# City of Santa Cruz Water Department
# Water Quality Relative to Public Health Goals
# 2013 Through 2015
## Water System CA4410010

**Background and Summary**

The California Health and Safety Code (Attachment 1) specifies that water utilities serving more than 10,000 connections must prepare a special report by July 1, 2016 if their water quality measurements have exceeded any Public Health Goals (PHGs). Unlike the primary Maximum Contaminant Levels (MCLs) which must not be exceeded in drinking water, PHGs are non-enforceable goals. PHGs are 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 supplier is to use the MCLGs (Maximum Contaminant Level Goal) adopted by the USEPA. Only constituents which have a California primary MCL and for which either a PHG or MCLG has been set are to be addressed. Attachment 2 is a list of all regulated constituents with the MCLs and PHGs or MCLGs.

There are a few constituents, such as Total Trihalomethanes that are routinely detected in water systems at levels usually below the drinking water standards and for which no PHG or MCLG has yet to be adopted by OEHHA or USEPA. These will be addressed in a future PHG report after a PHG has been adopted.

If a constituent had been detected in the City's water supply in 2013, 2014 or 2015 at a level exceeding an applicable PHG or MCLG, this report provides the information required by the law. This information would include the category or type of risk to health that could be associated with each constituent, the numerical public health risk associated with the MCL and the PHG or MCLG for constituents with a carcinogenicity health risk, 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 and feasible.

In the reporting period addressed herein, contaminants have been detected in the treated water at concentrations above the PHGs, or if no PHG has be established, above the MCLGs. Therefore, this report has been prepared to document that the Santa Cruz Water Department has reviewed all the relevant data in comparison to the PHGs and MCLGs and to further inform our customers of the high water quality of their drinking water.

## What are PHGs and MCLGs?

PHGs are set by the California Office of Environmental Health Hazard Assessment (OEHHA), which is part of the Cal-EPA. PHGs are based solely on public health risk considerations. None of the practical risk-management factors that are considered by the USEPA or the SWRCB in setting drinking water standards (maximum contaminant levels; MCLs) are considered in setting the PHGs. Practical risk-management factors include such considerations as analytical detection limits and the availability, benefits and costs of treatment technology. The PHGs are not enforceable and are not required to be met by any public water system. MCLGs are the federal equivalent to PHGs.

## Water Quality Data Considered

All of the 2013, 2014 and 2015 water quality data from treated water at the point-of-entry to the distribution system was considered for this report. Annual regulatory compliance with the MCLs was summarized in our 2013, 2014 or 2015 Annual Water Quality Consumer Confidence Reports that are made available to all of our customers each May following the reporting year. The 2015 Consumer Confidence Report (CCR) is included as Attachment 3. The three most current CCR's are available online: www.cityofsantacruz.com/ccr2015; www.cityofsantacruz.com/ccr2014; and www.cityofsantacruz.com/ccr2013.

## Guidelines Followed

The Association of California Water Agencies (ACWA) prepared guidelines for water utilities to use in preparing these PHG reports. The ACWA guidelines were used in the preparation of this report. Limited guidance was provided by State Water Resources Control Board (SWRCB), Division of Drinking Water staff.

## Best Available Treatment Technology and Cost Estimates

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

A few contaminants have been detected above the PHGs or MCLGs, cost estimates for reducing these contaminant concentrations to the PHGs are not relevant to this year's report.

## Contaminants Detected that Exceed a PHG or MCLG

In this triennial monitoring period (2013, 2014 and 2015), Arsenic and Hexavalent Chromium were detected in the treated drinking water at levels above the PHGs, or if no PHG has be established, above the MCLGs.

**Arsenic:** The MCL for Arsenic is 0.010 mg/L, while the PHG is 0.000004 mg/L. In 2014, one sample result from the Live Oak Water Treatment Plant measured greater than the PHG of 0.000004 mg/L or 4 parts per trillion, and greater than the Detection Level of Reporting (DLR) of 0.002 mg/L. This single sample result measured 0.0022 mg/L, while eight other treated water samples during this monitoring period were Non-Detect and also less than the instrument Method Reporting Limit (MRL) of 0.001 mg/L or 1 part per billion. In 2013, 2014 and 2015: the annual treated water averages for Arsenic were all below the DLR of 0.002 mg/L, as well as the MRL of 0.001 mg/L.

The Arsenic standard balances the current understanding of Arsenic's possible health effects against the costs of removing excessive amounts of Arsenic from drinking water. The USEPA continues to research the health effects of low levels of arsenic, which is known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Typical sources of contamination: Erosion of natural deposits; runoff from orchards; glass and electronics production wastes.

