

2011
ANNUAL
WATER REPORT

Presented By _____
City of Vacaville

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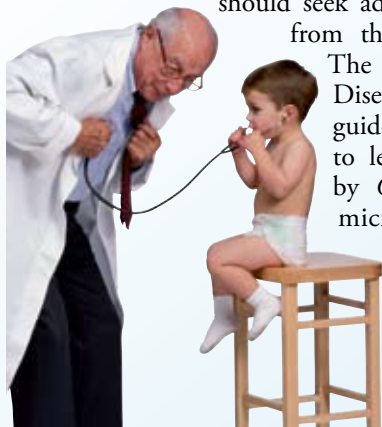
Quality First Quality First

The City of Vacaville wants our customers to know that your water has met or exceeded all quality standards established by the U.S. Environmental Protection Agency (USEPA) and the California Department of Public Health (DPH). In 2010, Vacaville delivered over 5.3 billion gallons of drinking water. This water was subjected to extensive testing, not only for regulated but also for non-regulated contaminants. For a complete table of analyses of Vacaville's water and other facts, see our website at <http://www.cityofvacaville.com>. We welcome your comments or questions about this report and invite you to join our source water protection efforts. Please contact the City of Vacaville Water Quality Lab Supervisor Tony Pirondini by calling (707) 469-6400 or by email at TPirondini@cityofvacaville.com.

Important Health Information

While arsenic levels in your drinking water are less than the current USEPA standard of 10 ppb, the groundwater does contain low levels of arsenic. These results are from samples taken in 2008–2010. The standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The USEPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.



The USEPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.

Source Water Assessments and Vulnerability Summaries

A Source Water Assessment evaluates the quality of a source water that is used in a community drinking water supply and to determine the Potential Contributing Activities (PCAs) that occur within and nearby a source water supply. The PCAs are compiled into a Vulnerability Summary. The latest Vulnerability Summary for the Sacramento Delta, including the Barker Slough North Bay Aqueduct (NBA), was completed in 2006, and the source was considered to be most vulnerable to cattle and sheep grazing activities in the watershed. The cities treating NBA water, in conjunction with the Solano County Water Agency, have implemented practices to improve water quality.

The latest Vulnerability Summary for Putah South Canal (PSC) was completed in 2006. The report determined that PSC has a physical barrier effectiveness rating of “low” and indicated that PSC is most vulnerable to illegal activities/ unauthorized dumping and herbicide application. Management measures along the canal have been implemented that mitigate the risk for each of these PCAs. These measures include improved security, the reduction of herbicide use, and diversion of surface drainage around and away from the canal.

The Vulnerability Summaries for Vacaville’s groundwater wells were performed in 2002, 2003, and 2005. The wells are considered most vulnerable to gas stations, chemical and petroleum processing and storage, dry cleaners, septic systems, sewer collection systems, agricultural drainage, and agricultural and irrigation wells. The wells offer various levels of protection from PCAs, including well construction features and physical barriers. No contamination of the water sources has been detected. Vacaville’s long-standing Source Control Program works to ensure that no illicit discharges are taking place and to confirm that pollutant disposal practices conform to guidelines and laws. A copy of the Source Water Assessments and Vulnerability Summaries can be obtained through the California DPH, Drinking Water Field Operations Branch, San Francisco District Office, 850 Marina Bay Parkway, Bldg P, 2nd Floor, Richmond, California 94804. You may request that a summary be sent to you by contacting Betty Graham, District Engineer, California Department of Public Health, at (510) 620-3474.


Where Does My Water Come From?

Vacaville’s water supply consists of two surface water sources and 12 deep groundwater wells. Depending on where you live, your water may come from a well, a treatment plant or a combination of both. In the year 2010, Lake Berryessa surface water, conveyed through Putah South Canal (PSC), provided 24 percent of the City’s total consumption; Sacramento Delta surface water from the North Bay Aqueduct (NBA) provided an additional 45 percent. Groundwater from the 12 deep wells made up the balance (31 percent) of our water needs. Treatment for surface water is divided between the Vacaville Water Treatment Plant (VWTP), located on Allison Drive, and the North Bay Regional Water Treatment Plant (NBR), located on Peabody Road. The wells are located on or near Elmira Road, Orange Drive, and Vaca Valley Parkway.



Lead in Home Plumbing

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



Community Participation

You are invited to voice your concerns about your drinking water at City Council meetings held on the second and fourth Tuesdays each month at 7:00 p.m. in the Council Chambers at City Hall, at 650 Merchant Street. All residents are encouraged to participate in these meetings. Agendas and minutes for the meeting are available on-line at the City of Vacaville website: <http://www.cityofvacaville.com>.

