	100	100	98						
Horse Park staff	SEA	Residential (8-15 units / acre)	Dwelling Units										12											

Del Rey Oaks	Jurisd	Land Use	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
New Residential																								
Del Rey Oaks																								
Golf Villas	DRO	SF Residential (< 5 units / acre)	Dwelling Units						37	13														
Patio Homes	DRO	SF Residential (< 5 units / acre)	Dwelling Units						32	4														
Condos	DRO	Multi family (> 15 units / acre)	Dwelling Units						40	160	176													
Workforce	DRO	Multi family (> 15 units / acre)	Dwelling Units							70	68													
Townhomes/Senior Casitas	DRO	SF Residential (5-8 units / acre)	Dwelling Units						21	40	30													
RV Resort (Manager)	DRO	Residential (8-15 units / acre)	Dwelling Units																					

US Army	Jurisd	Land Use	Units	2012-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2031-31	2031-32	2032-33	2033-34	2034-35
Residential																								
Doe Park (Stilwell) Single Family	ARMY	SF Residential (5-8 units / acre)	Dwelling Units	20		28						-20												
Doe Park (Stilwell) Duplex	ARMY	Residential (8-15 units / acre)	Dwelling Units	20		27						-20												

Monterey County	Multiplier	Incremental Increase (Persons)					Cumulative Increase (Persons)					Incremental Increase (EDU)				
New Residential																
East Garrison I	**East Garrison**	**2015**	**2020**	**2025**	**2030**	**2035**	**2015**	**2020**	**2025**	**2030**	**2035**	**2015**	**2020**	**2025**	**2030**	**2035**
Market Rate	2.1	213	1372	568	0	0	213	1585	2154	2154	2154	104	669	277	0	0
Affordable	2.1	135	258	468	0	0	135	394	861	861	861	66	126	228	0	0
Monterey Horse Park (see City of Seaside)	3.0	0	0	0	0	0	0	0	0	0	0		0	0	0	0
		349	1631	1036	0	0	349	1979	3015	3015	3015	170	795	505	0	0
CSUMB																
New Residential	**CSUMB**	**2015**	**2020**	**2025**	**2030**	**2035**	**2015**	**2020**	**2025**	**2030**	**2035**	**2015**	**2020**	**2025**	**2030**	**2035**
CSUMB Housing	3.0	0	285	1143	720	144	0	285	1428	2148	2292		95	381	240	48
		0	285	1143	720	144	0	285	1428	2148	2292	0	95	381	240	48
UCMBEST																
New Residential	**UC MBEST**	**2015**	**2020**	**2025**	**2030**	**2035**	**2015**	**2020**	**2025**	**2030**	**2035**	**2015**	**2020**	**2025**	**2030**	**2035**
UC 8th Street	2.6	0	257	429	172	0	0	257	686	858	858		99	165	66	0
UC East Campus - SF	2.6	0	0	174	346	0	0	0	174	520	520		0	67	133	0
UC East Campus - MF	2.6	0	0	0	0	0	0	0	0	0	0		0	0	0	0
		0	257	603	517	0	0	257	861	1378	1378	0	99	232	199	0
Seaside																
Residential	**Seaside**	**2015**	**2020**	**2025**	**2030**	**2035**	**2015**	**2020**	**2025**	**2030**	**2035**	**2015**	**2020**	**2025**	**2030**	**2035**
Seaside Resort Housing	3.0	0	48	318	0	0	0	48	366	366	366		16	106	0	0
Seaside Housing (Eastside)	3.0	0	0	0	0	1650	0	0	0	0	1650		0	0	0	550
Seaside Affordable Housing Obligations	3.0	0	216	0	0	0	0	216	216	216	216		72	0	0	0
Workforce Housing (Army to Build)	3.0	0	0	78	0	0	0	0	78	78	78		0	26	0	0
Market Rate Housing (Army to Build)	3.0	0	0	450	0	0	0	0	450	450	450		0	150	0	0
State Parks Housing (Workforce housing)	3.0	0	0	0	0	0	0	0	0	0	0		0	0	0	0
Workforce Housing (Seaside)	3.0	0	87	0	0	0	0	87	87	87	87		29	0	0	0
Seaside-Fort Ord Project Area	3.0	0	0	291	1500	1500	0	0	291	1791	3291		0	97	500	500
Seaside Housing (Eucalyptus)	3.0	0	0	0	1710	1116	0	0	0	1710	2826		0	0	570	372
Monterey Downs																
Affordable Rentals (34 du/ac)	1.5	0	0	192	192	0	0	0	192	384	384		0	128	128	0
Apartments (20 du/ac)	3.0	0	0	600	600	0	0	0	600	1200	1200		0	200	200	0
Court Yard Homes (9 du/ac)	3.0	0	0	126	120	0	0	0	126	246	246		0	42	40	0
Single Family Homes (9 du/ac)	3.0	0	0	1200	1194	0	0	0	1200	2394	2394		0	400	398	0
Horse Park staff	3.0	0	0	36	0	0	0	0	36	36	36		0	12	0	0
		0	351	3291	5316	4266	0	351	3642	8958	13224	0	117	1161	1836	1422
Del Rey Oaks																
New Residential																
Del Rey Oaks	**Del Rey Oaks**	**2015**	**2020**	**2025**	**2030**	**2035**	**2015**	**2020**	**2025**	**2030**	**2035**	**2015**	**2020**	**2025**	**2030**	**2035**
Golf Villas	3.5	0	130	46	0	0	0	130	175	175	175		37	13	0	0
Patio Homes	3.0	0	96	12	0	0	0	96	108	108	108		32	4	0	0
Condos	1.8	0	72	605	0	0	0	72	677	677	677		40	336	0	0
Workforce	2.5	0	0	345	0	0	0	0	345	345	345		0	138	0	0
Townhomes/Senior Casitas	2.0	0	42	140	0	0	0	42	182	182	182		21	70	0	0
RV Resort (Manager)	3.0	0	0	0	0	0	0	0	0	0	0		0	0	0	0
		0	340	1147	0	0	0	340	1487	1487	1487	0	130	561	0	0
US Army																
Residential	**Army**	**2015**	**2020**	**2025**	**2030**	**2035**	**2015**	**2020**	**2025**	**2030**	**2035**	**2015**	**2020**	**2025**	**2030**	**2035**
Doe Park (Stilwell) Single Family	3.0	60	84	-60	0	0	60	144	84	84	84	20	28	-20	0	0
Doe Park (Stilwell) Duplex	3.0	60	81	-60	0	0	60	141	81	81	81	20	27	-20	0	0
		120	165	-120	0	0	120	285	165	165	165	40	55	-40	0	0

Table C6: Projected Demands by Source, with Planned Recycled Use (AFY)

	Total Demands by Jurisdiction	2015	2020	2025	2030	2035	SVGB Allocation	RW Allocation
Ord	U.S. Army	633	663	825	825	825	1,577	
Ord	CSUMB	404	442	632	755	779	1,035	87
Ord	Del Rey Oaks	0	186	551	551	551	243	280
Ord	City of Monterey	0	0	130	130	130	65	
Ord	County of Monterey	52	377	539	539	539	710	134
Ord	UCMBEST	3	94	299	515	515	230	60
Ord	City of Seaside	657	997	1,852	2,447	2,876	1,012	453
Ord	State Parks and Rec.	0	12	18	20	25	45	
Ord	Marina Ord Comm.	285	901	1,572	1,702	1,704	1,325	345
Ord	Assumed Line Loss	348	348	348	348	348	348	68
Marina	Armstrong Ranch	0	0	680	680	680	920	
Marina	RMC Lonestar	0	0	0	0	500	500	
Marina	Marina Central	1,823	2,184	2,491	2,606	2,725	3,020	
	Subtotal - Ord	2,382	4,021	6,766	7,833	8,293	6,600	1,427
	Subtotal - Marina	1,823	2,184	3,171	3,286	3,905	4,440	0
	Total	4,204	6,205	9,937	11,119	12,197	11,040	1,427

Recycled Water Demand (1,2)						RW BODR Demands Phase 1	Phase 2
U.S. Army	0	0	0	0	0		38
CSUMB	0	0	87	87	87	202	109
Del Rey Oaks	0	0	280	280	280	338	
City of Monterey	0	0	0	0	0		
County of Monterey	0	0	134	134	134	47	614
UCMBEST	0	0	60	60	60	55	
City of Seaside	0	400	453	453	453	806	140
State Parks and Rec.	0	0	0	0	0		5
Marina Ord Comm.	0	200	345	345	345	435	391
Assumed Line Loss							
Armstrong Ranch	0	0	0	0	0		
RMC Lonestar	0	0	0	0	0		
Marina Central	0	0	0	0	0	52	87

Groundwater Demand (3)						Remaining GW
U.S. Army	633	663	825	825	825	752
CSUMB	404	442	545	668	692	343
Del Rey Oaks	0	186	243	243	243	0
City of Monterey	0	0	65	65	65	0
County of Monterey	52	377	405	405	405	305
UCMBEST	3	94	230	230	230	0
City of Seaside	657	597	1,012	1,012	1,012	0
State Parks and Rec.	0	12	18	20	25	20
Marina Ord Comm.	285	701	1,227	1,325	1,325	0
Assumed Line Loss	348	348	348	348	348	0
Armstrong Ranch	0	0	680	680	680	240
RMC Lonestar	0	0	0	0	500	0
Marina Central	1,823	2,184	2,491	2,606	2,725	295

1,955 total unused

Demand by Source	2015	2020	2025	2030	2035
Groundwater	4,204	5,605	8,089	8,428	9,075
Recycled Water	0	600	1,359	1,359	1,359
Desalinated Water (4)	0	0	489	1,332	1,763

Notes:

1 2020 value = maximum of Phase 1 allocation or BODR Phase 1 existing demand

2 Assumes only Recycled Phase 1 occurs

3 Maximum of projected potable demand or SVGB allocation

4 Desalinated demand is total minus groundwater and recycled

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Appendix D: Notices and Letters to Public Agencies

The following notices and mailings were prepared during the development of this Urban Water Management Plan, and are included in this appendix.

1. Demand Projection Review to Cities, dated October 30, 2015 (sample letter and mailing list)

2. 60-day Notice to Cities and Agencies, dated February 10, 2016 (sample letter and mailing list)

3. Notice of plan availability for review, MCWD Website, www.mcwd.org

4. Newspaper Notices for Public Hearing, dated May 22 and May 29, 2016

5. Transmittal of Draft Plan to Cities and Agencies, dated May 20, 2016 (sample letter, same mailing list as item 2)

6. Transmittal of additional tech memo to Cities and Agencies, dated May 27, 2016 (sample letter, same mailing list as item 2)

7. MCWD Board Agenda and Staff Report for Public Hearing, June 6, 2016 meeting

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David A. Foote, PE

October 30, 2015

Ms. Theresa Symansis
City of Marina, Director of Community Development
209 Cypress Avenue
Marina, CA 93933

Subject: Marina Coast Water District Urban Water Management Plan 2015 Update

Dear Ms. Symansis

Schaaf & Wheeler is preparing the Marina Coast Water District's 2015 Urban Water Management Plan (UWMP). These plans are prepared by water suppliers every five years. Existing and projected water demands are compared to existing and planned water supplies to ensure there is sufficient supply available. A preliminary task in this effort is to coordinate with the District's customer jurisdictions to determine projected population and water demands. The 2015 UWMP will need to account for existing and forecasted water demands by five-year increments through the year 2035.

Water demands are generally a function of the size (acreage/square footage) or number of units of a development, depending on the type of land use, and a water demand unit factor that corresponds to that use. For each type of land use, Demand = Size x Unit Factor. Using this concept, Schaaf & Wheeler has prepared a preliminary estimate of water demands by land use type and by jurisdiction through 2035 as follows:

- Existing demands are estimated from the District's 2014 water usage records for each jurisdictional area. (Potential future water savings through conservation will be accounted for in the UWMP.)
- For developments that have approved Specific Plans, the water demand factors and total water demand estimates have been taken from the respective Water Supply Assessments (WSAs) for these Specific Plan areas.
- For in-fill development under approved General Plans or Master Plans (e.g., the City of Marina, CSUMB), the District's standard water demand factors have been used with the in-fill land use projections provided by the jurisdiction.
- For most future development within the District's planning area, including all planned Fort Ord development though 2022, we have acquired the Fort Ord Reuse Authority's (FORA) latest annual growth forecast, which they use for CIP planning. The projected developments, generally by square footage or units, are then multiplied by the appropriate unit demand factors.

- For areas not reflected in the Fort Ord Reuse Authority growth forecast (Central Marina, the Army and State Parks), the projected developments reflect the projection in the 2010 UWMP.

You will find attached to this letter several tables detailing the estimates of existing and projected water usage. The summary table categorizes demand estimates by jurisdiction. The 2010 demand summary is provided for reference. The more detailed tables for each jurisdiction show the projected development over the next 20-years, categorized by three types of land use: New Residential, Replacement of Existing Residential, and Non-Residential.

Please have the appropriate staff member(s) review the projected development for your jurisdiction, and report any discrepancies to us.

Note that the FORA growth forecast only looks at planned development though the year 2022, while the UWMP must project demands through 2035. If a specific plan area was not fully reflected in the FORA forecast, you will need to add the remainder of that development in the 2023-2035 columns. Please pay careful attention to the projected development in years 2025 and later since those in particular may be underestimated. For the City of Marina, please confirm the development schedule for Cypress Knolls and SVMH in the Ord Community. Also, the Central Marina projection includes the Downtown Vitalization Specific Plan, which was not formally adopted. Those infill projections may need to be reduced.

The 2015 UWMP is projected to be completed in June 2016, pending the California Department of Water Resources release of updated guidance on UWMP preparation. We would appreciate your prompt review of and feedback on the projected water use figures. Even if no discrepancies are noted, please respond within sixty (60) days so that the UWMP preparation can proceed as scheduled.

Feel free to contact either myself or Andrew Racz of our office at 831-883-4848, email asterbenz@swsv.com, for any questions regarding this matter. Thank you for your cooperation.

Sincerely,

Schaaf & Wheeler

Andrew Sterbenz, PE

Project Engineer

Attachments

Urban Water Management Plan – Jurisdictional POC's

City of Marina	Theresa Symansis City of Marina, Director of Community Development 209 Cypress Avenue Marina, CA 93933 Phone: (831) 884-1289 Fax: (831) 384-0425 Alternate POC: Layne Long, City Manager
City of Seaside	Diana Ingersoll, PE City of Seaside, Deputy City Manager 440 Harcourt Ave. Seaside, CA 93955 (831) 899-6736 Alternate POC: Tim O'Halloran, PE
City of Del Rey Oaks	Daniel Dawson City of Del Rey Oaks, City Manager 650 Canyon Del Rey Road Del Rey Oaks, CA 93940 Phone: 831-394-8511 Fax: 831-394-6421 Alternate POC:
City of Monterey	Kim Cole, Principal Planner City of Monterey, Planning Office 570 Pacific Street Monterey, CA 93940 831.646.3885 Fax: 831.646.3408 Cole@ci.monterey.ca.us Alternate POC: Elizabeth Caraker, Principal Planner
County of Monterey	Michael Novo County of Monterey, Resource Management Agency, Planning Services 168 West Alisal St., 3rd Floor Salinas, CA 93901 Phone (831) 755-5390 Fax (831) 755-5398 novom@co.monterey.ca.us Alternate POC: Melanie Beretti
CSUMB	Kathleen Ventimiglia CSUMB, Director for Campus Planning and Development 100 Campus Center, CSU Monterey Bay Seaside CA 93955-8001

	(831) 582-4304 (831) 582-3729 kventimiglia@csumb.edu Alternate POC: John Marker, Director of Facilities
UCMBEST	Graham Bice Managing Director, UC MBEST Center 3180 Imjin Road, Suite 104 Marina. CA 93933 Phone: 831.582.1020 FAX: 831.582.1021 bice@ucmbest.org
US Army	James Willison Presidio of Monterey, Directorate of Public Works IMWE-POM-PWO Attn: James Willison PO Box 5004 Monterey, CA 93944-5004 Phone 831.242.7916 Fax 831.242.7019
State Parks	Joan Carpenter California State Parks, Monterey District 2211Garden Road Monterey, CA 93940 phone (831) 649-2836 fax (831) 647-6239 joan.carpenter@parks.ca.gov

MARINA COAST WATER DISTRICT

11 RESERVATION ROAD, MARINA, CA 93933-2099
Home Page: www.mcwd.org
TEL: (831) 384-6131 FAX: (831) 883-5995

February 10, 2016

Mr. Layne Long, City Manager
City of Marina
209 Cypress Avenue
Marina, CA 93933

Dear Mr. Long:

The Marina Coast Water District (MCWD) is preparing an updated Urban Water Management Plan (UWMP) for submittal to the California Department of Water Resources, pursuant to the Urban Water Management Planning Act, as codified in the California Water Code Sections 10610-10656. The last UWMP was adopted in 2011.

The updated plan is currently being drafted. Your planning staff was previously contacted for review and input on the development and water demand projections for the planning period, which runs to the year 2035. Our anticipated schedule for public review and plan adoption is:

March 21,2016	Publish public review draft of the UWMP
April 18, 2016	Conduct public hearing at the regularly scheduled MCWD Board meeting
April 21, 2016	Comment period closes
May 16, 2018	Adopt final UWMP at the regularly scheduled MCWD Board meeting

We will provide you a copy of the public review draft plan in March. We invite your input and comments on the UWMP. Please provide input to our consultant, Schaaf & Wheeler Consulting Civil Engineers, Attn: Andy Sterbenz, 3 Quail Run Circle, Suite 101, Salinas, CA, 93907. Andy may be contacted by phone at (831) 883-4848, or by e-mail at asterbenz@swsv.com. You may contact me by direct phone at (831) 883-5925, or e-mail mwegley@mcwd.org.

Sincerely,

Michael Wegley, PE
District Engineer

Urban Water Management Plan – POCs for Notices

City of Marina	Mr. Layne Long, City Manager City of Marina 211 Hillcrest Avenue Marina, CA 93933
City of Seaside	Mr. Craig Malin, City Manager City of Seaside 440 Harcourt Ave. Seaside, CA 93955
City of Del Rey Oaks	Mr. Daniel Dawson, City Manager City of Del Rey Oaks 650 Canyon Del Rey Road Del Rey Oaks, CA 93940 Phone: 831-394-8511 Fax: 831-394-6421
City of Monterey	Mr. Michael McCarthy, City Manager City of Monterey 580 Pacific Street Monterey, CA 93940
County of Monterey	Mr. Carl P. Holm, AICP County of Monterey, Director, Resource Management Agency 168 West Alisal St., 3rd Floor Salinas, CA 93901
MCWRA	Mr. David E. Chardavoyne, General Manager Monterey County Water Resources Agency 893 Blanco Circle Salinas, CA 93901
MRWPCA	Mr. Paul Sciuto, General Manager Monterey Regional Water Pollution Control Agency 5 Harris Court, Bldg D Monterey, CA 93940

CSUMB	Ms. Kathleen Ventimiglia CSUMB, Director for Campus Planning and Development 100 Campus Center, Mountain Hall A Seaside CA 93955-8001 (831) 582-4304 (831) 582-3729 kventimiglia@csumb.edu Alternate POC: John Marker, Director of Facilities
UCMBEST	Mr. Graham Bice Managing Director, UC MBEST Center 3180 Imjin Road, Suite 104 Marina. CA 93933 Phone: 831.582.1020 FAX: 831.582.1021 bice@ucmbest.org
US Army	Mr. James Willison Presidio of Monterey, Directorate of Public Works IMWE-POM-PWO Attn: James Willison PO Box 5004 Monterey, CA 93944-5004
State Parks	Ms. Joan Carpenter, District Services Manager California State Parks, Monterey District 2211Garden Road Monterey, CA 93940
CalAm	Mr. Eric Sabolsice General Manager, Monterey District California American Water 511 Forest Lodge Road, Suite 100 Pacific Grove, CA 93950
MPWMD	Mr. David J Stoldt Monterey Peninsula Water Management District 5 Harris Court, Bldg G Monterey, CA 93940
FORA	Mr. Michael A. Houlemard, Jr. Executive Officer, Fort Ord Reuse Authority 920 Second Ave, Suite A Marina, CA 93933

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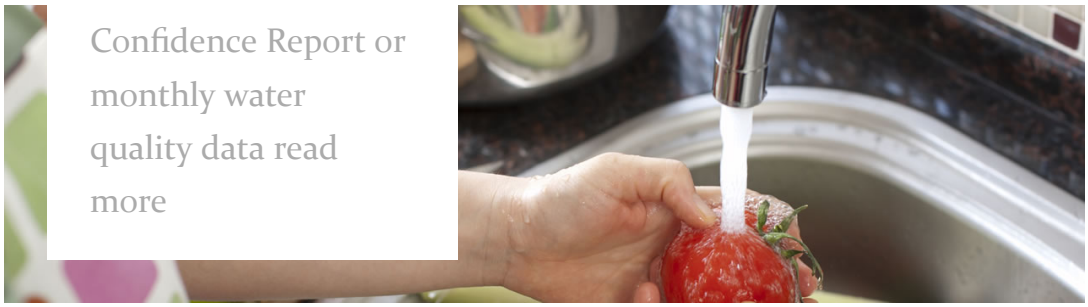

News and Announcements ...

Notice of Public Hearing ... MCWD will conduct a public hearing to receive comments on the Draft 2015 Urban Water Management Plan. 7:00 p.m., Monday, June 6, 2016, Marina Council Chambers, 211 Hillcrest Ave, Marina. PDF

California BLM Field Office Makes MCWD-built Facility Its New Home ... Details

Request for Proposals: IT Services ... Details

Mandatory Water Use Restrictions Continue ... Details

Of special interest ...

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About MCWD

Marina Coast Water District serves the Monterey Peninsula's fastest growing and most diverse communities — the City of Marina and the Ord Community (the former Fort Ord). MCWD provides high quality water, wastewater and recycled water services through management, conservation, and development of future resources at reasonable costs. read more

Webmail

Offices

Administration and Customer Service
11 Reservation Road, Marina, CA 93933-2099
Monday through Friday, 8 a.m. to 5:30 p.m.

Engineering and Operations & Maintenance
2840 4th Avenue, Marina, CA 93933
Monday through Friday, 8 a.m. to 5:00 p.m.

Telephone:
(831)384-6131

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NOTICE OF PUBLIC HEARING

THE MARINA COAST WATER DISTRICT will conduct a public hearing to receive comments on the Draft 2015 Urban Water Management Plan. The Urban Water Management Plan addresses water supply and water demands within the District's Marina and Ord Community Service Areas for the next 20-years. The District Board of Directors will conduct the hearing at their regularly scheduled meeting at 7:00 p.m., Monday, June 6, 2016, at the Marina Council Chambers, 211 Hillcrest Ave, Marina, CA 93933. The Draft Plan is available for review at the District Office, or may be viewed on the web at www.mcwd.org. Written comments will be accepted until 5:00 p.m., Friday, June 3, 2016. Submit written comments to MCWD, ATTN: Mike Wegley, 11 Reservation Road, Marina, CA 93933. Email mwegley@mcwd.org, Phone (831)384-6131, Fax (831)384-0197.

MONTEREY HERALD
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(831) 726.4382

This space is reserved for the County Clerk's Filing Stamp

MARINA COAST WATER DISTRICT
Account No. 2141283
11 RESERVATION RD
MARINA, CA 93933

Legal No. 0005736450
Notice of Public Hearing
Total Cost: $227.01
Ordered by:

PROOF OF PUBLICATION

STATE OF CALIFORNIA
County of Monterey

I am a citizen of the United States and a resident of the County aforesaid. I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of The Monterey Herald, a newspaper of general circulation, printed and published daily and Sunday in the City of Monterey, County of Monterey, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Monterey, State of California; that the notice, of which the annexed is a printed copy (set in type not smaller than 6 point), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

05/21/16, 05/22/16

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Executed on 05/22/2016 at Monterey, California.

Danielle Landaker

Signature

NOTICE OF PUBLIC HEARING

THE MARINA COAST WATER DISTRICT will conduct a public hearing to receive comments on the Draft 2015 Urban Water Management Plan. The Urban Water Management Plan addresses water supply and water demands within the District's Marina and Ord Community Service Areas for the next 20-years. The District Board of Directors will conduct the hearing at their regularly scheduled meeting at 7:00 p.m., Monday, June 6, 2016, at the Marina Council Chambers, 211 Hillcrest Ave, Marina, CA 93933. The Draft Plan is available for review at the District Office, or may be viewed on the web at www.mcwd.org. Written comments will be accepted until 5:00 p.m., Friday, June 3, 2016. Submit written comments to MCWD, ATTN: Mike Wegley, 11 Reservation Road, Marina, CA 93933. Email mwegley@mcwd.org, Phone (831)384-6131, Fax (831)384-0197.

Publish: May 21, 22, 2016.

MONTEREY HERALD
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MARINA COAST WATER DISTRICT
Account No. 2141283
11 RESERVATION RD
MARINA, CA 93933

Legal No. 0005742251

Total Cost: $116.98
Ordered by:

PROOF OF PUBLICATION

STATE OF CALIFORNIA
County of Monterey

I am a citizen of the United States and a resident of the County aforesaid. I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of The Monterey Herald, a newspaper of general circulation, printed and published daily and Sunday in the City of Monterey, County of Monterey, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Monterey, State of California; that the notice, of which the annexed is a printed copy (set in type not smaller than 6 point), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

05/29/16

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Executed on 05/29/2016 at Monterey, California.

Danielle Landaker

Signature

NOTICE OF PUBLIC HEARING

THE MARINA COAST WATER DISTRICT will conduct a public hearing to receive comments on the Draft 2015 Urban Water Management Plan. The Urban Water Management Plan addresses water supply and water demands within the District's Marina and Ord Community Service Areas for the next 20-years. The District Board of Directors will conduct the hearing at their regularly scheduled meeting at 7:00 p.m., Monday, June 6, 2016, at the Marina Council Chambers, 211 Hillcrest Ave, Marina, CA 93933. The Draft Plan is available for review at the District Office, or may be viewed on the web at www.mcwd.org. Written comments will be accepted until 5:00 p.m., Friday, June 3, 2016. Submit written comments to MCWD, ATTN: Mike Wegley, 11 Reservation Road, Marina, CA 93933. Email mwegley@mcwd.org, Phone (831)384-6131, Fax (831)384-0197.

Publish: May 29, 2016.

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

Kirk R. Wheeler, PE
Peder C. Jorgensen, PE
Charles D. Anderson, PE
Daniel J. Schaaf, PE
M. Eliza McNulty, PE

3 Quail Run Circle, Suite 101
Salinas, CA 93907
831-883-4848
FAX 831-758-6328

Benjamin L. Shick, PE
Leif M. Coponen, PE
Principal Emeritus
David A. Foote, PE
James R. Schaaf, Ph. D, PE

May 20, 2016

Mr. Layne Long, City Manager
City of Marina
209 Cypress Avenue
Marina, CA 93933

Subject: Marina Coast Water District 2015 Urban Water Management Plan

Dear Mr. Long:

On behalf of the Marina Coast Water District, we are providing you with the Public Review Draft of the 2015 Urban Water Management Plan. Please review the draft plan and provide any comments in writing to:

Marina Coast Water District
ATTN: District Engineer
11 Reservation Road
Marina, CA 93933

Or by e-mail to mwegley@mcwd.org.

The deadline for written comments is **Friday, June 3, 2016.**

The MCWD Board of Directors will conduct a public hearing to receive comments on the draft urban Water Management Plan at their regularly scheduled meeting on **June 6, 2016**. The meeting will be conducted at the City of Marina Council Chambers, 211 Hillcrest Road, Marina, CA at 7:00 p.m.

If you have any questions, you may contact me at 831-883-4848, or by e-mail asterbenz@swsv.com.

Sincerely,

Schaaf & Wheeler

Andrew Sterbenz, PE

Project Engineer

Attachments

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

Kirk R. Wheeler, PE
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Charles D. Anderson, PE
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M. Eliza McNulty, PE

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Benjamin L. Shick, PE
Leif M. Coponen, PE
Principal Emeritus
David A. Foote, PE
James R. Schaaf, Ph. D, PE

May 27, 2016

Mr. Layne Long, City Manager
City of Marina
211 Hillcrest Ave
Marina, CA 93933

Subject: Marina Coast Water District 2015 Urban Water Management Plan

Dear Mr. Long:

On behalf of the Marina Coast Water District, we provided your office with a copy of the District's Public Review Draft of the 2015 Urban Water Management Plan. We erroneously included the wrong cover letter. The correct letter soliciting review comments is attached.

Also attached, please find Technical Memorandum, North Marina Area Groundwater Data and Conditions, which is part of Appendix E. This report was under revision at the time the Public Review Draft was circulated.

The deadline for written comments is **Friday, June 3, 2016,** as discussed in the attached letter.

The MCWD Board of Directors will conduct a public hearing to receive comments on the draft urban Water Management Plan at their regularly scheduled meeting on **June 6, 2016**. The meeting will be conducted at the City of Marina Council Chambers, 211 Hillcrest Road, Marina, CA at 7:00 p.m.

I apologize for any confusion this may have caused. If you have any questions, you may contact me at 831-883-4848, or by e-mail asterbenz@swsv.com.

Sincerely,

Schaaf & Wheeler

Andrew Sterbenz, PE

Project Engineer

Attachments

MARINA COAST WATER DISTRICT

11 RESERVATION ROAD, MARINA, CA 93933-2099
Home Page: www.mcwd.org
TEL: (831) 384-6131 FAX: (831) 883-5995

Agenda
Regular Board Meeting, Board of Directors
Marina Coast Water District

Marina Council Chambers
211 Hillcrest Avenue, Marina, California
Monday, June 6, 2016, 6:30 p.m. PST

This meeting has been noticed according to the Brown Act rules. The Board of Directors meet regularly on the first and third Monday of each month. The meetings normally begin at 6:30 p.m. and are held at the City of Marina Council Chambers at 211 Hillcrest Avenue, Marina, California.

Our Mission: *We provide our customers with high quality water, wastewater collection and conservation services at a reasonable cost, through planning, management and the development of water resources in an environmentally sensitive manner.*

1. Call to Order

2. Roll Call

3. Public Comment on Closed Session Items *Anyone wishing to address the Board on matters appearing on Closed Session may do so at this time. Please limit your comment to four minutes. The public may comment on any other items listed on the agenda at the time they are considered by the Board.*

4. Closed Session

A. Pursuant to Government Code 54956.9
Conference with Legal Counsel – Existing Litigation

1) Ag Land Trust v. Marina Coast Water District, Monterey County Superior Court Case No. M105019; Sixth Appellate District Court of Appeals Case Nos. H038550 and H039559

2) In the Matter of the Application of California-American Water Company (U210W) for Approval of the Monterey Peninsula Water Supply Project and Authorization to Recover All Present and Future Costs in Rates, California Public Utilities Commission No. A.12-04-019 & A.13-05-017 Settlement Agreement

This agenda is subject to revision and may be amended prior to the scheduled meeting. Pursuant to Government Code section 54954.2(a)(1), the agenda for each meeting of the Board shall be posted at the City of Marina Council Chambers. The agenda shall also be posted at the following locations but those locations are not official agenda posting locations for purposes of section 54954.2(a)(1): District offices at 11 Reservation Road, Seaside City Hall, the City of Marina Library, and the City of Seaside Library. A complete Board packet containing all enclosures and staff materials will be available for public review on Wednesday, June 1, 2016. Copies will also be available at the Board meeting. Information about items on this agenda or persons requesting disability related modifications and/or accommodations should contact the Board Clerk 48 hours prior to the meeting at: 831-883-5910.

3) Marina Coast Water District v. California Public Utilities Commission, California Supreme Court Case No. S230728, Writ of Review

4) California-American Water Company vs Marina Coast Water District; Monterey County Water Resources Agency; and Does 1 through 10, San Francisco Superior Court Case No. CGC-13-528312 (Complaint for Declaratory Relief); First Appellate District Court of Appeals Case No. A145604

5) Marina Coast Water District vs. California-American Water Company, Monterey County Water Resources Agency, and Does 1 through 50, San Francisco Superior Court Case No. CGC-15-547125 (Complaint for Breach of Warranties, etc.)

6) Marina Coast Water District v, California Coastal Commission (California-American Water Company, Real Party in Interest), Santa Cruz County Superior Court Case No. CV180839 (Petition for Writ of Mandate). Sixth District Court of Appeal Case No. H042742

7) Marina Coast Water District v, California State Lands Commission (California-American Water Company, Real Party in Interest), Santa Cruz County Superior Court Case No. CV180895 (Petition for Writ of Mandate)

B. Pursuant to Government Code 54956.8
Conference with Real Property Negotiator
Property: Sewer Infrastructure
Negotiating parties: Howard Gustafson, Thomas Moore
Under Negotiation: Price and Terms

7:00 p.m. Reconvene Open Session

5. Reportable Actions Taken During Closed Session *The Board will announce any reportable action taken during closed session and the vote or abstention on that action of every director present, and may take additional action in open session as appropriate. Any closed session items not completed may be continued to after the end of all open session items.*

6. Pledge of Allegiance

7. Oral Communications *Anyone wishing to address the Board on matters not appearing on the Agenda may do so at this time. Please limit your comment to four minutes. The public may comment on any other items listed on the agenda at the time they are considered by the Board.*

8. Presentations

A. Consider Adoption of Resolution No. 2016-31 in Recognition of James Derbin, Operations and Maintenance Superintendent, and Awarding a Plaque and Gift Certificate for 10 years of Service to the Marina Coast Water District

B. Consider Adoption of Resolution No. 2016-32 in Recognition of Brian West, Systems Operator II, and Awarding a Plaque and Gift Certificate for 20 Years of Service to the Marina Coast Water District

9. Consent Calendar *Board approval can be taken with a single motion and vote. A Board member or member of the public may request that any item be pulled from the Consent Calendar for separate consideration at this meeting or a subsequent meeting. The public may address the Board on any Consent Calendar item. Please limit your comment to four minutes.*

A. Receive and File the Check Register for the Month of May 2016

B. Approve the Draft Minutes of the Regular Board Meeting of May 16, 2016

10. Public Hearing

A. Receive Public Comment on the Draft 2015 Urban Water Management Plan

11. Action Items *The Board will review and discuss agenda items and take action or direct staff to return to the Board for action at a following meeting. The public may address the Board on these Items as each item is reviewed by the Board. Please limit your comment to four minutes.*

A. Consider Adoption of Resolution No. 2016-33 to Approve and Adopt the District's 2015 Urban Water Management Plan

Action: The Board of Directors will consider approving and adopting the District's 2015 Urban Water Management Plan.

B. Consider Adoption of Resolution No. 2016-34 to Approve the Marina Coast Water District Budget for FY 2016-2017

Action: The Board of Directors will consider approving the FY 2016-2017 budget.

C. Consider Adoption of Resolution No. 2016-35 to Approve the District Five-Year Capital Improvement Projects Budget

Action: The Board of Directors will consider approving the District five-year Capital Improvement Projects budget for the Central Marina and Ord Community service areas.

D. Consider Adoption of Resolution No. 2016-36 to Approve a Professional Services Agreement for Inspection and Construction Support Services for the Dunes-1C Phase 3 Development Project

Action: The Board of Directors will consider approve a Professional Services Agreement for inspection and construction support services for the Dunes-1C Phase 3 development project.

E. Consider Adoption of Resolution No. 2016-37 to Approve a Professional Services Agreement to Provide Information Technology Support Services to the District for FY 2016-2017

Action: The Board of Directors will consider approving a Professional Services Agreement to provide information technology support services to the District for FY 2016-2017.

F. Discuss and Consider Adoption of Resolution No. 2016-38 to Approve Revisions to the Board Procedures Manual

Action: The Board of Directors will discuss and consider approving revisions to the Board Procedures Manual.

12. Staff Report

A. Receive the Developer Account Update as of March 31, 2016

B. Receive the 1st Quarter 2016 MCWD Water Consumption and Sewer Flow Report

13. Informational Items *Informational items are normally provided in the form of a written report or verbal update and may not require Board action. The public may address the Board on Informational Items as they are considered by the Board. Please limit your comments to four minutes.*

A. General Manager's Report

B. Counsel's Report

C. Committee and Board Liaison Reports

1. Water Conservation Commission
2. Joint City-District Committee
3. Executive Committee
4. Community Outreach Committee
5. Budget and Personnel Committee
6. MRWPCA Board Member Liaison
7. LAFCO Liaison
8. FORA
9. WWOC Report
10. JPIA Liaison
11. Special Districts Association

14. Board Member Requests for Future Agenda Items

15. Director's Comments *Director reports on meetings with other agencies, organizations and individuals on behalf of the District and on official District matters.*

16. Adjournment *Set or Announce Next Meeting(s), date(s), time(s), and location(s):*

Regular Meeting: Tuesday, July 5, 2016, 6:30 p.m.,
Marina Council Chambers, 211 Hillcrest Avenue, Marina

Marina Coast Water District
Public Hearing

Agenda Item: 10-A Meeting Date: June 6, 2016

Prepared By: Andrew Sterbenz Approved By: Keith Van Der Maaten
Reviewed by: Michael Wegley

Subject: Public Hearing on the Draft 2015 Urban Water Management Plan

Detailed Description: The Board will conduct a public hearing and receive public comments on the District's Draft 2015 Urban Water Management Plan (UWMP). Following the public hearing, the comments received will be considered and a final UWMP will be considered for adoption by the Board.

In June 2011 the Board approved the *2010 Urban Water Management Plan*. The California Urban Water Management Planning Act requires any municipal supplier serving over 3,000 connections or 3,000 acre-feet of water per year to prepare an urban water management plan every five years. The 2015 plan deadline was extended due to changes in the law which required the Department of Water Resources to develop additional procedures and guidelines for completion of UWMPs, which were not completed by DWR until March 2016. The District must now adopt the 2015 UWMP not later than July 1, 2016.

The draft development and water demand projections tables, which form the basis of the plan, were mailed to the land use jurisdictions (LUJs) for review on October 30, 2015, and discussed at the January 13, 2016 Fort Ord Reuse Authority's Administrative Committee meeting. On February 10, 2016, notice of preparation of the proposed *2015 UWMP* was provided to area cities and the county in accordance with the UWMP Act. Additionally, notification was extended to affected area agencies to invite input, review and comments on the UWMP.

Copies of the Draft 2015 UWMP were distributed to all of the land use jurisdictions on May 20, 2016, with a cover letter stating that the deadline for submitting comments was 5:00 p.m. on Friday, June 3, 2016. The required public notice was published in a local newspaper. All timely comments received will be provided to the Board at the Board meeting and will be included in the final 2015 UWMP. Copies of the notices and proofs of publication mentioned above are on file with the District Secretary and will be available for inspection by the Board at the Board meeting. The Draft 2015 UWMP is available at the District's Reservation Road and Ord offices and on the District website.

Material Included for Information/Consideration: The Draft 2015 Urban Water Management Plan was provided for public review on May 23, 2016 and is also available on the District website, www.mcwd.org. Staff errata for the Draft 2015 UWMP is also included.

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Appendix E: Technical Memoranda

The following technical memoranda were prepared as interim reports during the development of this Urban Water Management Plan, and are included in this appendix.

1. District Population Estimate, dated 5/25/2015
2. FORA Water Augmentation Target, dated 12/23/2015
3. Water Allocations by Jurisdiction, dated 5/17/2016
4. North Marina Area Groundwater Data and Conditions, Hopkins Groundwater Consultants, Inc., May 2016

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TECHNICAL MEMORANDUM

TO:	Paul Lord, MCWD	DATE:	May 25, 2015
FROM:	Andrew Sterbenz, PE	JOB #:	MCWD.43.12.001
SUBJECT:	District Population Estimate		

Purpose

The purpose of this memorandum is to summarize the methodology and source data used to develop annual population estimates for the Marina Coast Water District (MCWD). These estimates are to be used for reporting monthly urban water supplier reports to the California State Water Resources Control Board (SWRCB) under the current drought rules.

Methodology and Results

The SWRCB published guidance recommending two methods of estimating urban population for the required drought water usage reporting. The first method is to use the annual population estimate prepared by the California Department of Finance (DOF) for incorporated municipalities. This method is recommended for provider's whose service area has a 95% match with the urban boundary. The second method is to estimate the number of persons per residential connection based upon the 2010 values in the last Urban Water Management Plan (UWMP), and then estimate the population increase based upon the number of new residential connections each year.

MCWD currently serves all of the City of Marina, plus portions of the City of Seaside and unincorporated Monterey County. Therefore, a hybrid methodology may be used. The District has two service areas, Central Marina and the Ord Community. The Central Marina Service area includes all of the developed portions of the City outside of the former Fort Ord. The Ord Community includes the developed portions of the former base, including portions of the City of Marina, the City of Seaside and unincorporated Monterey County. Between the two service areas, all of the developed portions of the City of Marina are served by MCWD, so the DOF estimated population may be used, as shown in the Table 1, below.

Table 1: Extract from California Department of Finance
Report E-4 Population Estimates for Cities, Counties, and State, 2011-2015 with 2010 Benchmark

COUNTY/CITY	4/1/2010	1/1/2011	1/1/2012	1/1/2013	1/1/2014	1/1/2015
California						
Incorporated Total	30,764,188	30,973,925	31,297,312	31,636,815	31,921,717	32,237,899
Balance Of State Total	6,489,768	6,454,021	6,383,281	6,393,794	6,435,404	6,476,826
State Total	37,253,956	37,427,946	37,680,593	38,030,609	38,357,121	38,714,725
Monterey County						
Carmel-By-The-Sea	3,722	3,722	3,733	3,768	3,747	3,747
Del Rey Oaks	1,624	1,631	1,643	1,658	1,661	1,660
Gonzales	8,187	8,220	8,272	8,349	8,363	8,357
Greenfield	16,330	16,396	16,516	16,839	16,879	16,870
King City	12,874	12,942	13,033	13,158	13,179	13,417
Marina	**19,718**	**19,759**	**20,005**	**20,199**	**20,222**	**20,872**
Monterey	27,810	28,019	28,472	28,419	28,319	28,163
Pacific Grove	15,041	15,108	15,226	15,367	15,394	15,388
Salinas	150,441	150,996	152,461	154,189	154,815	154,720
Sand City	334	335	337	340	342	362
Seaside	33,025	32,808	33,174	33,523	33,456	33,672
Soledad	25,738	26,286	26,247	25,536	24,959	24,540
Balance Of County	100,213	100,746	101,680	102,719	103,438	103,645
Incorporated	314,844	316,222	319,119	321,345	321,336	321,768
County Total	415,057	416,968	420,799	424,064	424,774	425,413

The annual population change estimated by DOF for Marina is shown in Table 2:

Table 2: Estimated Cumulative Population Increases by Year

CITY	4/1/2010	1/1/2011	1/1/2012	1/1/2013	1/1/2014	1/1/2015
Marina	NA	41	287	481	504	1,154

The total MCWD population was determined for the last UWMP based on the 2010 census by summing all of the Census Tracts within the District. The population total in 2010 was 30,480 persons. Subtracting the 19,718 from within the City of Marina, the 2010 population for the remainder of the Ord Community was 10,762 persons. In the 2010 UWMP, the District reported having 7,153 residential connections (sum of single and multi-family accounts). The number of persons per account is calculated by dividing

$$\frac{30{,}480\ persons}{7{,}153\ accounts} = 4.26\ persons\ per\ account$$

Note that there are numerous multi-family units within the District which have more than one dwelling unit per meter, so the average number of persons per account is larger than the estimated persons per household.

Since 2010, five housing projects have been completed or partially completed:

- University Village Apartments (Marina), 108 units occupied in 2014
- Stilwell Kidney and Lower Stilwell (Seaside), 148 units occupied in 2010-2013
- Manzanita Place Apartments (Monterey County) , 66 units occupied in 2013
- East Garrison (Monterey County), 14 houses in 2013, 108 houses in 2014

The University Village Apartments are included within the City of Marina population projection. The Stilwell developments in Seaside are part of the Army housing upgrades in the Presidio of Monterey Annex. The Army is renovating and/or replacing existing housing units, and then emptying older units for the next phase, thus maintaining a constant number of occupied units. Therefore, the only additional residential units outside of Marina were in Monterey County. The annual increase in accounts is shown in Table 3, and the resulting population increase is shown in Table 4. The District total population is calculated in Table 5.

Table 3: New Residential Accounts Outside the City of Marina (cumulative)

Development	4/1/2010	1/1/2011	1/1/2012	1/1/2013	1/1/2014	1/1/2015
Manzanita Place	NA	0	0	0	66	66
East Garrison	NA	0	0	0	14	108
Total	**NA**	**0**	**0**	**0**	**80**	**174**

Table 4: Population Increases Outside the City of Marina (cumulative)

Development	4/1/2010	1/1/2011	1/1/2012	1/1/2013	1/1/2014	1/1/2015
Manzanita Place	NA	0	0	0	281	281
East Garrison	NA	0	0	0	60	460
Total	**NA**	**0**	**0**	**0**	**341**	**741**

Population estimated as 4.26 persons per residential account

Table 5: MCWD Estimated Population by Year

Area	4/1/2010	1/1/2011	1/1/2012	1/1/2013	1/1/2014	1/1/2015
City of Marina	19,718	19,759	20,005	20,199	20,222	20,872
Existing outside of Marina in 2010	10,762	10,762	10,762	10,762	10,762	10,762
New outside of Marina since 2010	NA	0	0	0	341	741
Total	**30,480**	**30,521**	**30,767**	**30,961**	**31,325**	**32,375**

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MEMORANDUM

TO:	File	DATE:	23 DEC 2015 Revised 06 JUN 2016
FROM:	Andrew Sterbenz	JOB#:	MCWD.43.12.020
SUBJECT:	FORA Water Augmentation Target		

The purpose of this memorandum is to document the required size of the water augmentation mitigation under the Fort Ord Reuse Authority Base Reuse Plan.

The Fort Ord Base Reuse Plan was adopted in 1997. The Fort Ord Reuse Study projected a build-out water demand of 18,262 AFY. The Base Reuse Plan EIR revised that down to 13,500 AFY at buildout, with a Phase 1 (Year 2015) projection of 8,999 AFY. The 2015 projection included 8,712 new residential dwelling units, 4,925,800 SF of new commercial and office space, and 270 acres of new primary and secondary education campuses. The demand estimate assumed a 10% overage to account for system losses. The United States had acquired 6,600 AFY of groundwater pumping rights in the Salinas Valley Groundwater Basin to serve the former Fort Ord. In the Base Reuse Plan EIR, the water augmentation mitigation was estimated to be 2,400 AFY, which is the projected 9,000 AFY demand minus the existing 6,600 AFY supply[1].

In the Base Reuse Plan, the Fort Ord Reuse Authority allocated the 6,600 AFY of existing United Stated groundwater rights among the land use jurisdictions so they could proceed with entitling redevelopment projects. The initial and current allocations are shown in the table below. The United States retained 1,577 AFY of the 6,600 AFY for use in the Presidio of Monterey Annex, which includes the military housing area and various offices and facilities.

The existing Bayonet/Black Horse Golf Courses on the former Fort Ord use approximately 400 AFY for landscape irrigation. This water was supplied from existing wells in the Seaside Groundwater Basin. The Base Reuse Plan assumed that supply from these wells would continue indefinitely, so this demand was not included in the 2015 demand projection, although the plan identified the need to convert these sites to recycled water once available. In 2005 the Seaside Groundwater Basin was adjudicated, which increased the urgency to convert the system to recycled water.

The Marina Coast Water District's Regional Urban Water Augmentation Project (RUWAP) was approved in 2004. That project was sized to provide 2,400 AFY of new supply to the Ord Community, as a mix of potable and recycled water. The supply target came from the Base Reuse Plan. In the demand analysis, MCWD included Bayonet and Black Horse Golf Courses as potential recycled water use locations. While this inclusion was appropriate given the status of the Seaside Groundwater Basin, the RUWAP target should have been increased by 400 AFY to be consistent with the Base Reuse Plan assumptions.

[1] Base Reuse Plan, Volume 3, Appendix B, page PIFP 2-7

The MCWD 2005 Urban Water Management Plan (UWMP) projected all jurisdictions fully using or exceeding their water allocations by the year 2020, with an overall shortfall of 5,300 AFY in the Ord Community (see attached tables). That projection did not include replacement water supply for Bayonet/Black Horse Golf Courses. The 2010 UWMP update reflected the reduced redevelopment rate following the economic downturn and the projected replacement supply for Bayonet/Black Horse, and shows two jurisdictions (the Army and CSUMB) which are projected to not fully use their allocations by 2030. The projected shortfall in the Ord Community was 1,600 AFY, but accounting for "stranded" allocations, the total becomes 2,400 AFY. The 2030 projection does not include all of the development included in the Base Reuse Plan 2015 projection, most notably the proposed golf courses in Marina and Del Rey Oaks.

FORA has a Water Augmentation item in its CIP as a mitigation for the projected redevelopment. As part of the 2015 UWMP update, a reassessment of the water augmentation target should be conducted to determine if 2,400 AFY is still valid. The FORA mitigation is funded through land sales and development fees, which are considered the developer's mitigation for project water demands. New development which is in excess of the "mitigated level of redevelopment" will need to develop additional water supplies, or fund MCWD's development of additional water supplies. MCWD needs to know what the "mitigated level of redevelopment" is so they can plan accordingly.

FORA Water Allocations

Jurisdiction	Original Allocation (1996) Acre-feet/year	Current Allocation (2007) Acre-feet/year
City of Seaside	710	1,012
City of Del Rey Oaks	75	243
City of Monterey	65	65
City of Marina	1,185	1,325
Monterey County	545	710
Army	1,410	1,577
CSUMB	1,055	1,035
UCMBEST	165	230
State Parks	45	45
Marina Sphere Polygon 8a	50	10
Line Loss	530	348
FORA Strategic Reserve	785	0

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MEMORANDUM

TO:	File	DATE:	May 18, 2016
FROM:	Andrew Sterbenz	JOB#:	MCWD.43.12.020
SUBJECT:	Jurisdictional Water Allocations		

The purpose of this memorandum is to summarize the potable water allocations within the Ord Community, both from the Fort Ord Reuse Authority (FORA) to the respective jurisdictions and from the jurisdictions to specific projects.

Groundwater Supply

Potable water supply for the former Fort Ord (MCWD Ord Community service area) comes from the Salinas Valley Groundwater Basin (SVGB), which is managed by the Monterey County Water Resources Agency (MCWRA). MCWRA operates two reservoirs which capture winter runoff and maintain year-round flow in the Salinas River, which recharges the groundwater basin. MCWRA established Zones 2 and 2A as benefit assessment zones to finance the construction and operation of Lakes Nacimiento and San Antonio, respectively. Under the "Agreement between the United States of America and the Monterey County Water Resources Agency concerning Annexation of Fort Ord into Zones 2 and 2A of the Monterey County Water Resources Agency, Agreement No. A-06404", dated September 21, 1993, the U.S. Army may withdraw up to 6,600 acre-feet per year from the Salinas Valley Groundwater Basin for use on the former Fort Ord, including those portions of the former Fort Ord that overly the Seaside Groundwater Basin. The MCWD Central Marina service area was similarly annexed into Zones 2/2A in 1996.

On October 24, 2001, the United States quitclaimed the water and sewer infrastructure on the former Fort Ord, including the SVGB groundwater allocation, through FORA to the Marina Coast Water District. The U.S. retained 1,729 AFY for use in the Presidio of Monterey Annex (military housing and facilities within the Ord Community) and the Bureau of Land Management. Under agreements between the U.S. Army and FORA (2000), and between MCWD and FORA (1998), the FORA Board allocated the remaining water supply among the land use jurisdictions in the Ord Community. MCWD owns and operates the water system and the underlying groundwater extraction rights, except for the rights reserved to the U.S. Army. MCWD provides water and sewer service to the Presidio of Monterey Annex under direct contract with the U.S. Army.

Allocations to Land Use Jurisdictions

The original and current allocation of potable water supply among the Ord Community Land Use Jurisdictions is shown in Table 1, below. FORA initially allocated supply among the jurisdictions on April 12, 1996, under the Development and Reuse Management Plan, adopted as part of the Base Reuse

Plan. At that time, FORA held out a strategic reserve of 785 AFY. On August 14, 1998, the allocations were adjusted and the strategic reserve reduced to 755 AFY. In 2001, the U.S. Army allocated 38 AFY to Brostram Park in Seaside, reducing the retained total to 1,691 AFY. In 2005, the U.S. Army allocated 114 AFY to Seaside as part of a real estate exchange between the Army and the City, reducing the retained total to 1,577 AFY. As the jurisdictions developed specific plans for the redevelopment of Ord Community, FORA made several "loans" from the strategic reserve to jurisdictions. On January 12, 2007, FORA made these loans permanent.

Table 1. Salinas Valley Groundwater Allocations

Jurisdiction	Original Allocation (1996) Acre-feet/year	Current Allocation (2007) Acre-feet/year
U.S. Army (retained)[1]	1,410	1,577
City of Seaside	710	1,012
City of Del Rey Oaks	75	242.5
City of Monterey	65	65
City of Marina	1,185	1,325
Monterey County	545	710
CSUMB	1,055	1,035
UCMBEST	165	230
State Parks	45	45
County/Marina Sphere (Polygon 8a)	50	10
Line Loss	530	348.5
FORA Strategic Reserve[2]	785	0

Notes:
1. The U.S. Army retained 1,729 AFY of groundwater rights for the POM Annex, but it is accounted for in the original allocation table as 1,410 AFY for POM Annex use, 160 AFY as a portion of the strategic reserve, and 159 AFY (10%) as a portion of the line loss allowance.
2. The original strategic reserve included 160 AFY for the POM Annex, 125 AFY for CSUMB, 230 AFY for Seaside and 270 AFY of unencumbered supply.

The County/Marina Sphere of influence area (included in the table above) is defined as County Planning Area 8a in the Base Reuse Plan. This area is bounded by Imjin Parkway on the north, Inter-Garrison Road on the south, the Marina City Limit on the west (7th Avenue alignment) and the CSUMB property on the east (includes a short portion of Abrams Drive). This is generally the landfill parcel, but it includes the Ord Market (former shoppette) at the corner of Imjin Parkway and Abrams Drive.

The existing Bayonet/Black Horse Golf Courses on the former Fort Ord use approximately 400 AFY for landscape irrigation. This water was supplied from existing wells in the Seaside Groundwater Basin. The Base Reuse Plan assumed that supply from these wells would continue indefinitely, or until it could be replaced with recycled water. In 2005 the Seaside Groundwater Basin was adjudicated, which increased the urgency to convert the system to recycled water.

The assumed line loss of 348.5 AFY represents 5.3% of the total water allocation, which is an ambitious target. Water loss rates around 10% are more typical within municipal water systems.

Sub-Allocations by Land Use Jurisdictions

MCWD maintains a listing of water sub-allocations made by land use jurisdictions to specific projects. When publishing a water supply assessment report, the list is updated for the affected jurisdiction(s) and included in the report. The current sub-allocation table is attached.

Some of the water uses within the Ord Community were on-going at the time of the Base Closure (such as the public schools) or transitioned to new uses without formal allocations (such as the conversion of Preston Park military housing to affordable public housing). The values for existing uses that do not have formal allocations reflect the peak demand years.

Two jurisdictions, the City of Del Rey Oaks and the City of Monterey, have not yet formally approved development in the Ord Community, and therefore have not made any sub-allocations. Several other jurisdictions (CSUMB, UCMBEST, U.S. Army and State Parks) retain all of their property under single ownership, and have not needed to sub-allocate water supply to internal projects. In 2007, State Parks allocated 5.5 AFY for the American Youth Hostel project in Seaside. In 2014, the U.S. Army allocated 5 AFY to the California Central Coast Veterans Cemetery Project in Seaside, with an additional 10 afy for the first two years for landscape establishment. These project allocations are reflected in the summary table.

In the City of Marina, sub-allocations have been made for three specific plan areas: Marina Heights, University Villages (now called Dunes on Monterey Bay) and Cypress Knolls. Project-specific allocations have also been made for the Monterey Peninsula College 12th Street Campus, the Rock Rose Gardens housing project, and the Promontory apartments. The table also includes several projects which are subsets of Specific Plan allocations.

In the City of Seaside, sub-allocations have been made to two specific plan areas: Seaside Highlands and Seaside Main Gate. Project-specific allocations have also been made for the Monterey College of Law, Monterey Peninsula College, Chartwell School and the American Youth Hostel. The water allocations for Sun Bay Apartments and Bay View Mobile Home Park were established through the MOA between the USA and FORA, as amended in 2001. The Water Supply Assessment for the Seaside Main Gate Project identified a demand range from 207 to 213 AFY, but the City allocation was only for the retail portion of that project. A Water Supply Assessment has been prepared for the Monterey Downs Specific Plan area, which includes portions of Seaside and unincorporated Monterey County. That specific plan has not yet been adopted by the City.

Also within Seaside, the Bayonet/Blackhorse Golf Courses were originally irrigated from a well in the Seaside Groundwater Basin. In 2010, MCWD and Seaside entered into a land purchase agreement. Under that agreement, MCWD is providing 2,500 acre-feet of SVGB supply to irrigate the golf course, which allows Seaside to reduce their groundwater use from the Seaside Groundwater Basin. This is a term agreement and not a permanent allocation, so it is listed in summary table without an allocation value.

In Monterey County, sub-allocation was made for the East Garrison Specific Plan area, and project-specific allocations were made for Monterey Peninsula College and for the Ord Market. The Ord Market is within the Marina Sphere sub-area.

Attachments

Table 2, Sub-Allocations by Jurisdiction

Table 3.11-2, Allocation of Existing Potable Water Supply by Jurisdiction, from the FORA Development and Resource Management Plan

References

Agreement between the United States of America and the Monterey County Water Resources Agency concerning Annexation of Fort Ord into Zones 2 and 2A of the Monterey County Water Resources Agency, Agreement No. A-06404, September 21, 1993.

Fort Ord Reuse Authority, Development and Resource Management Plan portion of the Fort Ord Base Reuse Plan, 1997

Fort Ord Reuse Authority, Board Agenda Packet for January 12, 2007, item 8b: Resolution of the Authority Board changing the 150 AFY loans granted to Del Rey Oaks, Seaside, Marina, and Monterey County in October 1998 to permanent additions to their water allocations

Memorandum of Agreement Between the United States of America, Acting By and Through the Secretary of The Army, United States Department of the Army and the Fort Ord Reuse Authority for the Sale of Portions of the Former Fort Ord, Located in Monterey County, California, June 20, 2000

Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands, 1996

Assignment of Easements on Former Fort Ord and Ord Military Community, County of Monterey, and Quitclaim Deed for Water and Wastewater Systems, between Fort Ord reuse Authority (Grantor) and Marina Coast Water District (Grantee), October 24, 2001

Table 2. Water Sub-Allocations by Jurisdiction

Ord Community Land Use Jurisdiction	SVGB Allocation (AFY)	Suballocations To	Suballocation Amount (AFY)	Resolution No.	Date	Notes:
U.S. Army	1,577					
		Exisitng POM Annex	686			maximum annual use, DPW has not allocated by facility
		Veterans Cemetery	5	USA	2014	15 AFY for 2 years, 5 AFY permanent
CSUMB	1,035					
		None				Campus has not allocated by facility.
Del Rey Oaks	242.5					
		None				
City of Monterey	65					
		None				
County of Monterey	710		522.5			
		East Garrison 1	470	05-268	10/4/2005	
		MPC	52.5	02-XX	12/10/2002	
		~~Whispering Oaks~~	0			Allocated 93 AFY, later revoked with the specific plan.
County/Marina Sphere	10		5			Reuse Plan polygon 8a (landfill parcel, shoppette)
		Ord Market	5		3/27/2008	
UCMBEST	230					
		None				
City of Seaside	1,012		786.6			
		Sunbay Apts (Thorson)	120.0	USA	10/23/2001	Amendment 1 to Agreement dated 6/20/2000 between USA and FORA
		Bay View Park (Brostram)	84.8	USA	10/23/2001	Amendment 1 to Agreement dated 6/20/2000 between USA and FORA
		Seaside Highlands	168.5	02-07	2002	43.1 AFY to be replaced with RW when available
		Seaside Resort	161.4	05-44	2005	
		Monterey College of Law	2.8	04-20	3/18/2004	
		Monterey Penninsula College	9.7	09-36	7/16/2009	
		MPUSD	81.0	USA		existing at time of base closure
		Chartwell School	6.4	05-26	5/19/2005	
		Other	3.0			existing at time of base closure
		Main Gate	149	08-XX	5/15/2008	WSA totalled 207 AFY. City allocated retail portion only.
		State Parks transfer for AYH	-5.5	07-XX	11/15/2007	Agreement to transfer supply for this project
		Amer. Youth Hostile	5.5	07-XX	11/15/2007	Agreement to supply AYH with transferred supply
		Bayonet/Blackhorse Golf (temp)		temp		Agreed on 4/1/10: 2500 AF in exchange for 17 ac parcel, max 500 AF/Yr
		Monterey Downs				Not yet approved, WSA estimated 852.5 AFY
State Parks and Rec.	45					
		Seaside for Amer. Youth Hostel	5.5		11/15/2007	AYH parcel goes to Seaside along with 5.5 AFY supply
City of Marina	1,325		1319.8			
		Existing use	233.1			Preston Park, Abrams Park, Airport, Veterans Housing, etc.
		Marina Heights	292.4	2004-41	3/3/2004	
		University Villages	593.0	2005-129	5/31/2005	renamed Dunes on Monterey Bay
		Cypress Knolls	156.1	2006-289	11/8/2006	
		MPC - 12th St Campus	7.0	2007-xx	2/6/2007	
		Imjin Office Park	0.0			IS-MND projected 11.76 AFY. No formal allcoation made
		CHOMP Wellness Center	0.0			21 AFY, Subset of University Villages
		Rock Rose Gardens	4.9	PC2011-07	6/9/2011	Planning commission, existing demand formalized as allocation
		Promontory Apartments	33.3	2013-86	7/2/2013	
Assumed Line Loss	348.5					
Total GW:	6,600					

SVGB = Salinas Valley Groundwater Basin
AFY = acre-feet/year
XX = Resolution # not included in meeting minutes
RW = Recycled Water

TABLE 3.11-2
Allocation of Existing Potable Water Supply
By Jurisdiction
(Based on FORA's April 12, 1996 Resolution

JURISDICTION	TOTAL WATER ALLOCATION (AFY)	NOTES
City of Seaside	710	
County/City of Del Rey Oaks	75	Plus reclaimed water for golf course
County/City of Monterey	65	
City of Marina	1,185	
Monterey County	545	
ARMY	1,410	
CSUMB	1,055	Plus reclaimed water for irrigation
UCMBEST	165	Plus reclaimed water for irrigation
County/State Parks and Recreation	45	
County/Marina Sphere Polygon 8a	50	
SUBTOTAL	5,295 AFY	
Line Loss (10%)	530	
FORA Strategic Receive	785	Encumbered Reserve: Army – 160 AFY1 CSUMB – 125 AFY1 Seaside – 230 AFY2 Unencumbered – 270 AFY
TOTAL	6,600 AFY	

ENCUMBRANCES TO FORA'S STRATEGIC RESERVE

1. 160 AFY at the POM Annex and 125 AFY at CSUMB polygon 10 are available upon metering of existing dwelling units.
2. 230 AFY loaned to Seaside is available to Seaside for golf course irrigation until reclaimed replacement water is provided.

HOPKINS
GROUNDWATER
CONSULTANTS, INC.
THE WATER RESOURCE SPECIALISTS

TECHNICAL MEMORANDUM

To: Mr. Keith Van Der Maaten
General Manager, Marina Coast Water District

From: Curtis J. Hopkins
Principal Hydrogeologist, Hopkins Groundwater Consultants, Inc.

Date: May 26, 2016

Subject: North Marina Area Groundwater Data and Conditions

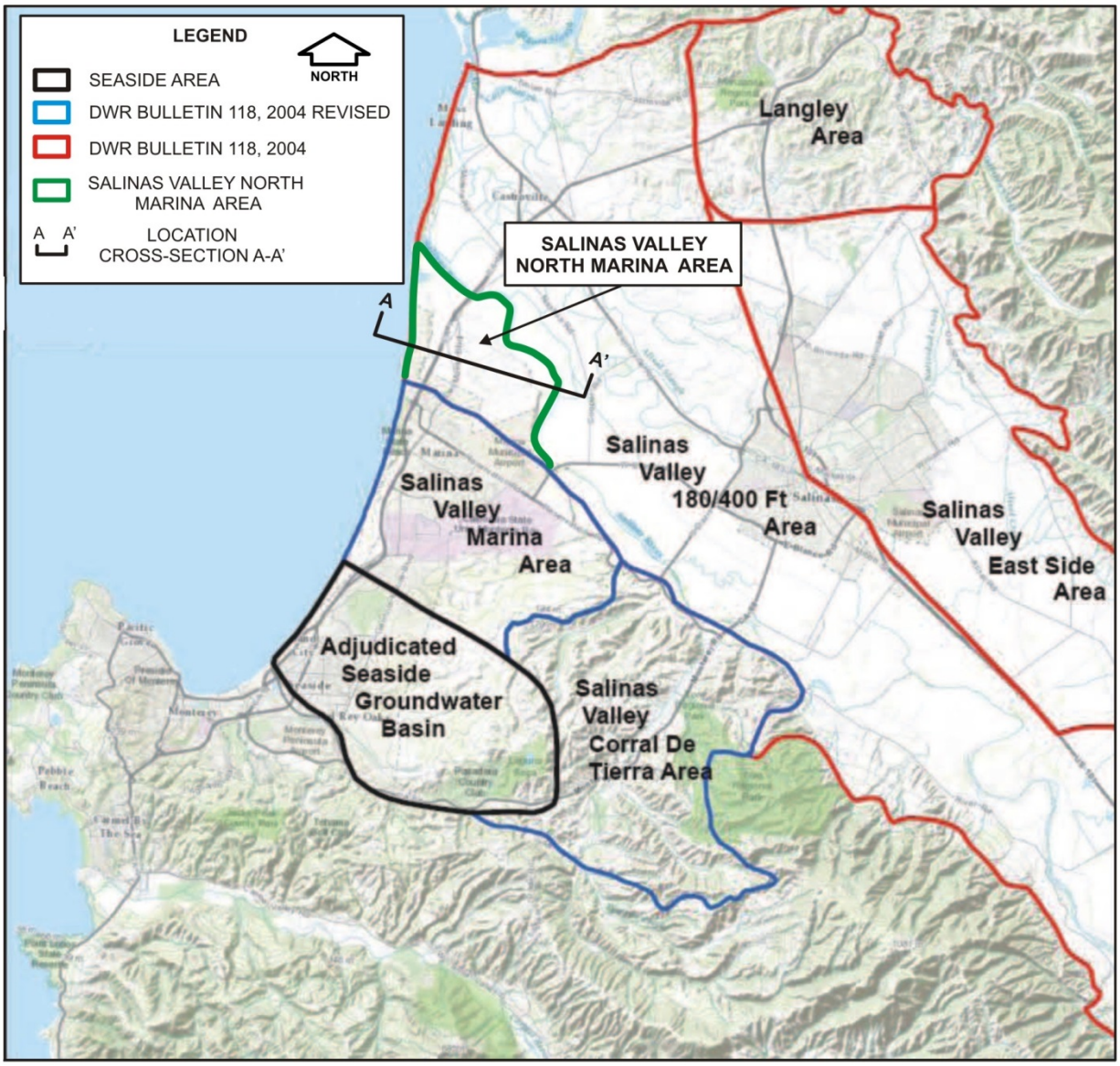
I. Introduction

Hopkins Groundwater Consultants, Inc. (Hopkins) has reviewed groundwater data provided by the California-American Water Company's (Cal-Am's) test slant well project for the Monterey Peninsula Water Supply Project (MPWSP) as requested by Marina Coast Water District (MCWD). This memorandum provides a summary of groundwater data and the conditions that are inferred from these data in the North Marina Area of the 180-400 Foot Aquifer Subbasin[1] within the Salinas Valley Groundwater Basin (SVGB). The North Marina Area is delineated for reference in Figure 1 – Groundwater Basin Boundary Map which shows its location within the SVGB. As shown, the North Marina Area is located between the northern boundary of the Marina Area and the Salinas River. This area of the basin has been largely undeveloped and historically contained very few wells to provide groundwater data.

The geology in the North Marina Area differs from the geology north of the Salinas River in the main portion of the 180-400 Foot Aquifer Subbasin and has been described in detail by studies conducted for the MPWSP. An interpretation of subsurface deposits within this specific coastal area is provided in Plate 1 – Cross-Section A-A', which is a portion of a subsurface profile constructed by Geoscience Support Services, Inc. from borehole data collected in the area (Geoscience, 2014). The approximate location of Cross-Section A-A' is shown in Figure 1. As shown and as described by previous study (Geoscience, 2014 and 2015, KJC, 2004), the terrace deposits that comprise the 180-Foot Equivalent Aquifer (180-FTE) in the North Marina Area grade into the alluvial deposits that comprise the 180-Foot Aquifer in the main portion of the basin around the present location of the Salinas River.

[1] / For purposes of the memorandum, the North Marina Area is defined as that portion of the 180/400 Foot Aquifer Subbasin located south of the Salinas River and north of the Salinas Valley Marina Area.

Figure 1 – Groundwater Basin Boundary Map

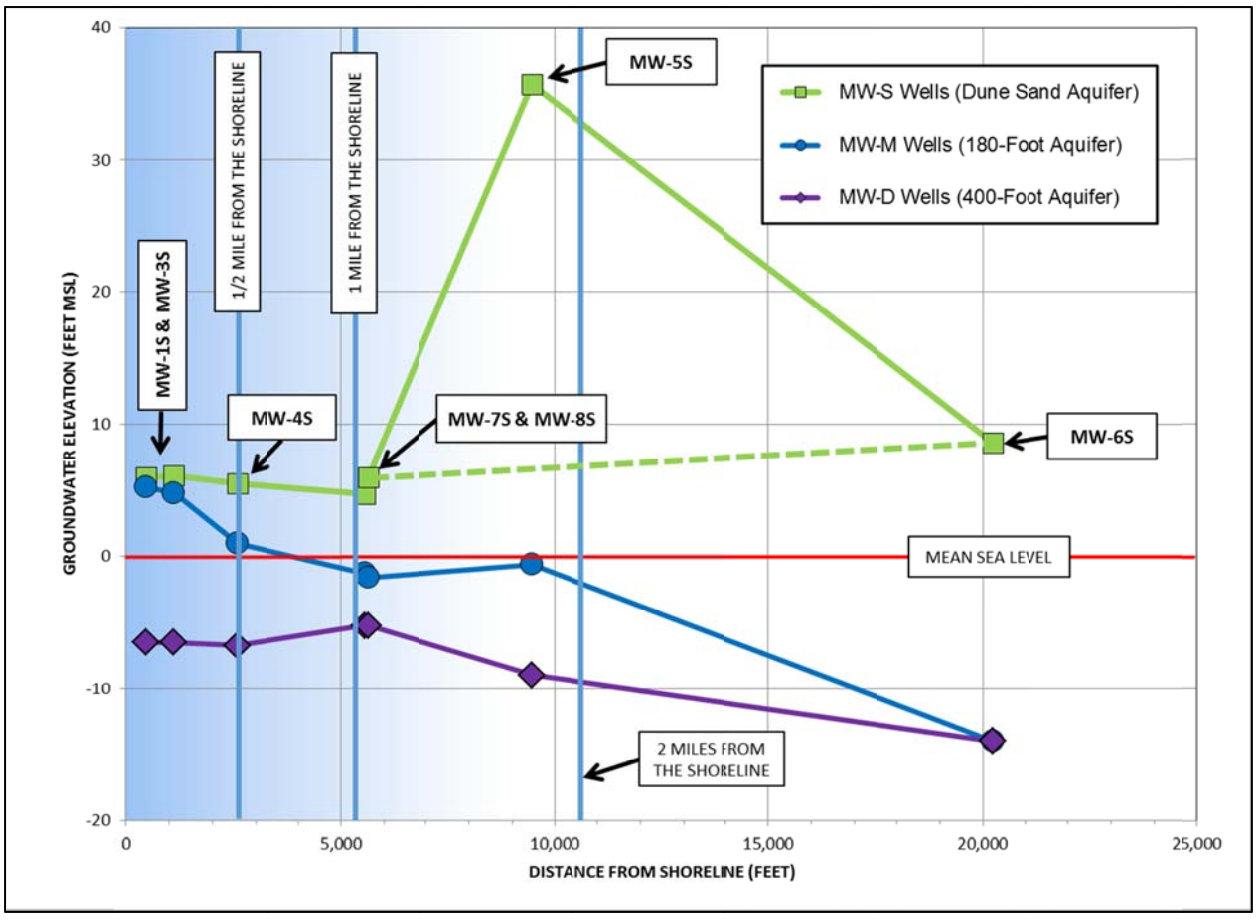


II. Coastal Groundwater Elevations

Recent investigation for the MPWSP includes the installation of a test slant well and multiple monitoring wells in and around the CEMEX property where the MPWSP intake wells are proposed to be located. The monitoring well network is being used to generate background water level and water quality data within the North Marina Area of the 180-400 Foot Aquifer Subbasin. The location of the monitoring facilities is shown on Plate 2 – Well Location Map. The construction details of these wells are included for reference as Attachment A – Well Construction Information.

