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2020 BIENNIAL WATER QUALITY MANAGEMENT PROGRAM (WQMP) REPORT December 08, 2020

INTRODUCTION:

This draft biennial report for Zone 7's Water Quality Management Program (WQMP) has been prepared as specified by Zone 7's 2014 Water Quality Policy. It includes a summary of water quality data collected from January 2018 through October 2020 which is compared against applicable water quality targets set forth by the WQMP. It also includes an update of ongoing and emerging potential water quality issues as well as relevant water quality improvement activities and regulatory/technology development since the last WQMP report in December 2018. In addition, this report includes discussion and outcomes from a joint workshop with the Retailers that was conducted on November 10, 2020.

BACKGROUND:

Zone 7 has a **Water Quality Policy for Potable and Non-Potable Water** (see **Attachment A**) that established the WQMP in 2003. The Policy establishes goals to effectively manage various water quality issues and to guide operations and capital improvement planning. The Policy calls for delivered potable water to its M&I Contractors' turnouts to be of a quality that contains no greater than 80% of the applicable State or federal primary Maximum Contaminant Levels (MCLs) and is aesthetically acceptable by meeting all State and federal secondary MCLs. The Policy also calls for Zone 7 to proactively mitigate earthy-musty taste and odor (T&O) events[1] from surface water supplies, optimize its treatment processes to minimize chlorinous odors, and reduce delivered water hardness to "moderately hard", which is defined as 75 to 150 milligrams per liter (mg/L) as calcium carbonate ($CaCO_3$). As for the non-potable water delivered to Zone 7's untreated water turnouts, it should be of a quality that meets the irrigation needs and does not negatively impact vegetation, crops, or soils.

The goals established in the Policy are further refined with water quality targets for the key parameters of concern. Potable water quality targets were established for "average" conditions; during dry years or emergencies, some targets may not be achieved, but all primary MCLs will be met. Most of the targets are to be met at the turnouts except for a few potable water targets that are based on customer complaints (e.g., appearance and earthy/musty T&O events). Due to operational controls and optimization opportunities, some disinfectant residuals (e.g., total chlorine and free ammonia) and disinfection byproducts (DBPs) are to be met as water leaves the surface water treatment plants (WTPs).

[1] An event is defined as when three or more similar complaints are received in a 7-day period.

Non-potable water quality targets were recommended for irrigated turf and vineyards, for both average conditions and short-term applications. The average targets represent supply sources under average water quality conditions that can be applied on a regular basis. The maximum applied targets represent the maximum tolerance levels that the irrigated turf or vineyards can accept on a short-term basis. This may represent either drought years where the surface water quality is degraded, or different supply sources with lower quality used on a temporary basis, such as with recycled water. Since the non-potable water is delivered via the SWP without any treatment and the SWP is operated and managed by DWR, Zone 7 has no control over the quality of water delivered to its non-potable water customers, the targets are established for information only. It is up to the non-potable water user to decide if and when they need to discontinue the use of water for irrigation due to unacceptable water quality.

Over the years, the water quality targets have been reviewed and adjusted as needed. The potable water quality targets are also incorporated into various operations plans, planning documents, and design criteria as appropriate. The WQMP also has identified operational modifications, studies, and capital facilities to facilitate meeting the potable targets. These projects have been implemented, completed, or incorporated into Zone 7's ongoing Capital Improvement Program (CIP) and Asset Management Program (AMP).

The Water Quality Policy was last revised in April 2014 and directs staff to *"conduct a workshop with the M&I Contractors to develop a Water Quality Management Program Report every two years. The workshop will review emerging water quality issues and relevant regulatory and/or technology developments, review status of key parameters of concern in relation to their water quality targets, review water quality policy and need for updates, and review the status of relevant water quality improvement projects/activities. The Report shall include any recommended revisions to the water quality targets and/or recommended projects/activities to assist in meeting the water quality targets. Optimization of system operations will be recommended, where possible, prior to the identification of the need for capital improvements. The Report recommended capital improvements shall be incorporated into Zone 7's biennial update of the Ten-Year Water System CIP."*

DISCUSSION:

Water Quality Policy: Zone 7's 2014 Water Quality Policy was reviewed and there is no recommended revision to the Policy.

Non-Potable Water Quality And Targets: Zone 7 delivers imported State Water Project (SWP) water from the California Department of Water Resources (DWR) via the South Bay Aqueduct (SBA) directly to its untreated water users without any treatment. Some untreated water users can also receive water from the local Lake Del Valle (LDV) or a blend of LDV and SWP water.

Water quality monitoring data is provided to any interested untreated water users and M&I Contractors on a monthly basis. As indicated in the attached **Table 1**, Zone 7 met all of its non-potable water quality targets during the reporting period.

Potable Water Quality And Targets: Zone 7 supplies mostly treated surface water to its four major retailers and a few direct customers. The four retailers, which provide water for M&I use, are the City of Pleasanton, the City of Livermore, the Dublin San Ramon Services District (DSRSD), and California Water Service Company (CWS). Groundwater supplies are used only to meet peak demands during summertime, for groundwater basin storage management, and when surface water supplies are limited (approximately 15% in 2018 and 26% in 2019). Zone 7 treats its surface water supplies at its Del Valle Water Treatment Plant (DVWTP) and/or Patterson Pass Water Treatment Plant (PPWTP). Groundwater is pumped through any of its ten wells and chloraminated to maintain consistent disinfectant residual in the distribution system. The highest salts and hardness values in Zone 7's groundwater supplies come from its Mocho Wells which can be treated through Zone 7's Mocho Groundwater Demineralization Plant (MGDP).

Zone 7's delivered water quality monitoring data is summarized in its Monthly Delivered Water Quality Reports and Annual Consumer Confidence Reports. Note that Zone 7 continued to meet all of the drinking water standards and, in almost all cases, the quality was significantly better than required. As indicated in the attached **Table 2**, the average delivered water quality data met the potable water quality targets during the reporting period, except for hardness in groundwater supplies and earthy-musty T&O caused by algal blooms in surface water supplies.