Sources of Water and Contaminants

The sources of drinking water (both tap water 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.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the State Department of Public Health (Department) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that must 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.

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 can 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, which are by-products of industrial processes and petroleum production and which can also come from gas stations, urban stormwater runoff, agricultural applications, and septic systems; **Radioactive Contaminants**, that can be naturally occurring or can be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline at (800) 426-4791.

Sampling Results

The City monitors your drinking water for more than 100 different constituents. Only those constituents detected are reported in the tables. While most monitoring was conducted in 2010, the State allows monitoring for some constituents less than once per year. Some of our data, therefore, are more than one year old. More information can be obtained about monitoring requirements, contaminants, and potential health effects by calling the USEPA's Safe Drinking Water Hotline (800-426-4791) or by visiting the EPA's website at www.epa.gov.

REGULATED SUBSTANCES

| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | MCL [MRDL] | PHG (MCLG) [MRDLG] | Groundwater Wells | | Distribution System (Cannot differentiate by source) | | Surface Water Sources | | VIOLATION | TYPICAL SOURCE |
|---|-----------------|--|--------------------------|--------------------|-------------------|--|----------------------|-----------------------|--------------------------|-----------|---|
| | | | | AMOUNT DETECTED | RANGE LOW-HIGH | AMOUNT DETECTED | RANGE LOW-HIGH | AMOUNT DETECTED | RANGE LOW-HIGH | | |
| Aluminum (ppm) | 2010 | 1 | 0.6 | ND | ND | NA | NA | 0.032 | 0.021–0.058 | No | Erosion of natural deposits; residue from some surface water treatment processes |
| Arsenic (ppb) | 2008 | 10 | 0.004 | 2.9 | 1.2–8.1 | NA | NA | 1 ¹ | ND–4 ¹ | No | Erosion of natural deposits; glass and electronics production wastes |
| Barium (ppm) | 2008 | 1 | 2 | 0.093 | 0.067–0.120 | NA | NA | 0.042 ¹ | 0.034–0.050 ¹ | No | Erosion of natural deposits |
| Bromate (ppb) | 2010 | 10 | 0.1 | NA | NA | 1.7 | ND–4.3 | NA | NA | No | By-product of drinking water disinfection |
| Chlorine (ppm) | 2010 | [4.0 (as Cl ₂)] | [4] | NA | NA | 0.75 | ND–1.5 | NA | NA | No | Drinking water disinfectant added for treatment |
| Chromium (ppb) | 2008 | 50 | (100) | 11 | 1.7–21 | NA | NA | 1 | ND–4 | No | Discharge from chrome plating; erosion of natural deposits |
| Control of DBP precursors [TOC] (ppm) | 2010 | TT | NA | NA | NA | 0.6 | ND–2.6 | NA | NA | No | Various natural and manmade sources |
| Fluoride (ppm) | 2010 | 2.0 | 1 | 0.3 | 0.2–0.4 | 0.9 ² | 0.7–1.0 ² | 0.07 | ND–0.16 | No | Erosion of natural deposits; water additive that promotes strong teeth |
| Gross Alpha Particle Activity (pCi/L) | 2008 | 15 | (0) | ND | ND–3.8 | NA | NA | ND | ND | No | Erosion of natural deposits |
| Gross Beta Particle Activity ³ (pCi/L) | 2008 | 50 | (0) | 3.5 | 1.5–5.9 | NA | NA | ND | ND | No | Decay of natural and manmade deposits |
| Haloacetic Acids (ppb) | 2010 | 60 | NA | ND | ND | 8.3 | ND–28 | ND | ND | No | By-product of drinking water disinfection |
| Nickel (ppb) | 2010 | 100 | 12 | NA | NA | NA | NA | 4 | ND–16 | No | Erosion of natural deposits; discharge from metal factories |
| Nitrate [as nitrate] (ppm) | 2010 | 45 | 45 | 7.7 | 2.0–17.6 | NA | NA | 4.1 | ND–7.4 | No | Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits |
| TTHMs [Total Trihalomethanes] (ppb) | 2010 | 80 | NA | ND | ND | 23 | ND–54 | 17 | 0.6–63 | No | By-product of drinking water disinfection |
| Total Coliform Bacteria [Total Coliform Rule] ⁴ (% positive samples) | 2010 | More than 5.0% of monthly samples are positive | (0) | NA | NA | 1.5 | NA | NA | NA | No | Naturally present in the environment |
| Turbidity ⁵ (NTU) | 2008 | TT | NA | 2.6 | 0.05–2.6 | NA | NA | 0.29 ¹ | 0.03–0.29 ¹ | No | Soil runoff |
| