YORBA LINDA WATER DISTRICT

Independent, Trusted & Reliable Service for more than 100 Years

2013 PUBLIC HEALTH GOALS REPORT

June 2013

Background

Provisions of the California Health and Safety Code Section 116470 (b) specify that water utilities with more than 10,000 connections prepare a special report by July 1, 2013 if their water quality measurements have exceeded any Public Health Goals (PHGs). PHGs are non-enforceable goals established by the Cal-EPA's Office of Environmental Health Hazard Assessment (OEHHA). The law also requires that where OEHHA has not adopted a PHG for a constituent, the water suppliers are to use the Maximum Contaminant Level Goals (MCLGs) adopted by the USEPA. Only constituents which have a California primary drinking water standard and for which either a PHG or MCLG has been set are to be addressed.

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

If a constituent was detected in the District's water supply between 2010 and 2012 at a level exceeding an applicable PHG or MCLG, this report provides the information required by the law. Included is the numerical health risk associated with the MCL and the PHG or MCLG, the category or type of risk to health that could be associated with each constituent, the best treatment technology available that could be used to reduce the constituent level, and an estimate of the cost to install that treatment if it is appropriate or feasible.

Public Health Goals and Drinking Water Standards

To help keep drinking water safe, the California Legislature passed the Calderon-Sher Safe Drinking Water Act of 1996. This law requires the California Department of Public Health (CDPH) to regularly test drinking water supplies and set drinking water standards known as the Maximum Contaminant Levels (MCLs). The Act also requires the Office of Environmental Health Hazard Assessment (OEHHA) to develop Public Health Goals for contaminants in California's publicly supplied drinking water. Public water utilities with more than 10,000 service connections are required to prepare a Public Health Goals report by July 1, 1998 and every three years thereafter if any water quality measurements exceed any of the Cal-EPA's Public Health Goals (PHGs) or USEPA's Maximum Contaminant Level Goals (MCLGs).

What is a Public Health Goal?

A PHG is the level of a chemical contaminant in drinking water that does not pose a significant risk to health. PHGs are not regulatory standards; however, state law requires CDPH to set drinking water standards for chemical contaminant as close to the corresponding PHG as is economically and technically feasible.

In some cases, it may not be feasible for CDPH to set the drinking water standard for a contaminant at the same level as the PHG. The technology to treat the chemicals may not be available, or the cost of treatment may be very high. CDPH must consider these factors when developing a drinking water standard. PHGs are non-enforceable goals established by the California-Environmental Protection Agency's (Cal-EPA) Office of Environmental Health Hazard Assessment. The law requires that where OEHHA has not adopted a PHG for a constituent, the water suppliers are to use the MCLGs adopted by the United States Environmental Protection Agency (USEPA). Only constituents which have primary drinking water standard and for which either a PHG or MCLG has been set are to be addressed. Appendix 1 is a list of California's PHGs and Appendix 2 is a list of the Federal MCLGs. Included in the appendices are the test results for YLWD for the years 2010-2012.

If a constituent was detected in the District's water supply from years 2010 to 2012 at a level exceeding an applicable PHG or MCLG, this report provides the information required by law. Also included in this report is the numerical public health risk associated with the PHG and/or MCLG, the category or type of risk to health that could be associated with constituent, the best treatment technology available that could be used to reduce the constituent level, and an estimate of the cost to install that treatment, if appropriate and feasible.

The purpose of the law is to give water system customers access to information on levels of contaminants even below the enforceable mandatory drinking water standard known as Maximum Contaminant Levels (MCLs). In addition, the law intends to provide an idea of the cost to totally eliminate any trace of the contaminant from drinking water regardless of how minimal the risk might be. The required report is unique to California.

How does OEHHA Establish a Public Health Goal?

The process for establishing a PHG for a chemical contaminant in drinking water is very rigorous. OEHHA scientists first compile all relevant scientific information available, which includes studies of the chemical's effect on laboratory animals and studies of humans, who have been exposed to the chemical. The scientists use data from these studies to perform a *health risk assessment*, in which they determine the levels of the

contaminant in drinking water that could be associated with various adverse health effects. In performing the health risk assessment, OEHHA considers the following factors:

- Certain groups of people, such as pregnant women, young children, the elderly or persons with pre-existing illnesses, who may be especially susceptible to the chemical's adverse effects. The PHG must consider health effects on individuals in these groups.
- Accumulated effects of exposure to the chemical from other sources, such as food, air and soil; as well as and other forms of drinking water, such as showering.
- The chemical's potential to interfere with bodily functions in a way that increases the risk of chronic health problems, such as liver damage.
- Possible synergistic effects from the combined exposure to the chemical in question with other chemicals, which may further increase health risks.