Routine monitoring of the well network is presented in weekly summary reports that are posted on the Cal-Am website. Water level data are graphically presented as hydrographs which show daily changes and seasonal trends. A set of hydrographs provided by the MPWSP test slant well long term pumping test Monitoring Report No. 55 are included as Attachment B – MPWSP Water Level Data. We must note that while we have over a year of data, the climatic conditions prior to initiation of testing have been extremely dry. For comparison of the groundwater conditions across the area prior to resumption of pumping, data from May 2, 2016 were used to construct Figure 2 – Groundwater Elevation From MPWSP Monitoring Wells. As shown, the water level elevations vary significantly between the shallow Dune Sand Aquifer (indicated by the MW-S Wells), the 180-FTE Aquifer (indicated by the MW-M Wells), and the 400-Foot Aquifer (indicated by the MW-D Wells).

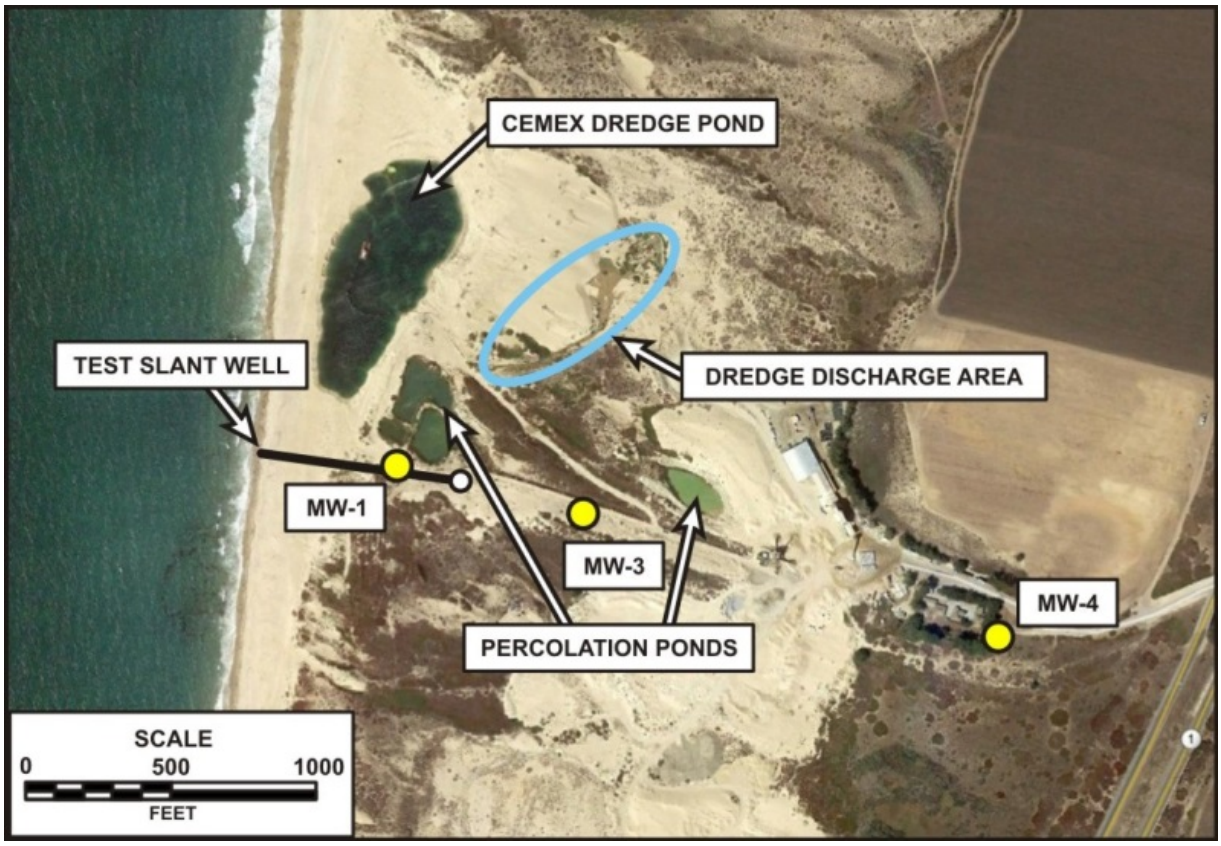
Figure 2 – Groundwater Elevation From MPWSP Monitoring Wells



The Dune Sand Aquifer has water levels that are notably above sea level and maintain a protective head against seawater intrusion (Geoscience, 2013). The coastal groundwater mounding at MW-1 and MW-3 is believed to be maintained by the CEMEX dredge pond operation that is discharged on the landward side of the coastal dunes as well as process water

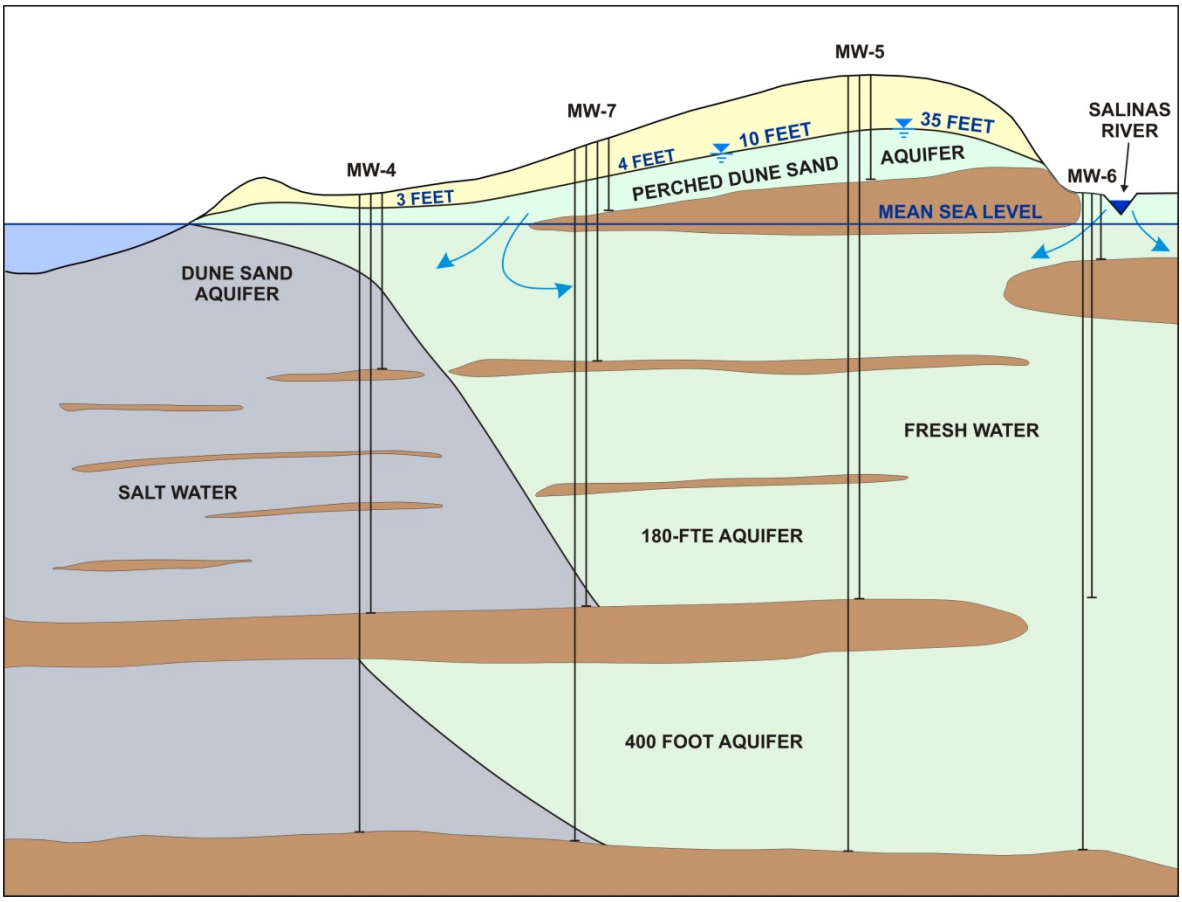
that is discharged to percolation ponds. Figure 3 – CEMEX Salt Water Discharge Locations shows the surface water features that have influenced the groundwater levels and quality at this location along the coast for decades. The maintenance of these features undoubtably increases the amount of ocean water present in the vicinity of the test slant well.

Figure 3 – CEMEX Salt Water Discharge Locations



These data also show the perched groundwater condition in the vicinity of MW-5 where the groundwater elevation is 36 feet above mean sea level (msl). The groundwater perched above the Salinas Valley Aquitard equivalent flows toward the coast and results in downward recharge where the aquitard layer thins (or ends) and provides fresh water recharge into the coastal unconfined Dune Sand Aquifer and the underlying 180-Foot Aquifer in the vicinity of MW-7 and MW-8. Figure 4 – Conceptual Drawing of the Hydrogeology in the North Marina Area illustrates the subsurface conditions indicated by these available data.

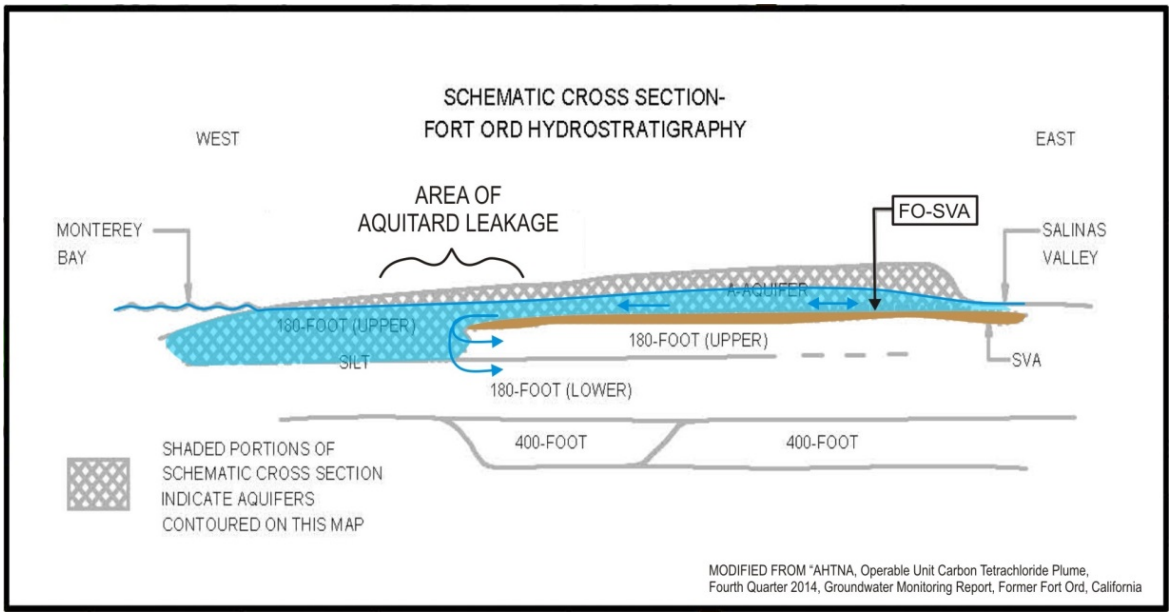
Figure 4 – Conceptual Drawing of the Hydrogeology in the North Marina Area



Years of reduced pumping has resulted in beneficial groundwater conditions that are apparently slowing the movement of seawater and providing a freshwater source that is replenishing the aquifers. Notably, the fact that the Dune Sand and 180-Foot Aquifers at Monitoring Well MW-7 are no longer contaminated by high concentrations of seawater can likely be explained by the changing hydrogeological conditions resulting from the efforts of MCWD (e.g., Annexation Agreement, etc.) and others to reduce pumping in the coastal area. As a result, recharge from rainfall into the Dune Sand Aquifer creates a mound of freshwater that flows toward the Salinas River and the ocean.

We further note this protective condition is not isolated in a small area. This coastal condition was previously documented as part of the Fort Ord cleanup effort located southeast of the CEMEX site. The study named the aquitard layer the "Fort Ord-Salinas Valley Aquitard" (FO-SVA). Figure 5 - Perched Dune Sand Aquifer Schematic from Fort Ord Groundwater Monitoring Program shows a drawing of this condition, which was modified to illustrate groundwater flow directions (Ahtna, 2014).

**Figure 5 – Perched Dune Sand Aquifer Schematic
from Fort Ord Groundwater Monitoring Program**



This is a very significant development. Given that the groundwater found with a 36-foot elevation in the Dune Sand Aquifer at the location of MW-5S (and a 6-foot elevation at MW-7S), the Dune Sand Aquifer effectively provides a protective layer preventing seawater intrusion from moving into the Basin at a shallow depth and percolating downward into the underlying aquifers. Instead of allowing a shallow pathway for ocean water, the Dune Sand Aquifer having a potable fresh water quality based on its TDS concentration, appears to be slowly recharging the lower aquifers (i.e., the 180-Foot Aquifer and perhaps 400-Foot Aquifer), which has significantly reduced their TDS levels in this coastal area. This unique condition in the Marina Subarea is believed to provide recharge all along the coast in an area that effectively forms a linear recharge barrier within a mile of the shoreline. The extent of the Fort Ord-Salinas Valley Aquitard was estimated in a 2001 study conducted as part of the Fort Ord cleanup program (Harding ESE, 2001).

Monitoring data indicate that the elevation of the water levels in Monitoring Wells MW-7M and MW-8M are presently lower than the levels in both MW-4M and MW-5M. While the groundwater elevation is near mean sea level, the gradient indicated by the higher level at MW-5M shows that groundwater flows toward the coast up to MW-7 and MW-8 under these conditions. The significance is that after several years of drought conditions, the groundwater gradient between MW-4M (roughly ½ mile from the coast) and MW-5M (almost 2 miles from the coast) is relatively flat in the 180-FTE Aquifer. A significant decline in the groundwater level is observed to occur between MW-5M and MW-6M (see Figure 2). Further study would be required to understand if the mounding indicated in the 400-Foot Aquifer at MW-7 and MW-8 were from vertical recharge from the 180-FTE in this area along the coast.

III. Groundwater Quality Data

Water quality data developed as part of the test slant well project are summarized in the tables included in Attachment C – Laboratory Water Quality Test Results. The first table shown in Attachment C provides the only data published for wells other than the test slant well and MW-4 (Geoscience, 2015a). This table includes laboratory results for wells including MW-1, MW-3, MW-4, MW-5, and the test slant well. The second table in Attachment C is a compilation of laboratory data received by MCWD in October 2015 in response to a data request in the California Public Utilities Commission proceedings. This table includes data for monitoring wells MW-6, MW-7, MW-8, and MW-9 that to our knowledge, have not be published in any of the MPWSP documents.

The significance of these data is that they indicate beneficial conditions have developed (or have always existed) in the North Marina Area of the 180-400 Foot Aquifer Subbasin and may be contrary to information published by the Monterey County Water Resources Agency (MCWRA). The recent investigation that is being conducted in and around the North Marina Area as part of the MPWSP has discovered an occurrence of freshwater within the shallow Dune Sand Aquifer and the underlying 180-Foot Aquifer within the area delineated as seawater intruded by the MCWRA. As previously shown, water level data from wells in the shallow dune sand aquifer appear to show protective water levels that are sufficiently above sea level to prevent seawater intrusion in the shallower sediments. This condition, combined with the lack of pumping in the 180-Foot Aquifer in the North Marina Area, appears to have slowed seawater intrusion in this portion of the coastline. Water quality test results for total dissolved solids and chloride concentrations in these two uppermost aquifer zones are shown on Figures 6 and 7 – Average Total Dissolved Solids Concentrations in Groundwater and Average Chloride Concentrations in Groundwater, respectively.

These data suggest a change of groundwater conditions in this coastal section of the aquifer or alternatively, they may reveal the groundwater conditions that existed in an area largely lacking historical data. While the freshwater in this area contains salts and nutrients that are derived from overlying land uses that include agriculture, landfill, and wastewater treatment plant and composting facilities, the chemical character is not sodium chloride, which is indicative of seawater intrusion. Figure 8 and 9 – Stiff Diagrams of Dune Sand Aquifer Groundwater and 180-Foot Aquifer Groundwater, respectively show that the chemical character of groundwater in these new wells is predominantly calcium chloride and calcium bicarbonate. Additionally, elevated concentrations of nitrate are present in monitoring wells MW-5S, MW-7S and MW-8S and range from 115 mg/l to 237 mg/l. The concentration of nitrate decreases with depth at all of these sites, and is the highest at MW-5, which is closest to the landfill and the wastewater treatment facilities. Future use of this area for a direct potable groundwater supply may be unlikely; however, existing conditions do show abatement of seawater intrusion in the shallower aquifer zones in this coastal portion of the Salinas Valley Groundwater Basin. This condition may support the future beneficial uses of the 180-Foot Aquifer zone potentially including aquifer storage and recovery of highly purified recycled water for indirect potable reuse.

Figure 6 – Average Total Dissolved Solids Concentrations in Groundwater

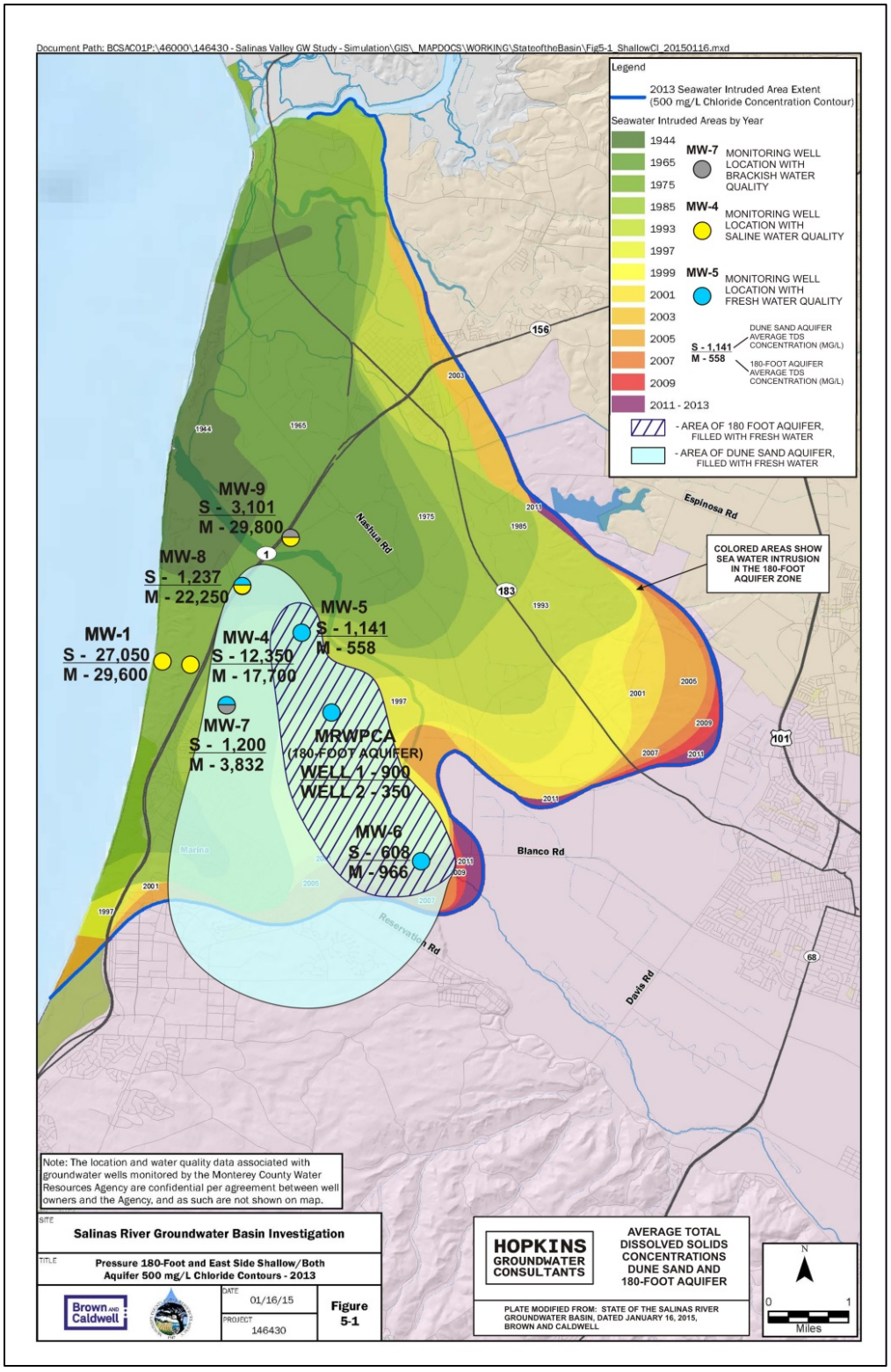


Figure 7 – Average Chloride Concentrations in Groundwater

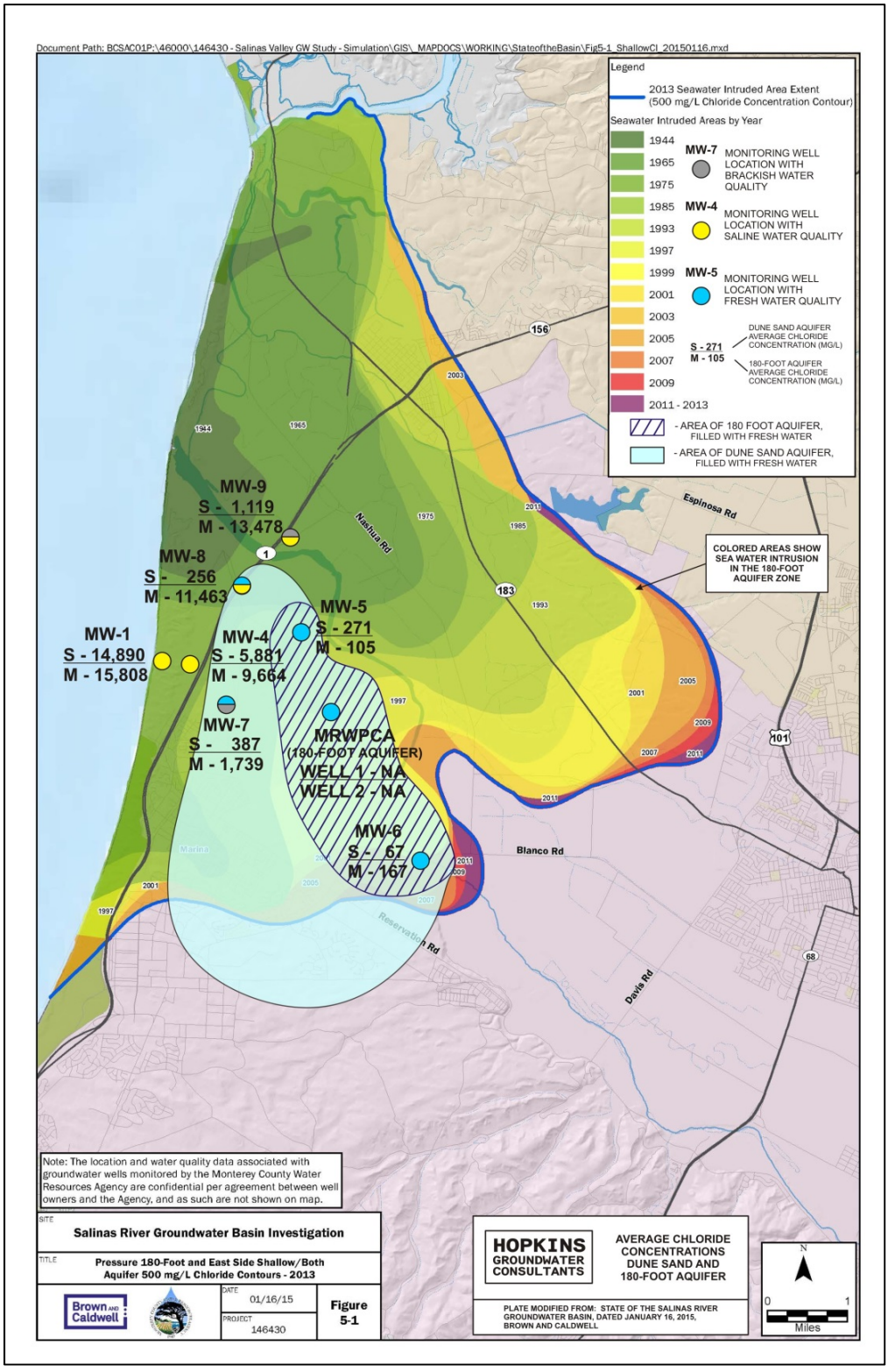


Figure 8 – Stiff Diagrams of Dune Sand Aquifer Groundwater

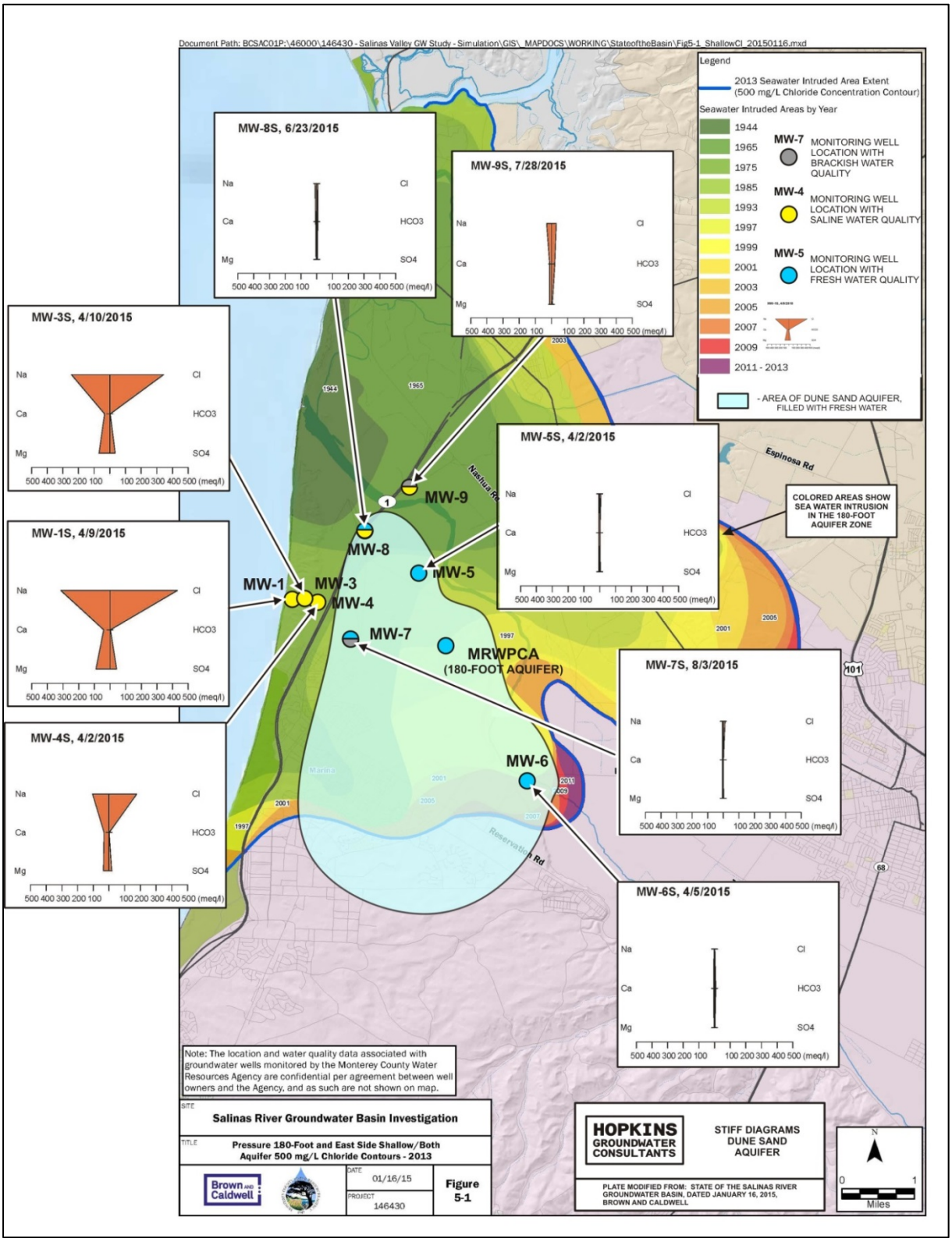
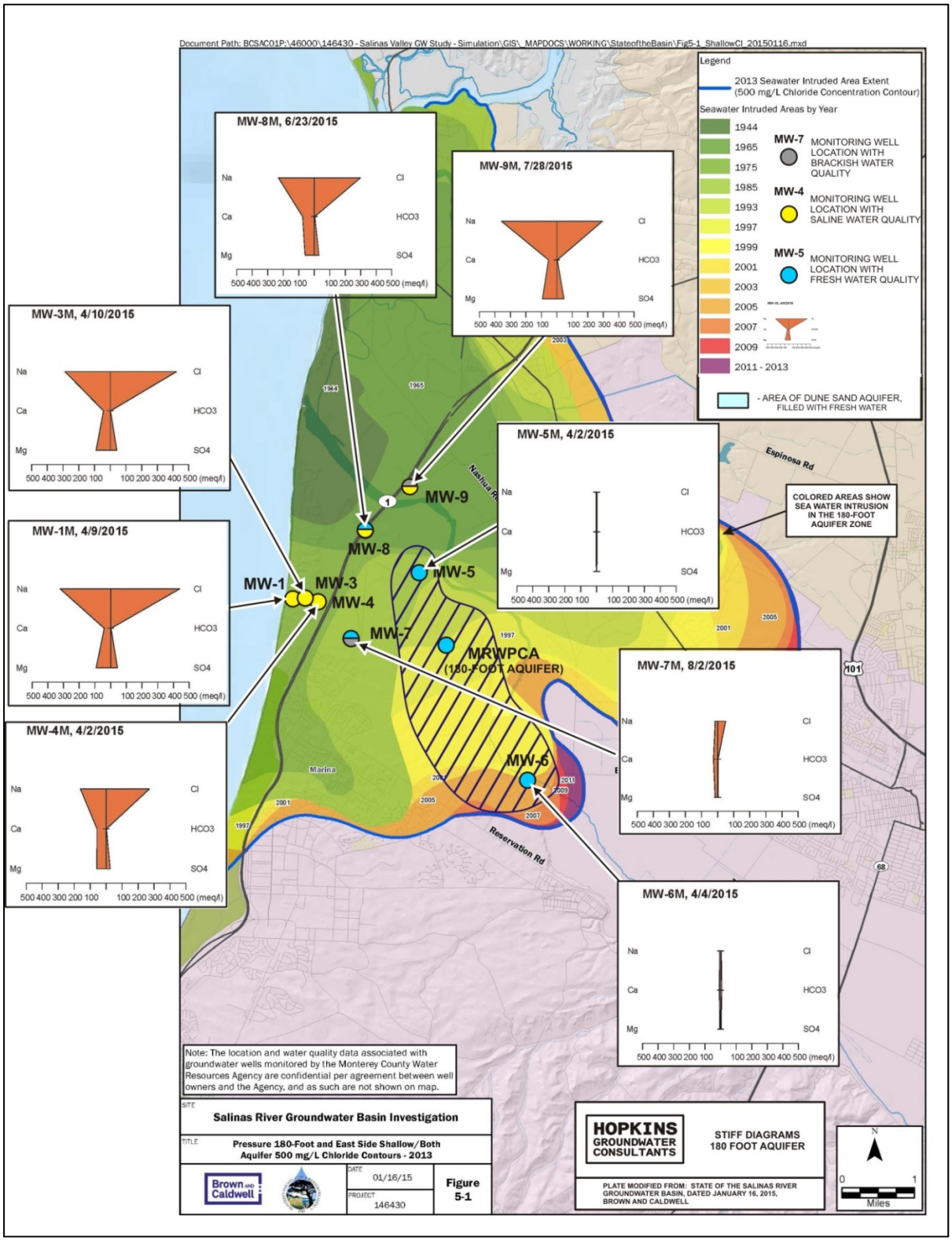


Figure 9 – Stiff Diagrams of 180-Foot Aquifer Groundwater



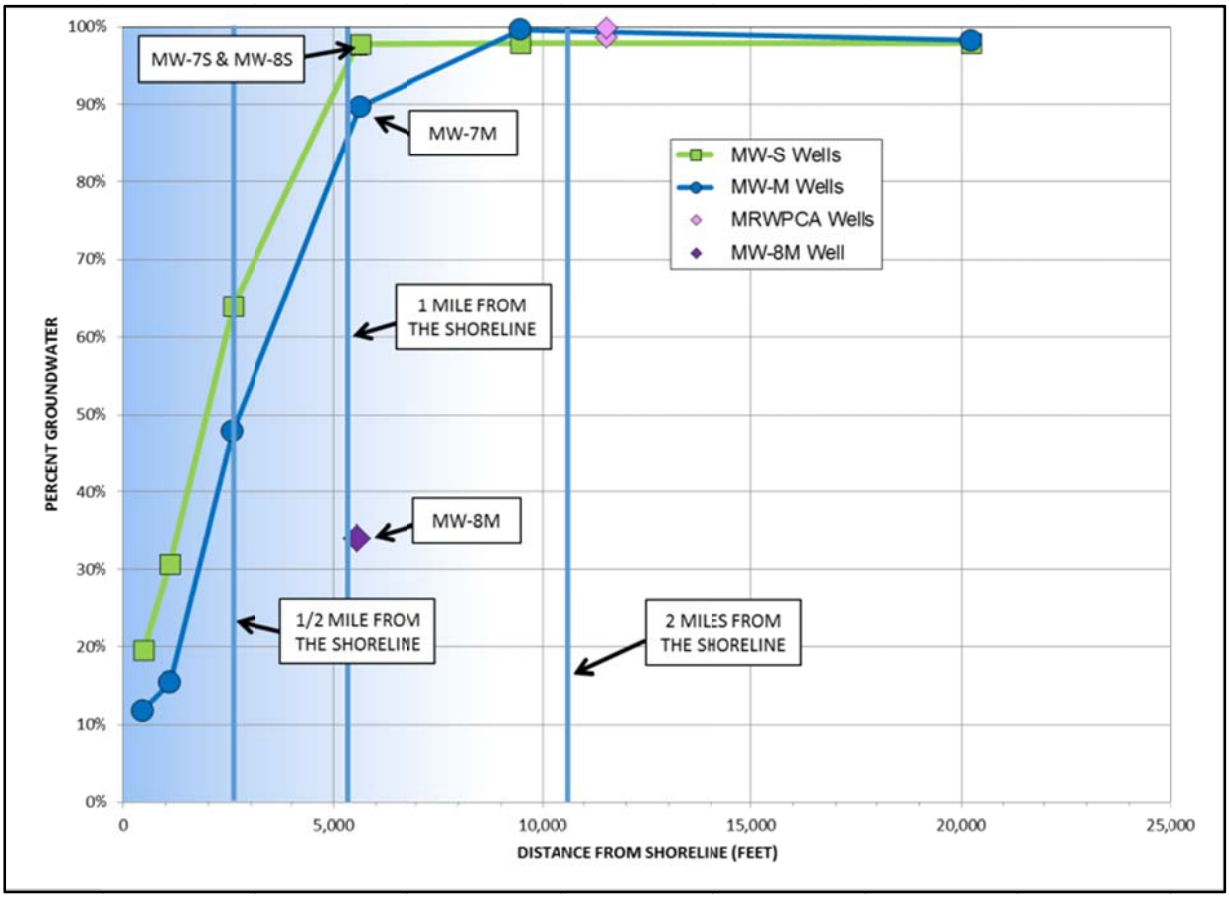
These data indicate a unique condition exists in the North Marina Subarea south of the Salinas River that provides a significant degree of protection against seawater intrusion in the shallower aquifers under the present and recent past hydrologic conditions. Figure 10 – Percent Groundwater with Distance From the Shoreline shows the rudimentary calculation of groundwater percentage versus ocean water percentage using the same equation applied to the test slant well discharge. The percentage of fresh groundwater in well water samples was calculated using the following equation:

$$GWP = [\,1 - (\,WSS - GWS/OWS - GWS)\,] \times 100$$

Where:

GWP = Percent Groundwater
WSS = Well Sample Salinity (mg/l)
GWS = Groundwater Salinity (420 mg/l)
OWS = Ocean Water Salinity (33,500 mg/l)

Figure 10 – Percent Groundwater with Distance From the Shoreline



Water quality data for this analysis were provided by the laboratory test results summarized in Attachment C. These available data show that the percentage of ocean water decreases significantly within a short distance from the coastline in the North Marina Area and the salinity of groundwater that is comparable to seawater is not up to 8 miles inland in the 180-Foot Aquifer as assumed by previous study. Calculation of percent ocean water using this method cannot differentiate between salts from overlying land uses and salt from ocean water. This calculation assumes that all salt in groundwater with a TDS above a concentration of 420 mg/l is from ocean water.