Zone 7's groundwater generally contains more salts and minerals and is "harder" than its surface water supplies. The highest chloride levels, total dissolved solids (TDS) and hardness values in Zone 7's groundwater supplies come from Mocho Wells; these levels have been increasing over the past few years (>150 mg/L chloride, >750 mg/L TDS, >400 mg/L hardness, respectively). Zone 7 manages salt loading for the long-term to its groundwater basin via artificial recharge with low TDS surface water, groundwater pumping and demineralization per its Salt Management Program (SMP). Demineralization is also used by Zone 7 to assist in meeting its delivered water salinity and hardness targets. Zone 7's MGDP uses a reverse-osmosis (RO) membrane filtration technology which produces approximately 80 permeate water and 20% reject concentrate. RO permeate is extremely "soft" (less than 10 mg/L) and corrosive, therefore, it is blended with untreated groundwater to ensure that the water is non-corrosive and safe to drink. In general, MGDP is online whenever Mocho wells are online except for repairs/maintenance, when there is need to avoid 20% waste due to drought/surface water emergencies, or when there are requests from PG&E to turn off high power use facilities during potential power shortages. More recently, MGDP was shut down for several months in 2020 to clean out the scale build-up in the RO concentrate pipeline. A second demineralization plant is in Zone 7's long-term plans to provide additional salt removal capability. The implementation schedule for additional groundwater demineralization capacity depends on factors such as growth in the Valley and will be evaluated as part of the ongoing CIP review and update process. The growth in the Valley impacts the overall salt management program needs and funding availability.

Zone 7's surface WTPs historically use Powdered Activated Carbon (PAC) and chlorine to treat algal byproducts; however, the effectiveness of these treatment methods is limited. Ozone is identified by Zone 7 as the best treatment technique for treating algal byproducts as well as reducing DBPs and other potential emerging contaminants. Zone 7 recently completed construction of ozone treatment facilities at DVWTP. One earthy-musty T&O event occurred in

July 2020, before the ozone system startup at DVWTP. Another event occurred in early November 2020, during performance testing of DVWTP's ozone system; Zone 7 immediately took actions to work with DWR to reduce Lake release while increasing the plant's ozone dose. The ozone treatment facilities at PPWTP are currently under construction and should come online in 2022.

Water Quality Issues: A summary of ongoing and emerging potential water quality issues as well as the status of relevant water quality improvement activities and regulatory/ technology development since the last WQMP update in December 2018 is provided in the attached **Table 3**.

The water quality issue that is of most concern to Zone 7 is Per- and Polyfluoroalkyl Substances (PFAS) found in the Tri-Valley's groundwater basin since late 2018. To date, Zone 7 has detected seven types of PFAS [(perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanoic acid (PFHxA), perfluorohexane sulfonic acid (PFHxS), perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS), and perfluorononanoic acid (PFNA)] in eight out of ten Zone 7's production wells (Stoneridge, 3 COL wells, and 4 Mocho wells). Only PFOS and PFOA currently have State guidance levels. Guidance level for PFBS is anticipated to be released in late November 2020 while guidance levels for the other detected PFAS are currently under development. Zone 7 has already implemented operational changes to ensure that any affected wells are treated below the applicable response level prior to entry into the distribution system. In July 2020, Zone 7 completed a study which identified COL wellfield to be most at risk of not being able to comply with future State MCLs for PFAS. In September 2020, Zone 7 Board approved moving forward with the design of the PFAS treatment facility at the COL wellfield, including bench-scale testing of various Granular Activated Carbon (GAC) and specialized Ionic Exchange (IX) resins, in order for the new facility to come online before the anticipated compliance date in early 2024. Zone 7 also recently completed a PFAS Potential Source Investigation Study which includes recommendations for additional sampling near most probable sources (airports, fire stations/fire training sites, land disposal sites, military facilities, and wastewater facilities) and in areas with little data as well as other follow-up work. Zone 7's monitoring data and both draft Study reports are available on Zone 7's website (https://www.zone7water.com/pfas-information). Zone 7 will continue its monitoring efforts, proceed with design of the PFAS treatment facility at the COL wellfield, track regulatory development for PFAS, and assess any impact to Zone 7 operations as needed.

CONCLUSIONS:

Based on review of the data and input from the Retailers, no revisions are identified to Zone 7's Water Quality Policy, water quality targets, and ongoing or planned water quality improvement projects/activities.

ATTACHMENTS:

- Table 1 - Status of Non-Potable Water Quality Targets
- Table 2 - Status of Potable Water Quality Targets
- Table 3 - Summary of Water Quality Issues, Status Updates and Recommendations
- Attachment A – 2014 Water Quality Policy for Potable and Non-Potable Water

Table 1 - Status of Non-Potable Water Quality Targets

Key Parameters of Concern	Maximum Applied Level Vineyards	Average Target	2018-2020 SBA Water Quality Data*,¥ Avg	Min	Max	Target Currently Met	Requires Optimization	Requires Capital Investment
Boron (mg/L)	<1	<0.5	0.1	<0.1	0.2	✓		
Chloride (mg/L)	<200	<125	53	10	141	✓		
Emitter Clogging Potential (mEq/L as Ca+Mg§)	3 to 4	3 to 4	1.7	0.7	2.9	✓		
Available Nitrogen from (Nitrate mg/L as N)	-	<10 during summer	0.1	<0.1	0.3	✓		
pH	-	<8.0	7.7	7.0	8.6	✓**		
Sodium (mg/L)	<200	<100	40	12	86	✓		
Total Dissolved Solids (TDS) (mg/L)	-	<650	214	69	397	✓		

* Data presented is from 1/1/18 to 10/31/20

** Averages met target.

¥ SBA data is an average of monthly untreated water samples taken from the surface WTPs.

§ mEq/L as Ca+Mg = milliequivalents per liter as calcium and magnesium.