Heath related concerns: Some people who drink water containing Arsenic in excess of the MCL (> 0.010 mg/L) over many years may experience skin damage or circulatory system problems, and may have an increased risk of getting cancer.

For more in depth information of the Public Health Goal setting by OEHHA for Arsenic: http://oehha.ca.gov/media/downloads/water/chemicals/phg/asfinal.pdf

**Hexavalent Chromium:** The newly adopted MCL for Hexavalent Chromium is 0.010 mg/L, while the PHG is 0.00002 mg/L or 20 parts per trillion. In 2013 and 2014, the Third Unregulated Contaminant Monitoring Rule (UCMR3) https://www.epa.gov/dwucmr/third-unregulated-contaminant-monitoring-rule studied Hexavalent Chromium with a Minimum Reporting Level (MRL) of 0.00003 mg/L or 30 parts per trillion. The detectable data set of the UCMR3 study is summarized in all three annual CCR's. In 2014 and 2015, Hexavalent Chromium became an annual California requirement for Title 22 required testing. In 2014 and 2015: 3 out of 6 treated water samples measured greater than the PHG of 0.00002 mg/L. Comparing these three detectable results of 0.000022 mg/L, 0.000046 mg/L and 0.000058 mg/L to the MCL of 0.010 mg/L, the highest measurable result of 0.000058 mg/L is less than one percent of the MCL of 0.010 mg/L or 10 parts per billion. The other 3 out of 6 treated water samples measured Non-Detect and were not detected above the PHG of 0.00002 mg/L.

Typical sources of contamination: Electroplating factories; leather tanneries and textile manufacturing facilities. Chromium also enters groundwater by leaching from soil. Chromium can exist in water as either Cr III or Cr VI. When high levels are present, they can usually be related to sources of pollution.

Heath related concerns: Some people who drink water containing hexavalent chromium in excess of the MCL (> 0.010 mg/L) over many years may have an increased risk of getting cancer.

For more in depth information of the Public Health Goal setting by OEHHA for Hexavalent Chromium: http://oehha.ca.gov/media/downloads/water/public-health-goal/cr6phg072911.pdf

Hugh Dalton
Water Quality Manager

6/29/16
Date

# Attachment No. 1

## California Health and Safety Code
## Public Health Goal Reporting Requirements

116470. (b) On or before July 1, 1998, and every three years thereafter, public water systems serving more than 10,000 service connections that detect one or more contaminants in drinking water that exceed the applicable public health goal, shall prepare a brief written report in plain language that does all of the following:

(1) Identifies each contaminant detected in drinking water that exceeds the applicable public health goal.

(2) Discloses the numerical public health risk, determined by the office, associated with the maximum contaminant level for each contaminant identified in paragraph (1) and the numerical public health risk determined by the office associated with the public health goal for that contaminant.

(3) Identifies the category of risk to public health, including, but not limited to, carcinogenic, mutagenic, teratogenic, and acute toxicity, associated with exposure to the contaminant in drinking water, and includes a brief plainly worded description of these terms.

(4) Describes the best available technology, if any is then available on a commercial basis, to remove the contaminant or reduce the concentration of the contaminant. The public water system may, solely at its own discretion, briefly describe actions that have been taken on its own, or by other entities, to prevent the introduction of the contaminant into drinking water supplies.

(5) Estimates the aggregate cost and the cost per customer of utilizing the technology described in paragraph (4), if any, to reduce the concentration of that contaminant in drinking water to a level at or below the public health goal.

(6) Briefly describes what action, if any, the local water purveyor intends to take to reduce the concentration of the contaminant in public drinking water supplies and the basis for that decision.

(c) Public water systems required to prepare a report pursuant to subdivision (b) shall hold a public hearing for the purpose of accepting and responding to public comment on the report. Public water systems may hold the public hearing as part of any regularly scheduled meeting.

(d) The department shall not require a public water system to take any action to reduce or eliminate any exceedance of a public health goal.

(e) Enforcement of this section does not require the department to amend a public water system's operating permit.

(f) Pending adoption of a public health goal by the Office of Environmental Health Hazard Assessment pursuant to subdivision (c) of Section 116365, and in lieu thereof, public water systems shall use the national maximum contaminant level goal adopted by the United States Environmental Protection Agency for the corresponding contaminant for purposes of complying with the notice and hearing requirements of this section.

(g) This section is intended to provide an alternative form for the federally required consumer confidence report as authorized by 42 U.S.C. Section 300g-3(c).