As shown in Figure 10, monitoring wells MW-5M and MW-6M along with the Monterey Regional Water Pollution Control Agency (MRWPCA) Wells are located in the 180-Foot Aquifer and the average TDS concentration for samples from these wells ranges from approximately 454 to 966 milligrams per liter (mg/l) and is also considered fresh water (See Figure 4 and Attachment C). However, the TDS concentration for MW-7M (3,832 mg/l) and MW-8M (22,250 mg/l) show that closer to the coast and closer to the main portion of the Basin north of the river, seawater has impacted the underlying 180-Foot Aquifer as shown in Figure 9 and 10.

We trust this review of available data provides a better understanding of what the MPWSP test slant well monitoring program has discovered. It is clear that without the new monitoring wells, this type of understanding about groundwater conditions in the North Marina Area could not have been provided from available data.

Sincerely,

HOPKINS GROUNDWATER CONSULTANTS, INC.

Curtis J. Hopkins
Principal Hydrogeologist
Certified Engineering Geologist, EG1800
Certified Hydrogeologist, HG114

Attachments: Plate 1 – Cross-Section A-A'
Plate 2 – Well Location Map
Attachment A – Well Construction Information
Attachment B – MPWSP Water Level Data
Attachment C – Laboratory Water Quality Test Results

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PLATES

NORTH MARINA AREA

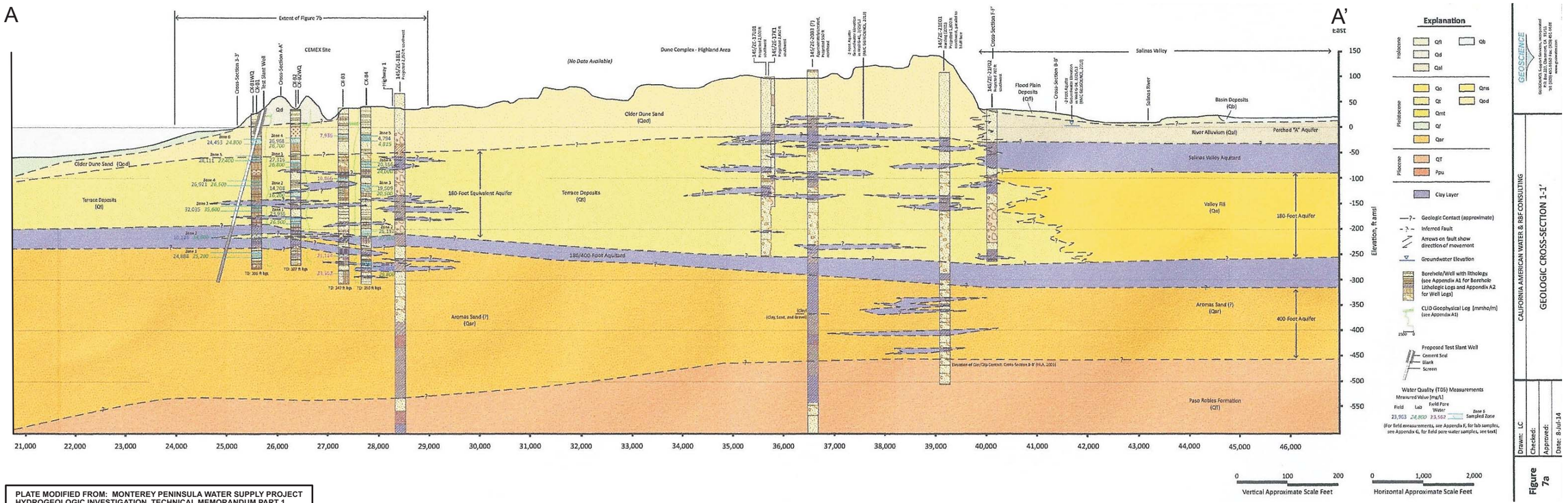

PLATE MODIFIED FROM: MONTEREY PENINSULA WATER SUPPLY PROJECT
HYDROGEOLOGIC INVESTIGATION, TECHNICAL MEMORANDUM PART 1
SUMMARY OF RESULTS - EXPLORATORY BOREHOLES
DATED JULY 8, 2014, GEOSCIENCE SUPPLY SERVICES, INC.

GEOSCIENCE
GEOSCIENCE Support Services, Incorporated
P.O. Box 220, Claremont, CA 91711
Tel: (909) 451-6650 Fax: (909) 451-6638
www.geoservices.com

CALIFORNIA AMERICAN WATER & RBF CONSULTING

GEOLOGIC CROSS-SECTION 1-1'

Drawn: LC
Checked:
Approved:
Date: 8-Jul-14

Figure 7a

CROSS-SECTION A-A'
Technical Memorandum
Marina Coast Water District
Marina, California

PLATE 1

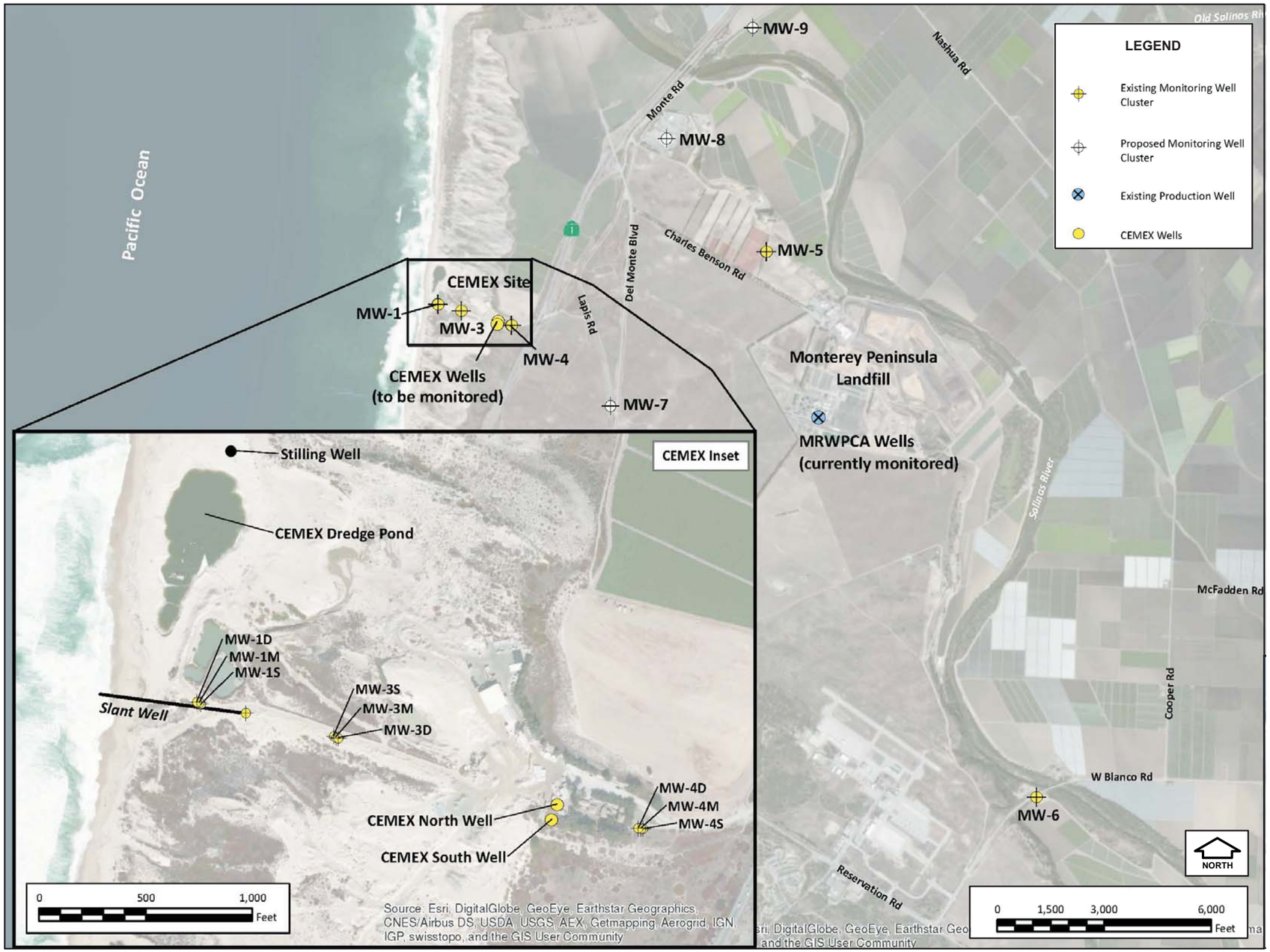

PLATE MODIFIED FROM: MONTEREY PENINSULA WATER SUPPLY PROJECT TEST SLANT WELL LONG TERM PUMPING MONITORING REPORT NO. 55 DATED MAY 24, 2016, GEOSCIENCE SUPPLY SERVICES, INC.

WELL LOCATION MAP
Technical Memorandum
Marina Coast Water District
Marina, California

PLATE 2

ATTACHMENT A
WELL CONSTRUCTION INFORMATION

Table 1: Well Information Table

Well Name	Cluster	Reference Point (RP)	State Plane Coordinates Northing	Easting	RP Elevation ft NAVD88	RP Height (ft above GS)	Distance of RP from Slant Well Head (ft)	Top of Screen Interval (ft below GS)	Bottom of Screen Interval (ft below GS)	Transducer Installed Depth (ft below RP)	Survey Date	Data Logging Start Date	Data Collected
MW-1S	MW-1	Top of ABS Transducer Mount	2,154,745.35	5,739,355.82	30.51 [1]	2.65 [1]	211	55	95	76	26-Mar-15	19-Feb-15	Level, Conductivity
MW-1M	MW-1	Top of ABS Transducer Mount	2,154,751.93	5,739,347.94	29.86	2.48	220	115	225	182	26-Mar-15	19-Feb-15	Level, Conductivity
MW-1D	MW-1	Top of ABS Transducer Mount	2,154,753.60	5,739,337.98	29.68 [1]	2.65 [1]	230	277	327	309	26-Mar-15	19-Feb-15	Level, Conductivity
MW-3S	MW-3	Top of ABS Transducer Mount	2,154,599.85	5,739,977.02	37.16	2.66	428	50	90	76	26-Mar-15	4-Mar-15	Level, Conductivity
MW-3M	MW-3	Top of ABS Transducer Mount	2,154,592.96	5,739,988.54	37.35	2.73	441	105	215	182	26-Mar-15	4-Mar-15	Level, Conductivity
MW-3D	MW-3	Top of ABS Transducer Mount	2,154,589.81	5,739,998.68	36.93	2.74	451	285	330	321	26-Mar-15	4-Mar-15	Level, Conductivity
MW-4S	MW-4	Top of ABS Transducer Mount	2,154,170.90	5,741,427.62	41.96	2.26	1,940	60	100	66	26-Mar-15	9-Mar-15	Level, Conductivity
MW-4M	MW-4	Top of ABS Transducer Mount	2,154,172.79	5,741,416.78	41.99	2.15	1,929	130	260	208	26-Mar-15	9-Mar-15	Level, Conductivity
MW-4D	MW-4	Top of ABS Transducer Mount	2,154,174.30	5,741,406.08	41.95	2.15	1,918	290	330	317	26-Mar-15	20-Feb-15	Level, Conductivity
MW-5S	MW-5	Top of ABS Transducer Mount	2,156,239.19	5,748,566.86	80.25 [1]	2.20 [1]	9,135	43	83	71	26-Mar-15	10-Mar-15	Level, Conductivity
MW-5M	MW-5	Top of ABS Transducer Mount	2,156,230.38	5,748,564.26	80.48 [1]	2.31 [1]	9,131	100	310	171	26-Mar-15	10-Mar-15	Level, Conductivity
MW-5D	MW-5	Top of ABS Transducer Mount	2,156,220.77	5,748,560.95	80.06	1.97	9,126	395	435	417	26-Mar-15	19-Feb-15	Level, Conductivity
MW-6S	MW-6	Top of ABS Transducer Mount	2,141,142.87	5,756,164.01	35.89	2.45 [1]	21,436	30	60	61	1-Oct-15	22-Apr-15	Level, Conductivity
MW-6M	MW-6	Top of ABS Transducer Mount	2,141,138.40	5,756,154.35	35.68	2.44 [1]	21,431	150	210	103	1-Oct-15	22-Apr-15	Level, Conductivity
MW-6D	MW-6	Top of ABS Transducer Mount	2,141,133.06	5,756,144.94	35.82	2.42 [1]	21,427	255	325	201	1-Oct-15	22-Apr-15	Level, Conductivity
MW-7S	MW-7	Top of ABS Transducer Mount	2,152,099.25	5,744,148.10	50.64	2.06	5,274	60	80	72	1-Oct-15	13-Aug-15	Level, Conductivity
MW-7M	MW-7	Top of ABS Transducer Mount	2,152,110.46	5,744,146.08	50.29	2.09	5,266	130	220	187	1-Oct-15	13-Aug-15	Level, Conductivity
MW-7D	MW-7	Top of ABS Transducer Mount	2,152,120.50	5,744,144.38	50.24	2.24	5,260	295	345	322	1-Oct-15	13-Aug-15	Level, Conductivity
MW-8S	MW-8	Top of ABS Transducer Mount	2,159,440.33	5,744,871.52	19.96	2.14 [3]	7,116	40	80	-	1-Oct-15	30-May-15	Hand Level
MW-8M	MW-8	Top of ABS Transducer Mount	2,159,430.86	5,744,866.05	19.99	2.17 [2]	7,106	125	215	181	1-Oct-15	30-May-15	Level, Conductivity
MW-8D	MW-8	Top of ABS Transducer Mount	2,159,421.47	5,744,861.04	20.08	2.10 [3]	7,096	300	350	-	1-Oct-15	30-May-15	Hand Level
MW-9S	MW-9	Top of ABS Transducer Mount	2,162,010.77	5,747,345.03	18.42	2.16 [3]	10,677	30	110	-	1-Oct-15	1-Jul-15	Hand Level
MW-9M	MW-9	Top of ABS Transducer Mount	2,162,016.58	5,747,353.64	18.32	2.13 [2]	10,687	145	225	182	1-Oct-15	29-Jun-15	Level, Conductivity
MW-9D	MW-9	Top of ABS Transducer Mount	2,162,022.89	5,747,362.25	18.32	2.15 [3]	10,697	353	393	-	1-Oct-15	26-Jun-15	Hand Level
Well No. 1[4]	MRWPCA	Well Cover	2,151,622.14	5,750,015.59	114 ft amsl (GS)	1.60	10,898	260	340	299	-	19-Feb-15	Level, Conductivity
Well No. 2[4]	MRWPCA	Well Cover	2,151,550.18	5,749,987.41	115 ft amsl (GS)	1.65	10,892	260	340	319	-	19-Feb-15	Level, Conductivity
CEMEX Dredge Pond	CEMEX	Top of ABS Transducer Mount	2,155,912.41	5,739,497.26	14.14	8.92*	1,212	-	-	-	26-Mar-15	8-Mar-15	Level, Conductivity
Test Slant Well	CEMEX	Near Ground Surface	2,154,702.56	5,739,561.92	30.86	0	0	46**	231**	305MD	26-Mar-15	1-Apr-15	Level, Conductivity
CEMEX North Well	CEMEX	Well Cover	2,154,284.48	5,741,032.07	39.20	0.25	1,529	244	481	150	1-Oct-15	1-Apr-15	Level, Conductivity
CEMEX South Well[4]	CEMEX	Ground Surface	2,154,213.90	5,740,998.57	31 ft amsl (GS)	0	1,518	400	506	-	-	-	-

Horizontal Datum: NAD83 State Plane Zone 4
Vertical Datum: NAVD88
* RP height above pond water level 5.22 ft NAVD88 (8-11 am 26-Mar-15)
** Top of 18 in. screen = 140 ft x Sin(19) = 46 ft TVD, Bottom of 14 in. screen = 710 x Sin(19) = 231 ft TVD

[1] RP/elevation change on May 17, 2015 - New caps
[2] RP/elevation change on July 17, 2015 - New caps
[3] RP/elevation change on September 24, 2015 - New caps
[4] Estimated - not surveyed.

MD: Measured Depth - lineal feet along the angle of the slant well
GS: Ground Surface - approximate ground surface elevation based on Google Earth

ATTACHMENT B
MPWSP WATER LEVEL DATA

Groundwater Elevation in MPWSP MW-1

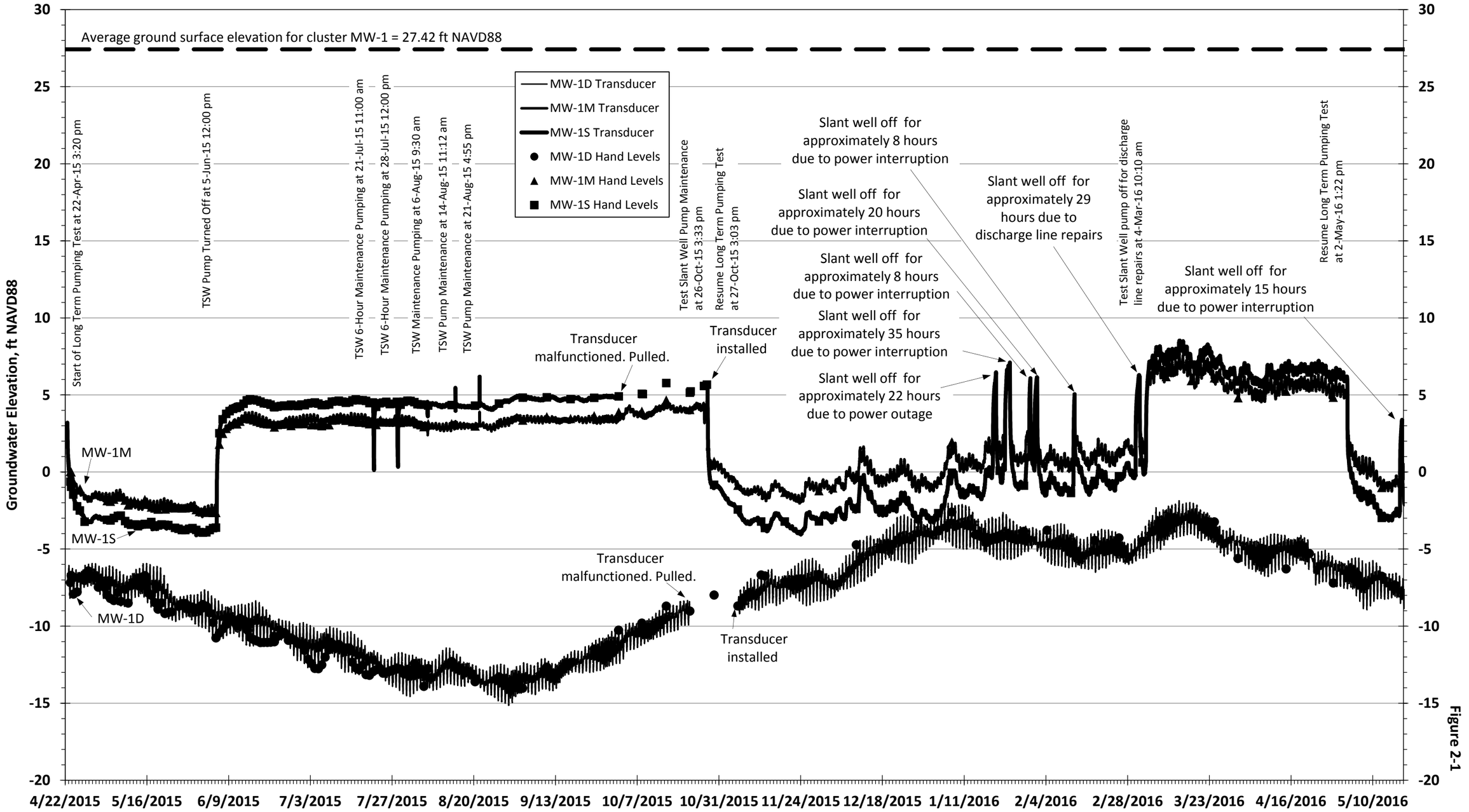

Figure 2-1

Groundwater Elevation in MPWSP MW-3

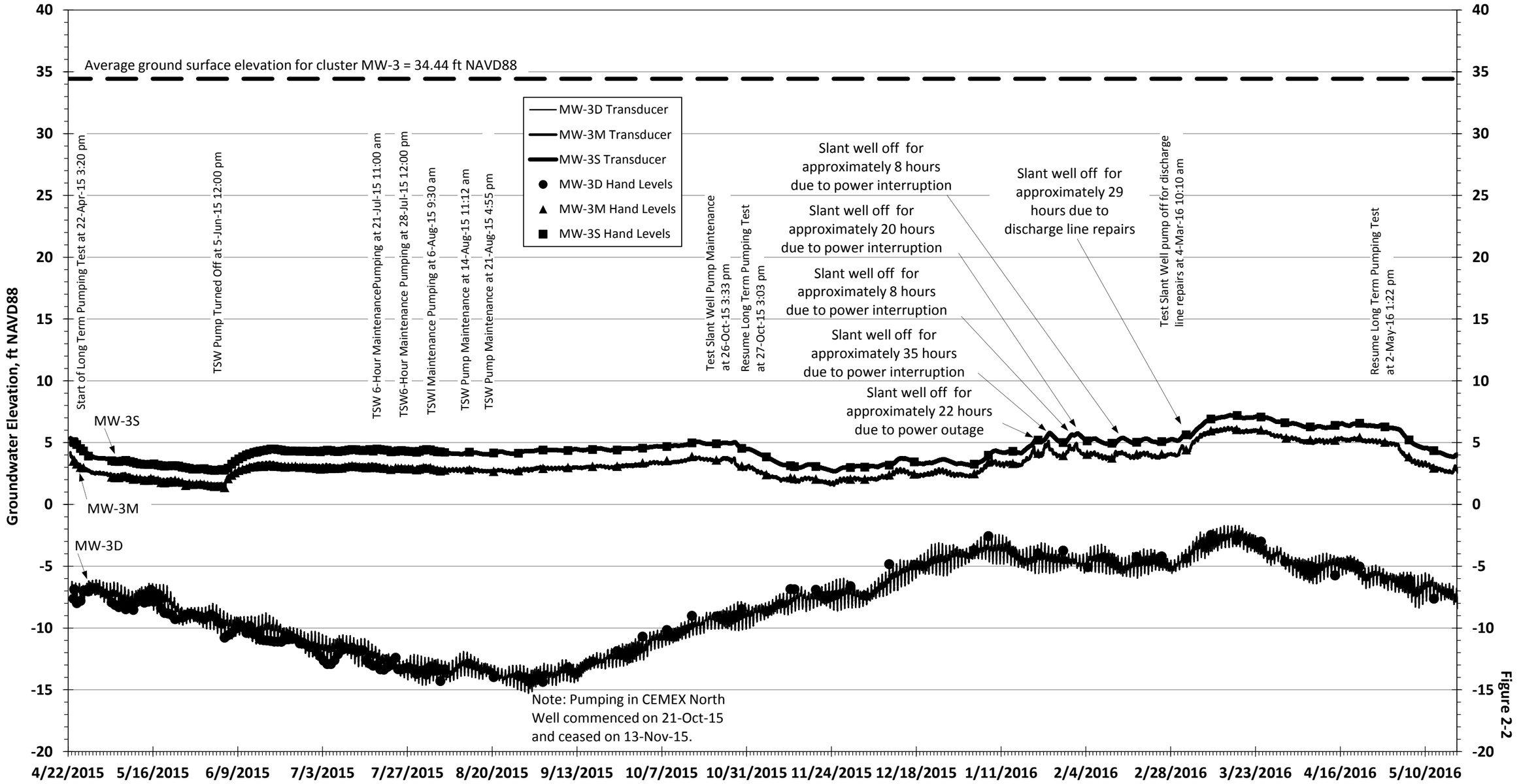

Figure 2-2

Groundwater Elevation in MPWSP MW-4

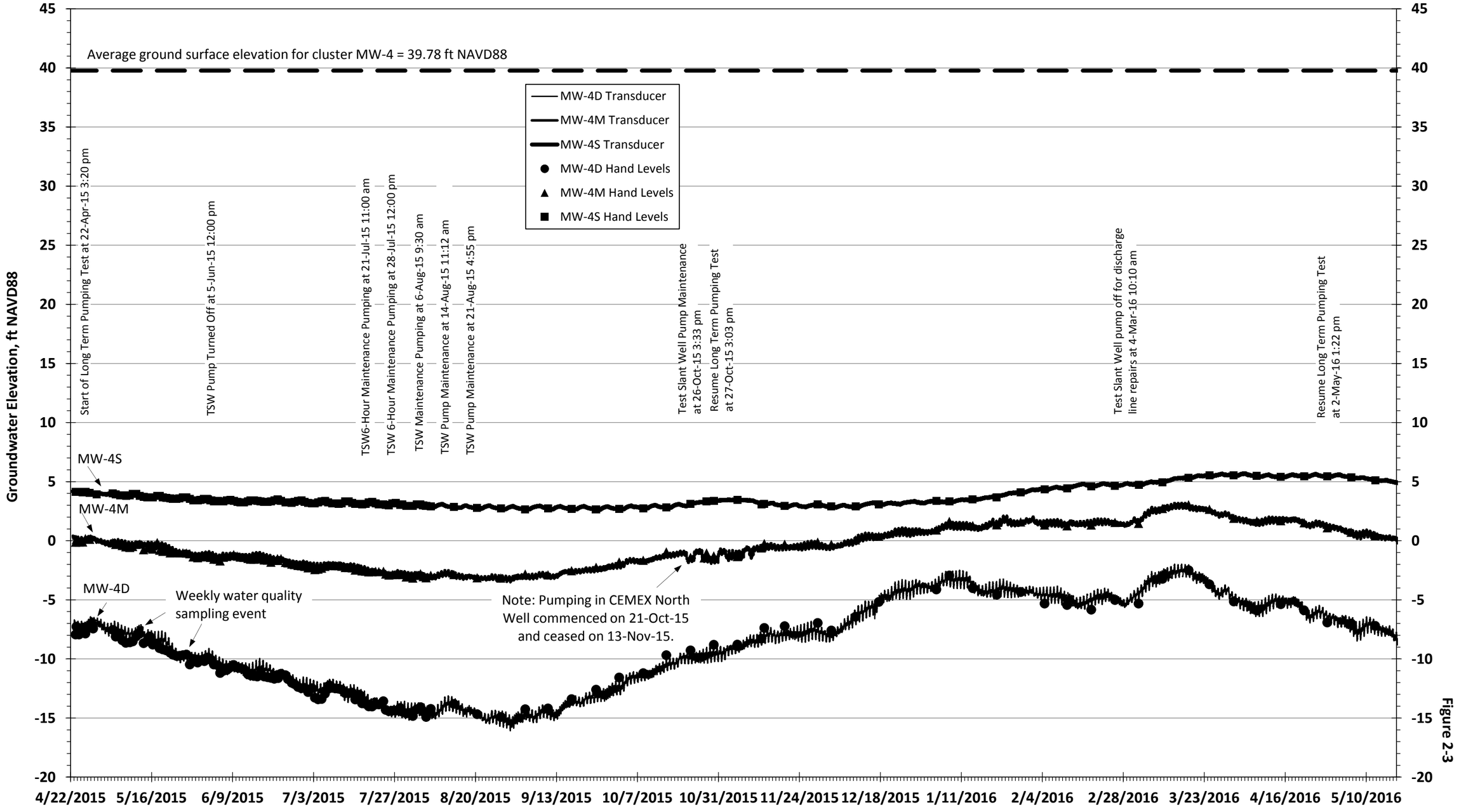

Figure 2-3

Groundwater Elevation in MPWSP MW-5

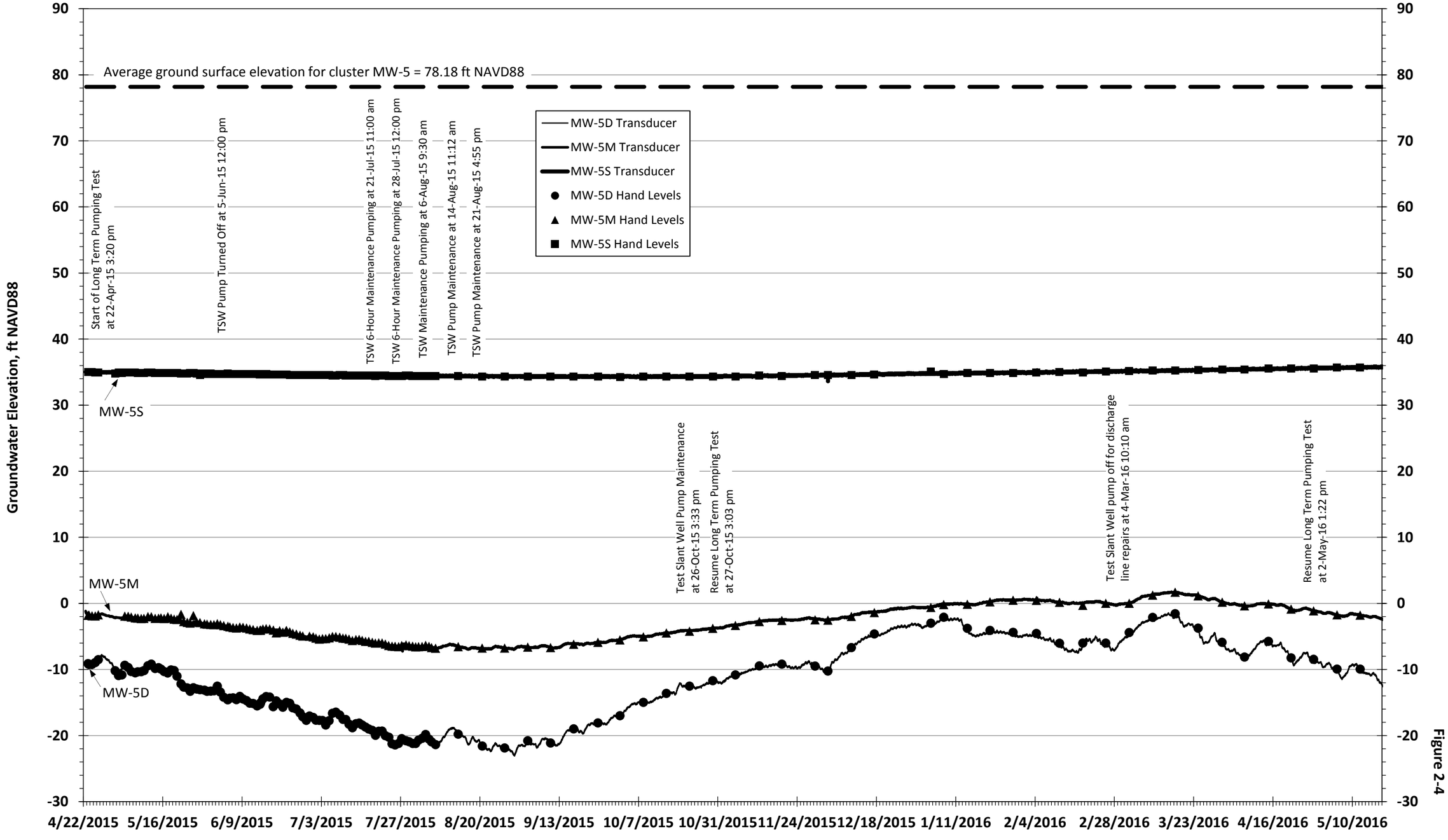

Figure 2-4

Groundwater Elevation in MPWSP MW-6

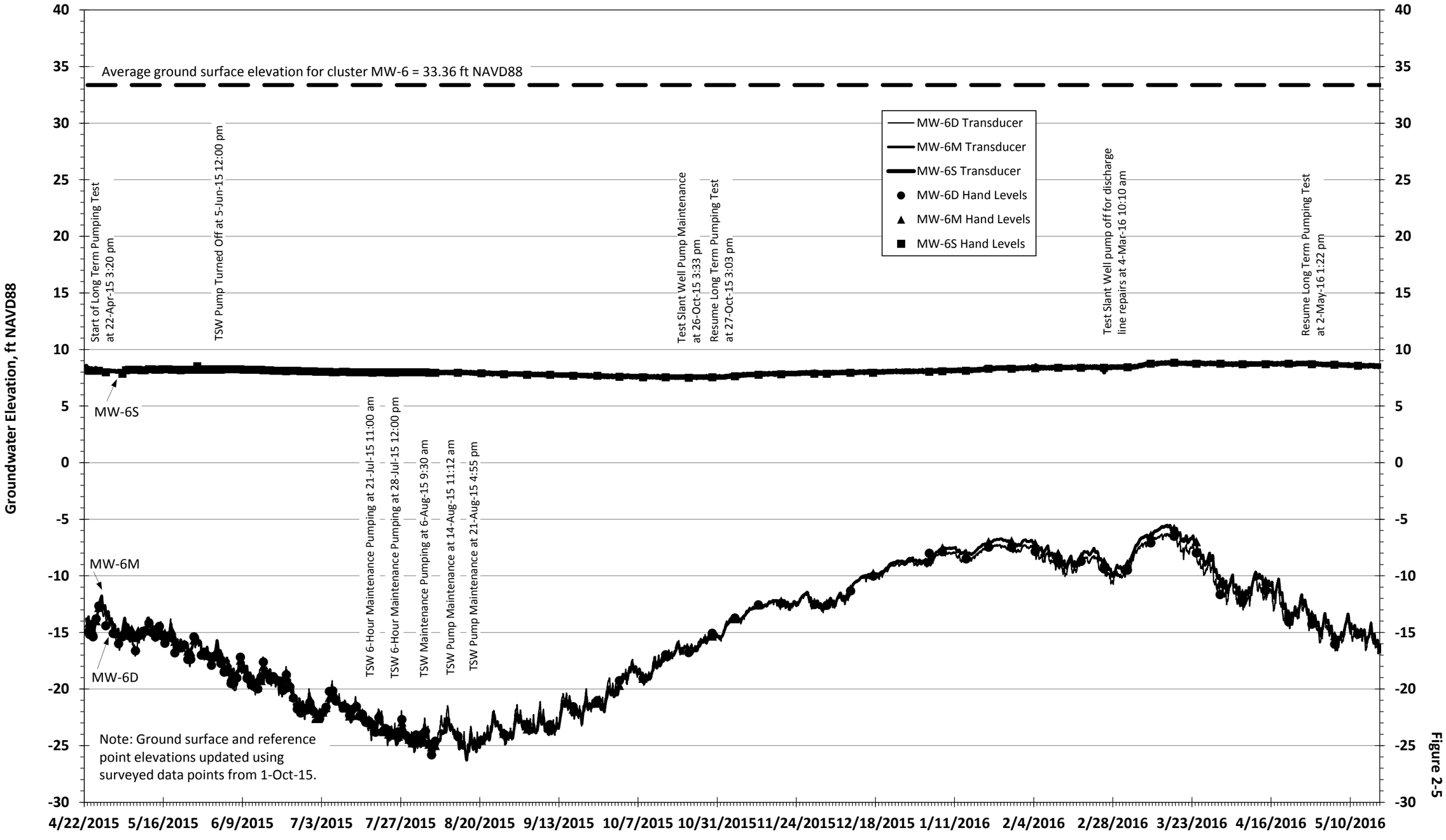

Figure 2-5

Groundwater Elevation in MPWSP MW-7

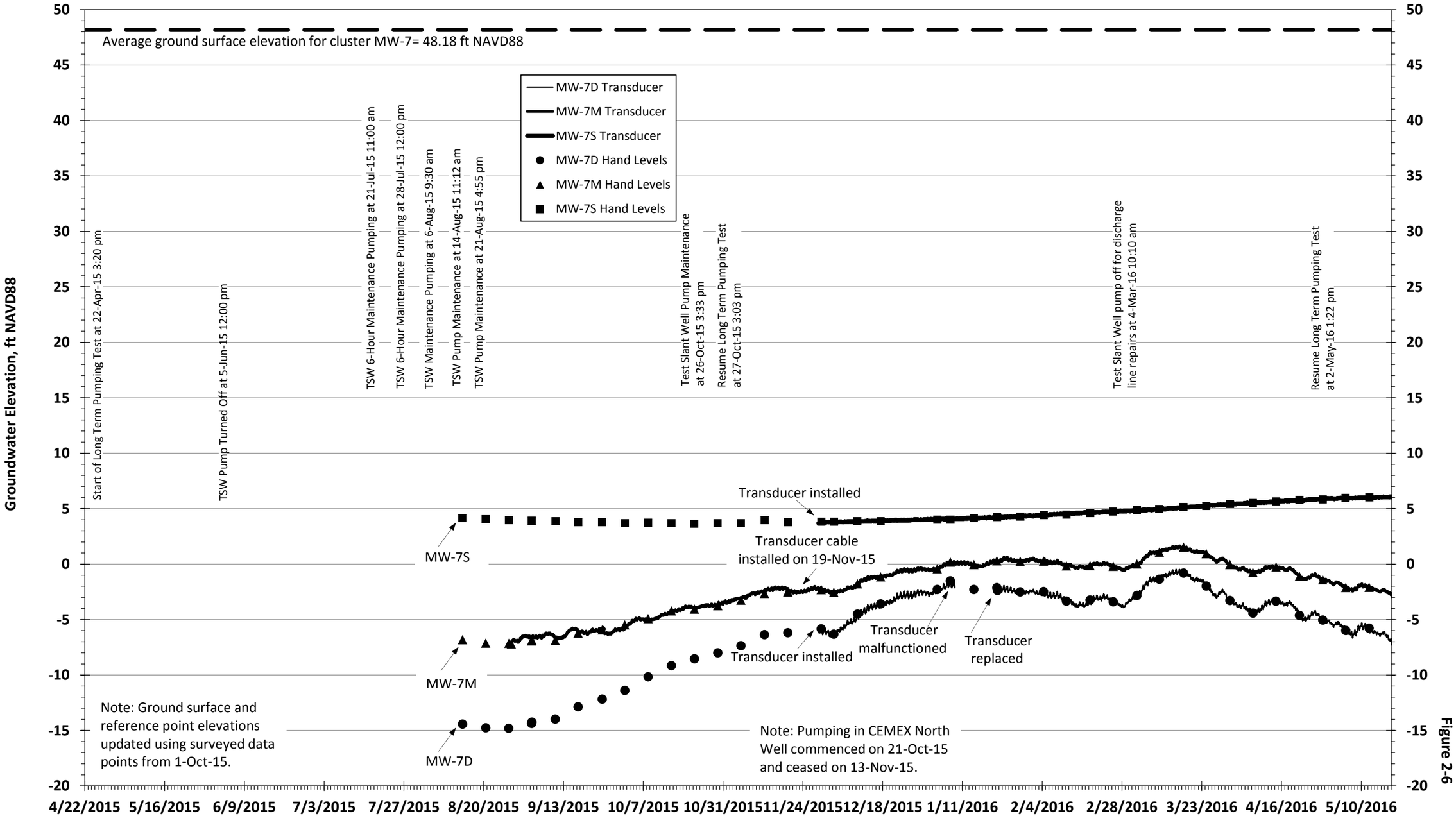

Figure 2-6

Groundwater Elevation in MPWSP MW-8

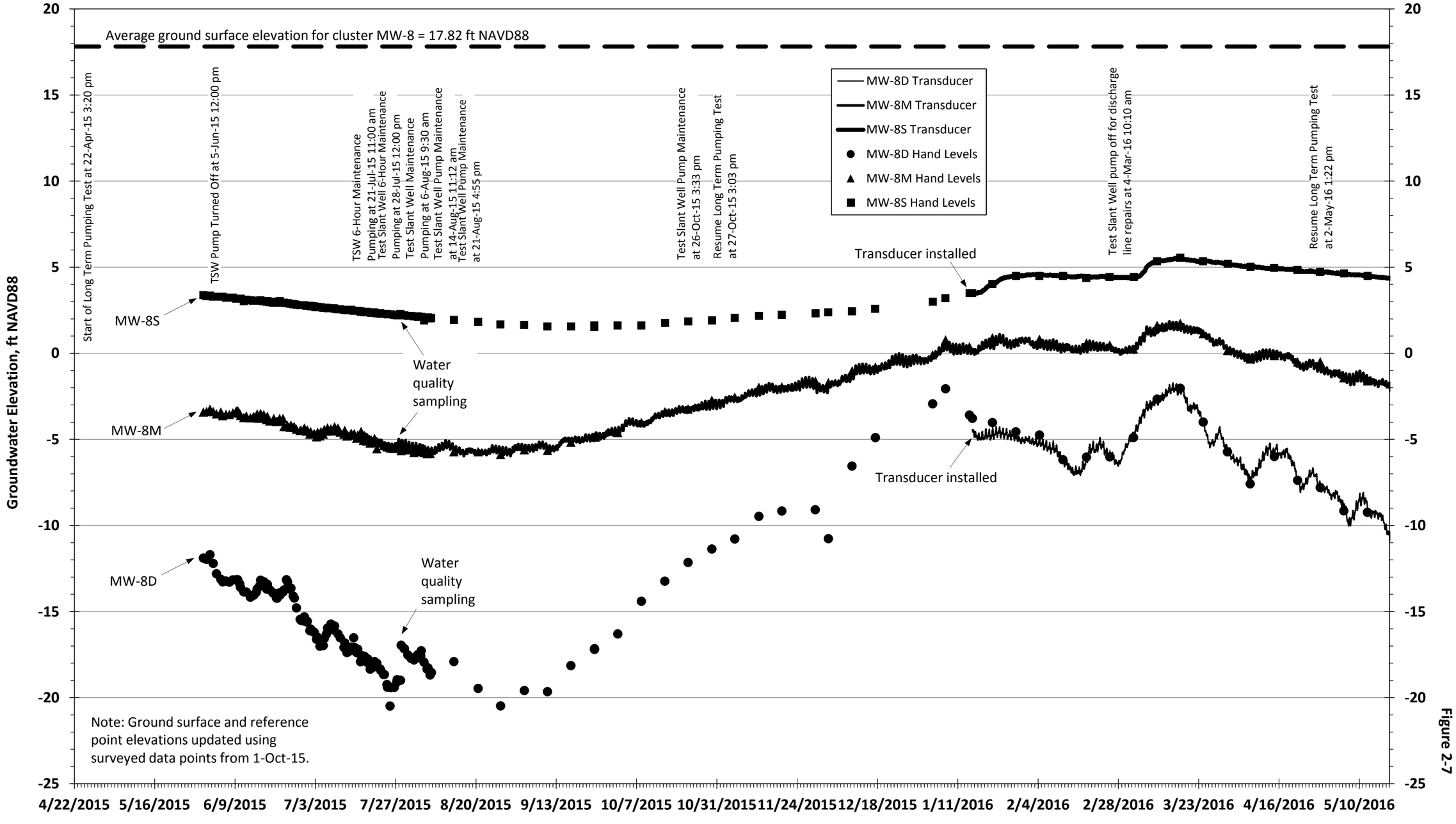

Figure 2-7

Groundwater Elevation in MPWSP MW-9

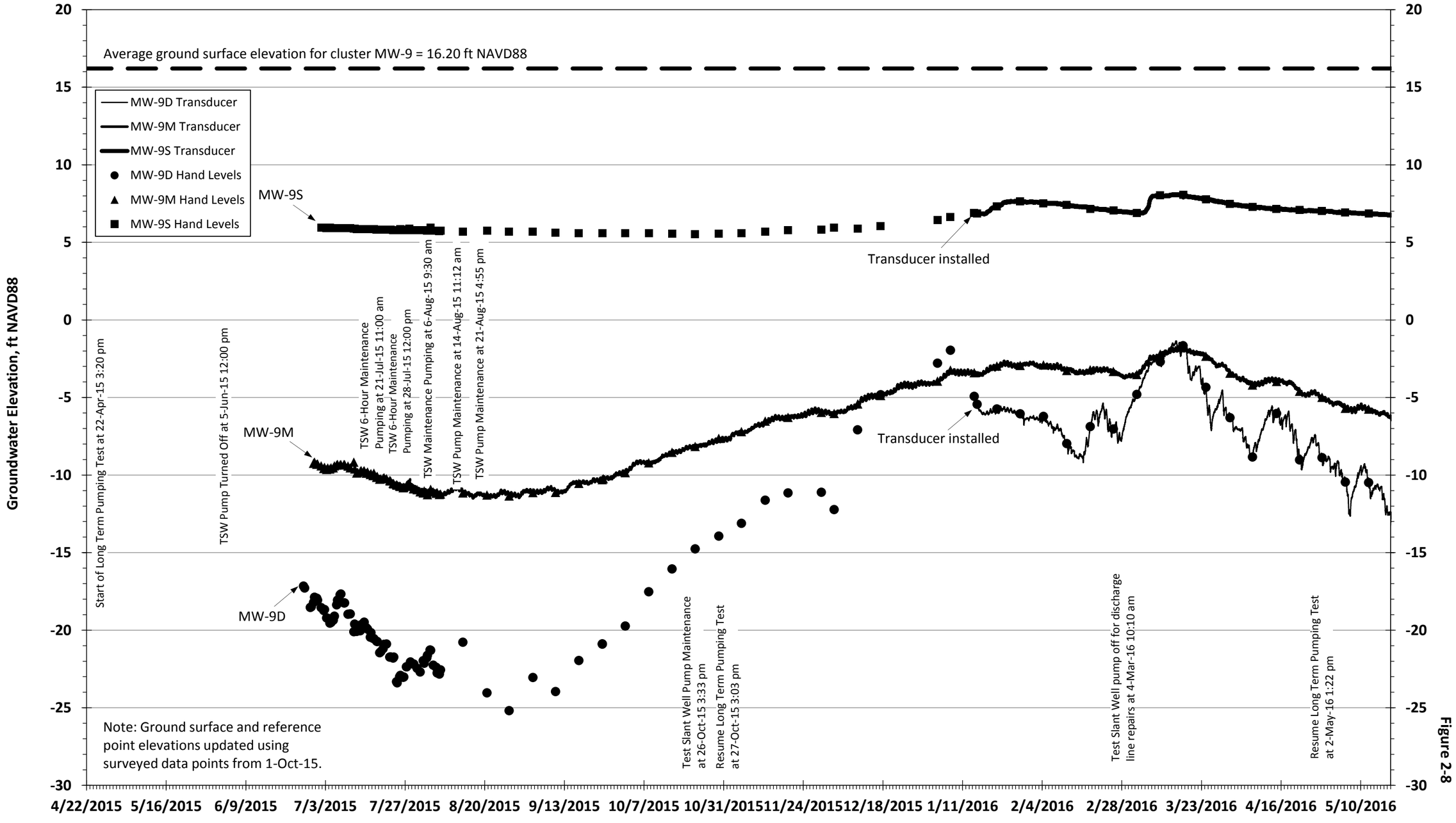

Figure 2-8

Groundwater Elevation in Monterey Regional Water Pollution Control Agency Wells

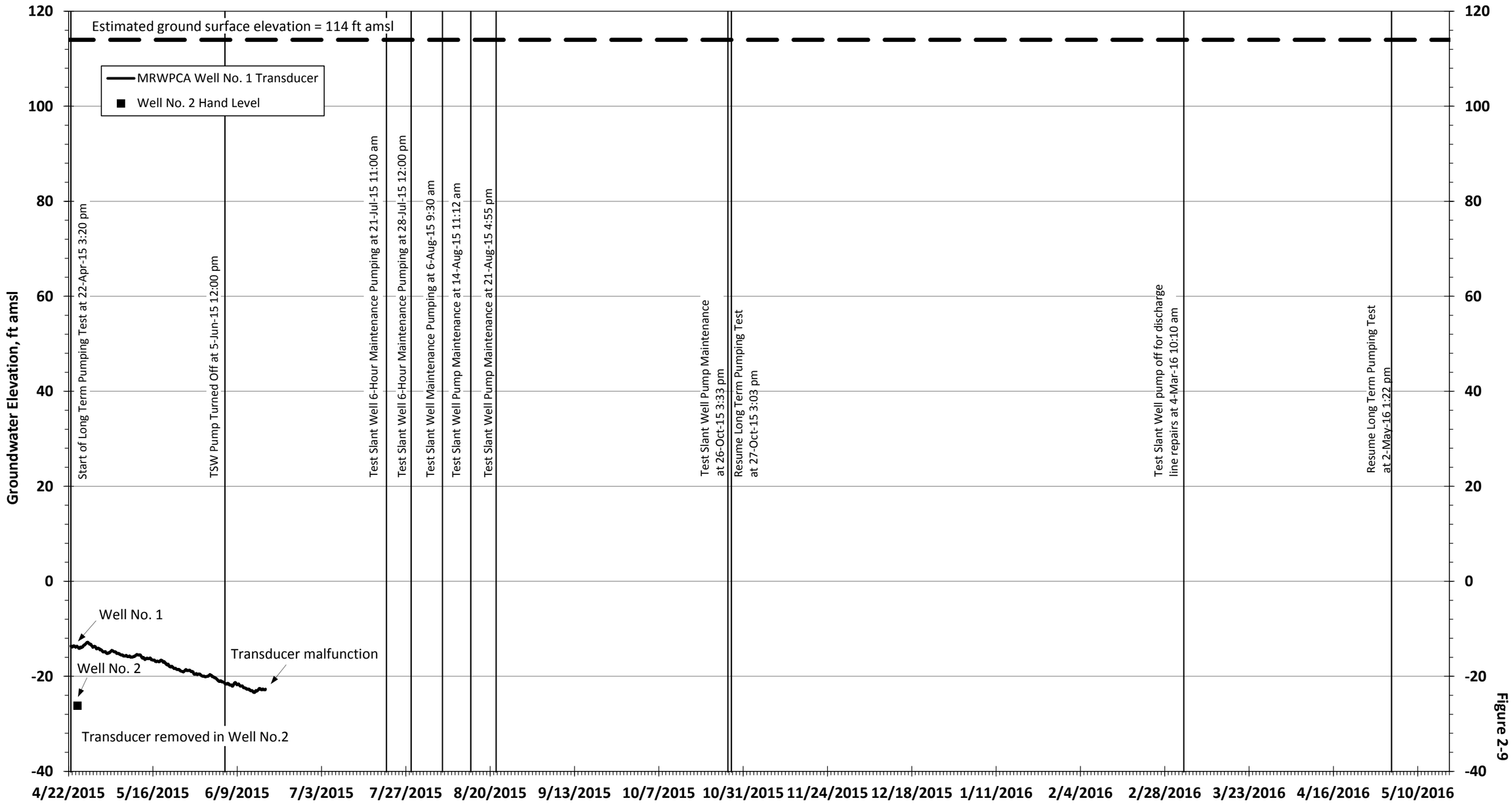

Figure 2-9

Surface Water Elevation in CEMEX Dredge Pond

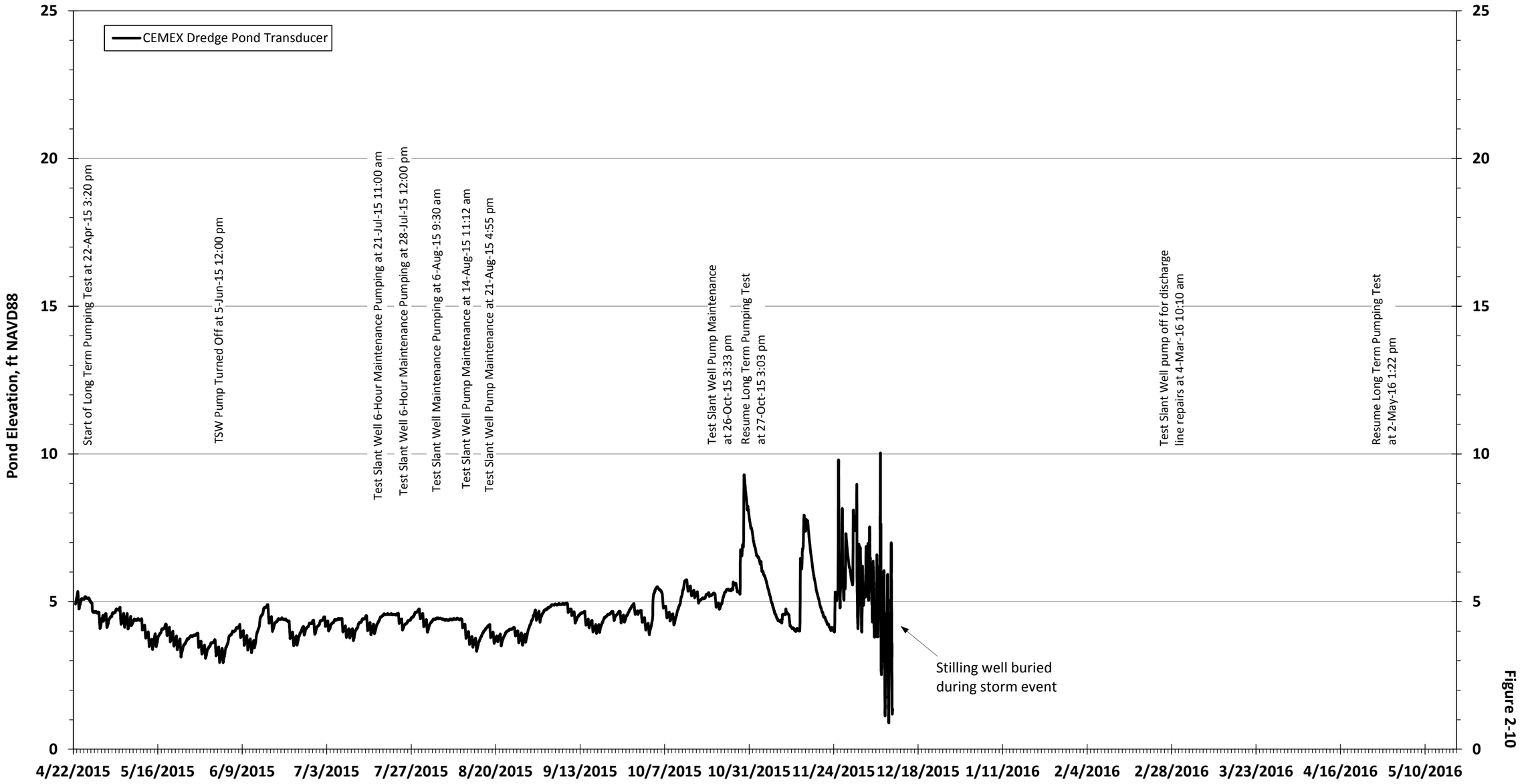

Figure 2-10

Groundwater Elevation in CEMEX North Well

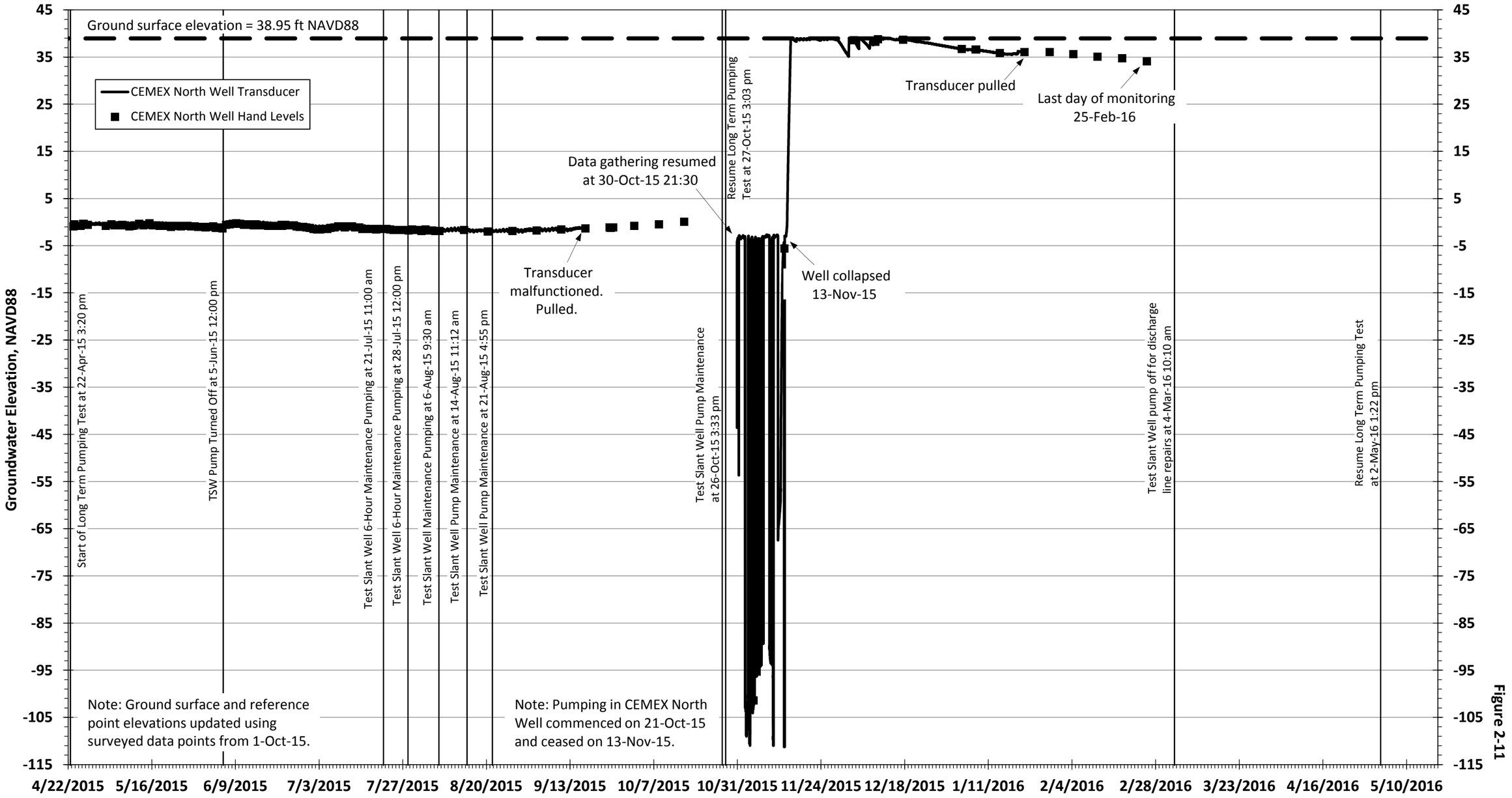

Figure 2-11

Groundwater Elevation in MPWSP Test Slant Well

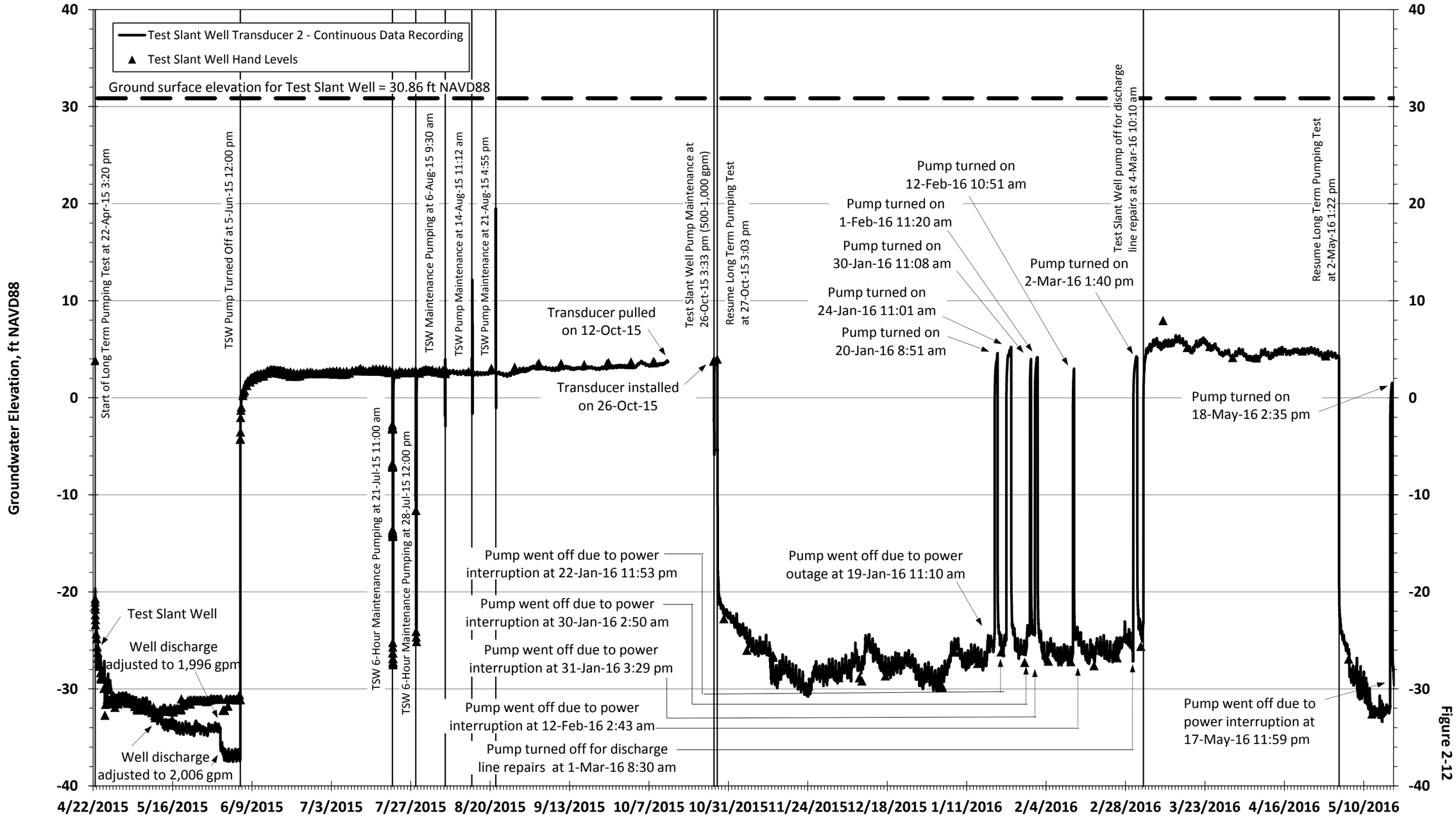

Figure 2-12

ATTACHMENT C
LABORATORY WATER QUALITY
TEST RESULTS

Cal Am / RBF
Baseline Water and Total Dissolved Solids Levels
Monterey Peninsula Water Supply Project Area

Table 2

Summary of Laboratory Water Quality Results in Monitoring Wells

Well Name:		MW-1D		MW-1M		MW-1S		MW-3D		MW-3M		MW-3S		MW-4D		MW-4M		MW-4S		MW-5D		MW-5M		MW-5S		Test Slant Well		
Screen Interval (ft bgs):		277 - 327		115 - 225		55 - 95		285 - 330		105 - 215		50 - 90		280 - 330		100 - 230		50 - 90		380 - 430		100 - 325		50 - 90		140 - 320, 400 - 710 (MD)		
Sample Date:		14-Feb-15	9-Apr-15	14-Feb-15	9-Apr-15	13-Feb-15	9-Apr-15	21-Feb-15	10-Apr-15	24-Feb-15	10-Apr-15	25-Feb-15	10-Apr-15	19-Feb-15	2-Apr-15	6-Mar-15	2-Apr-15	7-Mar-15	2-Apr-15	17-Feb-15	2-Apr-15	3-Mar-15	2-Apr-15	10-Mar-15	2-Apr-15	20-Mar-15	24-Mar-15	8-Apr-15
Constituent[1]	Units	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Alkalinity, Total (as $CaCO_3$)	mg/L	123	124	112	117	105	120	114	118	105	104	97	97	111	124	97	97	80	86	112	117	195	121	50	50	N/A	N/A	117
Aluminum, Total	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	166	18	166	36	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14	33	N/A	N/A	ND
Ammonia-N	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.08	ND	N/A
Ammonia-N, Dissolved	mg/L	ND	*	ND	*	ND	*	ND	*	ND	*	ND	*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Ammonia-NH_3 (calc) Un-Ionized	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
Arsenic, Total	µg/L	46	34	41	33	43	30	44	39	37	34	34	27	40	30	21	22	15	14	4	3	2	3	4	3	N/A	N/A	33
Barium, Dissolved	µg/L	141	143	61	63	68	63	162	157	79	66	97	91	166	176	104	104	92	107	562	466	96	67	173	200	N/A	N/A	95
Bicarbonate (as HCO3-)	mg/L	150	151	137	143	128	146	139	144	128	127	118	118	135	151	118	118	98	105	137	143	238	148	61	61	N/A	N/A	143
Boron, Dissolved	mg/L	0.89	1.16	2.36	2.78	2.27	2.73	1.06	1.03	1.01	2.68	2.2	2.3	0.65	0.75	1.16	1.03	0.79	0.88	0.09	ND	ND	ND	ND	ND	N/A	N/A	2.6
Bromide, Dissolved	mg/L	44	44	46	50	39	49	44.1	44	53.8	49	44.8	38	43.8	47	31	31	16.7	18	3.3	2	0.4	ND	4.4	5.2	N/A	N/A	37
Calcium	mg/L	2,440	2,510	746	805	661	791	2,470	2,350	826	835	628	664	2,980	2,827	1,040	1,131	594	621	360	358	96	62	129	132	N/A	N/A	349
Calcium, Dissolved	mg/L	2,410	2,480	732	781	646	771	2,370	2,360	844	879	666	664	3,070	2,810	1,060	1,100	617	627	363	356	99	63	142	138	N/A	N/A	371
Carbamates by HPLC (EPA 531)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Carbonate as $CaCO_3$	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Chloride, Dissolved	mg/L	14,905	16,346	16,037	15,580	14,504	15,276	16,069	16,456	14,686	14,964	11,680	12,136	14,142	14,177	9,751	9,587	5,497	6,266	1,168	1,152	120	90	271	272	N/A	N/A	13,830
Chlorinated Pesticides and PCB (EPA 508)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Chlorine Residual,Total (Laboratory)	mg/L (H)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
Coliform, E. Coli (Quantitray)	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<10	N/A
Coliform, E. Coli (Quantitray)-18 Hour	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 10	N/A	N/A
Coliform, Total (Quantitray)	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	490	N/A
Coliform, Total (Quantitray)-18Hour	MPN/100mL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2,755	N/A	N/A
Color, Apparent (Unfiltered)	CU	10	20	ND	ND	4	ND	6	ND	ND	ND	ND	7	8	ND	4	ND	3	ND	ND	4	ND	ND	7	8	60	10	4
Copper, Total	µg/L	40	52	61	80	62	52	56	76	62	90	42	78	46	30	42	22	ND	16	13	4	ND	ND	5	ND	N/A	N/A	44
DBCP & EDB	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Dioxin	pg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	RP	N/A	RP	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Diquat (EPA 549)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Dissolved Oxygen (Field)	mg/L (H)	N/A	0.08	N/A	3.34	N/A	2.64	N/A	0.225	N/A	3.85	4.7	3.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.28	N/A	N/A
Dissolved Oxygen (Laboratory)	mg/L (H)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.34	8.84	N/A
Endothall	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Fluoride, Dissolved	mg/L	ND	ND	ND	ND	0.3	ND	ND	ND	0.5	ND	0.4	ND	ND	0.1	ND	ND	ND	0.1	0.1	0.1	0.1	0.1	ND	ND	N/A	N/A	0.2
Glyphosate	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Hardness (as $CaCO_3$)	mg/L	10,765	11,338	6,327	6,606	5,678	6,439	12,063	11,140	6,378	6,520	5,044	5,109	11,617	11,021	5,601	5,740	3,176	3,321	1,484	1,429	367	229	561	540	N/A	N/A	4,751
Hydroxide	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Iodide	µg/L	ND	*	ND	*	ND	*	ND	*	ND	*	ND	*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Iron	µg/L	146	722	ND	ND	25	ND	169	671	ND	ND	ND	ND	77	223	ND	ND	ND	169	39	17	ND	ND	ND	26	N/A	N/A	69
Iron, Dissolved	µg/L	118	726	12	ND	15	ND	142	684	ND	ND	ND	ND	80	215	ND	ND	ND	175	ND	ND	ND	ND	ND	ND	N/A	N/A	65
Kjehldahl Nitrogen, Dissolved	mg/L	ND	*	ND	*	ND	*	ND	*	ND	*	ND	*	0.6	ND	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Lithium	µg/L	254	200	201	155	172	157	250	184	159	115	144	106	222	193	34	25	16	18	75	53	7	3	6	8	N/A	N/A	152
Magnesium	mg/L	1,130	1,230	1,080	1,120	978	1,080	1,430	1,280	1,050	1,080	844	838	1,020	962	730	708	411	430	142	130	31	18	58	51	N/A	N/A	942
Magnesium, Dissolved	mg/L	1,180	1,230	1,100	1,110	979	1,080	1,290	1,310	1,020	1,160	797	859	979	969	752	681	421	437	135	128	31	18	62	54	N/A	N/A	989
Manganese, Dissolved	µg/L	440	1,060	18	ND	41	ND	259	1,080	ND	ND	ND	170	268	1,220	113	ND	ND	248	340	645	ND	ND	ND	ND	N/A	N/A	26
Manganese, Total	µg/L	484	1,100	19	ND	43	ND	289	1,060	14	ND	58	154	276	1,221	90	ND	ND	268	336	653	ND	ND	ND	ND	N/A	N/A	26
MBAS (Surfactants)	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	ND
Nitrate as NO_3	mg/L	1	2	2	4	3	4	ND	2	5	3	29	6	1	ND	4	3	20	10	3	1	70	64	237	233	N/A	N/A	5
Nitrate+Nitrite as N	mg/L	0.4	0.6	1.1	1	0.7	0.9	0.1	0.6	1.2	0.8	6.5	1.5	0.2	0.1	1	0.9	5.3	2.3	0.8	0.4	16.2	14.6	54	52.7	N/A	N/A	1
Nitrite as NO_2-N, Dissolved	mg/L	0.2	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	ND	0.1	ND	0.1	ND	0.1	0.3	0.3	ND	0.1	N/A	N/A	ND
Odor Threshold at 60 C	TON	1	2	1	2	1	1	3	3	3	1	5	2	3	1	1	1	4	14	3	2	2	1	2	10	N/A	N/A	2
Oil & Grease (HEM)	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
o-Phosphate-P	mg/L	0.03	0.06	0.07	0.09	0.07	0.05	0.06	0.04	0.05	0.06	0.18	0.14	0.06	0.04	ND	0.06	0.06	0.09	0.04	0.05	0.06	0.12	0.05	0.12	N/A	N/A	0.1
pH (Field Test)	pH	6.72	7.24	7.02	7.74	7.15	7.87	6.55	6.84	6.89	7.05	7.25	7.27	6.65	6.56	6.78	6.78	6.77	6.91	7	7.18	7.23	7.44	6.46	6.63	7.53	7.07	7.03
pH (Laboratory)	pH (H)	7.1	7.1	7	7.4	7.2	7.5	6.9	7.2	7.2	7.4	7.2	7.5	7	7.1	7.1	7.2	7	7.2	7.5	7.4	7.3	7.5	6.7	7.1	7.7	7.2	7.2
Phenoxy Acid Herbicides (515.3)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Phosphorus, Dissolved Total	mg/L	0.04	0.03	0.09	0.08	0.05	0.04	0.04	ND	ND	0.06	0.12	0.13	0.11	0.14	ND	0.06	0.06	0.07	0.04	0.04	0.06	0.12	0.08	0.08	N/A	N/A	0.09
Potassium	mg/L	60	61	201	209	228	247	64.4	58	197	214	168	157	51.2	46.2	46	43.9	26	30.2	7.8	6.7	3.4	2.2	2	3.1	N/A	N/A	203
Potassium, Dissolved	mg/L	59	60.9	197	207	224	244	55.7	59.6	197	232	157	161	49.1	46.3	50	43.3	28	31.5	7.1	6.6	3.6	2.2	2.4	3	N/A	N/A	213
QC Ratio TDS/SEC		0.73	0.66	0.7	0.67	0.68	0.67	0.74	0.66	0.69	0.69	0.68	0.68	0.72	0.74	0.68	0.64	0.7	0.68	0.69	0.65	0.6	0.64	0.67	0.64	N/A	N/A	0.67
Reg. Org. Compounds (EPA 525)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	N/A	N/A	ND
Settleable Solids	mL/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	ND	N/A
Silica as SiO_2, Dissolved	mg/L	33	32	22	21	20	19	32	30	21	18	19	19	36	31	30	27	27	24	45	41	35	32	39	38	N/A	N/A	20
Sodium	mg/L	5,760	5,913	8,011	7,381	7,306	7,211	6,960	5,620	7,232	6,590	5,340	5,632	4,286	4,092	4,079	3,685	2,579	2,399	161	131	71	51	120	116	N/A	N/A	7,606
Sodium, Dissolved	mg/L	6,150	6,340	8,320	7,920	7,500	7,480	6,110	6,180	6,930	7,670	5,550	6,260	4,730	4,090	4,320	3,490	2,750	2,500	136	128	76	51	131	120	N/A	N/A	8,040
Specific Conductance (E.C)	µmhos/cm	40,120	43,440	43,960	42,510	39,090	40,840	44,020	43,570	41,090	41,040	34,180	34,300	38,000	37,390	26,250	27,200	17,050	18,800	3,775	3,729	1,106	714	1,752	1,735	36,890	36,280	37,860
Specific Conductance (E.C) (Field)	µmhos/cm	40,882	43,249	43,788	42,426	39,747	41,557	41,740	43,223	42,340	40,642	33,456	33,798	5,750	37,532	26,779	27,703	16,917	18,376	3,961	3,968	962	796	1,828	1,746	35,270	36,306	38,097
Strontium, Dissolved	µg/L	15,666	16,477	8,689	9,434	7,995	9,084	16,370	16,228	9,500	9,458	7,619	7,287	17,499	17,148	9,637	9,864	5,208	5,455	2,777	2,834	630	435	1,231	1,288	N/A	N/A	7,440

Cal Am / RBF
Baseline Water and Total Dissolved Solids Levels
Monterey Peninsula Water Supply Project Area

Table 2

Summary of Laboratory Water Quality Results in Monitoring Wells

Well Name:		MW-1D		MW-1M		MW-1S		MW-3D		MW-3M		MW-3S		MW-4D		MW-4M		MW-4S		MW-5D		MW-5M		MW-5S		Test Slant Well		
Screen Interval (ft bgs):		277 - 327		115 - 225		55 - 95		285 - 330		105 - 215		50 - 90		280 - 330		100 - 230		50 - 90		380 - 430		100 - 325		50 - 90		140 - 320, 400 - 710 (MD)		
Sample Date:		14-Feb-15	9-Apr-15	14-Feb-15	9-Apr-15	13-Feb-15	9-Apr-15	21-Feb-15	10-Apr-15	24-Feb-15	10-Apr-15	25-Feb-15	10-Apr-15	19-Feb-15	2-Apr-15	6-Mar-15	2-Apr-15	7-Mar-15	2-Apr-15	17-Feb-15	2-Apr-15	3-Mar-15	2-Apr-15	10-Mar-15	2-Apr-15	20-Mar-15	24-Mar-15	8-Apr-15
Constituent[1]	**Units**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**	**Result**
Sulfate	mg/L	1,950	N/A	2,070	N/A	1,840	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,700	N/A	N/A	N/A	N/A	N/A	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sulfate, Dissolved	mg/L	N/A	2,148	N/A	2,048	N/A	2,008	2,058	2,158	1,960	1,967	1,533	1,605	N/A	1,796	1,184	1,205	716	807	N/A	31	110	67	197	192	N/A	N/A	1,840
Temperature	° C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16.3	N/A	N/A
Temperature (Field)	° C	19.2	20.02	17.2	17.89	18.8	17.64	19.6	20.22	16.3	18.74	17.5	19.17	19.9	19.8	18.4	18.3	17.7	18.1	21.3	21.4	16.97	18.2	16.7	18.1	20.9	19.1	17.2
Total Diss. Solids	mg/L	29,100	28,700	30,900	28,300	26,600	27,500	32,600	28,600	28,500	28,300	23,400	23,300	27,500	27,600	17,900	17,500	11,900	12,800	2,616	2,437	663	454	1,166	1,117	25,300	24,400	25,400
Total Susp. Solids	mg/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	36	ND	N/A
Turbidity	NTU	1.8	0.15	0.1	0.1	0.1	0.15	1	0.3	0.1	0.16	0.15	0.24	0.65	0.15	0.25	0.05	0.3	0.2	0.25	0.25	ND	ND	0.4	0.75	17	1.6	0.4
Turbidity (Field)	NTU	0.65	0.69	0.41	0.35	0.28	0.43	0.38	0.87	0.42	0.21	0.96	0.55	0.76	0.53	0.71	0.84	0.52	0.17	0.71	0.87	0.47	0.45	1.31	1.26	40.3	0.66	0.74
Volatile Org. Compounds (524)	µg/L	ND	N/A	ND	N/A	ND	N/A	ND	N/A	ND	N/A	RP	N/A	RP	N/A	ND	N/A	RP	N/A	RP	N/A	ND	N/A	RP	N/A	N/A	N/A	ND
Zinc, Total	µg/L	ND	ND	ND	ND	413	ND	ND	ND	297	ND	312	ND	ND	ND	211	107	ND	108	51	ND	40	ND	43	ND	N/A	N/A	ND

Notes:

°C	= Degrees Celsius
CU	= Color Units
mg/L	= Milligrams per Liter
NTU	= Nephelometric Turbidity Units
pg/L	= Picograms per Liter
TON	= Threshold Odor Number
µg/L	= Micorgrams per Liter
µmhos/cm	= Micromhos per Centimeter
H	= Analyzed outside of hold time
MPN/100mL	= The most probable number (MPN) of coliform or fecal coliform bacteria per 100 milliliter
ND	= NOT DETECTED at or above the Reporting Limit or Practical Quantitation Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL)
N/A	= No Lab Results available
RP	= Results to be provided

[1] Laboratory water quality reports will be provided in the Test Slant Well and mornitoring well completion report.
* Laboratory water quality results pending.

CONSTITUENT	UNIT	MW-6D	MW-6M	MW-6S	MW-7D	MW-7M	MW-7S	MW-8D	MW-8D	MW-8M	MW-8M	MW-8S	MW-8S	MW-9D	MW-9D	MW-9M	MW-9M	MW-9S	MW-9S
		4/2/2015	4/4/2015	4/5/2015	9-Aug-15	2-Aug-15	3-Aug-15	5/21/2015	6/23/2015	5/27/2015	6/23/2015	5/28/2015	6/23/2015	25-Jun-15	28-Jul-15	28-Jun-15	28-Jul-15	30-Jun-15	28-Jul-15
ALKALINITY, TOTAL (as $CaCO_3$)	mg/L	117	397	366	109	98	29	152	112	140	155	320	302	170	176	127	128	1,051	1,019
ALUMINUM, TOTAL	µg/L	ND	ND	ND	ND	18	ND	37	128	292	ND	ND	ND	ND	ND	ND	ND	11	ND
AMMONIA-N	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
AMMONIA-N, DISSOLVED	mg/L	ND	0.17	0.45	ND	ND	0.08	ND	ND	ND	ND	ND	ND	ND	0.07	0.12	0.17	2.83	2.86
AMMONIA-NH_3 (CALC) UN-IONIZED	ug/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
ARSENIC, TOTAL	µg/L	3	5	16	41	4	1	1	11	28	24	1	1	2	2	39	35	11	12
BARIUM, DISSOLVED	µg/L	255	155	105	110	282	199	88	178	154	119	57	75	59	48	163	141	315	273
BICARBONATE (AS HCO3-)	mg/L	143	484	447	133	120	35	185	137	171	189	390	368	207	215	155	156	1,282	1,243
BORON, DISSOLVED	mg/L	ND	ND	ND	1.71	ND	ND	0.05	0.66	1.83	1.37	0.22	0.29	0.08	0.07	2.93	2.77	0.69	0.64
BROMIDE, DISSOLVED	mg/L	2	0.5	0.2	44.3	6.6	1.3	0.6	11.5	42.1	33.6	0.9	1	0.2	0.2	49.6	47.6	4.2	3.5
CALCIUM	mg/L	341	139	93	1,900	507	120	64	413	1110	1500	149	142	32	34	878	1,060	209	234
CALCIUM, DISSOLVED	mg/L	347	140	92	1,890	520	114	59	416	1140	1500	151	139	35	33	869	1,100	242	235
CARBAMATES BY HPLC (EPA 531)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND		ND		ND	
CARBONATE AS $CaCO_3$	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHLORIDE, DISSOLVED	mg/L	814	167	57	13,589	1,739	387	220	3995	12380	10546	261	251	74	75	16,519	10,436	1,199	1,038
CHLORINATED PESTICIDES AND PCB (EPA 508)	µg/L	ND	A	A	A	ND	ND	ND	ND	ND	ND	A	A	ND		ND		ND	
CHLORINE RESIDUAL, TOTAL (LABORATORY)	mg/L (H)	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, E. COLI (QUANTITRAY)	MPN/1OOml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, E. COLI (QUANTITRAY) - 18 HOUR	MPN/1OOml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, TOTAL (QUANTITRAY)	MPN/1OOml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLIFORM, TOTAL (QUANTITRAY) - 18 HOUR	MPN/1OOml	NA	NA	NA				NA	NA	NA	NA	NA	NA						
COLOR, APPARENT (UNFILTERED)	CU	5	16	20	ND	ND	ND	11	16	ND	7	3	ND	ND	3	6	14	175	60
COPPER, TOTAL	µg/L	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10	ND	ND	ND	ND	ND
DBCP & EDB	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
DIOXIN	pg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
DIQUAT (EPA 549)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
DISSOLVED OXYGEN (FIELD)	mg/L (H)	NA	NA	NA				NA	NA	NA	NA	NA	NA						
DISSOLVED OXYGEN (LABORATORY)	mg/L (H)	NA	NA	NA				NA	NA	NA	NA	NA	NA						
ENDOTHALL	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
FLUORIDE, DISSOLVED	mg/L	0.1	ND	0.2	ND	ND	0.1	0.3	ND	0.4	ND	0.1	ND	0.3	0.3	ND	ND	ND	0.4
GLYPHOSATE	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
HARDNESS (AS $CaCO_3$)	mg/L	1222	565	393	9,030	2,044	547	263	2057	6080	6698	578	556	133	138	6,718	7,296	1,218	1,206
HYDROXIDE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
IODIDE	µg/L	ND	35	35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	500	330
IRON	µg/L	ND	184	315	ND	ND	33	81	274	ND	ND	104	ND	10	ND	670	1,540	6,964	6,878
IRON, DISSOLVED	µg/L	ND	182	315	ND	ND	26	15	ND	ND	ND	99	ND	ND	ND	667	1,520	6,300	1,400
KJEHLDAHL NITROGEN, DISSOLVED	mg/L	ND	0.7	1	ND	ND	0.09	ND	ND	ND	ND	ND	ND	ND	0.11	0.2	0.19	6.12	2.9
LITHIUM	µg/L	25	17	6	271	29	5	49	157	132	132	ND	6	38	39	289	296	23	20
MAGNESIUM	mg/L	90	53	39	1,040	189	60	25	249	801	717	50	49	13	13	1,100	1,130	169	151
MAGNESIUM, DISSOLVED	mg/L	83	49	37	1,010	192	58	23	250	828	692	51	47	13	13	1,090	1,140	161	152
MANGANESE, DISSOLVED	µg/L	714	821	2090	230	372	476	283	759	353	642	ND	76	247	186	1,120	1,410	4,920	4,830
MANGANESE, TOTAL	µg/L	750	810	1880	232	372	500	310	847	354	668	ND	86	254	188	1,160	1,380	5,140	4,840
MBAS (SURFACTANTS)	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NITRATE AS NO_3	mg/L	2	ND	ND	6	15	198	2	6	5	6	123	115	2	2	5	6	ND	ND
NITRATE+NITRITE AS N	mg/L	0.7	0.5	0.5	1.4	3.4	44.8	0.7	1.3	1.5	1.4	28.2	26.8	0.9	0.8	1.2	1.3	2.5	1.2
NITRITE AS NO_2-N, DISSOLVED	mg/L	0.2	0.1	0.5	ND	ND	0.1	0.3	ND	0.4	ND	0.4	0.8	0.3	0.3	ND	ND	2.5	1.2
ODOR THRESHOLD AT 60 C	TON	1	1	2	1	2	2	1	2	1	1	2	1	1	2	1	2	2	5
OIL & GREASE (HEM)	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
o-PHOSPHATE-P	mg/L	0.05	0.32	1.55	0.05	0.016	0.035	0.06	0.04	0.06	0.04	0.1	0.13	0.06	0.13	0.06	0.04	1.34	0.28
pH (FIELD TEST)	pH	7.24	7.43	7.07	6.77	7.17	7.05	7.33	8.17	6.67	6.92	7.13	6.99	7.44	8.03	6.84	7.03	7.06	7.04
pH (LABORATORY)	pH (H)	7.4		7.1	6.9	7.2	7.3	7.6	8.2	7.2	7.2	7.4	7.2	7.5	7.8	6.9	6.9	7.1	7.1
PHENOXY ACID HERBICIDES (515.3)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
PHOSPHORUS, DISSOLVED TOTAL	mg/L	0.06	0.31	1.38	0.02	0.017	0.04	0.06	ND	0.07	ND	0.11	0.07	0.12	0.029	0.06	ND	1.4	0.16
POTASSIUM	mg/L	7.1	6.4	7.6	57	10	5.9	5.1	41	108	55	4.1	5	3.5	6.1	197	168	14	13
POTASSIUM, DISSOLVED	mg/L	8	7	7.2	55	10	5.5	4.6	42	111	50	4.3	4.8	3.6	6	196	167	12.8	13
QC RATIO TDS/SEC		0.67	0.63	0.61	0.69	0.68	0.68	0.56	0.58	0.69	0.7	0.62	0.63	0.59	0.61	0.66	0.69	0.6	0.58
REG. ORG. COMPOUNDS (EPA 525)	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND		ND	
SETTLEABLE SOLIDS	mL/L	NA	NA	NA				NA	NA	NA	NA	NA							
SILICA AS SiO_2, DISSOLVED	mg/L	44	44	34	35	30	37	45	33	30	33	37	40	45	44	35	30	43	40
SODIUM	mg/L	77	140	79	6,834	338	124	148	2192	6106	5310	262	245	68	75	8,407	8,224	732	691
SODIUM, DISSOLVED	mg/L	78	141	79	6,540	342	119	135	2290	6270	4950	265	239	68	74	8,430	8,240	698	692
SPECIFIC CONDUCTANCE (E.C)	µmhos/cm	2758	1545	989	38,800	5,650	1,768	1045	12190	35020	29320	2036	1935	624	617	44,090	44,660	5,330	5,190
SPECIFIC CONDUCTANCE (E.C) (FIELD)	µmhos/cm	2859	1531	869	39,065	5,507	1,762	1113	15312	35040	29888	2004	1932	574	658	44,462	45,724	5,384	5,255
STRONTIUM, DISSOLVED	µg/L	1826	761	561	12,676	3,689	1,327	470	3536	8504	8507	868	855	273	260	8,148	8,301	3,064	1,861
SULFATE	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
SULFATE, DISSOLVED	mg/L	85	175	87	1,882	176	61	32	541	1743	1430	258	239	25	23	2,286	2,207	210	220
TEMPERATURE	°C	NA	NA	NA				NA	NA	NA	NA	NA	NA						
TEMPERATURE, (FIELD)	°C	10.6	16.8	NA	19.7	18.4	18.2	21.2	19.2	17.17	17.2	16.83	17	21.2	20.2	17.2	17.3	17.3	17.1
TOTAL DISS. SOLIDS	mg/L	1840	966	608	26,700	3,832	1,200	583	7100	24000	20500	1260	1214	366	377	29,000	30,600	3,204	2,997
TOTAL SUSP. SOLIDS	mg/L	NA	NA	NA				NA	NA	NA	NA	NA	NA						
TURBIDITY	NTU	0.2	0.7	2.6	0.2	0.2	0.3	0.55	1.9	0.1	0.2	0.1	0.15	0.1	0.5	1.3	3	55	50
TURBIDITY (FIELD)	NTU	0.59	0.7	0.62	0.85	0.88	0.7	2.48	1	0.56	1	0.92	1	0.86	0.7	0.29	0.3	0.82	0.2
VOLATILE ORG. COMPOUNDS (524)	µg/L	ND	ND	ND	ND	A	ND	ND	ND	ND	ND	A	A	ND		ND		A	
ZINC, TOTAL	µg/L	24	ND	ND	ND	ND	ND	ND	ND	340	ND	636	ND	22	ND	ND	ND	ND	ND

Appendix F: Water Shortage Contingency Plan with Resolution of Adoption

The following documents are included in this appendix:

1. Resolution 2015-33, dated July 6, 2015, Adopting an Updated Water Shortage Contingency Plan
2. MCWD Water Shortage Contingency Plan, dated July 6, 2015
3. Resolution 2014-34, dated November 3, 2014, Declaring Water Conservation Stage 3 (included as an example of an implementing resolution)

July 6, 2015

Resolution No. 2015-33
Resolution of the Board of Directors
Marina Coast Water District
Adopting an Updated Water Shortage Contingency Plan

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District ("MCWD"), at a regular meeting duly called and held on July 6, 2015, at 211 Hillcrest Avenue, Marina, California as follows:

WHEREAS, Section 10632 of the California Water Code requires the Marina Coast Water District to maintain a Water Shortage Contingency Plan within its Urban Water Management Plan; and,

WHEREAS, the District maintains a Water Shortage Contingency Plan and desires to update said plan in accordance with the Water Code and provide a guidance document for management of water shortages within the District; and,

WHEREAS, due to ongoing historic drought conditions, the District desires to incorporate current mandatory water conservation measures into an updated Water Shortage Contingency Plan.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Marina Coast Water District does hereby:

1. Approve and adopt the attached Water Shortage Contingency Plan, and,

2. Authorize the Interim General Manager to file the Water Shortage Contingency Plan with the California Department of Water Resources.

PASSED AND ADOPTED on July 6, 2015 by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes:	Directors	Shriner, Moore, Lee, Le
Noes:	Directors	None
Absent:	Directors	Gustafson
Abstained:	Directors	None

Peter Le

Peter Le, Vice President

ATTEST:

Bill Kocher, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2015-33 adopted July 6, 2015.

Bill Kocher, Secretary

MARINA COAST WATER DISTRICT
WATER SHORTAGE CONTINGENCY PLAN

1.0 INTRODUCTION AND BACKGROUND

This Water Shortage Contingency Plan is developed in compliance with California Water Code Section 10632. Requirements of subsections (a)(1)-(a)(9) and (b) are identified below and are accompanied by the required elements and information.

The Marina Coast Water District (MCWD) obtains its water supply from the Salinas Valley Groundwater Basin (SVGB). The SVGB is not adjudicated and provides water for growers, municipalities and other municipal and industrial uses in the Salinas Valley. Due to cumulative basin pumping, coastal aquifers are experiencing seawater intrusion. MCWD continues to work with Monterey County Water Resources Agency (MCWRA) in developing plans to coordinate and encourage preservation of the SVGB aquifers by all municipal and agricultural users.

In 2005, MCWD interconnected its two service areas, Central Marina and the Ord Community. The interconnection has improved system-wide reliability, making maximum use of available water storage tanks in the Ord Community and allowing both areas to be served by any of the eight District wells. In 2007, the District consolidated the two systems under a single Public Water System Permit.

The District continues its participation as a member of the Water Awareness Committee of Monterey County (WAC). Through the WAC, representatives from several agencies throughout Monterey County work together coordinating conservation and other water awareness efforts including education programs, information booths for special events and public understanding of Monterey County water challenges and opportunities.

California Water Code Section 10632(a)(3) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies, including but not limited to, a regional power outage, an earthquake or other disaster.

The MCWD developed and adopted an Emergency Response Plan[1] for emergency and disaster occurrences with guidelines and agreements for cooperative efforts with other State and local agencies, as required by the State Water Resources Control Board, Division of Drinking Water (DDW). This Plan contains actions MCWD would initiate in the event of a catastrophic reduction in its water supply.

2.0 STAGES OF ACTION

California Water Code Section 10632(a)(1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply and an outline of specific water supply conditions which are applicable to each stage.

[1] Ordinance 44, adopted in 2007

The MCWD has developed a five-stage Water Conservation Plan that includes two voluntary and three mandatory stages. Table 1 generally describes the various stages. Specific water supply conditions applicable to each stage, referred to as "triggering mechanisms" herein, are discussed in the next section.

Table 1: Water Conservation Stages and Demand Reduction Goals

Stage	Water Shortage Level	Demand Reduction Goal	Type Program
Stage 1	0 – 10%	10% reduction	Voluntary Compliance
Stage 2	>10 - 25%	20% reduction	Voluntary Compliance
Stage 3	>25 - 35%	30% reduction	Mandatory Compliance
Stage 4	>35 – 50%	40% reduction	Mandatory Compliance
Stage 5	>50%	50%+ reduction	Mandatory Compliance
Priorities for use of available water, based on California Water Code Chapter 3 are: 1. Health and Safety - interior residential and fire fighting 2. Commercial, Industrial, and Governmental - maintain jobs & economic base 3. Existing Landscaping - especially trees and shrubs 4. New Demand - projects without permits when shortage declared			

California Water Code Section 10632(a)(2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

This requirement is oriented toward water supply systems that are primarily supplied with surface water and are therefore directly affected by short-term fluctuations in hydrology (i.e., drought conditions). MCWD's current water supply is produced through groundwater pumping from the large SVGB. MCWD supply availability from this basin has not historically varied due to short-term hydrologic conditions. MCWD's wells are located in the Pressure Sub-Area of the SVGB. Within the Pressure Sub-Area, the historic difference between water levels under average and drought conditions is only 10- to 20-feet. The minimum water supply available during the driest three-year sequence is expected to match demands as discussed in the Urban Water Management Plan.

3.0 TRIGGERING MECHANISMS

The SVGB is currently the most important source of water for MCWD. In 2004, the MCWD's groundwater withdrawals of about 4,600 acre-feet accounted for less than one percent (1%) of the estimated basin-wide annual extractions of roughly 550,000 acre-feet. Given this relatively small percentage, MCWD conservation and contingency management activities can play only a small part within the SVGB. The foremost concern in developing appropriate triggers is achieving the maximum practical protection of an adequate long-term water supply of acceptable quality for MCWD customers. To that end, triggering mechanisms should be tied to factors that, directly or indirectly, have the greatest potential effect on the quality and quantity of available groundwater. Two general types of threats could cause MCWD to experience water shortages:

1. Unanticipated catastrophic system failure due to an earthquake, terrorist attack or sudden contamination of water supply, or
2. Chronic system shortage due to seawater intrusion reaching water supply wells in

concentrations such that those wells would have to be removed from service.

In the case of a catastrophic failure, the MCWD would assess the nature and extent of the failure, and the General Manager would identify the appropriate Conservation Stage in accordance with the expected level of water supply shortage. Should shortages be anticipated in amounts beyond fifty percent of normal demands, emergency actions will be taken in accordance with the MCWD's Emergency Response Plan, including enacting emergency ordinances as may be required by MCWD Board of Directors.

The chronic system threat to MCWD's present water supplies is seawater intrusion, which has occurred along the coastal margin of the Salinas Valley in response to historic over-drafting of the basin. Contamination from volatile organic compounds (VOCs) has also affected MCWD wells and could pose additional problems. Although seawater intrusion has not yet affected the deep zone (900-Foot Aquifer) of the SVGB (which is the source of supply for District Wells No.10, 11, 12 and 34), it is possible that continued extractions in the 900-Foot Aquifer could ultimately lead to contamination of these water supplies by seawater. MCWD monitors the rate of seawater intrusion and plans to develop alternative water resources that would be insulated from intrusion. However, it is possible for intrusion to appear in a relatively short time span and reduce overall supplies available. Consequently, the MCWD has structured this Water Shortage Contingency Plan with the primary goal of reducing water demands to allow time for alternative water supply measures, including the drilling of alternate wells in areas unaffected by intrusion and/or contamination. A specific triggering mechanism for various levels of conservation is tied to concentrations of chlorides in MCWD wells and possible concentrations of VOCs, such as trichloroethylene (TCE) which was previously observed at low levels in Well No. 9 (no longer in service) in Central Marina and is occasionally detected at Wells No. 29, 30 and 31 in the Ord Community. Chloride concentration is directly related to the seawater intrusion problem, and both parameters (chloride and VOCs) are related to the overall basin viability as a secure source of water supply.

Chloride concentration is a key indicator of water quality degradation due to seawater intrusion. Tests for statistically significant changes in chloride concentrations assist in the detection of the earliest stages of intrusion and are appropriate indicators of a water supply emergency. In addition, MCWD currently monitors its Ord Community wells for the presence of TCE and other organic compounds, and works with the U.S. Army regarding the Army's groundwater cleanup actions in the Ord Community.

Climate conditions are monitored by the State of California and by Monterey County. Monterey County specifically monitors water levels in the Salinas Valley Groundwater Basin. During prolonged or extended periods of drought, the State of California, acting through the Legislature, the State Water Resources Control Board (SWRCB) and/or the Department of Water Resources may enact rules or legislation directing urban water suppliers to implement demand reduction measures. Similarly, the County of Monterey, acting through the Board of Supervisors and/or the Monterey County Water Resources Agency may enact rules or ordinances directing urban water suppliers to implement demand reduction measures. Such legislation, rules or ordinances shall be considered as triggering mechanisms under this Plan.

TRIGGERING MECHANISMS FOR CONSERVATION STAGES

These Triggering mechanisms shall be interpreted as guidelines and are summarized in Table 2. The General Manager and/or Board of Directors may impose any of the following conservation stages based upon facts and circumstances which may not have been otherwise anticipated in this plan.

Table 2 Conservation Level Triggering Mechanisms

Conservation Stage and Water Shortage Level	Triggering Mechanism
Stage One 0-10% Water Shortage Voluntary Compliance	1) system malfunction resulting in up to 10% shortage 2) increase in chlorides which do not threaten to exceed drinking water quality standard 3) increase in VOC concentrations which do not threaten to exceed standards with blending 4) directive by the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions
Stage Two >10-25% Water Shortage Voluntary Compliance	1) system malfunction resulting in greater than10% shortage 2) increase in chlorides which may threaten to exceed drinking water quality standard 3) increase in VOC concentrations which do not threaten to exceed standards with blending 4) directive by the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions
Stage Three >25-35% Water Shortage Mandatory Compliance	1) system malfunction resulting in greater than 25% shortage 2) increase in chlorides which are expected to exceed drinking water quality standard 3) increase in VOC concentrations which do not threaten to exceed standards with blending or when remaining capacity is reduced by up to 25% 4) directive by the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions
Stage Four >35-50% Water Shortage Mandatory Compliance	1) system malfunction resulting in greater than 35% shortage 2) increase in chlorides which are expected to exceed drinking water quality standard 3) increase in VOC concentrations which do not threaten to exceed standards with blending or when remaining capacity is reduced more than 35% 4) directive by the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions
Stage Five >50% Water Shortage Mandatory Compliance	1) system malfunction resulting in greater than 50% shortage 2) increase in chlorides which are expected to exceed drinking water quality standard

	3) increase in VOC concentrations which do not threaten to exceed standards with blending or when remaining capacity is reduced more than 50% 4) directive by the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions

STAGE 1 Triggers: Up to 10% Water Supply Shortage

Stage 1 conservation measures may be called for as a result of malfunction of all or portions of the water system that reduces supplies by up to 10% on a daily, peak seasonal or annual basis. It also may be called due to prolonged drought conditions that result in legislation, rules or ordinances enacted by the State of California and/or the County of Monterey, and/or the determination that there is a need to focus public attention on water conservation.

Further triggering could also be based on:

1) detection of a statistically significant increase in chloride concentrations but where such concentrations do not threaten to exceed the DDW "Upper Level" secondary (aesthetics) drinking water standard currently set at 500 mg/l at the well(s) in question, or

2) detection of a statistically significant increase in VOC concentrations but where such concentrations do not threaten to exceed the primary drinking water maximum contaminant level (MCL) for each VOC at the well(s) in question and/or blending of this supply with other well supplies cannot maintain a distribution system concentration(s) below these standards.

STAGE 2 Triggers: >10% to 25% Water Supply Shortage

Stage 2 conservation measures may be called for due to malfunction or failure of all or portions of the water system that reduces supplies by greater than 10% on a daily, peak seasonal or annual basis. It also may be called due to prolonged drought conditions that result in legislation, rules or ordinances enacted by the State of California and/or the County of Monterey, and/or the determination that there is a need to focus public attention on water conservation.

Further triggering could also be based on:

1) detection of a statistically significant increase in chloride concentrations where such concentrations may threaten to exceed the DDW "Upper Level" secondary (aesthetics) drinking water standard currently set at 500 mg/l at the well(s) in question, or

2) detection of a statistically significant increase in VOC concentrations, but where such concentrations do not threaten to exceed the primary drinking water MCL for each VOC at the well(s) in question and/or blending of this supply with other well supplies cannot maintain a distribution system concentration(s) below these standards.

STAGE 3 Triggers: >25% to 35% Water Supply Shortage

Stage 3 conservation measures may be called for due to malfunction or failure of all or portions of the water system that reduces supplies by greater than 25% on a daily, peak seasonal or annual basis. It also may be called due to prolonged drought conditions that result in legislation, rules or ordinances enacted by the State of California and/or the County of Monterey.

Further triggering could also be based on:

1) detection of an increase in chloride concentrations where such concentrations are expected to exceed the DDW "Upper Level" secondary (aesthetics) drinking water standard currently set at 500 mg/l at the well(s) in question, or

2) detection of VOC concentrations, but where such concentrations do not threaten to exceed the primary drinking water MCL for each VOC, and/or blending of this supply with other well supplies cannot maintain a distribution system concentration(s) below these standards, and/or when gross reduced well production of up to 25% is necessary to maintain adequate water quality.

STAGE 4 Triggers: >35% to 50% Water Supply Shortage

Stage 4 conservation measures may be called for due to malfunction or failure of all or portions of the water system that reduces supplies by greater than 35% on a daily, peak seasonal or annual basis. It also may be called due to prolonged drought conditions that result in legislation, rules or ordinances enacted by the State of California and/or the County of Monterey.

Further triggering could also be based on:

1) detection of an increase in chloride concentrations where such concentrations are expected to exceed the DDW "Upper Level" secondary (aesthetics) drinking water standard currently set at 500 mg/l at the well(s) in question, or

2) detection of VOC concentrations, but where such concentrations do not threaten to exceed the primary drinking water MCL for each VOC, and/or blending of this supply with other well supplies cannot maintain a distribution system concentration(s) below these standards, and/or gross reduced well production of up to 35% is necessary to maintain adequate water quality.

STAGE 5 Triggers: >50% Water Supply Shortage

Stage 5 conservation measures may be called for due to in malfunction or failure of all or portions of the water system that reduces supplies by 50 % or more on a daily, peak seasonal or annual basis. It also may be called due to prolonged drought conditions that result in legislation, rules or ordinances enacted by the State of California and/or the County of Monterey.

Further triggering could also be based on:

1) detection of an increase in chloride concentrations where such concentrations are expected to exceed the short term primary drinking water standard of 600 mg/l at

the well(s) in question, or

2) detection of VOC concentrations but where such concentrations do not threaten to exceed the primary drinking water MCL for each VOC, and /or blending of this supply with other well supplies cannot maintain a distribution system concentration(s) below these standards, and/or gross reduced well production of over 50% is necessary to maintain adequate water quality.

4.0 CONSERVATION REQUIREMENTS AND APPEAL PROCEDURES

The following are MCWD's conservation requirements by customer type and stage and the appeal procedures. These requirements and procedures are adopted as part of MCWD's Water Shortage Contingency Plan.