PHGs Set at Levels That Protect Human Health

For carcinogens, OEHHA establishes the PHG at the "one-in-one-million" risk level. At that level, not more than one person in a population of one million people drinking 2 liters of water daily for 70 years would be expected to develop cancer as a result of exposure to that chemical.

For chemicals that cause health effects other than cancer, OEHHA sets the PHG at a level that is not expected to cause any toxic effects, including birth defects and chronic illness.

When calculating a PHG, OEHHA uses all the information it has compiled to identify the level of the chemical in drinking water that would not cause significant adverse health effects in people who drink that water every day for 70 years. OEHHA assumes that an adult will drink two liters of water per day and a child will drink one liter per day. OEHHA must also consider any evidence of immediate and severe health effects when setting the PHG.

Water Quality Data Considered

All of the water quality data collected by the District in the years 2010, 2011, and 2012 for purposes of determining compliance with drinking water standards were considered. This data was also summarized in the District's latest 2013 Annual Water Quality Report, also known as Consumer Confidence Report available on the District's website.

Guidelines Followed

The Association of California Water Agencies (ACWA) formed a workgroup which prepared guidelines for water utilities to use in preparing these newly required reports. The ACWA guidelines were used in preparation of this report. No guidance was available from state regulatory agencies.

Best Available Treatment Technologies and Cost Estimates

Both the USEPA and CDPH adopted what are known as Best Available Technologies (BATs). BATs are the best known methods of reducing contaminant levels to below MCL. Costs can be estimated for such technologies. However, since many PHGs and all MCLGs are set much lower than the MCL, it is not always possible or feasible to determine what treatment is needed to further reduce a constituent downward to or near the PHG or MCLG, many of which are set at zero. Estimating costs to reduce a constituent to zero is difficult, if not impossible, to verify by analytical means that the level has been lowered to zero. Additionally, in some cases, installing treatment to try and further reduce very low levels of one constituent may have adverse effects on other aspects of water quality.

Constituents Detected That Exceed a PHG or MCLG

The following is a discussion of the constituents that were detected in the District's drinking water sources and water distributions system above the PHG, or if no PHG, above the MCLG.

Total Coliform Bacteria

Total coliform (TC) bacteria are indicator organisms that indicate a potential microbial water quality problem that requires confirmation follow-up sampling, testing, and investigation. When the District receives a positive TC result from the contract laboratory, a repeat sample set is immediately taken for a retest. In addition, the disinfection procedures are reviewed and the sample collection site and the adjacent section of the water distribution system are analyzed.

The MCLG for total coliform (TC) bacteria is zero percent (0%) of samples with presence of coliform per month. The **MCL for TC is not to exceed five percent (5%)** of positive or coliform-presence samples per month.

During the years 2010, 2011, 2012, combined staff and an independent certified testing laboratory collected and analyzed from the District's water distribution system an average of 160 TC samples each month, for a total of 5778 samples over the last three years.

From these 5778 samples, there were 6 which tested positive for TC. This equates to a 3-year average monthly percentage of TC positive samples of **0.1%,** which exceeds the **MCLG of zero percent (0%).**

Factors that can produce positive TC test besides degraded water quality include, but are not limited to, the weather and environmental conditions when samples are taken, and the human factor associated with the collection methods, handling, and test procedures.

Numerical Health Risks

Because total coliform is only a surrogate indicator of the potential presence of pathogens, it is not possible to state a specific numerical public health risk. While USEPA normally sets MCLGs "at a level where no known or anticipated adverse effects on persons would occur", they indicate that they cannot do so with coliforms.

Category of Risk to Public Health

The California Department of Public Health has determined that the presence of TC bacteria is a possible health concern. TCs are common in the environment and are *generally not harmful themselves*. State of California Health and Safety Code Section 64470(a) states: "The presence of these bacteria in drinking water, however, generally is a result of a problem with water treatment or the pipes which distribute the water, and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue. These symptoms, however are not just associated with disease causing organisms in drinking water, but may also be caused by a number of factors other than your drinking water."