# Attachment No. 2
## MCLs and PHGs or MCLGs

**MCLs, DLRs, and PHGs for Regulated Drinking Water Contaminants**

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

**Last Update: September 23, 2015**

This table includes:

California's maximum contaminant levels (MCLs)

Detection limits for purposes of reporting (DLRs)

Public health goals (PHGs) from the Office of Environmental Health Hazard Assessment (OEHHA)

Also, PHGs for NDMA and 1,2,3-Trichloropropane (which are not yet regulated) are included

| | MCL | DLR | PHG | Date of PHG |
|---|---|---|---|---|
| ***Chemicals with MCLs in 22 CCR §64431—Inorganic Chemicals*** | | | | |
| Aluminum | 1 | 0.05 | 0.6 | 2001 |
| Antimony | 0.006 | 0.006 | 0.02 | 1997 |
| Antimony | -- | -- | 0.0007 | 2009 draft |
| Arsenic | 0.010 | 0.002 | 0.000004 | 2004 |
| Asbestos (MFL = million fibers per liter; for fibers >10 microns long) | 7 MFL | 0.2 MFL | 7 MFL | 2003 |
| Barium | 1 | 0.1 | 2 | 2003 |
| Beryllium | 0.004 | 0.001 | 0.001 | 2003 |
| Cadmium | 0.005 | 0.001 | 0.00004 | 2006 |
| Chromium, Total - OEHHA withdrew the 0.0025-mg/L PHG | 0.05 | 0.01 | withdrawn Nov. 2001 | 1999 |
| Chromium, Hexavalent | 0.010 | 0.001 | 0.00002 | 2011 |
| Cyanide | 0.15 | 0.1 | 0.15 | 1997 |
| Fluoride | 2 | 0.1 | 1 | 1997 |
| Mercury (inorganic) | 0.002 | 0.001 | 0.0012 | 1999 (rev2005)* |
| Nickel | 0.1 | 0.01 | 0.012 | 2001 |
| Nitrate (as nitrogen, N) | 10 as N | 0.4 | 45 as NO3 (=10 as N) | 1997 |
| Nitrite (as N) | 1 as N | 0.4 | 1 as N | 1997 |
| Nitrate + Nitrite (as N) | 10 as N | – | 10 as N | 1997 |
| Perchlorate | 0.006 | 0.004 | 0.001 | 2015 |
| Selenium | 0.05 | 0.005 | 0.03 | 2010 |
| Thallium | 0.002 | 0.001 | 0.0001 | 1999 (rev2004) |
| ***Copper and Lead, 22 CCR §64672.3*** | | | | |
| *Values referred to as MCLs for lead and copper are not actually MCLs; instead, they are called "Action Levels" under the lead and copper rule* | | | | |
| Copper | 1.3 | 0.05 | 0.3 | 2008 |
| Lead | 0.015 | 0.005 | 0.0002 | 2009 |