STAGE 1 Actions: Voluntary – Minimal Conservation Requirement, 10% Demand Reduction Goal

MCWD shall:

- notify all customers of the water shortage
- mail information to every customer and reasonably available potential water user explaining the importance of significant water use reductions
- provide technical information to customers on ways to improve water use efficiency
- conduct media campaign to remind consumers of the need to save water
- publicize the showerhead, toilet rebate and other efficiency programs
- enforce mandatory restrictions on water waste as provided in MCWD Code, Chapter 3

Stage 1 actions shall apply under any triggering event.

STAGE 2 Actions: Voluntary – Moderate Conservation Requirement, 20% Demand Reduction Goal

In addition to the actions listed in Stage 1, MCWD shall call for voluntary reductions of up to 25% for each connection based on the average use during a base period proposed by the Water Conservation Commission and adopted by MCWD's Board of Directors. Stage 2 actions shall apply under any triggering event.

STAGE 3 Actions: Mandatory – Severe Conservation Requirement, 30% Demand Reduction Goal

In addition to the actions listed in Stage 1 and 2, MCWD shall establish mandatory annual allotments for each connection based on the average use of all connections within that category during a base period proposed by the Water Conservation Commission and adopted by MCWD's Board of Directors. When Stage 3 use reductions become necessary, administration and enforcement of the District's mandatory restrictions on water waste become the major focus of MCWD. If necessary, additional temporary personnel may be hired and special meetings of the Water Conservation Commission and /or Board of Directors may be scheduled.

Stage 3 actions shall be applied based upon triggering event, as noted below.

1. Each water service connection shall receive an allotted quantity of water, typically specified in hundred cubic feet (hcf) units per billing cycle. The Board of Directors may elect not to impose this action in response to a drought if the supply reduction trigger is not met.

2. The Board of Directors may pass an emergency ordinance increasing the usage rate for potable water consumed over a connections allocation, and/or in order to ensure stable revenues for operation and maintenance of MCWD. The Board of Directors may elect not to impose this action if water service allocations are not imposed.

3. As individual customers are notified of allotments, it is expected that many requests for special consideration will be received. These petitions must be processed rapidly, efficiently and fairly. Every application for waiver must be heard, evaluated and acted upon by the Water Conservation Commission as rapidly as possible. Every action by the Water Conservation Commission shall be referred to MCWD's Board of Directors for consideration. The procedures for appeal are defined, below. Appeals shall be considered under any Stage in which mandatory restrictions or allocations are imposed.

4. No building permits will be issued or meters installed for new accounts that had not received building permits before the "Severe Shortage" was declared. The Board of Directors may elect not to impose this action in response to a drought if the supply reduction trigger is not met.

5. The following water use restrictions shall be imposed.

Stage	Type Use	Restriction	Applies
3	Existing, Irrigated Landscapes Commercial Complexes, Residential Units, Public Parks, and Athletic Fields	Landscape watering with recycled water or other non-potable water sources may continue without restriction. Landscape watering with potable water shall be subject to the following limits: (1) Landscape watering using sprinklers or automated irrigation systems is permitted only two days per week, Wednesdays and Saturdays, before 10:00 a.m. or after 5:00 p.m. The Board of Directors may choose to assign different watering days to specific areas if daily system-wide usage limits are required. (2) With on-site supervision, including supervision by a professional gardener/landscaper, landscapes may be manually watered with drip irrigation, a soaker hose, a handheld hose with a positive action shut-off nozzle, or a watering can/bucket at any time, on any day, not more than 2 days per week. (3) Irrigation of ornamental turf in roadway medians and parkway strips is prohibited. Plantings of trees, shrubs, ornamental grasses, and ground covers with low water demand, watered by drip irrigation, are encouraged.	During both Water Shortage and Drought Conditions
3	New, Irrigated Landscapes Commercial Complexes, Residential units, Public Parks, and Athletic Fields	Landscape watering with recycled water or other non-potable water sources may continue without restriction. Landscape watering with potable water shall be subject to the following limits: (1) Landscape watering is permitted three (3) days a week to maintain adequate growth on newly installed landscapes, for a period generally up to five (5) weeks. Watering days for new landscapes are Monday, Wednesday, and Saturday. Property owners must notify the District of the address where new landscape is installed and the date of installation. (2) Following the initial establishment period, landscape watering using sprinklers or automated irrigation systems is permitted only on the days associated with the current conservation stage in effect.	During both Water Shortage and Drought Conditions

Stage	Type Use	Restriction	Applies
3	Golf Courses	Landscape watering with recycled water or other non-potable water sources may continue without restriction. Landscape watering with potable water shall be subject to the following limits: (1) All landscape out-of-play areas such as may be found around a clubhouse or entryway shall follow the general landscape irrigation restrictions. (2) All in-play areas may be irrigated during the standard watering hours (before 10:00 a.m. or after 5:00 p.m.). (3) Course operators shall implement a plan to achieve a twenty (20) percent reduction in monthly irrigation water use.	During both Water Shortage and Drought Conditions
3	Hotels, motels and bed and breakfasts	Hotels, motels and B&B's must offer and clearly notify guests of a "limited linen/towel exchange" program.	During both Water Shortage and Drought Conditions
3	Swimming pools, hot tubs	Initially filling new and existing swimming pools is prohibited. Draining and refilling existing swimming pools is permitted only if repairing a pool leak or repairing, maintaining or replacing a pool component that has become hazardous. All pools and tubs shall be covered when not in use to reduce evaporation.	During both Water Shortage and Drought Conditions
3	Decorative fountains, ponds and waterfalls over 20 gallons in size	Initially filling new and existing decorative fountains, ponds and waterfalls is prohibited. Adding water to make up for evaporative loss is allowed only for ponds and fountains that serve as aquarium tanks for fish or aquatic animals.	During both Water Shortage and Drought Conditions
3	Industrial and Commercial	Reduction of water use by any means is encouraged. Compliance with mandatory demand reduction measures is required for outdoor water uses including landscape irrigation, swimming pools, and vehicle washing.	During both Water Shortage and Drought Conditions
3	Vehicle and Equipment Washing	Washing of vehicles and mobile equipment (e.g., washing vehicle at a residence) is permitted on any day, any time of the day, with the use of a positive action shut-off nozzle. All customers are encouraged to only wash those vehicles as is necessary for health and safety utilizing commercial car wash facilities.	During both Water Shortage and Drought Conditions

Stage	Type Use	Restriction	Applies
3	Heavy Construction	The use of potable water for dust control shall be reduced to the greatest extent possible.	During both Water Shortage and Drought Conditions

STAGE 4 Actions: Mandatory – Critical Conservation Requirement, 40% Demand Reduction Goal

In addition to the actions listed in the previous stages, MCWD shall establish allotments based upon a 35% -50% curtailment of water use. All new and previous appeals for waiver shall be evaluated by field audit and shall be reheard by the Water Conservation Commission, if necessary, upon recommendation of MCWD staff. Water rates may be increased by the Board of Directors.

The following water use restrictions shall be imposed.

Stage	Type Use	Restriction	Applies
4	Existing, Irrigated Landscapes Commercial Complexes, Residential units, Public Parks, and Athletic Fields	Landscape watering with recycled water or other non-potable water sources may continue without restriction. Landscape watering with potable water shall be subject to the following limits: (1) Landscape watering using sprinklers or automated irrigation systems is permitted only one day per week, on Wednesdays before 10:00 a.m. or after 5:00 p.m. The Board of Directors may choose to assign different watering days to specific areas if daily system-wide usage limits are required. (2) With on-site supervision, including supervision by a professional gardener/landscaper, landscapes may be manually watered with drip irrigation, a soaker hose, a handheld hose with a positive action shut-off nozzle, or a watering can/bucket at any time, on any day, not more than 1 day per week. (3) Irrigation of ornamental turf in roadway medians and parkway strips is prohibited. Plantings of trees, shrubs, ornamental grasses, and ground covers with low water demand, watered by drip irrigation, are encouraged.	During both Water Shortage and Drought Conditions
4	New, Irrigated Landscapes	Landscape watering with recycled or other non-potable water sources water may continue without restriction.	During both Water

Stage	Type Use	Restriction	Applies
	Commercial Complexes, Residential units, Public Parks, and Athletic Fields	The installation of new landscapes irrigated with potable water is discouraged. Landscape watering with potable water shall be subject to the following limits: (1) Landscape watering is permitted three (3) days a week to maintain adequate growth on newly installed landscapes, for a period generally up to five (5) weeks. Watering days for new landscapes are Monday, Wednesday, and Saturday. Property owners must notify the District of the address where new landscape is installed and the date of installation. (2) Following the initial establishment period, landscape watering using sprinklers or automated irrigation systems is permitted only on the days associated with the current conservation stage in effect.	Shortage and Drought Conditions
4	Golf Courses	Landscape watering with recycled water or other non-potable water sources may continue without restriction. Landscape watering with potable water shall be subject to the following limits: (1) All landscape out-of-play areas such as may be found around a clubhouse or entryway shall follow the general landscape irrigation restrictions. (2) All in-play areas may be irrigated during the standard watering hours (before 10:00 a.m. or after 5:00 p.m.). Course operators shall implement a plan to achieve a thirty (30) percent reduction in monthly irrigation water use.	During both Water Shortage and Drought Conditions
4	Hotels, motels and bed and breakfasts	Hotels, motels and B&B's must limit linen/towel changes to once every two (2) nights or for the entire stay, whichever is shorter, except for health and safety.	During both Water Shortage and Drought Conditions
4	Swimming pools, hot tubs	Initially filling new and existing swimming pools is prohibited. Draining and refilling existing swimming pools is permitted only if repairing a pool leak or repairing, maintaining or replacing a pool component that has become hazardous. All pools and tubs shall be covered when not in use to reduce evaporation.	During both Water Shortage and Drought Conditions

Stage	Type Use	Restriction	Applies
4	Decorative fountains, ponds and waterfalls over 20 gallons in size	Filling or refilling new and existing decorative fountains, ponds and waterfalls is prohibited. Adding water to make up for evaporative loss is allowed only for ponds and fountains that serve as aquarium tanks for fish or aquatic animals. Owners are encouraged to move fish and aquatic animals to indoor tanks less subject to evaporation.	During both Water Shortage and Drought Conditions
4	Vehicle and Equipment Washing	Washing of vehicles and mobile equipment (e.g., washing vehicle at a residence) is permitted on any day, any time of the day, with the use of a positive action shut-off nozzle. All customers are encouraged to only wash those vehicles as is necessary for health and safety utilizing commercial car wash facilities.	During both Water Shortage and Drought Conditions
4	Industrial and commercial	Reduction of water use by any means is encouraged. The Board of Directors may establish mandatory use reduction targets, if needed. Compliance with mandatory demand reduction measures is required for outdoor water uses including landscape irrigation, swimming pools, and vehicle washing.	During both Water Shortage and Drought Conditions
4	Heavy Construction	The use of potable water for dust control shall be reduced to the greatest extent possible.	During both Water Shortage and Drought Conditions

STAGE 5 Actions: Mandatory – Emergency Conservation Requirement, 50% Demand Reduction Goal

Appropriate 50% water shortage allotments shall be calculated and noticed to customers. Appropriate administration and enforcement of this stringent program shall be the highest priority of MCWD activity. All resources of MCWD will be directed toward improvement and increase of water supply to the system. Water rates may be further increased by the Board of Directors.

The following water use restrictions shall be imposed:

Stage	Type Use	Restriction	Applies
5	Existing, Irrigated Landscapes Commercial Complexes, Residential units, Public Parks, and Athletic Fields	Landscape watering with recycled water or other non-potable water sources may continue without restriction. Landscape watering with potable water is prohibited.	During both Water Shortage and Drought Conditions
5	New, Irrigated Landscapes Commercial Complexes, Residential units, Public Parks, and Athletic Fields	Landscape watering with recycled water or other non-potable water sources may continue without restriction. The installation of new landscapes irrigated with potable water is prohibited during Conservation Stage 5. New landscapes installed prior to declaration of Conservation Stage 5 may water two (2) days a week to maintain adequate growth on newly installed landscapes, for the remainder of the initial five (5) week establishment period. Watering days for new landscapes are Wednesday and Saturday. Property owners must notify the District of the address where new landscape is installed and the date of installation	During both Water Shortage and Drought Conditions
5	Golf Courses	Landscape watering with recycled water or other non-potable water sources may continue without restriction. Landscape watering with potable water shall be subject to the following limits: (3) All landscape out-of-play areas such as may be found around a clubhouse or entryway shall follow the general landscape irrigation restrictions. (4) All in-play areas may be irrigated during the standard watering hours (before 10:00 a.m. or after 5:00 p.m.). Course operators shall implement a plan to achieve a forty (40) percent reduction in monthly irrigation water use.	During both Water Shortage and Drought Conditions
5	Hotels, motels and bed and breakfasts	Hotels, motels and B&B's must limit linen/towel changes to once every three (3) nights or for the entire stay, whichever is shorter, except for health and safety.	During both Water Shortage and Drought Conditions

Stage	Type Use	Restriction	Applies
5	Swimming pools, hot tubs	Filling new swimming pools and/or draining and refilling existing swimming pools is prohibited. All pools and tubs shall be covered when not in use to reduce evaporation. Contact District conservation staff if an existing swimming pool must be repaired and refilled during Conservation Stage 5.	During both Water Shortage and Drought Conditions
5	Decorative fountains, ponds and waterfalls over 20 gallons in size	Filling or refilling new and existing decorative fountains, ponds and waterfalls is prohibited. Adding water to make up for evaporative loss is allowed only for ponds and fountains that serve as aquarium tanks for fish or aquatic animals. Owners are encouraged to move fish and aquatic animals to indoor tanks less subject to evaporation.	During both Water Shortage and Drought Conditions
5	Vehicle and Equipment Washing	Washing of vehicles and mobile equipment is prohibited. Only commercial facilities with water recycling systems may be used.	During both Water Shortage and Drought
5	Industrial and commercial	Reduction of water use by any means is encouraged. The Board of Directors may establish mandatory use reduction targets, if needed. Compliance with mandatory demand reduction measures is required for outdoor water uses including landscape irrigation, swimming pools, and vehicle washing.	During both Water Shortage and Drought Conditions
5	Heavy Construction	The use of potable water for dust control shall be reduced to the greatest extent possible. The District may establish mandatory construction water budgets, if needed.	During both Water Shortage and Drought Conditions

Appeals Procedure

1. Any person who wishes to appeal a customer classification or allotment shall do so in writing by using the forms provided by MCWD.

2. Appeals will be reviewed by the District staff. Site visits may be scheduled if required.

3. A condition of granting an appeal shall be that all plumbing fixtures or irrigation systems be replaced or modified for maximum water conservation.

4. Examples of appeals that may be considered are as follows:

a. Substantial medical requirements.

b. Commercial/Industrial/Institutional accounts where any additional water supply reductions will result in unemployment or inappropriate hardship, after confirmation by the MCWD staff that the account has instituted all applicable water efficiency improvements.

5. In the event an appeal is requested for irrigation of trees or vegetation, MCWD staff may use the services of a qualified consultant in determining the validity of the request. Costs for such consulting services shall be paid by the party or parties making the request.

6. District staff shall refer all appeals to the Water Conservation Commission. The Water Conservation Commission may refer appeals to MCWD's Board of Directors.

7. If the Water Conservation Commission and the applicant are unable to reach accord, then the appeal shall be heard by the MCWD Board of Directors, who will make the final determination.

8. All appeals shall be reported monthly to the Board as a part of the Water Supply Report.

5.0 MANDATORY PROHIBITIONS ON WATER USE

California Water Code Section 10632(a)(4) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning. Section 10632(b) Commencing with the urban water management plan update due December 31, 2015, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code. Section 10632(a)(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

The MCWD adopted a "Water Waste/Water Conservation" Ordinance (Ordinance No. 20) in April of 1990, which prohibits water waste and promotes water conservation. Since the initial adoption, revisions were adopted by the Board of Directors on April 14, 1992 and October 4, 1993. The ordinance has most recently been revised on and now appears as Chapter 3.36 of MCWD Code. Section 3.36.030, Mandatory Restrictions on Water Waste, details the applicable prohibitions of use. These prohibitions are in force at all times. Additional water use reduction methods available to water users or MCWD to adopt in order to comply with use reductions during the more restrictive stages of water shortages (Stages 4 and 5) include, but are not limited to, the following:

a) elimination of turf irrigation with potable supplies;

b) restriction of landscape watering to shrubs and trees by hand or drip irrigation only;

c) elimination of vehicle washing except in car washes that have water recirculation

systems;

d) prohibition on filling or topping off of swimming pools where damage to pumping equipment will not result;

e) elimination of the issuance of construction meters;

f) shut-off of dedicated landscape irrigation meters; and

g) moratorium on provision of new supply meters.

If water use reductions called for in Stages 3-5 are not achieved, the MCWD may amend this Water Shortage Contingency Plan to make any of the above available conservation tactics mandatory.

6.0 PENALTIES OR CHARGES FOR EXCESSIVE USE

California Water Code Section 10632(a)(6) Penalties or charges for excessive use.

Section 3.36.050 of MCWD Code provides for a system of violations and notices. Violation of provisions of this Water Shortage Contingency Plan shall be enforced under Section 3.36.050 of MCWD Code.

7.0 REVENUE AND EXPENDITURE IMPACTS

California Water Code Section 10632(a)(7) – An analysis of the impacts of each of the actions and conditions described in subdivisions (a)(1) to (a)(6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

Enforcement of the Water Shortage Contingency Plan is assumed to be covered by enhanced revenues from application of excess use charges and penalties. MCWD reserves may be used temporarily should revenues remain below expectations. MCWD's rate structure is based upon adopted rate ranges and allows for modification of rates on short notice within those ranges. MCWD retains the ability to modify rates to meet all legitimate MCWD needs. Revenue impacts from water sales losses are estimated as follows, based upon Tier 2 rates of $2.79/hcf in Central Marina and $3.27/hcf in the Ord Community, and recognizing approximately 10% of MCWD's customers are not metered as of 2013.

Table 3: Potential Revenue Impacts of Implementation of WSCP

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Assumed Reduction	10 percent	20 percent	30 percent	40 percent	50 percent
Water Sales Loss	$579,804	$1,159,607	$1,739,411	$2,319,215	$2,899,018
Revenue Source: Pumping savings at $135/af	$57,807	$115,614	$173,421	$231,228	$289,035
Net Revenue Reduction	$521,997	$1,043,993	$1,565,990	$2,087,987	$2,609,983

Percent of Total Annual Water System Revenue	6%	12%	18%	24%	30%

* Table based on FY2012-13 water sales, $8,839,268 for 4,282 acre-feet

8.0 WATER SHORTAGE CONTINGENCY PLAN IMPLEMENTATION

California Water Code Section 10632 (a)(8) A draft water shortage contingency resolution or ordinance.

MCWD Board of Directors adopted the Water Shortage Contingency Plan in Resolution No. 2014-__, which enables implementation of the Plan upon advice of staff based in part on the triggering mechanisms discussed herein. The resolution is attached as Appendix A to this Plan.

Chapter 3.36.035 of the MCWD Code of Ordinances[2] provides for enforcement of the current Water Shortage Contingency Plan. Chapter 2.09 of the Code of Ordinances[3] contains a sample ordinance which may be adopted in the event of a local emergency, including a water shortage.

9.0 WATER USE MONITORING PROCEDURES

California Water Code Section 10632* (a)(9) *A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency plan.

Normal Monitoring Procedure:

In normal water supply conditions, production figures are recorded daily by MCWD O&M personnel. Totals are reported monthly to the O&M Superintendent. Production figures are reported in the Annual Report to the Drinking Water Program, which is submitted to the SWRCB Division of Drinking Water each year.

Stage 1 and 2 Water Shortages

During a Stage 1 or 2 water shortage, daily production figures will be reported to the O&M Superintendent. The O&M Superintendent compares the weekly production to the target weekly production to verify that the reduction goal is being met. Monthly reports are forwarded to the District Engineer and the General Manager, the Water Conservation Commission and the MCWD Board of Directors. If reduction goals are not met, the General Manager may notify the Board of Directors so that corrective action can be taken.

Stage 3 and 4 Water Shortages

During a Stage 3 or 4 water shortage, the procedure listed above will be followed, with the addition of a daily production report to the General Manager and weekly reports to the Water Conservation Commission and Board of Directors. Special meetings may be called for administration of the

[2] Ordinance 41, adopted in 2005
[3] Ordinance 44, adopted in 2007

Water Shortage Contingency Plan.

Stage 5 Water Shortage

During a Stage 5 shortage, production figures will be reported to the O&M Superintendent hourly, and to the General Manager daily. Reports will also be provided to MCWD's Board of Directors, the Monterey County Office of Emergency Services, and land use jurisdictions located within MCWD's service territory.

November 3, 2014

Resolution No. 2014-34
Resolution of the Board of Directors
Marina Coast Water District
Declaring Water Conservation Stage 3 as Required by the State Water Resource Control Board's Emergency Mandatory Water Conservation Regulations

RESOLVED by the Board of Directors ("Directors") of the Marina Coast Water District ("MCWD"), at a regular meeting duly called and held on November 3, 2014, at 211 Hillcrest Avenue, Marina, California as follows:

WHEREAS, the State Water Resources Control Board (SWRCB) adopted Mandatory Water Conservation Regulations (Emergency Regulations), which went into effect on July 29, 2014; and,

WHEREAS, the District supplies more than 3,000 acre-feet of water annually and, therefore, the District is classified as an "urban water supplier" pursuant to Water Code Section 10617; and,

WHEREAS, the Emergency Regulations specifically require the following:

> To promote water conservation, each urban water supplier shall implement all requirements and actions of the stage of its water shortage contingency plan that imposes mandatory restrictions on outdoor irrigation of ornamental landscapes or turf with potable water.

WHEREAS, on November 3, 2014, the District adopted a Water Shortage Contingency Plan (District Plan) pursuant to Water Code Section 10632; and,

WHEREAS, under the District Plan, mandatory restrictions on outdoor irrigation of ornamental landscapes or turf with potable water are not required until Stage 3; and,

WHEREAS, the District' water supply is not actually experiencing a severe water shortage; and,

WHEREAS, the Emergency Regulations require the Board of Directors to declare a Water Conservation Stage 3 even though the District is not actually experiencing a severe water shortage.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Marina Coast Water District does hereby do the following:

1. Declare a Water Conservation Stage 3 under the District Plan as mandated by the SWRCB.

2. Find that since the District's water supply is not actually experiencing a severe water shortage, the following Stage 3 requirements shall **not** be implemented at this time, but shall be subject to periodic review by the Board of Directors:

a. "Each water service connection shall receive an allotted quantity of water, typically specified in hundred cubic feet (hcf) units per billing cycle."

b. "No building permits will be issued or meters installed for new accounts that had not received building permits before the 'Severe Shortage' was declared."

3. The Stage 3 mandatory water use restrictions set forth in the District Plan's restrictions table for Stage 3 shall be implemented effective with the adoption of this Resolution.

4. Direct staff to notify all customers in writing of this decision within 10 days of the date of adoption.

PASSED AND ADOPTED on November 3, 2014 by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes: Directors Le, Shriner, Moore

Noes: Directors None

Absent: Directors Gustafson, Lee

Abstained: Directors None

Thomas P. Moore, President

ATTEST:

Brian C. Lee, Deputy Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2014-34 adopted November 3, 2014.

Brian C. Lee, Deputy Secretary

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Appendix G: DWR Urban Water Management Plan Checklist

Checklist arranged by Water Code Section

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10608.20(b)	Retail suppliers shall adopt a 2020 water use target using one of four methods.	Baselines and Targets	Section 5.7 and App E	**3.4**
10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Chapter 5 and App E	**3.4**
10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.7.2	**3.4**
10608.24(a)	Retail suppliers shall meet their interim target by December 31, 2015.	Baselines and Targets	Section 5.8 and App E	**3.4**
10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Section 5.8.2	**N/A**
10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets.	Plan Adoption, Submittal, and Implementation	Section 10.3	**1.2**
10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Section 5.1	**N/A**
10608.40	Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form.	Baselines and Targets	Section 5.8 and App E	**3.4** **App H**
10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 2.1	**1.4** **App A**

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Section 2.5.2	**1.3**
10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.4	**4.2** **4.4**
10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.	Plan Adoption, Submittal, and Implementation	Section 10.2.1	**1.3** **App D**
10621(d)	Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.	Plan Adoption, Submittal, and Implementation	Sections 10.3.1 and 10.4	**1.4**
10631(a)	Describe the water supplier service area.	System Description	Section 3.1	**2.1**
10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3	**2.2**
10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4	**2.3**
10631(a)	Provide population projections for 2020, 2025, 2030, and 2035.	System Description	Section 3.4	**2.3**
10631(a)	Describe other demographic factors affecting the supplier's water management planning.	System Description	Section 3.4	**2.4**
10631(b)	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035.	System Supplies	Chapter 6	**4.1** **4.2** **4.4**
10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2	**4.1** **4.2**

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10631(b)(1)	Indicate whether a groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 6.2.2	**4.2**
10631(b)(2)	Describe the groundwater basin.	System Supplies	Section 6.2.1	**4.2**
10631(b)(2)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.2	**4.2**
10631(b)(2)	For unadjudicated basins, indicate whether or not the department has identified the basin as overdrafted, or projected to become overdrafted. Describe efforts by the supplier to eliminate the long-term overdraft condition.	System Supplies	Section 6.2.3	**4.2**
10631(b)(3)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Section 6.2.4	**4.2**
10631(b)(4)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Sections 6.2 and 6.9	**4.2**
10631(c)(1)	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Water Supply Reliability Assessment	Section 7.1	**5.1** **5.2**
10631(c)(1)	Provide data for an average water year, a single dry water year, and multiple dry water years	Water Supply Reliability Assessment	Section 7.2	**5.1**
10631(c)(2)	For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source.	Water Supply Reliability Assessment	Section 7.1	**4.2.5** **4.2.6**
10631(d)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.7	**4.3**
10631(e)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2	**3.1** **3.2** **3.3**

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10631(e)(3)(A)	Report the distribution system water loss for the most recent 12-month period available.	System Water Use	Section 4.3	**6.2.5 App J**
10631(f)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Sections 9.2 and 9.3	**6.2**
10631(f)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Sections 9.1 and 9.3	**N/A**
10631(g)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years.	System Supplies	Section 6.8	**4.4**
10631(h)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6	**4.6**
10631(i)	CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been found to be in full compliance with the CUWCC MOU.	Demand Management Measures	Section 9.5	**N/A**
10631(j)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) – if any - with water use projections from that source.	System Supplies	Section 2.5.1	**N/A**
10631(j)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Section 2.5.1	**N/A**
10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.5	**3.3.1**

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10632(a) and 10632(a)(1)	Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage.	Water Shortage Contingency Planning	Section 8.1	**5.5 App F**
10632(a)(2)	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency.	Water Shortage Contingency Planning	Section 8.9	**5.7**
10632(a)(3)	Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies.	Water Shortage Contingency Planning	Section 8.8	**5.5.1 App F**
10632(a)(4)	Identify mandatory prohibitions against specific water use practices during water shortages.	Water Shortage Contingency Planning	Section 8.2	**5.5 App F**
10632(a)(5)	Specify consumption reduction methods in the most restrictive stages.	Water Shortage Contingency Planning	Section 8.4	**5.5 App F**
10632(a)(6)	Indicated penalties or charges for excessive use, where applicable.	Water Shortage Contingency Planning	Section 8.3	**5.5.3 App F**
10632(a)(7)	Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts.	Water Shortage Contingency Planning	Section 8.6	**5.5.4 App F**
10632(a)(8)	Provide a draft water shortage contingency resolution or ordinance.	Water Shortage Contingency Planning	Section 8.7	**App F**
10632(a)(9)	Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis.	Water Shortage Contingency Planning	Section 8.5	**App F**
10633	For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.1	**4.6**
10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	System Supplies (Recycled Water)	Section 6.5.2	**4.6**

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.5.2.2	**4.6**
10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.3 and 6.5.4	**N/A**
10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.5.4	**4.6**
10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	Section 6.5.4	**4.6** **4.4**
10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Section 6.5.5	**4.5.2**
10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.5	**4.5.2**
10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.1	**4.2.4** **4.2.5** **5.2**
10635(a)	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3	**5.1**
10635(b)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 60 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**App F**

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	Plan Preparation	Section 2.5.2	**App D**
10642	Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan.	Plan Adoption, Submittal, and Implementation	Sections 10.2.2, 10.3, and 10.5	**App D**
10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Sections 10.2.1	**App D**
10642	Provide supporting documentation that the plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.1	**App A**
10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4.3	**Transmittal Letter**
10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**Transmittal Letter**
10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2	**Transmittal Letter**
10645	**Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.**	**Plan Adoption, Submittal, and Implementation**	**Section 10.5**	**Transmittal Letter**

Appendix H: Standardized Data Tables and SB X7-7 Verification Form

The following tables are provided, as required by the Department of Water Resources 2015 UWMP Guidebook for Urban Water Suppliers. Only the tables applicable to MCWD are included, as listed below.

DWR Reporting Tables: 2-1, 2-2, 2-3, 2-4, 3-1, 4-1, 4-2, 4-3, 4-4, 4-5, 5-1, 5-2, 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 6-7, 7-1, 7-2, 7-3, 7-4, 8-1, 8-2, 8-3, 8-4, 10-1

SB X7-7 Verification Tables: 0, 1, 2, 3, 4, 4-A, 5, 6, 7, 7-E, 7-F, 8, 9

Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
CA2710017	Marina Coast Water District	7,500	3228.04
	TOTAL	7500	3,228
NOTES:			

Table 2-2: Plan Identification (Select One)		
☑	Individual UWMP	
☐	Regional UWMP (RUWMP) *(checking this triggers the next line to appear)*	
	Select One:	
	☐	RUWMP includes a Regional Alliance
	☐	RUWMP does not include a Regional Alliance
NOTES:		

Table 2-3: Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Day that the Fiscal Year Begins (dd/mm)	
dd/mm	
Units of Measure Used in UWMP (select from Drop down)	
Unit	AF
NOTES:	

Table 2-4 Retail: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name *(Add additional rows as needed)*
Not Applicable
NOTES:

Table 3-1 Retail: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	32,375	40,464	56,648	64,635	70,161	
NOTES:						

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type *(Add additional rows as needed)*	2015 Actual		
Use Drop down list *May select each use multiple times* *These are the only Use Types that will be recognized by the WUEdata online submittal tool*	Additional Description *(as needed)*	Level of Treatment When Delivered *Drop down list*	Volume
Single Family	metered	Drinking Water	968
Multi-Family	flat rate	Drinking Water	206
Multi-Family	metered	Drinking Water	905
Commercial	metered	Drinking Water	327
Industrial	metered	Drinking Water	0
Institutional/Governmental	metered	Drinking Water	156
Landscape	metered	Drinking Water	632
Losses		Drinking Water	34
		TOTAL	3,228
NOTES:			

Table 4-2 Retail: Demands for Potable and Raw Water - Projected						
Use Type *(Add additional rows as needed)*	Additional Description *(as needed)*	Projected Water Use *Report To the Extent that Records are Available*				
Use Drop down list *May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool*		2020	2025	2030	2035	2040-opt
Single Family		1,717	2,728	3,128	3,432	
Multi-Family		1,658	2,351	2,734	2,971	
Commercial		1,220	2,339	2,616	2,645	
Industrial		24	214	250	750	
Institutional/Governmental		276	501	503	508	
Landscape	Municipal/Domestic	275	257	61	64	
Losses		435	467	467	467	
	TOTAL	5604.844	8856.874	9759.495	10837.98	0
NOTES:						

Table 4-3 Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040 *(opt)*
Potable and Raw Water *From Tables 4-1 and 4-2*	3,228	5,605	8,857	9,759	10,838	0
Recycled Water Demand *From Table 6-4*	0	600	1,080	1,359	1,359	0
TOTAL WATER DEMAND	3,228	6,205	9,936	11,118	12,197	0
NOTES:						

Table 4-4 Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss
07/2014	86.1
NOTES: Report based on FY14/15	

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) *Drop down list (y/n)*	No
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc... utilized in demand projections are found.	
Are Lower Income Residential Demands Included In Projections? *Drop down list (y/n)*	Yes
NOTES: Projections for new developments reflect water-conserving fixtures, but no reduction are made for	

Table 5-1 Baselines and Targets Summary
Retail Agency or Regional Alliance Only

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	*1999*	*2008*	*135.25*	*126.13*	*117*
5 Year	*2004*	*2008*	*130.64*		

*All values are in Gallons per Capita per Day (GPCD)

NOTES:

Table 5-2: 2015 Compliance
*Retail Agency or Regional Alliance Only**

Actual 2015 GPCD	2015 Interim Target GPCD	**Optional Adjustments to 2015 GPCD** "0" for adjustments not used *Methodology 8*				Enter *From*	2015 GPCD *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events	Economic Adjustment	Weather Normalization	TOTAL Adjustments	Adjusted 2015 GPCD		
89.01	126.13	0	0	0	0	89.01	89.01	Yes

**All values are in Gallons per Capita per Day (GPCD)*

NOTES:

Update with population check.

Table 6-1 Retail: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type ***Drop Down List*** *May use each category multiple times*	Location or Basin Name	2011	2012	2013	2014	2015
Add additional rows as needed						
Alluvial Basin	Salinas Valley Groundwater Basin, Seaside Subbasin	4046.6	4173.6	4413.3	4025.9	3228.04
	TOTAL	4,047	4,174	4,413	4,026	3,228
NOTES:						

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
☐	There is no wastewater collection system. The supplier will not complete the table below.					
100	Percentage of 2015 service area covered by wastewater collection system *(optional)*					
100	Percentage of 2015 service area population covered by wastewater collection system *(optional)*					
Wastewater Collection			**Recipient of Collected Wastewater**			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? *Drop Down List*	Volume of Wastewater Collected in 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? *Drop Down List*	Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List*
Add additional rows as needed						
MCWD - Marina PS	Metered	1,226	*MRWPCA*	MRWPCA RTP	No	No
MCWD - Ord Flume	Metered	887	*MRWPCA*	MRWPCA RTP	No	No
MCWD - Marina Airport	Estimated	2.2	*MRWPCA*	MRWPCA RTP	No	No
Total Wastewater Collected from Service Area in 2015:		2,115				
NOTES: The Monterey Regional Water Pollution Control Agency (MRWPCA) provides regional wastewater treatment.						

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015

☐ No wastewater is treated or disposed of within the UWMP service area.
The supplier will not complete the table below.

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal *Drop down list*	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level *Drop down list*	2015 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Add additional rows as needed										
MRWPCA	Ocean Outfall	Monterey Bay	ermit CA00485	Ocean outfall	Yes	Secondary, Disinfected - 2.2	19,712	5,462	0	14,250
						Total	19,712	5,462	0	14,250

NOTES: WW from MCWD is treated at the MRWPCA Regional treatment Plant. The majority is recycled and delivered to the Castroville Seawater Intrusion project for

Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area									
☐	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.								
Name of Agency Producing (Treating) the Recycled Water:		Monterey Regional Water Pollution Control Agency							
Name of Agency Operating the Recycled Water Distribution System:									
Supplemental Water Added in 2015									
Source of 2015 Supplemental Water									
Beneficial Use Type *These are the only Use Types that will be recognized by the DWR online submittal tool*		General Description of 2015 Uses	Level of Treatment *Drop down list*	2015	2020	2025	2030	2035	2040 (opt)
Agricultural irrigation									
Landscape irrigation (excludes golf courses)		Planned for future	Tertiary	0	200	480	759	759	
Golf course irrigation		Planned for future	Tertiary	0	400	600	600	600	
Commercial use									
Industrial use									
Geothermal and other energy production									
Seawater intrusion barrier									
Recreational impoundment									
Wetlands or wildlife habitat									
Groundwater recharge (IPR)									
Surface water augmentation (IPR)									
Direct potable reuse									
Other	Type of Use								
			Total:	0	600	1,080	1,359	1,359	0
IPR - Indirect Potable Reuse									
NOTES:									

Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual			
☐	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.		
Use Type *These are the only Use Types that will be recognized by the WUEdata online submittal tool*		2010 Projection for 2015	2015 actual use
Agricultural irrigation		0	0
Landscape irrigation (excludes golf courses)		319	0
Golf course irrigation		461	0
Commercial use		0	0
Industrial use		0	0
Geothermal and other energy production		0	0
Seawater intrusion barrier		0	0
Recreational impoundment		0	0
Wetlands or wildlife habitat		0	0
Groundwater recharge (IPR)		0	0
Surface water augmentation (IPR)		0	0
Direct potable reuse		0	0
Other	Required for this use		
Total		780	0
NOTES: Construction of recycled water delivery system delayed due to economic downturn.			

Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
☐	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Add additional rows as needed			
RUWAP (Recycled)	Build distribution system	2018	600
		Total	600
NOTES:			

Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☐	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type *Drop Down List User may select more than one.*	Expected Increase in Water Supply to Agency *This may be a range*
	Drop Down List (y/n)	*If Yes, Agency Name*				
Add additional rows as needed						
RUWAP (Potable)	No		Seawater Desal	2025	Average Year	500 to 1800
NOTES: planned seawater desalination facility will be needed by 2025.						

Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2015		
Drop down list *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*		Actual Volume	Water Quality *Drop Down List*	Total Right or Safe Yield *(optional)*
Add additional rows as needed				
Groundwater	Marina Wells	1,420	Drinking Water	3,020
Groundwater	Ord Wells	1,808	Drinking Water	6,600
	Total	3,228		9,620
NOTES:				

Table 6-9 Retail: Water Supplies — Projected											
Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*									
Drop down list *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*		**2020**		**2025**		**2030**		**2035**		**2040** *(opt)*	
		Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*
Add additional rows as needed											
Groundwater	Marina Wells	3,020	3,020	3,020	3,020	3,020	3,020	3,020	3,020	3,020	3,020
Groundwater	Ord Wells	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600	6,600
Groundwater	Armstrong Ranch	680	920	680	920	680	920	680	920	680	920
Groundwater	Cemex	500	500	500	500	500	500	500	500	500	500
Recycled Water		600		1,080		1,359		1,359		1,359	
Desalinated Water		0		491		1,335		1,766		1,800	
	Total	11,400	11,040	12,371	11,040	13,494	11,040	13,925	11,040	13,959	11,040
NOTES: Groundwater from the Salinas Valley Groundwater Basin, 180/400 ft Subarea.											

Table 7-1 Retail: Basis of Water Year Data			
Year Type	Base Year	Available Supplies if Year Type Repeats	
		Agency may provide volume only, percent only, or both	
		Volume Available	% of Average Supply
Average Year	2035	13,959	100%
Single-Dry Year	2035	13,959	100%
Multiple-Dry Years 1st Year	2035	13,959	100%
Multiple-Dry Years 2nd Year	2035	13,959	100%
Multiple-Dry Years 3rd Year	2035	13,959	100%
Multiple-Dry Years 4th Year *Optional*			
Multiple-Dry Years 5th Year *Optional*			
Multiple-Dry Years 6th Year *Optional*			
Agency may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If an agency uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.			
NOTES:			

Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 *(Opt)*
Supply totals *(autofill from Table 6-9)*	11,400	12,371	13,494	13,925	13,959
Demand totals *(autofill from Table 4-3)*	6,205	9,936	11,118	12,197	0
Difference	5,195	2,435	2,376	1,728	13,959
NOTES:					

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 (Opt)
Supply totals	10,220	11,871	12,994	13,925	
Demand totals	6,267	10,036	11,230	12,319	
Difference	3,953	1,835	1,764	1,606	0
NOTES:					

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	10,220	11,871	12,994	13,925	13,959
	Demand totals	6,267	10,036	11,230	12,319	
	Difference	3,953	1,835	1,764	1,606	13,959
Second year	Supply totals	10,220	11,871	12,994	13,925	13,959
	Demand totals	5,460	8,744	9,784	10,733	
	Difference	4,760	3,127	3,210	3,192	13,959
Third year	Supply totals	10,220	11,871	12,994	13,925	13,959
	Demand totals	4,654	7,452	8,339	9,148	
	Difference	5,566	4,419	4,655	4,777	13,959
Fourth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
Fifth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
Sixth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
NOTES:						

Table 8-1 Retail Stages of Water Shortage Contingency Plan		
Stage	Complete Both	
	Percent Supply Reduction[1] *Numerical value as a percent*	Water Supply Condition (*Narrative description)*
Add additional rows as needed		
1	10%	Mechanical loss of 10% capacity, or
1	10%	Chlorides increase but WQ standard met, or
1	10%	VOC increase but WQ standards met, or
1	10%	Drought declared by State or County
2	25%	Mechanical loss of 10-25% capacity, or
2	25%	Chlorides increase but WQ standard met, or
2	25%	VOC increase but WQ STD can be met, or
2	25%	Drought declared by State or County
3	35%	Mechanical loss of 25-35% capacity, or
3	35%	Chlorides increase above WQ standard, or
3	35%	VOC increase but WQ STD can be met, or
3	35%	Drought declared by State or County
4	50%	Mechanical loss of 35-50% capacity, or
4	50%	Chlorides increase above WQ standard, or
4	50%	VOC increase but WQ STD can be met, or
4	50%	Drought declared by State or County
5	51%	Mechanical loss of over 50% capacity, or
5	51%	Chlorides increase above WQ standard, or
5	51%	VOC increase but WQ STD can be met, or
5	51%	Drought declared by State or County
[1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.*		
NOTES: See the full WSCP for detailed descriptions		

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? *Drop Down List*
Add additional rows as needed			
0-5	Landscape - Restrict or prohibit runoff from landscape irrigation		Yes
0-5	Landscape - Limit landscape irrigation to specific times		Yes
0-5	Landscape - Prohibit certain types of landscape irrigation		Yes
0-5	CII - Restaurants may only serve water upon request		Yes
0-5	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner		Yes
0-5	Other water feature or swimming pool restriction	Drain and refill for repair only	Yes
0-5	Water Features - Restrict water use for decorative water features, such as fountains	Must be recirculating	Yes
0-5	Other - Prohibit use of potable water for washing hard surfaces		Yes
3-5	Pools and Spas - Require covers for pools and spas		Yes
3-5	Landscape - Limit landscape irrigation to specific days		Yes
3-5	CII - Lodging establishment must offer opt out of linen service		Yes
3-5	Other - Prohibit use of potable water for construction and dust control	Use recycled/non-potable when available	Yes
5	Landscape - Prohibit all landscape irrigation	Only recycled water	Yes
5	Other - Prohibit use of potable water for construction and dust control	Only recycled water	Yes
5	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		Yes
NOTES: Stage 0 (no shortage) reflects District Code Section 3.36.030, Prohibitions on Water Waste			

Table 8-3 Retail Only: **Stages of Water Shortage Contingency Plan - Consumption Reduction Methods**		
Stage	Consumption Reduction Methods by Water Supplier ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*
Add additional rows as needed		
1-5	Expand Public Information Campaign	
0-5	Offer Water Use Surveys	
0-5	Provide Rebates on Plumbing Fixtures and Devices	
0-5	Provide Rebates for Landscape Irrigation Efficiency	
0-5	Provide Rebates for Turf Replacement	
2-5	Decrease Line Flushing	
3-5	Implement or Modify Drought Rate Structure or Surcharge	
NOTES: See the full WSCP for full descriptions		

Table 8-4 Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	9,620	9,620	9,620
NOTES:			

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
City of Marina	☑	☑
City of Seaside	☑	☑
City of Del Rey Oaks	X	X
City of Monterey	X	X
CSU Monterey Bay	X	X
UC MBEST	X	X
CA State Parks	X	X
U.S. Army Presidio of Monterey	X	X
Fort Ord Reuse Authority	X	X
MCWRA	X	X
MPWMD	X	X
Cal-Am	X	X
	☐	☐
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Monterey County	☑	☑
	☐	☐
	☐	☐
NOTES:		

SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent with Table 2-3*
NOTES:

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	**Parameter**	**Value**	**Units**
10- to 15-year baseline period	2008 total water deliveries	4,102	Acre Feet
	2008 total volume of delivered recycled water	0	Acre Feet
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period[1]	10	Years
	Year beginning baseline period range	1999	
	Year ending baseline period range[2]	2008	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2004	
	Year ending baseline period range[3]	2008	
[1] If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.			
[2] The ending year must be between December 31, 2004 and December 31, 2010.			
[3] The ending year must be between December 31, 2007 and December 31, 2010.			
NOTES:			

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☑	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☑	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES: Service area crosses multiple jurisdictions. All of the City of	

SB X7-7 Table 3: Service Area Population		
Year		**Population**
10 to 15 Year Baseline Population		
Year 1	1999	28,657
Year 2	2000	29,137
Year 3	2001	29,416
Year 4	2002	29,648
Year 5	2003	29,613
Year 6	2004	29,633
Year 7	2005	29,477
Year 8	2006	29,154
Year 9	2007	29,065
Year 10	2008	29,533
Year 11		
Year 12		
Year 13		
Year 14		
Year 15		
5 Year Baseline Population		
Year 1	2004	29,633
Year 2	2005	29,477
Year 3	2006	29,154
Year 4	2007	29,065
Year 5	2008	29,533
2015 Compliance Year Population		
2015		32,375
NOTES:		

SB X7-7 Table 4: Annual Gross Water Use *								
			Deductions					
	Baseline Year *Fm SB X7-7 Table 3*	**Volume Into Distribution System** *Fm SB X7-7 Table(s) 4-A*	Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water *Fm SB X7-7 Table 4-B*	Water Delivered for Agricultural Use	Process Water *Fm SB X7-7 Table(s) 4-D*	**Annual Gross Water Use**
10 to 15 Year Baseline - Gross Water Use								
Year 1	1999	4637	0	0	0	0	0	4,637
Year 2	2000	4671.2	0	0	0	0	0	4,671
Year 3	2001	4513	0	0	0	0	0	4,513
Year 4	2002	4442.8	0	0	0	0	0	4,443
Year 5	2003	4329.7	0	0	0	0	0	4,330
Year 6	2004	4684.6	0	0	0	0	0	4,685
Year 7	2005	4188.1	0	0	0	0	0	4,188
Year 8	2006	4295.3	0	0	0	0	0	4,295
Year 9	2007	4563	0	0	0	0	0	4,563
Year 10	2008	4102.2	0	0	0	0	0	4,102
Year 11	0	0			0		0	0
Year 12	0	0			0		0	0
Year 13	0	0			0		0	0
Year 14	0	0			0		0	0
Year 15	0	0			0		0	0
10 - 15 year baseline average gross water use								**2,962**
5 Year Baseline - Gross Water Use								
Year 1	2004	4,685	0	0	0	0	0	4,685
Year 2	2005	4,188	0	0	0	0	0	4,188
Year 3	2006	4,295	0	0	0	0	0	4,295
Year 4	2007	4,563	0	0	0	0	0	4,563
Year 5	2008	4,102	0	0	0	0	0	4,102
5 year baseline average gross water use								**4,367**
2015 Compliance Year - Gross Water Use								
2015		3,228	0	0	0	0	0	3,228
* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3								
NOTES: All water supply from District-owned wells.								

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)
Complete one table for each source.

Name of Source	Salinas Valley Groundwater Basin
This water source is:	
☑	The supplier's own water source
☐	A purchased or imported source

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1999	4637		4,637
Year 2	2000	4671.2		4,671
Year 3	2001	4513		4,513
Year 4	2002	4442.8		4,443
Year 5	2003	4329.7		4,330
Year 6	2004	4684.6		4,685
Year 7	2005	4188.1		4,188
Year 8	2006	4295.3		4,295
Year 9	2007	4563		4,563
Year 10	2008	4102.2		4,102
Year 11	0			0
Year 12	0			0
Year 13	0			0
Year 14	0			0
Year 15	0			0
5 Year Baseline - Water into Distribution System				
Year 1	2004	4684.6		4,685
Year 2	2005	4188.1		4,188
Year 3	2006	4295.3		4,295
Year 4	2007	4563		4,563
Year 5	2008	4102.2		4,102
2015 Compliance Year - Water into Distribution System				
2015		3228.04		3,228

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1999	28,657	4,637	144
Year 2	2000	29,137	4,671	143
Year 3	2001	29,416	4,513	137
Year 4	2002	29,648	4,443	134
Year 5	2003	29,613	4,330	131
Year 6	2004	29,633	4,685	141
Year 7	2005	29,477	4,188	127
Year 8	2006	29,154	4,295	132
Year 9	2007	29,065	4,563	140
Year 10	2008	29,533	4,102	124
Year 11	0	0	0	
Year 12	0	0	0	
Year 13	0	0	0	
Year 14	0	0	0	
Year 15	0	0	0	
10-15 Year Average Baseline GPCD				**135**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2004	29,633	4,685	141
Year 2	2005	29,477	4,188	127
Year 3	2006	29,154	4,295	132
Year 4	2007	29,065	4,563	140
Year 5	2008	29,533	4,102	124
5 Year Average Baseline GPCD				**133**
2015 Compliance Year GPCD				
2015		32,375	3,228	89
NOTES:				

SB X7-7 Table 6: Gallons per Capita per Day *Summary From Table SB X7-7 Table 5*	
10-15 Year Baseline GPCD	135
5 Year Baseline GPCD	133
2015 Compliance Year GPCD	89
NOTES:	

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		Supporting Documentation
☐	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D *Contact DWR for these tables*
☑	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator
NOTES:		

SB X7-7 Table 7-E: Target Method 3				
Agency May Select More Than One as Applicable	Percentage of Service Area in This Hydrological Region	Hydrologic Region	"2020 Plan" Regional Targets	Method 3 Regional Targets (95%)
☐		North Coast	137	130
☐		North Lahontan	173	164
☐		Sacramento River	176	167
☐		San Francisco Bay	131	124
☐		San Joaquin River	174	165
☑	100%	Central Coast	123	117
☐		Tulare Lake	188	179
☐		South Lahontan	170	162
☐		South Coast	149	142
☐		Colorado River	211	200
Target *(If more than one region is selected, this value is calculated.)*				**117**
NOTES:				

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target*	Calculated 2020 Target *Fm Appropriate Target Table*	Confirmed 2020 Target
133	126	117	117
** Maximum 2020 Target is 95% of the 5 Year Baseline GPCD*			
NOTES:			

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target *Fm SB X7-7 Table 7-F*	10-15 year Baseline GPCD *Fm SB X7-7 Table 5*	2015 Interim Target GPCD
117	135	126
NOTES:		

SB X7-7 Table 9: 2015 Compliance								
Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments *(in GPCD)*					2015 GPCD *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015?
		Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments	Adjusted 2015 GPCD		
89	126	*NA*	*NA*	*NA*	0	89.01338654	89.01338654	YES
NOTES:								

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Appendix I: Voluntary Reporting of Energy Intensity

The MCWD water distribution system has five pressure zones, with eight water storage tanks and six booster pump stations. The District produces all of its water supply from groundwater wells. Treatment consists of chlorination to meet distribution system requirements. Some water is provided directly to customers in the lowest pressure zone, and the rest is boosted into the upper zones for storage and customer use. Power consumption for 2015 is tabulated below. Total water production for the year was 3,228 acre-feet. The portion of that supply boosted into the upper pressure zones was not metered or estimated.

2015 Water System Power Use

Component	kWh
Wells	1,451,161
Booster Pump Stations	1,024,865
SCADA (Controls)	1,397
Desalination	0
Total	2,477,423

MCWD provides wastewater collection within its service area, but not treatment. Wastewater treatment is provided by the Monterey Regional Water Pollution Control Agency at the regional treatment plant. The MCWD wastewater collection system includes 20 pump stations. Power consumption for 2015 is tabulated below. Total wastewater conveyed for the year was 2,115 acre-feet.

2015 Wastewater System Power Use

Component	kWh
Lift Stations	278,600
SCADA	413
Total	279,013

DWR Standard Tables O-1A and O-2 are provided on the following pages.

Urban Water Supplier: *Marina Coast Water District*

Water Delivery Product (If delivering more than one type of product use Table O-1C)

Retail Potable Deliveries

Table O-1A: Voluntary Energy Intensity - Water Supply Process Approach

Enter Start Date for Reporting Period 1/1/2015

End Date 12/31/2015

	Urban Water Supplier Operational Control							
	Water Management Process						Non-Consequential Hydropower (if applicable)	
	Extract and Divert	Place into Storage	Conveyance	Treatment	Distribution	Total Utility	Hydropower	Net Utility
Volume of Water Entering Process (AF)	*3228*	*0*	*0*	*0*	*2905.2*	*2905.2*	*0*	*2905.2*
Energy Consumed (kWh)	*1451161*	*0*	*0*	*0*	*1026262*	*2477423*		*2477423*
Energy Intensity (kWh/AF)	*449.6*	*0.0*	*0.0*	*0.0*	*353.3*	*852.8*	*0.0*	*852.8*

Quantity of Self-Generated Renewable Energy

None kWh

Data Quality *(Estimate, Metered Data, Combination of Estimates and Metered Data)*

Combination of Estimates and Metered Data

Data Quality Narrative:

Power use is from PG&E Meters. Well Production from Well Meters. Distribution volume is estimated at 90% of well production.

Narrative:

All water originates as groundwater at District wells. The Extract and Divert power use includes chlorination for distribution.

Urban Water Supplier: *Marina Coast Water District*

Table O-2: Voluntary Energy Intensity - Wastewater & Recycled Water					
Enter Start Date for Reporting Period	1/1/2015	Urban Water Supplier Operational Control			
End Date	12/31/2015	Water Management Process			
		Collection / Conveyance	Treatment	Discharge / Distribution	Total
Volume of Wastewater Entering Process (AF)		*2115*	*0*	*0*	*0*
Wastewater Energy Consumed (kWh)		*279013*	*0*	*0*	*279013*
Wastewater Energy Intensity (kWh/AF)		*131.9*	*0.0*	*0.0*	*0.0*
Volume of Recycled Water Entering Process (AF)		*0*	*0*	*0*	*0*
Recycled Water Energy Consumed (kWh)		*0*	*0*	*0*	*0*
Recycled Water Energy Intensity (kWh/AF)		*0.0*	*0.0*	*0.0*	*0.0*

Quantity of Self-Generated Renewable Energy related to recycled water and wastewater operations

None kWh

Data Quality *(Estimate, Metered Data, Combination of Estimates and Metered Data)*

Combination of Estimates and Metered Data

Data Quality Narrative:

Power is sum of PG&E meters for lift stations and sewer SCADA. Flow is sum of two metered stations plus Marina Airport estimate.

Narrative:

Wastewater is collected from throughout the system and conveyed to the MRWPCA Regional Interceptor.

Appendix J: Water Loss Audit Tables

A system water audit was prepared using the AWWA Free Water Audit Software v5.0. Because the report audit requires financial data as well as water production and deliveries, this report was prepared for FY 2014-15 (July 1, 2014 – June 30, 2015). Financial data came from the District's Certified Annual Financial Report of FY 2014/15.

Water production during that period totaled 3,642 acre-feet, with 86 acre-feet of water loss (approximately 2%). The low loss rate is due to the District's tracking of unmetered water uses, such as water main flushing, hydrant testing and fire department training.

The Audit output tables are provided on the following pages.

AWWA Free Water Audit Software v5.0

This spreadsheet-based water audit tool is designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. It provides a "top-down" summary water audit format, and is not meant to take the place of a full-scale, comprehensive water audit format.

Auditors are strongly encouraged to refer to the most current edition of AWWA M36 Manual for Water Audits for detailed guidance on the water auditing process and targetting loss reduction levels

The spreadsheet contains several separate worksheets. Sheets can be accessed using the tabs towards the bottom of the screen, or by clicking the buttons below.

Please begin by providing the following information

Name of Contact Person:	Paul Lord
Email Address:	plord@mcwd.org
Telephone | Ext.:	831.883.5905
Name of City / Utility:	Marina Coast Water District
City/Town/Municipality:	Marina
State / Province:	California (CA)
Country:	USA
Year:	2015 Financial Year
Start Date:	07/2014 Enter MM/YYYY numeric format
End Date:	06/2015 Enter MM/YYYY numeric format
Audit Preparation Date:	1/15/2016
Volume Reporting Units:	Acre-feet
PWSID / Other ID:	CA2710017

The following guidance will help you complete the Audit

All audit data are entered on the ***Reporting Worksheet***

- Value can be entered by user
- Value calculated based on input data
- These cells contain recommended default values

Use of Option (Radio) Buttons: Pcnt: 0.25% Value:

Select the default percentage by choosing the option button on the left

To enter a value, choose this button and enter a value in the cell to the right

The following worksheets are available by clicking the buttons below or selecting the tabs along the bottom of the page

Instructions
The current sheet. Enter contact information and basic audit details (year, units etc)

Reporting Worksheet
Enter the required data on this worksheet to calculate the water balance and data grading

Comments
Enter comments to explain how values were calculated or to document data sources

Performance Indicators
Review the performance indicators to evaluate the results of the audit

Water Balance
The values entered in the Reporting Worksheet are used to populate the Water Balance

Dashboard
A graphical summary of the water balance and Non-Revenue Water components

Grading Matrix
Presents the possible grading options for each input component of the audit

Service Connection Diagram
Diagrams depicting possible customer service connection line configurations

Definitions
Use this sheet to understand the terms used in the audit process

Loss Control Planning
Use this sheet to interpret the results of the audit validity score and performance indicators

Example Audits
Reporting Worksheet and Performance Indicators examples are shown for two validated audits

Acknowledgements
Acknowledgements for the AWWA Free Water Audit Software v5.0

If you have questions or comments regarding the software please contact us via email at: wlc@awwa.org

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: Marina Coast Water District (CA2710017)
Reporting Year: 2015 | 7/2014 - 6/2015

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

					Pcnt:	Value:	
Volume from own sources:	8	3,641.510	acre-ft/yr	5			acre-ft/yr
Water imported:	n/a	0.000	acre-ft/yr				acre-ft/yr
Water exported:	n/a	0.000	acre-ft/yr				acre-ft/yr
WATER SUPPLIED:		**3,641.510**	acre-ft/yr				

Enter negative % or value for under-registration
Enter positive % or value for over-registration

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	6	3,334.800	acre-ft/yr			
Billed unmetered:	6	206.360	acre-ft/yr			
Unbilled metered:	8	10.427	acre-ft/yr			
Unbilled unmetered:	6	3.776	acre-ft/yr		3.776	acre-ft/yr
AUTHORIZED CONSUMPTION:		**3,555.363**	acre-ft/yr			

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption)

86.147 acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		9.104	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	7	16.810	acre-ft/yr	0.50%		acre-ft/yr
Systematic data handling errors:		8.337	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: **34.251** acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: **51.896** acre-ft/yr

WATER LOSSES: **86.147** acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: **100.350** acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	6	147.0	miles
Number of active AND inactive service connections:	7	8,534	
Service connection density:		58	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line:

(length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 3 | 60.0 psi

COST DATA

Total annual cost of operating water system:	10	$8,700,333	$/Year	
Customer retail unit cost (applied to Apparent Losses):	8	$6.15	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	5	$1,300.00	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 72 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Billed metered
3: Variable production cost (applied to Real Losses)

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: Marina Coast Water District (CA2710017)
Reporting Year: 2015 | 7/2014 - 6/2015

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 72 out of 100 ***

System Attributes:

	Apparent Losses:	34.251	acre-ft/yr
+	Real Losses:	51.896	acre-ft/yr
=	**Water Losses:**	**86.147**	acre-ft/yr
?	Unavoidable Annual Real Losses (UARL):	139.48	acre-ft/yr
	Annual cost of Apparent Losses:	$91,756	
	Annual cost of Real Losses:	$67,464	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	2.8%	
	Non-revenue water as percent by cost of operating system:	2.0%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	3.58	gallons/connection/day
	Real Losses per service connection per day:	5.43	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.09	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	51.90	acre-feet/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	0.37	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software:
User Comments

Use this worksheet to add comments or notes to explain how an input value was calculated, or to document the sources of the information used.

General Comment:	

Audit Item	Comment
Volume from own sources:	All wells are metered. Readings are taken monthly.
Vol. from own sources: Master meter error adjustment:	
Water imported:	No water imported.
Water imported: master meter error adjustment:	
Water exported:	No water exported during this period.
Water exported: master meter error adjustment:	
Billed metered:	Total water sales of 3,578 AF during FY 14-15 (CAFR Schedule 7). Value is 3578 minus estimate of flat rate account use.
Billed unmetered:	District has 737 unmetered residential accounts in the Ord Community out of 3414 total accounts in the Ord Community. Use assumes 0.33 AF/DU. All Central Marina accounts are metered.
Unbilled metered:	The District meters internal water use at the wastewater lift stations (wash down water) and at the corporation yard (office and truck filling station).

Audit Item	Comment
Unbilled unmetered:	The District records hydrant run times for line flushing, fire pressure testing and fire training. Run times are converted to water use estimates and recorded in the work order database. The total estimate for 2015 was entered in this field.
Unauthorized consumption:	Default value used.
Customer metering inaccuracies:	Meters were upgrades to AMR in 2004-2005. Accuracy assumed to still be +/- 0.5%
Systematic data handling errors:	Default value used.
Length of mains:	Data from CAFR Schedule 13
Number of active AND inactive service connections:	Value is active account total from 2015 CAFR, Schedule 6. Does not include inactive service connections.
Average length of customer service line:	NA
Average operating pressure:	Estimated using the average within the B-Zone (middle of the elevation range)
Total annual cost of operating water system:	Data from 4Q15 financials. Marina Water Ops + Marina Water CIP + Ord Water Ops + Ord Water CIP. $2,237,560 + $111,928 + $4,888,56 + $1,461,992 = $8,700,333
Customer retail unit cost (applied to Apparent Losses):	Total water sales revenue / total water sales. $9,581,388 / 3578 AF = $2,677.86/AF = $6.15/hcf
Variable production cost (applied to Real Losses):	Using the average commodity rates, estimated at $2.99/hcf. Need to update with data from O&M.

AWWA Free Water Audit Software: Water Balance

WAS v5.0

American Water Works Association.

Water Audit Report for:	Marina Coast Water District (CA2710017)
Reporting Year:	2015 — 7/2014 - 6/2015
Data Validity Score:	72

Own Sources (Adjusted for known errors)
3,641.510

Water Imported
0.000

System Input
3,641.510

Water Exported
0.000

Water Supplied
3,641.510

Authorized Consumption
3,555.363

Water Losses
86.147

Billed Authorized Consumption
3,541.160

Unbilled Authorized Consumption
14.203

Apparent Losses
34.251

Real Losses
51.896

Billed Water Exported

Billed Metered Consumption (water exported is removed)
3,334.800

Billed Unmetered Consumption
206.360

Unbilled Metered Consumption
10.427

Unbilled Unmetered Consumption
3.776

Unauthorized Consumption
9.104

Customer Metering Inaccuracies
16.810

Systematic Data Handling Errors
8.337

Leakage on Transmission and/or Distribution Mains
Not broken down

Leakage and Overflows at Utility's Storage Tanks
Not broken down

Leakage on Service Connections
Not broken down

Revenue Water
0.000

Revenue Water
3,541.160

Non-Revenue Water (NRW)
100.350

Appendix K: Comments Received on the Draft Plan

One verbal comment was submitted at the Public Hearing for the UWMP.

1. Mr. Michael Owen, Marina resident, inquired if the proposed budget would result in increased water rates or increased property taxes.

   Response: The UWMP does not include a proposed budget. Mr. Owen meant to comment on a later item on the meeting agenda.

Two comment letters were received:

1. E-mailed comment from Mr. Steve Matarazzo, UC MBEST
2. Letter from Mike Lerch, CSUMB

The letters are on the following pages. Responses follow each letter.

Andy Sterbenz

From: Steve Matarazzo <smataraz@ucsc.edu>
Sent: Thursday, June 02, 2016 2:45 PM
To: Andy Sterbenz
Cc: mwegley@mcwd.org
Subject: Review of Draft Urban Water Management Plan (UWMP)

Follow Up Flag: Follow up
Flag Status: Flagged

Andy: Please include the following footnote (as footnote 3) under Table 3.5, page 21, Water Demand by Jurisdiction: "The UC MBEST water demand estimates over time may occur sooner than anticipated based on a very active real estate market. Therefore, the 2020 water demand estimate of 94 acre feet/year may be a conservative figure. If the real estate market is thriving during the next 5 years, all of UCSC's current water allocation of 230 acre-feet per year could be used within that time frame."

Thanks. - Steve Matarazzo, UC MBEST Planning Director (Graham Bice has retired.)

MARINA COAST WATER DISTRICT

11 RESERVATION ROAD, MARINA, CA 93933-2099
Home Page: www.mcwd.org
TEL: (831) 384-6131 FAX: (831) 883-5995

June 8, 2016

Mr. Steve Matarazzo
Planning Director
Monterey Bay Education, Science and Technology Center
3180 Imjin Road, Suite 104
Marina, CA 93933

Dear Steve:

Thank you for your comments on the Draft 2015 Urban Water Management Plan. We have incorporated your requested footnote into Table 3.5 on page 21, and also Table C-1 in Appendix C.

We will provide you a copy of the final plan under separate cover.

Sincerely,

Michael Wegley, PE
District Engineer

CALIFORNIA STATE UNIVERSITY
Monterey Bay
FACILITIES SERVICES AND OPERATIONS

100 CAMPUS CENTER, BUILDING 84D
SEASIDE, CA 93955-8001
831-582-3700
WWW.CSUMB.EDU

Marina Coast Water District
ATTN: Mike Wegley
11 Reservation Road
Marina, CA 93933

June 3rd, 2016

Re: Comments on 2015 Draft Urban Water Management Plan

Dear Mr. Wegley,

Thank you for the opportunity to comment on the 2015 Draft Urban Water Management Plan. The following are California State University Monterey Bay's (CSUMB) comments relative to this document:

Page 5: Suggest that the document list all ex-officio members of FOR A, including CSUMB.

Page 6: Suggest that the document specifically cite the Deeds and Documents transferring the water system from U.S. Army to FOR A and MCWD, noting that these documents specify limits of system ownership, rights of way and specify the rights retained by the USA, the rights granted to FOR A and MCWD and the rights transferred to the current property owners of record. Also note that this Deed requires that the recipient of the water system "ensure that all owners of property at the former Fort will continue to be provided an equitable supply of the water at equitable rates."

Page 18: The unavailability of water usage data at the District that predates the drought which could be used to validate water use estimation factors by occupancy type is unfortunate. Maintaining accurate usage history is important not only for projecting future requirements but for validating capacity charge calculations factors as described in MCWD Codes and Ordinances appendix C.

Page 19: CSUMB appreciates that the District recognizes the work done to develop usage factors pertinent to occupancies specific to higher education in the Ord Community. The University looks forward to incorporating these factors into the estimation of Capacity Charges for future buildings.

Page 21, Table 3.5: It would be informative and relative to show water demand prior to metering of the major un-metered jurisdictions listed on page 20, ie 2010 data, such that the impact of metering on conservation can be clearly seen. CSUMB records indicate its usage was 626 acre feet that year.

Page 21 Table 3.5 Water Demand by Jurisdiction: CSUMB's ability to remain within it's allocation is a direct result of its conservation efforts relative to existing programs and new construction. By their very nature the programs hosted by the University will evolve over time resulting in either lesser or greater water demand than forecasted.
Page 25 and appendix E: It is not clear that the population modelling approach accurately incorporates the contribution of students to the count. As an example CSUMB's student population increased by 1,212 students to 4,790 between 2004 and 2010, yet the Ord community growth data only shows a change of 286 people. Undercounting the student contribution to the population would adversely affect the per capita water use and drive more restrictive and expensive conservation measures than would otherwise be required. The CSUMB student population stood at 6,769 as of 2015 and is expected to increase to 12,500 over time, a non-negligible increase in population.

Page 83 Conservation Pricing: The districts tiered rate structure for usage volume treats all customers as if they were single family residential. This approach unfairly pushes industrial and institutional customers into the highest tier, and these customers have no possibility of conserving their way into a lower tier given the nature of their operations. The District needs to study and develop a tier rate structure that takes into account the customer meter size, operations and past conservation efforts.

Page 84: The statement made at the end of the first paragraph that the District is contemplating relatively expensive marginal supplies is not sufficient to meet the proposition 218 requirement that rates be developed on a cost of service basis. These future rates are unknown and may never come about as they are dependent on development that may or may not come about. This statement is particularly specious when certain jurisdictions are projected to be well within their allocations and others are forecasted to be well over their allocations, yet all jurisdictions are in the same rate structure. This is exacerbated when the aforementioned issues with the tiered rate structure taking no account of the nature of the operation behind the meter. Meeting this test is a tremendous concern, both now and in the future.

MCWD Water Shortage Contingency Plans, page 17: The District needs to be mindful of the amount of revenue that is being collected for purposes of system maintenance and expansion and that under ongoing higher level water supply shortages, the expenditures on system expansion become moot and therefore the revenue requirement would also be expected to decrease.

Sincerely,

Mike Lerch
Associate Director Facility Services and Operations

MARINA COAST WATER DISTRICT

11 RESERVATION ROAD, MARINA, CA 93933-2099
Home Page: www.mcwd.org
TEL: (831) 384-6131 FAX: (831) 883-5995

June 8, 2016

Mr. Mike Lerch
Associate Director, Facility Services and Operations
California State University, Monterey Bay
100 Campus Center, Bldg 84D
Seaside, CA 93955

Dear Mike:

Thank you for your comments on the Draft 2015 Urban Water Management Plan. The Plan is prepared in response to statutory requirements of the Urban Water Management Planning Act. Comments received are incorporated into the report, where appropriate, as noted below:

Comment on page 5: Due to the number of agencies involved, we opted not to list the ex officio members of FORA.

Comment on page 6: The Quitclaim deed for the water and wastewater infrastructure was added to the reference list in Appendix B.

Comment on page 18: The District recently updated the accounting database, and the reporting tool which would facilitate reviewing earlier usage records was still under development while the plan was being prepared. We anticipate restoring that functionality within the next few months.

Comment on page 19: No response required for the 2015 Plan.

Comment on page 21, Table 3.5: Our records show that CSUMB metered all residential units in 2009, so the savings you point out were reflected and discussed in the 2010 UWMP. We do appreciate the on-going conservation efforts by the university.

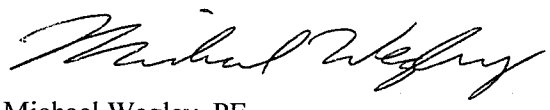
Comment on page 25 and Appendix E: The current population is aggregated at the service area level (Ord Community and Central Marina), and not split out by jurisdiction. A footnote will be added to Table C-6 explaining that. What is shown in Table C-6 is only the projected increase in resident student and faculty population. Please note that the numbers you cited were total enrollment, which includes those living off-campus. Even the new Promontory dormitory is considered off-campus and part of the City of Marina population.

Comments on page 83 and 84: No response required for the 2015 Plan. Comments on tiered rates would be applicable to the next rate study, which should occur in 2017-18.

Comment on Appendix F, Water Shortage Contingency Plan. The discussion of revenue impacts due to implementing the Water Shortage Contingency Plan are a mandatory component of the Water Shortage Contingency Plan. Please note that the District implemented Stage 3 water use restrictions in 2015, but has not increased rates as a result. System maintenance is on-going even during a drought or shortage period, so your comment that that it would be curtailed is incorrect. Similarly, system expansion is driven by new development and funded through capacity charges, which are not related to the temporary shortages the Water Shortage Contingency Plan is meant to address.

We will provide you a copy of the final plan under separate cover.

Sincerely,



Michael Wegley, PE
District Engineer