Best Available Technology to Remove or Reduce the Presence of Total Coliform

The addition of disinfectants to the drinking water is the best available technology to eliminate or reduce the presence of TC. The District disinfects with and monitors chlorine levels at our sources and water system to assure that the water served is microbiologically safe. The chlorine residual levels are carefully controlled to provide the best health protection without causing the water to have undesirable taste and odor or increasing the disinfection by-product level. This careful balance of treatment processes is essential to continue supplying our customers with safe drinking water. In addition, the District also has an effective cross-connection program, maintains positive pipeline pressures, and, conducts a regular flushing program for water distribution system dead-end mains. The District has already taken necessary steps associated with best management practices and the best available technology for the prevention and control of TC in our water distribution system.

Cost to Reduce the Level of Total Coliform to a Level at or below the MCLG

Since we are applying a disinfectant and conducting a thorough effort to eliminate and prevent the presence of TC, it is not prudent to initiate additional treatment as proper disinfection and frequent flushing programs have proven to be effective methods in destroying possible TC contamination, therefore no estimate of cost has been included.

Copper

The District's well water and import water sources do not contain copper. Copper found inside homes is a chemical reaction of the District's water with household plumbing fixtures containing copper and brass.

There is no Maximum Contaminant Level for copper. United States Environmental Protection Agency and the California Department of Public Health **Notification Level for copper is 1.3 milligrams per liter.** The notification level for copper is measured at the 90th percentile of all samples taken from plumbing fixtures inside the customer's home. Lead and Copper tests are conducted once every 3 years as required by CDPH.

The California Office of Environmental Health Hazard Assessment has established a Public **Health Goal of 0.17 milligrams per liter.** The **District's 90th percentile** of all samples taken from inside the customers' houses in 2012 sampling for copper is **0.48 milligrams per liter.**

Category of Risk to Public Health

The Office of Environmental Health Hazard Assessment and the Department of Health Services have determined the following risk for copper:

"Based on human data, the health risk category for copper is acute toxicity. Acute toxicity is adverse health effects that develop after a short-term exposure to copper. Short term exposure to high levels of copper can temporarily cause problems in the gastrointestinal system."

Numerical Health Risks

The Office of Environmental Health Hazard Assessment has determined that, in the case of copper, there is no numerical public health risk associated with the Public Health Goal. Numerical public health risks are not calculated for chemicals considered non-*cancer causing*.

Best Available Technology

Both the U.S. Environmental Protection Agency and California Department of Public Health adopt what are known as Best Available Technologies which are the best-known methods of reducing contaminant levels to the Maximum Contaminant Level. Since many of the Public Health Goals and Maximum Contaminant Level Goals are set much lower than the Maximum Contaminant Level, it is not always possible or feasible to determine what treatment is needed to further reduce a substance to or near the Public Health Goal or Maximum Contaminant Level Goal.

Similar to lead, optimizing corrosion control is the best available technology to reduce the level of copper in drinking water. This is achieved through effectively adjusting and maintaining alkalinity, pH, and calcium hardness, and the addition of phosphate or silica-based corrosion inhibitors, or a combination of all. Optimizing corrosion control also includes an intensive process of collection and analyses of water quality data to determine the effectiveness of corrosion control.

Arsenic

Arsenic is a naturally occurring element in the earth's crust and is very widely distributed in the environment. All humans are exposed to small quantities of arsenic (inorganic and organic) largely from food and to a lesser degree from drinking water and air. Some edible seafood may contain higher concentrations of arsenic which is predominantly in less acutely toxic organic forms.

YLWD's Well No. 15 slightly exceeds the 10 parts per billion (ppb) arsenic primary drinking water standard, the MCL. Currently, Well No. 15's 3-year average arsenic level is approximately **11.90 ppb**. Other District wells have an average **1.84 ppb** arsenic level. Whenever in operation, staff blends Well 15 water with other District wells in compliance with State Health approved blending plan. Blended well water served to our customer has an arsenic level of about **3.46 ppb**, which is well below the current not-to-exceed level of **10 ppb arsenic MCL**.

The California Office of Environmental Health Hazard Assessment has established a **Public Health Goal of 0.004 micrograms per liter or parts per billion (ppb)**.