| MCLs, DLRs, and PHGs for Regulated Drinking Water Contaminants<br>(Units are in milligrams per liter (mg/L), unless otherwise noted.)<br>Last Update: September 23, 2015 | | | | |
|---|---|---|---|---|
| ***Radionuclides with MCLs in 22 CCR §64441 and §64443—Radioactivity*** | | | | |
| [units are picocuries per liter (pCi/L), unless otherwise stated; n/a = not applicable] | | | | |
| Gross alpha particle activity - OEHHA concluded in 2003 that a PHG was not practical | 15 | 3 | none | n/a |
| Gross beta particle activity - OEHHA concluded in 2003 that a PHG was not practical | 4 mrem/yr | 4 | none | n/a |
| Radium-226 | -- | 1 | 0.05 | 2006 |
| Radium-228 | -- | 1 | 0.019 | 2006 |
| Radium-226 + Radium-228 | 5 | -- | -- | -- |
| Strontium-90 | 8 | 2 | 0.35 | 2006 |
| Tritium | 20,000 | 1,000 | 400 | 2006 |
| Uranium | 20 | 1 | 0.43 | 2001 |
| ***Chemicals with MCLs in 22 CCR §64444—Organic Chemicals*** | | | | |
| ***(a) Volatile Organic Chemicals (VOCs)*** | | | | |
| Benzene | 0.001 | 0.0005 | 0.00015 | 2001 |
| Carbon tetrachloride | 0.0005 | 0.0005 | 0.0001 | 2000 |
| 1,2-Dichlorobenzene | 0.6 | 0.0005 | 0.6 | 1997 (rev2009) |
| 1,4-Dichlorobenzene (p-DCB) | 0.005 | 0.0005 | 0.006 | 1997 |
| 1,1-Dichloroethane (1,1-DCA) | 0.005 | 0.0005 | 0.003 | 2003 |
| 1,2-Dichloroethane (1,2-DCA) | 0.0005 | 0.0005 | 0.0004 | 1999 (rev2005) |
| 1,1-Dichloroethylene (1,1-DCE) | 0.006 | 0.0005 | 0.01 | 1999 |
| cis-1,2-Dichloroethylene | 0.006 | 0.0005 | 0.1 | 2006 |
| trans-1,2-Dichloroethylene | 0.01 | 0.0005 | 0.06 | 2006 |
| Dichloromethane (Methylene chloride) | 0.005 | 0.0005 | 0.004 | 2000 |
| 1,2-Dichloropropane | 0.005 | 0.0005 | 0.0005 | 1999 |
| 1,3-Dichloropropene | 0.0005 | 0.0005 | 0.0002 | 1999 (rev2006) |
| Ethylbenzene | 0.3 | 0.0005 | 0.3 | 1997 |
| Methyl tertiary butyl ether (MTBE) | 0.013 | 0.003 | 0.013 | 1999 |
| Monochlorobenzene | 0.07 | 0.0005 | 0.07 | 2014 |
| Styrene | 0.1 | 0.0005 | 0.0005 | 2010 |
| 1,1,2,2-Tetrachloroethane | 0.001 | 0.0005 | 0.0001 | 2003 |
| Tetrachloroethylene (PCE) | 0.005 | 0.0005 | 0.00006 | 2001 |
| Toluene | 0.15 | 0.0005 | 0.15 | 1999 |
| 1,2,4-Trichlorobenzene | 0.005 | 0.0005 | 0.005 | 1999 |
| 1,1,1-Trichloroethane (1,1,1-TCA) | 0.2 | 0.0005 | 1 | 2006 |
| 1,1,2-Trichloroethane (1,1,2-TCA) | 0.005 | 0.0005 | 0.0003 | 2006 |
| Trichloroethylene (TCE) | 0.005 | 0.0005 | 0.0017 | 2009 |
| Trichlorofluoromethane (Freon 11) | 0.15 | 0.005 | 1.3 | 2014 |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113) | 1.2 | 0.01 | 4 | 1997 (rev2011) |
| Vinyl chloride | 0.0005 | 0.0005 | 0.00005 | 2000 |
| Xylenes | 1.75 | 0.0005 | 1.8 | 1997 |

| MCLs, DLRs, and PHGs for Regulated Drinking Water Contaminants (Units are in milligrams per liter (mg/L), unless otherwise noted.) Last Update: September 23, 2015 | | | | |
|---|---|---|---|---|
| ***(b) Non-Volatile Synthetic Organic Chemicals (SOCs)*** | | | | |
| Alachlor | 0.002 | 0.001 | 0.004 | 1997 |
| Atrazine | 0.001 | 0.0005 | 0.00015 | 1999 |
| **Bentazon** | **0.018** | **0.002** | **0.2** | 1999 (rev2009) |
| Benzo(a)pyrene | 0.0002 | 0.0001 | 0.000007 | 2010 |
| Carbofuran | 0.018 | 0.005 | 0.0017 | 2000 |
| Carbofuran | -- | -- | 0.0007 | 2015 draft |
| Chlordane | 0.0001 | 0.0001 | 0.00003 | 1997 (rev2006) |
| Dalapon | 0.2 | 0.01 | 0.79 | 1997 (rev2009) |
| 1,2-Dibromo-3-chloropropane (DBCP) | 0.0002 | 0.00001 | 0.0000017 | 1999 |
| 2,4-Dichlorophenoxyacetic acid (2,4-D) | 0.07 | 0.01 | 0.02 | 2009 |
| Di(2-ethylhexyl)adipate | 0.4 | 0.005 | 0.2 | 2003 |
| Di(2-ethylhexyl)phthalate (DEHP) | 0.004 | 0.003 | 0.012 | 1997 |
| Dinoseb | 0.007 | 0.002 | 0.014 | 1997 (rev2010) |
| Diquat | 0.02 | 0.004 | 0.015 | 2000 |
| Diquat | -- | -- | 0.006 | 2015 draft |
| Endrin | 0.002 | 0.0001 | 0.0018 | 1999 (rev2008) |
| Endrin | -- | -- | 0.0003 | 2015 draft |
| Endothal | 0.1 | 0.045 | 0.094 | 2014 |
| Ethylene dibromide (EDB) | 0.00005 | 0.00002 | 0.00001 | 2003 |
| Glyphosate | 0.7 | 0.025 | 0.9 | 2007 |
| Heptachlor | 0.00001 | 0.00001 | 0.000008 | 1999 |
| Heptachlor epoxide | 0.00001 | 0.00001 | 0.000006 | 1999 |
| Hexachlorobenzene | 0.001 | 0.0005 | 0.00003 | 2003 |
| Hexachlorocyclopentadiene | 0.05 | 0.001 | 0.002 | 2014 |
| Lindane | 0.0002 | 0.0002 | 0.000032 | 1999 (rev2005) |
| Methoxychlor | 0.03 | 0.01 | 0.00009 | 2010 |
| Molinate | 0.02 | 0.002 | 0.001 | 2008 |
| Oxamyl | 0.05 | 0.02 | 0.026 | 2009 |
| Pentachlorophenol | 0.001 | 0.0002 | 0.0003 | 2009 |
| Picloram | 0.5 | 0.001 | 0.5 | 1997 |
| Picloram | -- | -- | 0.166 | 2015 draft |
| Polychlorinated biphenyls (PCBs) | 0.0005 | 0.0005 | 0.00009 | 2007 |
| Simazine | 0.004 | 0.001 | 0.004 | 2001 |
| 2,4,5-TP (Silvex) | 0.05 | 0.001 | 0.003 | 2014 |
| 2,3,7,8-TCDD (dioxin) | $3x10^{-8}$ | $5x10^{-9}$ | $5x10^{-11}$ | 2010 |
| Thiobencarb | 0.07 | 0.001 | 0.07 | 2000 |
| Thiobencarb | -- | -- | 0.042 | 2015 draft |
| Toxaphene | 0.003 | 0.001 | 0.00003 | 2003 |