Table 2 - Status of Potable Water Quality Targets

Key Parameters of Concern	Water Quality Target[1]	2018-2020 Delivered Water Quality Data*,**			Target Currently Met	Requires Optimization	Requires Capital Investment
		Avg	Min[2]	Max[2]			
Appearance	Minimize air bubbles/cloudiness events[3]	NA	0	0	✓		
Boron (mg/L)	< 2.0 mg/L at turnouts	0.3	<0.1	1.6	✓		
Chloramines and Nitrification Prevention							
Total Disinfectant Residual (mg/L as Cl_2)	2.0 - 2.5 mg/L as Cl2 from water treatment plants (WTPs), wells will be operated to be as close to this target range as feasible	2.5	2.2	2.8	✓[5]	✓	
Cl_2:NH_3-N	4:1 to 5:1	NA	NA	NA	✓[4]	✓	
Minimize odor	Chloraminate above pH 8.0 for WTPs	8.9	8.6	9.4	✓[7]	✓	
Free Ammonia Residual (mg/L as N)	<0.15 mg/L as N from WTPs; wells to be operated as close to this target as feasible	0.03	<0.01	0.09	✓	✓	
Nitrite (mg/L as N)	<0.02 mg/L as N at turnouts	<0.01	<0.01	0.08	✓[5]	✓	
Consistency	Provide consistent chloramine residual at all wells and WTPs	2.5	2.2	2.8	✓[5]	✓	
Chromium VI, Cr^{6+}(µg/L)	<8 µg/L at turnouts***	3.2	<1	13.0	✓[5,6]	✓	?
Corrosion Control	non-corrosive or Aggressive Index (AI) ≥ 12.0	12.3	11.9	12.5	✓[5]	✓	
	pH leaving WTP at +/- 0.2 units of target	0.1	0.0	0.3	✓[5,7]	✓	
Disinfection By-Products (DBPs)							
Maximum Leaving Surface WTP	Total Trihalomethanes (TTHMs) <64 µg/L	25	11	60	✓	✓	✓
	Five Haloacetic acids (HAA5) <48 µg/L	12	5	19	✓		
N-Nitrosodimethylamine (NDMA) (ng/L)	<10 ng/L @ turnouts	1	ND	3	✓		
Easthy-Musty Taste and Odor (T&O)							
Odor Threshold Concentrations							
2-Methylisoborneol (MIB)(ng/L)	<9 ng/L	2	<1	22	✓[5]	✓	✓
Geosmin (ng/L)	<4 ng/L	3	<1	14	✓[5]	✓	✓
Events[3]	No events	NA	0	2		✓	✓
Salinity & Hardness							
Chloride (mg/L)	<100 mg/L at turnouts	85	40	202	✓[5]	✓	✓
Total Dissolved Solids (TDS) (mg/L)	<500 mg/L at turnouts	356	110	970	✓[5]	✓	✓
Hardness (mg/L as $CaCO_3$)	<150 mg/L as $CaCO_3$ at turnouts	151	15	469		✓	✓

NA = Not Applicable/Available

* Data presented is from 1/1/18 to 10/31/20

** Online data are used when available and pulled out every 4 hours.

*** There is currently no MCL for Cr6+. The previous MCL of 0.010 mg/L was withdrawn on September 11, 2017.

1 Targets are either at the secondary MCLs or 80% of the primary MCLs except for the key parameters of concern in the table above.

2 5th percentile and 95th percentile values are used in lieu of minimium and maximum values, respectfully, for online data to exclude instrument related spikes and null values.

3 An event is defined as when three or more similar complaints are received in a 7-day period.

4 Ratio is adjusted to meet target free ammonia residual at WTPs.

5 Averages met target.

6 Total chromium data is reported in lieu of Cr^{6+} data. All WTP samples were non-detect.

7 Data is for Surface WTPs only.

Units: **Milligrams per liter (mg/L):** a unit expressing the concentration of chemical constituent in solution as weight (milligram) of solute per unit volume (liter) of water; equivalent to one part per million (ppm).

Micrograms per liter (µg/L): equivalent to one part per billion (ppb).

Nanograms per liter (ng/L): equivalent to one part per trillion (ppt).

Table 3 – Summary of Water Quality Issues, Status Updates and Recommendations

#	Issue	Background/Overview	Update of relevant regulatory/technology development	Status of relevant water quality improvement projects/activities	Recommendation to add/modify any projects/activities?
1	Arsenic	Arsenic in drinking water has been linked to various health effects including bladder, lung, and skin cancer as well as cardiovascular disease. Current federal and California MCL is 10 ppb. USEPA typically sets MCLs for drinking water contaminants at a level at which a lifetime of exposure would result in one excess cancer in one million people exposed. However, the 10-ppb MCL for arsenic is associated with a far greater risk – 3,000 in a million (roughly 1 in 300) based on the health effects and treatment costs information available in 2001 when the federal standard was set. The only State that has a standard other than the federal MCL is New Jersey, which has a drinking water MCL of 5 ppb since 2006.	Evidence continues to mount about the health effects of arsenic at less than 10 ppb of exposure. New Hampshire will be the second state to lower its arsenic MCL to 5 ppb, which is expected to take effect in July 2021.[1] USEPA currently expects to complete the review of a revised risk assessment in 2021 which could result in a revised federal MCL.[2]	Zone 7 monitors its groundwater sources quarterly for any well that is running at the time of sample collection. Arsenic is currently not an issue in Zone 7's existing production wells (typically near or below 1 ppb). Arsenic is a potential concern for future well development because of its natural occurrence in the Livermore-Amador Valley Groundwater Basin, particularly in the Tassajara formation.	None - Zone 7 will continue its monitoring efforts, track regulatory development for arsenic, and assess any impact to Zone 7 as needed.

[1] https://www.nhpr.org/post/nh-becomes-second-state-sharply-lower-arsenic-limit-drinking-water#stream/
[2] https://www.des.nh.gov/organization/commissioner/pip/publications/documents/r-wd-18-20.pdf

<table>
<tr><th>#</th><th>Issue</th><th>Background/Overview</th><th>Update of relevant regulatory/technology development</th><th>Status of relevant water quality improvement projects/activities</th><th>Recommendation to add/modify any projects/activities?</th></tr>
<tr><td>2</td><td>Cyanotoxins</td><td>Cyanotoxins are toxins produced by cyanobacteria (also known as blue-green algae or harmful algal blooms (HABs)) commonly found in surface water supplies.

Cyanotoxins in drinking water have been linked to health effects including gastroenteritis and liver and kidney damage.

The most common cyanotoxins are: microcystins, cylindrospermopsin, anatoxins and saxitoxins. There are currently no regulatory limits for cyanotoxins.

The only guidance levels are USEPA's Drinking Water Health Advisories for microcystins and cylindrospermopsin over a 10-day exposure[3]:
<table>
<tr><th>Cyanotoxin (ppb)</th><th>Children < 6-Years Old</th><th>Older Children & Adults</th></tr>
<tr><td>Microcystins</td><td>0.3</td><td>1.6</td></tr>
<tr><td>Cylindrospermopsin</td><td>0.7</td><td>3.0</td></tr>
</table></td><td>As part of the federal fourth Unregulated Contaminant Monitoring Rule (UCMR4)[4], Zone 7's four retailers monitored for 10 cyanotoxins, including microcystins and cylindrospermopsin, at the entry points to their distribution systems between 2018 to 2020 and found no detection of the cyanotoxins in their treated water samples.</td><td>Zone 7 and DWR actively monitors for algal blooms and cyanotoxins in its surface water supplies. Low levels of microcystins have been occasionally detected in Zone 7's surface water supplies, however, they were removed by Zone 7's water treatment processes and none were detected in the treated water.