Category of Risk to Public Health

The Office of Environmental Health Hazard Assessment has determined arsenic as a carcinogen.

Numerical Health Risks

The Office of Environmental Health Hazard Assessment has a numerical cancer risk of 1×10^{-6} for the 0.004 ppb PHG, and 1 in four hundred for the EPA Maximum Contaminant Level of 10 ppb. Note that, as previously described, cancer risk is stated in terms of excess cancer per million (or fewer) population. The value of 1×10^{-6} means 1 excess cancer case per 1,000,000 people. (1 excess case means 1 person will get cancer than if the population had not been exposed to the chemical.)

Best Available Technology to Remove or Reduce the Concentration of Arsenic and Approximate Treatment Cost

Activated alumina, ion exchange, reverse osmosis, lime softening, coagulation/filtration are the water treatment technologies available for achieving compliance with the MCL for arsenic.

It would cost the District approximately $11.7 million dollars in capital cost excluding annual operation and maintenance costs to reduce the arsenic levels of all its well water to the PHG level of 0.004 ppb.*

* *based on Golden State Water Co., Granular Ferric Oxide Resin, Arsenic removal, 600 gpm, 2 facilities, built in 2006 adjusted for 2013 dollars with estimated 3.5% annual inflation.*

Uranium

Naturally occurring uranium is found in groundwater supplies as a result of leaching from uranium-bearing sandstone, shale, and other rock formations. Uranium may also be present in surface water, carried through runoff from areas with mining operations.

The **Public Health Goal** for uranium is **0.43 pico-Curies per liter (pCi/L**), and the **Maximum Contaminant Level (MCL) is 20 pCi/L.** The **District's average uranium level is 7.90 pCi/L.** The levels detected were below MCL at all times.

Category of Risk to Public Health

The Office of Environmental Health Hazard Assessment has determined uranium as a carcinogen.

Numerical Health Risks

The Office of Environmental Health Hazard Assessment has a numerical cancer risk of 1×10^{-6} for the 0.43 pCi/L PHG, and a cancer risk of 5×10^{-5} for the California Department of Health Maximum Contaminant Level of 20 pCi/L. As previously described, 1×10^{-6} means 1 excess cancer case per 1,000,000 people; 5×10^{-5} means 5 excess cancer cases per 100,000 people. (1and 5 excess cases mean 1 and 5 persons respectively will get cancer than if the population had not been exposed to the chemical.)

Best Available Technology to Remove or Reduce the Concentration of Uranium and Approximate Treatment Cost

Ion exchange, reverse osmosis, lime softening, coagulation/filtration are the technologies available for achieving compliance with the MCL for uranium. Using reverse osmosis, it would cost the District about $48 million dollars in annualized capital, and operation and maintenance cost to achieve the PHG level**.

** based on CH2M Hill Study, for a 1.0 mgd plant operated at 40% design capacity, October 1991 adjusted for 2013 dollars with estimated 3.5% annual inflation.

Gross Alpha

Radionuclides such as alpha in water supplies are from erosion of natural deposits. The term radionuclide refers to naturally occurring elemental radium, radon, uranium, and thorium with unstable atomic nuclei that spontaneously decay producing ionizing radiation. Gross alpha is defined as the sum total of these radionuclides. Exposure to ionizing radiation in concentrations exceeding the maximum contaminant level may have carcinogenic (cancer causing), mutagenic (causing mutation of cells) or teratogenic (causing abnormalities in offspring) effects.

The EPA's **Maximum Contaminant Level Goal (MCLG)** for gross alpha particle is **0** and the California **Maximum Contaminant Level (MCL) is 15 pCi/L.** The **District's** average level of gross alpha **is 8.44 pCi/L.** The levels detected were below MCL at all times.

Category of Risk to Public Health

Health risk category based on experimental animal testing data evaluated in the U.S. EPA MCLG document and California MCL has determined gross alpha particle as a carcinogen.

Numerical Health Risks

The USEPA's MCLG for Gross Alpha is zero (0) and a cancer risk of 1×10^{-3} for the California Department of Public Health Maximum Contaminant Level of 15 pCi/L.

NOTE: *Cancer Risk is defined as the theoretical 70-year lifetime excess cancer risk at a statistical confidence limit. Actual cancer risk may be lower or zero. Cancer risk is stated in terms of excess cancer per million (or fewer) population. The value of* 1×10^{-3} *means 1 excess cancer case per 1,000 people. (1 excess case means 1 more person will get cancer than if the population had not been exposed to the chemical.)*

Best Available Technology to Remove or Reduce the Concentration of Gross Alpha Particles and Approximate Treatment Cost

Similar to uranium, reverse osmosis, lime softening, and coagulation/filtration are the water treatment technologies available for achieving compliance with the MCLG for gross alpha. Removal and reduction could be achieved concurrently with uranium.

Conclusion:

Drinking water provided by the Yorba Linda Water District meets 100% of all enforceable State of California, Department of Public Health, and United States Environmental Protection Agency primary drinking water standards.

The District also meets 96% of all the California Public Health Goals and 91% of the Federal Maximum Contaminant Level Goals. Public Health Goal levels are not enforceable water quality standards, and no action to meet them is mandated.

For total coliform bacteria, the staff does not recommend further action. The District has already taken all steps associated with the best available technology and multi-barrier approach for control and occurrence prevention of total coliform bacteria including an effective cross-connection program, maintenance and monitoring of proper disinfectant levels, regular water quality monitoring of wells and reservoirs, source water protection, and maintenance of positive pipeline pressures throughout the distribution system.

Yorba Linda Water District meets 100% of all enforceable drinking water standards from the California Department of Public Health and the United State Environmental Protection Agency.

For copper, the District already has optimized corrosion control, and the District's water has been found to be non-corrosive. Staff does not recommend undertaking additional corrosion control efforts. It is not recommended for two reasons: 1) the United States Environmental Protection Agency and California Department of Public Health classified the District's system as having optimized corrosion control, and 2) adding chemicals for more corrosion control will cause other water quality problems. These could reduce the effectiveness of the current disinfection process which could increase the presence of total coliforms. In addition, contributing factors such as type and age of plumbing and plumbing fixtures, point-of-use and point-of-entry water treatment devices, and electro-chemical-induced pipe corrosion could change the water chemistry in customers' taps, thus increasing water copper content.

For arsenic, the California Department of Public Health approved the District's blending plan and performance requirements are being met to keep the level of arsenic below the enforceable standard. Providing additional treatment for 100% removal to meet the PHG would be cost-prohibitive.

For uranium and gross alpha particle, current methods of removal and disposal technologies do not provide complete reduction to meet the level of the public health goals at this time. In the future, if available removal technology can be achieved, the District will explore and conduct the necessary studies and related costs to implement.

In summary, the drinking water served by the Yorba Linda Water District meets all Federal and State drinking water standards set to protect public health. To further reduce the levels of constituents identified in this report that are already significantly below the health-based Maximum Contaminant Levels would require significant financial investment. The effectiveness of the treatment processes to provide any significant reduction in constituent levels at already low values is uncertain. The health protection benefits of these hypothetical reductions are not clear and may not be quantifiable. Furthermore, the funds that would be required for the additional treatment, approximately $60 million, might provide greater public health protection benefits to the District's customers if spent on improving other water system operation, surveillance, and monitoring programs.

APPENDICES

Appendix 1

State of California Public Health Goals (PHGs)

Comparison with YLWD Water Quality

(Units are in milligrams per liter (mg/L), unless otherwise noted)

Constituent	MCL	State PHG or MCLG	YLWD Test Results	Imported Water Results
Organic Chemicals – 22 CCR § 64444				
Alachlor	0.002	0.004	ND	ND
Atrazine	0.001	0.00015	ND	ND
Bentazon	0.018	0.2	ND	ND
Benzene	0.001	0.00015	ND	ND
Benzo (a) pyrene	0.0002	0.000007	ND	ND
Carbofuran	0.018	0.0017	ND	ND
Carbon Tetrachloride	0.0005	0.0001	ND	ND
Chlordane	0.0001	0.00003	ND	ND
Chloro-ethylene (Vinyl Chloride)	0.0005	0.00005	ND	ND
Cis-1,2-Dichloroethylene	0.006	0.1	ND	ND
2,4-Dichlorophenoxyacetic acid (2,4-D)	0.07	0.07	ND	ND
Dalapon	0.2	0.79	ND	ND
Dibromochloropropane (DBCP)	0.0002	0.000007	ND	ND
1,2-Dichlorobenzene (ortho)	0.6	0.6	ND	ND
1,4-Dichlorobenzene (Para)	0.005	0.006	ND	ND
1,1-Dichloroethane (1,1-DCA)	0.005	0.003	ND	ND
1,2-Dichloroethane (1,2-DCA)	0.0005	0.0004	ND	ND
1,1-Dichloroethene (1,1-DCE)	0.006	0.01	ND	ND

Constituent	MCL	State PHG or MCLG	YLWD Test Results	Imported Water Results
Dichloromethane	0.005	0.004	ND	ND
1,2-Dichloropropane	0.005	0.0005	ND	ND
1,3-Dichloropropene	0.0005	0.0002	ND	ND
Di (2-ethylhexyl) adipate	0.4	0.2	ND	ND
Di (2-ethylhexyl) pthalate (DEHP)	0.004	0.012	ND	ND
Dinoseb	0.007	0.014	ND	ND
Diquat	0.02	0.015	ND	ND
Endothall	0.1	0.58	ND	ND
Endrin	0.002	0.0018	ND	ND
Ethylbenzene	0.3	0.3	ND	ND
Ethylbenzene Dibromide (EDB)	0.00005	0.00001	ND	ND
Glyphosate	0.7	1	ND	ND
Heptachlor	0.00001	0.000008	ND	ND
Heptachlor Epoxide	0.00001	0.000006	ND	ND
Hexachlorobenzene	0.001	0.00003	ND	ND
Hexachlorocyclopentadiene	0.05	0.05	ND	ND
Lindane	0.0002	0.000032	ND	ND
Methoxychlor	0.03	0.03	ND	ND
Methyl Tertiary Butyl Ether (MTBE)	0.013	0.013	ND	ND
Monochlorobenzene	0.07	0.2	ND	ND
Oxamyl	0.05	0.05	ND	ND
Pentachlorophenol (PCP)	0.001	0.0004	ND	ND

Constituent	MCL	State PHG or MCLG	YLWD Test Results	Imported Water Results
Picloram	0.5	0.5	ND[3]	ND
Silvex (2,4,5-TP)	0.05	0.025	ND	ND
Simazine	0.004	0.004	ND	ND
1,1,2,2-Tetrachloroethane	0.001	0.0001	ND	ND
Tetrachloroethylene (PCE)	0.005	0.0006	ND	ND
Thiobencarb	0.07	0.07	ND	ND
Toluene	0.15	0.15	ND	ND
Toxaphene	0.003	0.00003	ND	ND
Trans-1,2-Dichloroethylene	0.01	0.06	ND	ND
1,2,4-Trichlorobenzene	0.005	0.005	ND	ND
1,1,1-Trichloroethane (1,1,1-TCA)	0.2	1.0	ND	ND
1,1,2-Trichloroethane (1,1,2-TCA)	0.005	0.0003	ND	ND
Trichloroethylene (TCE)	0.005	0.0008	ND	ND
Trichlorofluoromethane (Freon 11)	0.15	0.7	ND	ND
Trichlorotrifluoroethane (Freon 113)	1.2	4	ND	ND
Xylenes (sum of isomers)	1.75	1.8	ND	ND
Inorganic Chemicals – 22 CCR § 64431				
Aluminum	1	0.60	0.004	ND
Antimony	0.006	0.02	ND	ND
Arsenic	**0.01**	**0.000004**	**0.0034**	**.0015**
Barium	1	2	ND	ND
Beryllium	0.004	0.0001	ND	ND

Constituent	MCL	State PHG or MCLG	YLWD Test Results	Imported Water Results
Cadmium	0.005	0.00004	ND	ND
Copper (customer's tap: 90th percentile)[5]	**1.3**	**0.17**	**0.48**	**ND**
Cyanide	0.15	0.15	ND	ND
Fluoride	1.4 to 2.4	1	0.4	0.15
Lead (at-the-tap: 90th percentile)	0.015	0.002	ND	ND
Mercury	0.002	0.0012	ND	ND
Nickel	0.1	0.012	ND	ND
Nitrate as Nitrate	45	45	14	2
Nitrite as Nitrogen	1	1	ND	ND
Thallium	0.002	0.0001	ND	ND
Radiological Chemicals – 22 CCR § 64441 and 64443				
Uranium[6]	**20**	**0.43**	**7.90**	**2.43**

Abbreviations:

1. MCL – Maximum Contaminant Level
2. MCLG – Maximum Contaminant Level Goal
3. ND – Not Detected
4. YLWD – Yorba Linda Water District (Groundwater Source)

Notes:

1. PHG – Public Health Goals, established by the California Office of Environmental Health Hazard Assessment. PHGs are the estimated levels of substances in drinking water that pose no significant health risks to individuals including the most sensitive sub-populations, consuming 2 liters of water daily over a period of 70 years.
2. MCLs are enforceable standards established by the California Department of Public Health and the U.S. Environmental Protection Agency. For lead and copper, Notification Levels are listed.
3. Data shown in **Orange** indicates exceeding PHG levels, but is well below the health-based MCLs.
4. mg/L – milligrams per liter (equivalent to parts per million)
5. 90^{th} percentile – the lead or copper level at the 90^{th} percent of all samples collected and arranged in an increasing order in accordance with the guidelines established by the Federal and State Lead and Copper Rule. These samples were collected inside at homeowner's taps.
6. All units pCi/L, Pico Curies per Liter (0.9 pCi = 1 microgram)

Appendix 2

Federal Maximum Contaminant Level Goals (MCLGs)

Comparison with YLWD Water Quality

(Units are in milligrams per liter (mg/L), unless otherwise noted

Constituent	MCL	State PHG or MCLG	YLWD Test Results	Imported Water Results
Organic Chemicals				
Acrylamide	TT[9]	0	ND	ND
Bromate	0.01	0	ND	ND
Chlorite	1	0.8	ND	ND
Dioxin (2,3,7,8 – TCDD)	3×10^{-8}	0	ND	ND
Epichlorohydrin	TT[9]	0	ND	ND
Molinate	0.02	NS	ND	ND
Polychlorinated Biphenyls (PCBs)	0.0005	0	ND	ND
Styrene	0.1	0.1	ND	ND
Trihalomethanes, Total (TTHMs)	0.100	NS	0.054	0.054
Inorganic Chemicals				
Asbestos, in fibers / liter	7 million	7 million	waived by CDPH[7]	Not Required
Chromium (Total)	0.05	withdrawn	ND	ND
Selenium	0.05	0.05	ND	ND
Microbiological				
Coliform (% positive samples/month)	**5%**	**zero**	**0.1%[8]**	**0.06%**
Cryptosporidium	TT[9]	zero	NR	ND

Constituent	MCL	State PHG or MCLG	YLWD Test Results	Imported Water Results
Giardia Lamblia	TT[9]	zero	NR	ND
Legionella	TT[9]	zero	NR	NA
Viruses	TT[9]	zero	NR	ND
Radiological[11]				
Alpha Activity, Gross	**15**	**0[10]**	**8.44**	**3.00**
Beta Activity, Gross	50	NS	NR	4.13
Radium 226 & 228, Total	5	0[10]	ND	ND
Strontium 90	8	NS	NR	ND
Tritium	20,000	NS	NR	ND

Abbreviations:

1. MCL – Maximum Contaminant Level
2. MCLG – Maximum Contaminant Level Goal
3. ND – Not Detected
4. YLWD – Yorba Linda Water District (Groundwater Source)
5. CDPH – California Department of Public Health

Notes:

1. MCLGs – Maximum Contaminant Level Goals are estimates of levels of contaminants in drinking water, below which there are no known or expected health risks. These levels are set by the United States Environmental Protection Agency
2. Maximum Contaminant Levels are enforceable standards established by the California Department of Public Health and the U.S. Environmental Protection Agency
3. Data shown in **Orange** indicates exceeding PHG levels, but is well below the health-based MCLs.
4. mg/L – milligrams per liter (equivalent to parts per million)
5. NS – Not Set
6. NR – Not Required
7. Monitoring is waived by California Department of Public Health, because District water sources are not susceptible to asbestos contamination.
8. District's highest monthly percentage of coliform positive in the water distribution samples from 2010-2012
9. TT – Treatment Techniques are the water treatment processes and methods required by the California Department of Public Health and Environmental Protection Agency under the Surface Water Treatment Rule in lieu of establishing a Maximum Contaminant Level. The processes and methods are intended to reduce and/or eliminate the contaminants in drinking water.
10. Effective 12/08/03
11. All units pCi/L, Pico Curies per Liter (0.9 pCi = 1 microgram)