| MCLs, DLRs, and PHGs for Regulated Drinking Water Contaminants (Units are in milligrams per liter (mg/L), unless otherwise noted.) Last Update: September 23, 2015 | | | | |
|---|---|---|---|---|
| ***Chemicals with MCLs in 22 CCR §64533—Disinfection Byproducts*** | | | | |
| Total Trihalomethanes | 0.080 | -- | 0.0008 | 2010 draft |
| Bromodichloromethane | -- | 0.0010 | -- | -- |
| Bromoform | -- | 0.0010 | -- | -- |
| Chloroform | -- | 0.0010 | -- | -- |
| Dibromochloromethane | -- | 0.0010 | -- | -- |
| Haloacetic Acids (five) (HAA5) | 0.060 | -- | -- | -- |
| Monochloroacetic Acid | -- | 0.0020 | -- | -- |
| Dichloroacetic Adic | -- | 0.0010 | -- | -- |
| Trichloroacetic Acid | -- | 0.0010 | -- | -- |
| Monobromoacetic Acid | -- | 0.0010 | -- | -- |
| Dibromoacetic Acid | -- | 0.0010 | -- | -- |
| Bromate | 0.010 | 0.0050** | 0.0001 | 2009 |
| Chlorite | 1.0 | 0.020 | 0.05 | 2009 |
| ***Chemicals with PHGs established in response to DDW requests. These are not currently regulated drinking water contaminants.*** | | | | |
| N-Nitrosodimethylamine (NDMA) | -- | -- | 0.000003 | 2006 |
| 1,2,3-Trichloropropane | -- | -- | 0.0000007 | 2009 |
| *OEHHA's review of this chemical during the year indicated (rev20XX) resulted in no change in the PHG. | | | | |
| **The DLR for Bromate is 0.0010 mg/L for analysis performed using EPA Method 317.0 Revision 2.0, 321.8, or 326.0. | | | | |

# Attachment No. 3

2015 Annual Consumer Confidence Report

# CITY OF SANTA CRUZ WATER DEPARTMENT

## CONSUMER CONFIDENCE REPORT

## 2015

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

**此份有關你的食水報告,內有重要資料和訊息,請找他人為你翻譯及解釋清楚。**

### WHAT IS THIS REPORT?

This annual Consumer Confidence Report provides a summary of the water quality in 2015 and has been prepared to inform the City of Santa Cruz Water Department customers about their drinking water. Included in this report are details about where your water comes from, what it contains and how it compares to Federal and State drinking water standards. The City of Santa Cruz Water Department vigilantly safeguards its water supplies and provides thorough treatment to ensure that our customers receive high quality drinking water. We are committed to providing our customers with accurate information about their drinking water quality.

**In 2015, your tap water met or exceeded all United States Environmental Protection Agency (USEPA) and California drinking water health standards.**

### WHERE DOES OUR WATER COME FROM?

To provide water for our service area, the City of Santa Cruz depends on water supplies from four locales: the North Coast sources, the San Lorenzo River, Loch Lomond Reservoir and the Live Oak Wells. Except for groundwater from the Live Oak Wells, these are all surface water sources dependent on rainfall and runoff. No water is purchased from State or Federal sources or imported to the region from outside the Santa Cruz area.

The North Coast sources consist of surface water diversions from three coastal streams and one natural spring. Due to the excellent water quality and the lowest production cost, these North Coast sources are used to the greatest extent possible. These source waters are conveyed to the City's Graham Hill Water Treatment Plant for treatment. The use of these sources by the City dates back to 1890.

San Lorenzo River flows are diverted to the Graham Hill Water Treatment Plant for treatment. Two wells located next to the San Lorenzo River and hydraulically connected are included in the City's water right. Additionally, the City can divert water from the San Lorenzo River in Felton to store in Loch Lomond Reservoir. This water is used to supplement storage in the reservoir during dry years, when natural water inflow from Newell Creek is low.

Loch Lomond Reservoir, constructed in 1960, provides surface water storage on Newell Creek. Water from the reservoir is treated at the Graham Hill Water Treatment Plant. Additionally, the reservoir and surrounding watershed are used for public recreation purposes, including fishing, boating, hiking, and picnicking.

The Live Oak well system consists of four groundwater wells and two small treatment plants located in the southeast portion of the City's service area. Three of these wells draw directly from the Purisima Aquifer, while one well draws from both the Purisima and Santa Margarita Aquifers. During the late spring, summer and early fall seasons, when surface water flows may be inadequate to meet the daily customer water demand, this supplemental groundwater supply is pumped from the four Live Oak Wells and treated on-site at two groundwater Treatment Plants and distributed to customers in the southeast service area.

## IS OUR WATER VULNERABLE TO CONTAMINATION?

In 2002, water suppliers were required to conduct assessments of their water sources. These assessments included delineations of areas around sources from which contamination might reach the source. Further, these assessments included an inventory of activities with the potential to release contaminants within the delineated areas. There are potentially contaminating activities in the areas of the Santa Cruz water sources, such as automobile service facilities, septic systems, confined animal facilities, construction, timber harvest, road maintenance, "legacy" land disturbance including historic logging roads and isolated industrial operations resulting in contaminant plumes, as well as other activities. However, the City currently manages its water sources by prioritizing use of the purest source water during times when the drinking water system is most vulnerable (i.e. during storm runoff periods), so that we can produce the highest quality drinking water possible. In 2013, the Water Resources section completed an update of the 2007 Drinking Water Sanitary Survey of the San Lorenzo Valley and North Coast Watersheds. The 2013 Sanitary Survey can be viewed at www.cityofsantacruz.com/sanitarysurvey2013 or by contacting the City's Watershed Compliance Manager at (831) 420-5483 or by email at WaterResources@cityofsantacruz.com.

## WHY ARE THERE CONTAMINANTS IN DRINKING WATER?

In order to ensure that tap water is safe to drink, U.S. Environmental Protection Agency (USEPA) and the State Water Resources Control Board (State Board) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. State Board regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

The sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- Radioactive contaminants that can be naturally-occurring or be the result of oil and gas production and mining activities.

The State Water Resources Control Board, Division of Drinking Water allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, are more than one year old.

## DO I NEED TO TAKE SPECIAL PRECAUTIONS?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Although filtration removes

Cryptosporidium, the most commonly-used filtration methods cannot guarantee 100 percent removal. Our 2015 monitoring indicates the presence of these organisms in our source water. Current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immune-compromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness. We encourage immune-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection. Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water.

## INORGANIC CONTAMINANTS WITH ACTION LEVELS

If present, elevated levels of lead can cause serious health problems, especially for pregnant women, young children and infants. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Santa Cruz Water Department is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. **When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you do so, you may wish to collect the flushed water and reuse it for another beneficial purpose, such as watering plants.** If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/lead. In 2015, tap water samples were collected from 34 Santa Cruz homes after their water sat unused overnight for 6 hours or more, and then analyzed for lead and copper. These specific homes were selected because they were all built and/or their plumbing was constructed between January 1983 and December 1987 with lead solder and copper pipe as required by the Lead and Copper Rule https://www.epa.gov/dwreginfo/lead-and-copper-rule . The City of Santa Cruz Water Department has a three year waiver for required Lead and Copper monitoring frequency.

## WATER QUALITY DATA TABLE

The Table of Detected Contaminants lists drinking water contaminants that were detected during the 2015 calendar year. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk.

**To interpret the tables, you will need the following definitions:**

**MCL**: Maximum Contaminant Level: 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 technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

**MCLG**: Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency.

**MRDL**: Maximum Residual Disinfectant Level: The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

**MRDLG**: Maximum Residual Disinfectant Level Goal: The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

**N/A**: Not Applicable

**PDWS**: Primary Drinking Water Standard: MCLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

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

**LRAA**: Locational Running Annual Average: The locational average of the most recent 12 months of data.

**RAL**: Regulatory Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

**SDWS**: Secondary Drinking Water Standards: MCLs for contaminants that may adversely affect the taste, odor or appearance of drinking water. These are aesthetic considerations that are not considered as health concerns.