Zone 7 treatment plants historically use Powdered Activated Carbon (PAC) and chlorine to treat algal byproducts; however, the effectiveness of these treatment methods is limited. Ozone is identified by Zone 7 as the best treatment technique for treating algal byproducts as well as reducing disinfection byproducts and other potential emerging contaminants. Zone 7 recently completed construction of ozone treatment facilities at Del Valle Water Treatment Plant (DVWTP). The ozone treatment facilities at Patterson Pass Water Treatment Plant (PPWTP) are currently under construction and should come online in 2022.</td><td>None - Zone 7 will continue its monitoring efforts, work with DWR, optimize treatment, track regulatory development for cyanotoxins, and assess any impact to Zone 7 as needed.</td></tr>
</table>

[3] https://www.epa.gov/cyanohabs/epa-drinking-water-health-advisories-cyanotoxins
[4] www.epa.gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule/

#	Issue	Background/Overview	Update of relevant regulatory/technology development	Status of relevant water quality improvement projects/activities	Recommendation to add/modify any projects/activities?
3	Earthy-Musty Tastes and Odors (T&O)	Surface water supplies are vulnerable to algal blooms and their byproducts, especially during warm summer months when high concentrations of nutrients combine with abundant sunshine and warm water temperatures. Some algae (Melosira, Anabaena, Microcyst, Aphanizomenons, Cryptomonads, etc.) can produce earthy/musty T&O compounds such as *2-methylisoborneol (MIB)* and *geosmin*.	Earthy-Musty T&O compounds are not regulated.	Zone 7 and DWR actively monitor for algal blooms and *MIB* and *geosmin* in its surface water supplies. DWR applies copper sulfate and other algaecides to control algal blooms in the State Water Project facilities. PAC was utilized at Zone 7's surface WTPs as needed and there were no earthy-musty T&O events in 2018-2019. One earthy-musty T&O event occurred in July 2020, before ozone system startup at DVWTP. Another event occurred in November 2020, during performance testing of DVWTP's ozone system; Zone 7 immediately took actions to work with DWR to reduce Lake release while increasing the plant's ozone dose. The ozone treatment facilities at PPWTP are currently under construction and should come online in 2022.	None - Zone 7 will continue its monitoring efforts, work with DWR, optimize treatment, complete PPWTP ozone project, and assess any impact to Zone 7 as needed

#	Issue	Background/Overview	Update of relevant regulatory/technology development	Status of relevant water quality improvement projects/activities	Recommendation to add/modify any projects/activities?
4	Hexavalent Chromium (Cr VI or Cr^{6+})	Cr^{6+} is a carcinogen and a reproductive toxicant for both males and females. Cr^{6+} is currently regulated under the 50-ppb California MCL and the 100- ppb federal MCL for total chromium. In 2011, the California Office of Environmental Health Hazard Assessment (OEHHA) established a Public Health Goal (PHG) of 0.02 ppb for Cr^{6+} based on cancer risk. The California State Water Board is now required to establish a contaminant's MCL at a level as close as is technically and "economically feasible" to its PHG. In 2014, California became the only State that had adopted a drinking water MCL of 10 µg/L for Cr^{6+}; however, in 2017, the Superior Court of Sacramento County found that the State Water Board "failed to properly consider the economic feasibility of complying with the MCL" and thereby invalidated that MCL.[5]	USEPA is still in the process of re-assessing the health risks associated with Cr^{6+} exposure and currently has no regulatory timeline on its website.[6] California is currently working to establish criteria to determine economic feasibility and at the same time move forward with adopting a new MCL for Cr^{6+}. Public workshops were conducted in April 2020 for its White Paper on economic feasibility criteria[7] and in December 2020 for its preliminary occurrence data and cost estimates[8]. It is anticipated that the State would release a draft MCL by spring 2021 and adopt a final MCL by early 2022. Multiple technologies exist to treat hexavalent chromium. These include ion exchange (IX), reverse osmosis, and reduction coagulation filtration. Another promising treatment option is the use of stannous chloride to reduce $Cr^{6+}$to the relatively harmless Cr^{3+} which can then be filtered out if needed.[9,10]	Although the Cr^{6+} MCL is no longer in effect, Zone 7 is keeping its delivered water quality target at <8 ppb (80% of the previous MCL) at its turnouts. Zone 7 has one well (COL 5) that has Cr^{+6} as high as 14 ppb in recent years. Zone 7 currently blends COL 5 well with the other COL wells to meet its water quality target. Other wells are currently <7 ppb and are not expected to require treatment. Provisions for Cr^{6+} treatment via stannous chloride without filtration will be included in the design for the PFAS treatment at COL wellfield; this is because the IX resins used for Cr^{+6} removal and PFAS removal are different and separate IX systems would be required to be installed (see PFAS discussion below for more details).	None - Zone 7 will continue its monitoring efforts, track regulatory development for Cr^{6+}, plan for treatment at COL wellfield, and assess any impact to Zone 7 operations as needed.

[5] www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Chromium6.html
[6] www.epa.gov/dwstandardsregulations/chromium-drinking-water
[7] www.waterboards.ca.gov/drinking_water/programs/documents/cr6econwp.pdf
[8] https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/chromium6/hex_chrome_occurrence_data_2020_v4.pdf
[9] https://www.soquelcreekwater.org/water-quality/chromium-6
[10] http://www.cvwd.org/383/Stannous-Chloride-Demonstration-Project

#	Issue	Background/Overview	Update of relevant regulatory/technology development	Status of relevant water quality improvement projects/activities	Recommendation to add/modify any projects/activities?
5	Lead and Copper /Corrosion Control	Lead and copper can enter drinking water when plumbing materials corrode, especially where the water has high acidity or low mineral content that corrodes pipes and fixtures. Exposure to lead and copper may cause health problems ranging from stomach distress to brain damage. Lead and copper in drinking water is currently regulated under the federal Lead and Copper Rule (LCR) which was promulgated in 1991. The LCR requires water systems to collect tap samples from sites served by the system that are more likely to have plumbing materials containing lead. If more than 10 percent of tap water samples exceed the lead action level of 15 ppb or the copper action level of 1300 ppb, then water systems are required to take additional actions to control corrosion. Zone 7's groundwater is naturally non-corrosive due to its high mineral content. Zone 7's corrosion control treatment for its surface WTPs is via pH adjustment with sodium hydroxide. This treatment technique is called carbonate passivation where the pipe materials are incorporated into a metal/hydroxide/carbonate film that protects the pipe. This technique is most suitable for low hardness and alkalinity water where a water system does not want to drastically alter the water chemistry to the point that calcium carbonate precipitation will occur.	In July 2020, EPA submitted the proposed Rule to the Office of Management and Budget (OMB) for their review. The OMB website does not provide an update on the status of their review nor information on an anticipated date for EPA to publish the final Rule. The proposed Rule will include a mandatory inventory of lead service lines (LSLs), lead testing in schools and child cares, and other improvements in sampling and monitoring requirements. The proposed Rule will also include a new lead trigger level of 10 ppb, which would compel water systems to identify actions that would reduce lead levels in drinking water. These actions could include re-evaluating current treatment or conducting a corrosion control study. Water systems above existing action level of 15 ppb would be required to annually replace a minimum of three percent of the number of known or potential LSLs in the inventory at the time the action level exceedance occurs. EPA is proposing that a galvanized service line to be considered as a LSL if it ever was or is currently downstream of any LSL or service line of unknown material.[11]	To maintain optimal corrosion control, Zone 7 uses either the Aggressiveness Index (AI) or the Calcium Carbonate Precipitation Potential (CCPP) to calculate a target pH for each WTP on a weekly basis; the WTPs then adjust the pH as necessary. Water with AI ≥12 or CCPP>0 is generally considered non-corrosive. The CCPP in Zone 7's treated surface water is generally > 0 while the CCPP in Zone 7's groundwater is much higher, between 20 to 30. When the minerals are removed at Zone 7's Mocho Groundwater Demineralization Plant (MGDP), the demineralized water becomes corrosive and is typically treated to achieve a target CCPP of 4 to 10 before entering the transmission system. Zone 7 and its retailers had already completed the state required inventory of LSLs[12]and did not find any LSL in their systems. Zone 7 and its retailers are also currently are on reduced monitoring frequency under the 1991 LCR due to low detection of lead and copper in their systems. In September 2017, Zone 7 proactively completed an assessment of its corrosion control practices which were found to be adequate.[13]	None - Zone 7 will continue its monitoring efforts, revise sampling plan per new federal requirements, optimize corrosion control treatment, track regulatory development for LCR revisions, and assess any impact to Zone 7 operations as needed.

[11] https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=201904&RIN=2040-AF15
[12] https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/lead_service_line_inventory_pws.html
[13] http://www.zone7water.com/images/pdf_docs/water_quality/corrosion_control_assessment.pdf

#	Issue	Background/Overview	Update of relevant regulatory/technology development	Status of relevant water quality improvement projects/activities	Recommendation to add/modify projects/activities?
6	Manganese and Colored Water Complaints	Manganese is naturally-occurring mineral that is present in Zone 7's surface water supplies at varying concentrations. Some of the chemicals used in the coagulation process for surface water treatment process can also contain manganese. Under typical raw water quality and plant operating conditions, Zone 7's treatment processes will remove manganese through oxidation, precipitation, and filtration. However, small amounts of the oxidized manganese tend to accumulate on the filter media and could be released periodically under certain water quality conditions (e.g., low pH, alkalinity, and temperature). Manganese in drinking water is regulated by a 0.05-ppm secondary MCL, a federal and State standard established to address issues of aesthetics (discoloration), not health concerns. At relatively low concentrations (0.02 ppm or greater), manganese can cause discolored water (usually black or dark red/brown) and staining of laundry and plumbing fixtures. At higher levels (0.1 ppm or greater), manganese can create a metallic taste in water. In mid-March of 2020 when DVWTP was restarted without ozone, manganese passed through the new biofilters and caused numerous colored water complaints. Zone 7 immediately switched its primary coagulant from ferric chloride to ferric sulfate, which has lower amount of manganese impurity, and made other operational changes to control the manganese leaving the plant to around its manganese target of less than 0.02 ppm.	None	DVWTP began performance testing of its new ozone system in late July 2020 and completed testing in early October 2020. Ozone can oxidize and precipitate manganese in the water, however, under certain water quality conditions, especially during cold water temperature below 15^{o}C, the manganese deposits on the filter media may be released and create colored water problems in the treated water. Therefore, for long-term management of manganese in the water, in mid-October of 2020, DVWTP switched to another coagulant (aluminum sulfate) which does not contain manganese. Zone 7 plans to switch the coagulant at PPWTP to aluminum sulfate when the plant restarts in spring of 2021. This switch to aluminum sulfate for coagulant has significantly reduced manganese levels in treated water.	None - Zone 7 will continue its monitoring efforts, optimize treatment, and assess any impact to Zone 7 as needed.

#	Issue	Background/Overview	Update of relevant regulatory/technology development	Status of relevant water quality improvement projects/activities	Recommendation to add/modify projects/activities?
7	Microbial and Disinfection By-Products (DBPs)	DBPs are formed when naturally occurring precursors such as Total Organic Carbon (TOC) and bromide react with disinfectants such as chlorine and ozone. DBPs such as Trihalomethanes (THMs) and Haloacetic acids (HAAs) are formed when precursors in the water react with chlorine during water treatment. Applying ozone at treatment plants will reduce both coagulant and chlorine demand, thus reduce typical chlorination DBPs. However, ozonation can create other DBPs such as formaldehyde and other aldehydes, carboxylic acids, hydrogen peroxide, bromate, bromomethanes, brominated acetic acids, brominated acetonitriles and ketones.	In early 2020, California issued public health goals (PHGs)[14] for 4 individual THMs[15] and proposed PHGs for 5 individual HAAs[16] found in drinking water as a result of disinfection practice. Public water systems serving more than 10,000 service connections, such as Zone 7's retailers, must prepare a brief written report every 3 years that gives information on the "detection" of any contaminants above PHGs. USEPA is currently conducting analyses to further evaluate potential regulatory revision for 8 microbial and DBP contaminants (Chlorite, HAAs, THMs, Heterotrophic Bacteria, *Cryptosporidium*, *Giardia lamblia*, *Legionella*, and Viruses). Additionally, with a consideration of risk/risk tradeoff among different DBPs, USEPA is also evaluating information on unregulated DBPs, including chlorate and nitrosamines. A virtual public meeting was held in mid-October 2020 to kick off this process.[17]	DBPs are minimized through source control (e.g., working with DWR in controlling salinity and organic carbon loading in the Delta), removal of organic precursors and DBPs themselves in the treatment plant, and optimization of disinfection processes. Zone 7 recently started up ozonation at its DVWTP in late summer of 2020. The plant uses raw water pH adjustment via carbonic acid and chloramination ahead of the ozone to control bromate formation. Also, biofiltration is used to control other ozonated byproducts. Similar ozonation, bromate control and biofiltration processes will be installed at PPWTP which should come online in 2022.	None - Zone 7 will continue its monitoring efforts, work with DWR, optimize treatment, complete PPWTP ozone project, track regulatory development for microbial and DBP contaminants, and assess any impact to Zone 7 as needed.

[14] A PHG is the level of a drinking water contaminant at which adverse health effects are not expected to occur from a lifetime of exposure.
[15] https://oehha.ca.gov/water/crnr/announcement-publication-public-health-goals-and-technical-support-document
[16] https://oehha.ca.gov/water/crnr/haloacetic-acids-drinking-water
[17] https://www.epa.gov/dwsixyearreview/potential-revisions-microbial-and-disinfection-byproducts-rules

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8	Microplastics	Microplastics are ubiquitous in the environment and have been detected in some drinking water (bottled and tap water). Evidence concerning the hazards and exposure of humans to microplastics is nascent and rapidly evolving. Potential hazards associated with microplastics are: the particles themselves which present a physical hazard, the chemicals in or on the plastics (e.g., unbound monomers, additives, and absorbed chemicals from the environment), and the microorganisms that may attach and colonize on the plastics. There is currently no standardized methods for sampling and analyzing microplastics which makes comparisons across studies difficult. Although there are no treatment technologies directly targeted at the removal of microplastics from drinking water; conventional treatment have anecdotally been found to remove at least 70 – 80% of microplastics. Microplastics >50 µm in dimensions were virtually not detected in treated water, and no microplastics >100 µm were detected in treated water, despite their observed occurrence in raw water.	In August 2019, the World Health Organization (WHO) published a report [18] concluding that chemicals and microbial pathogens associated with microplastics in drinking water pose a low concern for human health, although there is insufficient information to draw firm conclusions on the toxicity of nanoparticles. Thus, further research is needed in the development of standard methods for measuring micro- and nano- particles in the water. In June 2020, California State Water Board became the world's first government agency to define "microplastics in drinking water" pursuant to Senate Bill 1422. The adopted definition encompassed a particle size of "at least three dimensions" that are greater than 1 nanometer and less than 5 millimeters to be consistent with the definitions used by other agencies and entities such as California's Ocean Protection Council and the National Oceanic and Atmospheric Administration. The State Water Board is also required by Senate Bill 1422 to adopt test methodology, laboratory accreditation, monitoring and reporting requirements by July 1, 2021.[19]	None	None - Zone 7 will continue to track regulatory development for Microplastics, and assess any impact to Zone 7 as needed.

[18] https://www.who.int/water_sanitation_health/publications/microplastics-in-drinking-water/en/
[19] https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/microplastics.html

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9	Nitrification	Nitrification is a microbial process by which ammonia (primarily added in drinking water to form chloramines as a secondary disinfectant) are oxidized to nitrite and nitrate. The problem is greatest when temperatures are warm and water usage is low. Nitrification can occur rapidly and lead to degradation of the water quality in the distribution system, including increasing nitrite and nitrate levels; reducing alkalinity, pH, dissolved oxygen, and chloramine residuals; increasing corrosivity; and promoting bacterial regrowth in the distribution system. Nitrification can result in potential violation of the Total Coliform Rule, Lead and Copper Rule, and MCL violation for nitrite and nitrate (1 mg/L-N and 10 mg/L-N, respectively).[20]	None	Zone 7 and its retailers use chloramines (ammonia combined with free chlorine) to control microbial growth in their distribution systems. However, any excess free ammonia added or decomposed from chloramines becomes a food source for nitrifying bacteria that produce nitrite and nitrate. Therefore, chemical feeds and residuals are continuously monitored and controlled at all Zone 7 production facilities. Zone 7 also conducts weekly total chlorine and twice-a-month nitrite monitoring at selected turnouts. Retailers are also carefully monitoring their distribution systems and are cycling or mixing their treated water tanks to reduce water age.	None - Zone 7 will continue its monitoring efforts, work with the retailers, optimize treatment, and assess any impact to Zone 7 operations as needed.

[20] https://www.epa.gov/sites/production/files/2015-09/documents/nitrification_1.pdf

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10	Per- and poly fluoroalkyl substances (PFAS)	PFAS exposure through drinking water has become an increasing concern due to the prevalence of PFAS and the tendency of PFASs to accumulate in groundwater. In addition, PFAS exposure has been associated with a host of health impacts, including various cancers and reproductive and immune system problems. PFOA (perfluoro-octanoic acid) and PFOS (perfluro-octane sulfonic acid) are the most well-known PFAS compounds and have been the primary focus of regulatory attention. In May 2016, EPA issued a lifetime Health Advisory of 70 parts per trillion (ppt) for PFOA and PFOS, either singly or combined. While the federal PFAS MCLs are still under development, many states are moving forward with developing their own PFAS MCLs. There are currently 4 states (Michigan, New Hampshire, New Jersey and New York) that have adopted MCLs for PFOA and PFOS; New York has the lowest MCL of 10 ppt for either chemical. Two states (Vermont and Massachusetts) have a combined PFAS MCL of 20 ppt for a sum of either 5 or 6 PFAS, respectively.	It is anticipated that USEPA would make final regulatory determination to regulate PFOA/PFOS by early 2021. EPA then has 24 months to propose the regulation and 18 months after that to finalize the regulation. Additional PFAS monitoring is also anticipated under upcoming Unregulated Contaminant Monitoring Rule (UCMR5) which is to be finalized by late 2021 with monitoring to occur between 2023-2025.[21] California also has begun the process to regulate these chemicals. In July 2018, the State issued guidance levels for PFOA/PFOS which were later lowered in August 2019 and in February 2020. The current State guidance includes a notification level of 5.1 ppt for PFOA and 6.5 ppt for PFOS as well as a response level of 10 ppt for PFOA and 40 ppt for PFOS. It is anticipated that California would issue draft Public Health Goals (PHGs) for PFOA/PFOS by the end of this year, propose draft MCLs by fall 2022, and adopt final MCLs by early 2024. In addition, California is in the process of developing notification levels for seven other PFAS[22] with one new notification level (for PFBS) anticipated to be released by the end of 2020.	To date, Zone 7 has detected seven types of PFAS (PFBS, PFHpA, PFHxA, PFHxS, PFOA, PFOS and PFNA) in eight out of ten Zone 7's production wells (Stoneridge, 3 COL wells, and 4 Mocho wells). Zone 7 has already implemented operational changes to ensure that any affected wells are treated below the applicable response level prior to entry into the distribution system. In July 2020, Zone 7 completed a study which identified COL wellfield to be most at risk of not being able to comply with future State MCLs for PFAS. In September 2020, Zone 7 Board approved moving forward with the design of the PFAS treatment facility at the COL wellfield, including bench-scale testing of GAC/IX media, in order for the new facility to come online before the anticipated compliance date. Zone 7 also recently completed a Groundwater PFAS Characterization study which includes recommendations for additional sampling near most probable sources (airports, fire stations/fire training sites, land disposal sites, military facilities, wastewater facilities) and in areas with little data as well as other follow-up work.	None - Zone 7 will continue its monitoring efforts, proceed with design of the PFAS treatment facility at the COL wellfield, track regulatory development for PFAS, and assess any impact to Zone 7 operations as needed. Zone 7's monitoring data and both draft Study reports are available on Zone 7's website (https://www.zone7water.com/pfas-information)

[21] https://www.epa.gov/sites/production/files/2019-10/documents/ucmr5-stakeholdermeeting-190830.pdf

[22] ADONA = 4,8-dioxia-3H-perflourononanoic acid, PFBS = perfluorobutane sulfonic acid, PFDA = perfluorodecanoic acid, PFHpA = perfluoroheptanoic acid, PFHxA = perfluorohexanoic acid, PFHxS = perfluorohexane sulfonic acid, PFNA = perfluorononanoic acid;

#	Issue	Background/Overview	Update of relevant regulatory/technology development	Status of relevant water quality improvement projects/activities	Recommendation to add/modify any projects/activities?
11	Salinity and Hardness	Zone 7's groundwater generally contains more salts and minerals and is "harder" than its surface water supplies. The highest chloride levels, TDS and hardness values in Zone 7's groundwater supplies come from Mocho Wells; these levels have been increasing over the past few years (>150 mg/L chloride, >750 mg/L TDS, >400 mg/L hardness, respectively). Zone 7 manages salt loading to its groundwater basin via artificial recharge with low TDS surface water, groundwater pumping and demineralization per its Salt Management Program (SMP)[23]; This SMP has a current salt export goal of about 4,000 tons per year and a future salt export of about 6,000 tons per year at build-out. Demineralization is also used by Zone 7 to assist in meeting its delivered water salinity and hardness goals. Zone 7's Mocho Groundwater Demineralization Plant (MGDP) was constructed in 2009 to assist in achieving the current salt export goal per year. This plant uses a reverse-osmosis (RO) membrane filtration technology which produces approximately 80 permeate water and 20% reject concentrate. RO permeate is extremely soft (less than 10 mg/L) and corrosive, therefore, it is blended with untreated groundwater to ensure that the water is non-corrosive and safe to drink (see more discussion on Lead and Copper/Corrosion Control).	None	In 2018, Zone 7 exported a total of 5,748 tons of salts (1,168 tons of salts from the Valley via MGDP and 4,580 tons of salts via groundwater pumping) and imported and artificially recharged 6,773 AF of lower TDS (220 mg/L, average) into the Basin. In 2019, Zone 7 exported a total of 8,750 tons of salts (1,873 tons of salt from the Valley via MGDP and 6,877 tons of salts via groundwater pumping) and imported and artificially recharged 2,943 AF of lower TDS (139 mg/L, average) into the Basin.[24] In general, MGDP is online whenever Mocho wells are online except for repairs/ maintenance, when there is need to avoid 20% waste due to drought /surface water emergencies, or when there are requests from PG&E to turn off high power use facilities during potential power shortages. MGDP was shut down for several months in 2020 to clean out the scale buildup in the concentrate pipeline. The plan for additional groundwater demineralization capacity will be evaluated as part of the ongoing CIP review and update process, which considers overall program needs and funding availability.	None - Zone 7 will continue its monitoring efforts, working with DWR to control salinity in surface water supplies, implementing salt management strategies per SMP, including operation of MGDP.

[23] http://www.zone7water.com/library/reports-planning-documents/36-public/content/158-salt-management-plan-2004
[24] http://www.zone7water.com/36-public/content/76-groundwater-management-program-annual-report

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12	Total Coliform Rule Revisions	The federal Revisions to the Total Coliform Rule (RTCR) became effective in 2016, however, because California has yet not adopted its revisions, California water systems have had to comply with both the California TCR and the federal RTCR.	California recently announced its long-awaited draft RTCR[25] on October 29, 2020. Some applicable proposed State provisions that are not present in the federal RTCR include: • Requirements for quarterly bacteriological monitoring of a groundwater source that is treated with a primary or residual disinfectant on a continuous basis; • Requirements for coliform density determinations of total coliforms and E. coli, if directed by the State Water Board; • Requirements for a report and corrective action when monitoring results indicate a possible significant rise in bacterial count; The State Water Board is planning on holding a public hearing on December 17 and the comment period will close on December 18. The Board plans to adopt the RTCR in January 2021 which will become effective sometimes in spring 2021.	Zone 7 has a comprehensive monitoring program and already includes production wells in use during routine bacteriological monitoring. Based upon historical bacteriology monitoring records, no concernable impacts are anticipated from this proposed rule.	None - Zone 7 will continue its monitoring efforts, revise sampling plan per new State requirements, track regulatory development for CA RTCR, and assess any impact to Zone 7 operations as needed.

[25] https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/sbddw_20_002_rtcr.html

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13	Wildfires	Wildfires can have both short-term and long-term impacts on water quality. Wildfires can cause drastic changes to landscape and vegetation, which may alter the water quality of surrounding streams, rivers, and lakes within a burned watershed, and potentially cause changes to water quality. Increased erosion due to the destabilization of hillslopes following wildfire can result in more particulate matter mobilized to streams. Subsequent precipitation events can also lead to the transport of ash, charred biomass and sediments. Naturally occurring and anthropogenic substances (such as PFAS in some fire retardants) can also impact the water quality and may potentially contribute to algal blooms. Several SWP reservoirs have been impacted by past wildfires and data collected so far have confirmed negative effects from the fires. For example, in 2018, samples collected after the Camp Fire had showed increases in some metals, minerals, nutrients, and sediment constituents.	None	Two recent fires of concern to Zone 7 are the fire near Lake Del Valle (part of SCU Complex) and the fire near Lake Oroville (North Complex Fire). Cal Fire has confirmed that the fire retardant used does not contain PFAS. Zone 7 has a comprehensive source water monitoring program that can detect any adverse source water quality changes. DWR also has developed a post-fire source water quality monitoring plan targeting areas impacted by these fires. Based on past experience, it is anticipated that significant dilution of potential contaminants would occur by the time the affected Lake Oroville water supply reaches Zone 7's treatment plants via Delta. Also, our treatment plants are equipped with robust treatment processes that can handle any anticipated source water quality changes and will continue to deliver high-quality water to our customers. Ozone at DVWTP is another process to better handle any potential treatment challenges due to SCU Complex fire in the Lake Del Valle watershed.	None - Zone 7 will continue its monitoring efforts, work with DWR to evaluate any water quality impacts from the wildfires, optimize treatment, and assess any impact to Zone 7 operations as needed.

Attachment A

2014 Water Quality Policy for Potable and Non-Potable Water

ZONE 7
ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
BOARD OF DIRECTORS

RESOLUTION NO 14-4365

INTRODUCED BY DIRECTOR PALMER
SECONDED BY DIRECTOR GRECI

Revised Water Quality Policy for Potable and Non-potable Water

WHEREAS, the Zone 7 Board of Directors is committed to delivering high quality water supplies to its potable (treated drinking water) Municipal and Industrial (M&I) Contractors that meet all public health regulatory requirements; and

WHEREAS, the Board endeavors to, in a manner that is fiscally responsible, proactive, and environmentally sensitive, deliver potable water that is aesthetically acceptable to its M&I Contractors; and

WHEREAS, the Board endeavors to provide potable water of an approximately equal quality within its operational capabilities to each M&I Contractor without diminishing existing water quality at any Contractors' turnouts; and

WHEREAS, the Board endeavors to provide non-potable water of an appropriate quality for its untreated water users from current surface and ground water supplies, and as a blended source of untreated and recycled water, when available; and

WHEREAS, the Board on April 16, 2003 adopted Resolution No. 03-2494 setting forth its Water Quality Policy for Potable and Non-potable Water after extensive discussion with stakeholders, and with the support of its M&I Contractors and untreated water users; and

WHEREAS, the adopted Water Quality Policy called for an Implementation Plan to be prepared as part of the Water Quality Management Program which shall be reviewed and updated every two years, or sooner if required, to reflect any emerging water quality issues and other regulatory and/or technology developments; and

WHEREAS, the Implementation Plan was completed in April 2003 which established internal water quality targets for guiding operations and capital improvements and recommended several capital projects for meeting the water quality targets; and

WHEREAS, the Board on August 17, 2005 adopted Resolution No. 06-2783 setting forth its Joint Water Quality Resolution with two of its M&I Contractors, City of Pleasanton and Dublin San Ramon Services District, for a work plan to update the Implementation Plan which included schedules and several policy principles to be evaluated; and

WHEREAS, the Implementation Plan was updated in December 2006 per the 2005 Joint Water Quality Resolution and every two years after; and

WHEREAS, Zone 7 has incorporated the internal water quality targets into various operations plans, planning documents, and design criteria as appropriate; and

WHEREAS, the capital projects recommended by the 2003 Implementation Plan and its updates have been implemented, completed, or incorporated into Zone 7's ongoing Capital Improvement Program (CIP); and

WHEREAS, the Board desires to revise the 2003 Water Quality Policy and the 2005 Joint Water Quality Resolution to reflect current condition of water quality and project status as well as the expectations of its M&I Contractors and untreated water users.

NOW, THEREFORE, BE IT RESOLVED that the Board hereby rescinds Resolution No. 03-2494 adopting the 2003 Water Quality Policy and Resolution No. 06-2783 adopting the 2005 Joint Water Quality Resolution; and

BE IT FURTHER RESOLVED that the Board hereby adopts the following policy goals regarding water quality to guide the Zone 7 potable and non-potable water operations and its CIP:

GOAL 1 – Zone 7 shall continue to meet all State and federal primary Maximum Contaminant Levels[1] (MCLs) for potable water delivered to the M&I Contractors' turnouts. In addition, Zone 7 shall deliver potable water of a quality that is as close as technically feasible and fiscally responsible to the Public Health Goals[2] (PHGs) and/or Maximum Contaminant Level Goals[3] (MCLGs). To ensure a margin of safety, the delivered water shall generally be of a quality that contains no greater than 80 percent of the applicable State or federal primary MCLs.

GOAL 2 – Zone 7 shall meet all State and federal secondary MCLs[1] in the potable water delivered to its M&I Contractors' turnouts. In addition, Zone 7 shall, within technical and fiscal constraints, proactively mitigate earthy-musty taste and odor events[4] from surface water supplies and reduce hardness levels to "moderately hard", defined as 75 to 150 mg/L. Also, Zone 7 shall optimize its treatment processes to minimize chlorinous odors by maintaining consistent disinfectant dosage and residual.

GOAL 3 – Zone 7 shall endeavor to deliver to its untreated water turnouts, from a variety of sources, water of a quality that meets the irrigation needs and does not negatively impact vegetation, crops, or soils.

GOAL 4 – In order to achieve Goals 1 through 3, Zone 7 shall continue to work to improve the quality of its source waters. This may be achieved through Zone 7's Salt and Nutrient Management Plan, which will maintain or improve the water quality in the groundwater basin, and through advocacy of improvements in the State Water Project, its facilities and their operations, which may improve the source water of Zone 7's surface water supplies.

GOAL 5 – Zone 7 will partner with M&I Contractors to assist them in taking similar steps as those outlined in this policy to maintain or improve the quality of water delivered to the M&I Contractor's retail customers.

BE IT FURTHER RESOLVED that this Board policy be reviewed and updated as needed. Also, to ensure that this Board policy is carried out effectively, the Zone 7 General Manager shall implement the following actions:

- Maintain a regular dialog with the M&I Contractors and untreated water users as appropriate and provide opportunities for meaningful and timely input;

- Conduct a workshop with the M&I Contractors to develop a Water Quality Management Program Report every two years. The workshop will review emerging water quality issues and relevant regulatory and/or technology developments, review status of key parameters of concern in relation to their water quality targets, review water quality policy and need for updates, and review status of relevant water quality improvement projects/activities. The Report shall include any recommended revisions to the water quality targets and/or recommended projects/activities to assist in meeting the water quality targets. Optimization of system operations will be recommended, where possible, prior to the identification of the need for capital improvements. The Report recommended capital improvements shall be incorporated into Zone 7's biennial update of the Ten-Year Water System CIP.

- Work with the M&I Contractors to develop joint educational and notification materials for the public regarding Valley's water supplies, emphasizing all the actions taken and to be taken to improve water quality, including how those actions affect each Contactor.

- Establish and facilitate a joint operations workgroup consisting of operations staff from Zone 7 and the M&I Contractors to coordinate data collection and analysis and to coordinate operating practices to improve and minimize variations in delivered water quality.

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[1] Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

[2] Public Health Goal (PHG): The level of a primary contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

[3] Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the United States Environmental Protection Agency.

[4] An event is defined as when three or more similar complaints are received in a 7-day period.

ADOPTED BY THE FOLLOWING VOTE:

AYES: DIRECTORS GRECI, FIGUERS, PALMER, RAMIREZ HOLMES, STEVENS

NOES: NONE

ABSENT: DIRECTOR MACHAEVICH, QUIGLEY

ABSTAIN: NONE

I certify that the foregoing is a correct copy of a Resolution adopted by the Board of Directors of Zone 7 of the Alameda County Flood Control and Water Conservation District on April 16, 2014.

By _____
President, Board of Directors