**TT**: Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.

## WATER QUALITY TABLE OF DETECTED CONTAMINANTS

| Contaminants Regulated by Primary Drinking Water Standards | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Contaminants (units)** | **PHG MCLG** | **PDWS MCL** | **Treated Water Average[2]** | **Source Water Range[1]** | | **Sample Date** | **Violation** | **Typical Source of Contamination** |
| | | | | **Low** | **High** | | | |
| Aluminum (ppm) | 0.6 | 1 | < 0.02 | < 0.02 | 0.10 | 2015 | No | Erosion of natural deposits; residue from some surface water treatment processes |
| Arsenic (ppb) | 0.004 | 10 | < 1.0 | 1.0 | 3.8 | 2015 | No | Erosion of natural deposits; runoff from orchards; glass and electronics production wastes |
| Fluoride (ppm) | 1 | 2.0 | 0.2 | < 0.1 | 0.3 | 2015 | No | Erosion of natural deposits; discharge from fertilizer and aluminum factories |
| Hexavalent Chromium (ppb) | 0.02 | 10 | 0.05 | < 0.02 | 0.23 | 2015 | No | Some people who drink water containing hexavalent chromium in excess of the MCL over many years may have an increased risk of getting cancer |
| Gross Alpha particle activity (pCi/L) | 0 | 15 | < 3.00 | < 3.00 | 4.00 | 2011 | No | Erosion of natural deposits |
| Nitrate as Nitrogen (ppm) | 10 | 10 | 0.27 | < 0.02 | 0.63 | 2015 | No | Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits |

| Additional Contaminants Regulated by Primary Drinking Water Standards | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Contaminants (units)** | **PHG MCLG** | **PDWS MCL** | **Treated Water Average[2]** | **Treated Water Range[2]** | | **Sample Date** | **Violation** | **Typical Source of Contamination** |
| | | | | **Low** | **High** | | | |
| Turbidity (NTU) | TT | Maximum 1 and 95% < 0.3 | 0.10 | 0.04 | 3.18 | 2015 | No | Soil runoff |

Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

| Microbiological Contaminants | | | | | | |
|---|---|---|---|---|---|---|
| **Contaminants** | **PHG MCLG** | **PDWS MCL** | **Treated Water[2]** | **Source Water[1]** | **Sample Date** | **Violation** | **Typical Source of Contamination** |
| Total Coliform Bacteria | 0 | less than 5% positive | 2 positive | | 2015 | No | Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present |
| *E. Coli* | 0 | 0 | 0 positive | | 2015 | No | *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes |

| Contaminants Regulated by MRDL | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Contaminants (units)** | **PHG** | **PDWS MRDL** | **Treated Water Average[2]** | **Treated Water Range[2]** | | **Sample Date** | **Violation** | **Typical Source of Contamination** |
| | | | | **Low** | **High** | | | |
| Chlorine (ppm) | 4 | 4 | 0.82 | 0.06 | 1.84 | 2015 | No | Drinking water disinfectant added for treatment |

| Disinfection Byproduct Contaminants under Stage 2 DBP Rule | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Contaminants (units)** | **PHG MCLG** | **MCL** | **Treated Water[2]** | **Treated Water Range[2]** | | **Sample Date** | **Violation** | **Typical Source of Contamination** |
| | | | | **Low** | **High** | | | |
| TTHM [Total Trihalomethanes] (ppb) | N/A | 80 (LRAA) | 69 (LRAA) | 5 | 83 | 2015 | No | By-product of drinking water disinfection |
| HAA5 [Haloacetic Acids (five)] (ppb) | N/A | 60 (LRAA) | 45 (LRAA) | < 2 | 63 | 2015 | No | By-product of drinking water disinfection |

## Inorganic Contaminants with Action Levels

| Contaminants (units) | PHG | RAL | Tap Water 90th Percentile[3] | # of Samples Exceeding RAL[3] | Sample Date | Exceeds RAL | Typical Source of Contamination |
|---|---|---|---|---|---|---|---|
| Copper (ppm) | 0.3 | 1.3 | 0.4 | 0 | 2015 | No | Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives |
| Lead (ppb) | 0.2 | 15 | < 2 | 0 | 2015 | No | Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits |

## Contaminants with Secondary Drinking Water Standards (SDWS)

| Contaminants (units) | SDWS MCL | Treated Water Average[2] | Treated Water Range[2] | | Sample Date | Typical Source of Contamination |
|---|---|---|---|---|---|---|
| | | | Low | High | | |
| Iron (ppb) | 300 | < 20 | < 20 | 62 | 2015 | Leaching from natural deposits; industrial wastes |
| Chloride (ppm) | 500 | 31 | 22 | 61 | 2015 | Runoff/leaching from natural deposits; seawater influence |
| Manganese (ppb) | 50 | < 2 | < 2 | 14 | 2015 | Leaching from natural deposits |
| Specific Conductance (µmhos/cm) | 1600 | 465 | 370 | 780 | 2015 | Substances that form ions when in water; seawater influence |
| Sulfate (ppm) | 500 | 88 | 75 | 160 | 2015 | Runoff/leaching from natural deposits; industrial wastes |
| Total Dissolved Solids (ppm) | 1000 | 325 | 285 | 540 | 2015 | Runoff/leaching from natural deposits |

## Other Monitoring Results

Other monitoring results are provided for consumer information.

| Constituents (units) | Treated Water Average[2] | Treated Water Range[2] | | Sample Date | Typical Source of Contamination |
|---|---|---|---|---|---|
| | | Low | High | | |
| Hardness (ppm) | 183 | 164 | 266 | 2015 | A measure of the major cations, primarily calcium and magnesium |
| Sodium (ppm) | 30 | 27 | 58 | 2015 | Runoff/leaching from natural deposits; saltwater influence |

## Unregulated Contaminants – UCMR3

| Contaminants (units) | Treated Water Average[2] | Treated Water Range[2] | | Sample Dates |
|---|---|---|---|---|
| | | Low | High | |
| Chlorate (ppb) | 180 | 73 | 320 | 2013/2014 |
| Chromium-6 (ppb) | 0.05 | < 0.03 | 0.14 | 2013/2014 |
| Molybdenum (ppb) | 2.1 | 1.6 | 2.6 | 2013/2014 |
| Strontium (ppb) | 245 | 200 | 260 | 2013/2014 |
| Vanadium (ppb) | 0.3 | < 0.2 | 0.7 | 2013/2014 |

Unregulated contaminants are those for which USEPA has not established drinking water standards. Unregulated contaminant monitoring helps USEPA and the State Water Resources Control Board to determine where certain contaminants occur and whether the contaminants need to be regulated.

[1]Untreated water from the raw sources [2]Treated water from treatment plants and/or water mains [3]Water from 34 customers' household taps

**Data Table Units:**
**NTU**: Nephelometric Turbidity Units
**pCi/L:** picocuries per liter (a measurement of radioactivity)
**ppm**: parts per million or milligrams per liter (mg/L)
**ppb**: parts per billion or micrograms per liter (µg/L)
**µmhos/cm:** a measure of electrical conductivity

**We hope this Consumer Confidence Report is valuable to you. If you have questions or comments about your water, please contact one of the City of Santa Cruz staff listed below.**

**WATER ADMINISTRATION**
Rosemary Menard, Water Director
212 Locust St, Suite A
Santa Cruz, CA 95060
Phone: (831) 420-5200
Fax: (831) 420-5201

**WATER QUALITY LABORATORY**
Hugh Dalton, Water Quality Manager
715 Graham Hill Road
Santa Cruz, CA 95060
Phone: (831) 420-5484
E-mail: WaterQuality@cityofsantacruz.com
CCR2015:
www.cityofsantacruz.com/ccr2015

**WATER RESOURCES**
Chris Berry, Watershed Compliance Manager
715 Graham Hill Road
Santa Cruz, CA 95060
Phone: (831) 420-5483
E-mail:
WaterResources@cityofsantacruz.com

**You can also find other information on the Water Department and its activities at the City's website www.cityofsantacruz.com There you can find information on Water Conservation, Loch Lomond Recreation Area, activities and projects of our Engineering Section, Water Commission and more. Meetings of the City Council and Water Commission provide excellent opportunities for you to get involved in issues related to drinking water. Their agendas are posted on the website listed above, at City Hall, or you can call the Water Department at (831) 420-5200 to find out more. We welcome your attendance and input.**

**SANTA CRUZ CITY COUNCIL**
809 Center Street, Room 10
Santa Cruz, CA 95060
Phone: (831) 420-5020
E-mail: CityCouncil@cityofsantacruz.com

**SANTA CRUZ WATER COMMISSION**
Contact the Water Commission through the Water Department (831) 420-5200
Water Commission meetings are scheduled for the first Monday of each month at 7:00 pm.

**Other sources of information:**

**STATE WATER RESOURCES CONTROL BOARD**
**DIVISION OF DRINKING WATER**
Monterey District Office
(831) 655-6939
http://www.waterboards.ca.gov/drinking_water/programs/index.shtml

**U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)**
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460
(202) 566-1729
http://water.epa.gov/drink/index.cfm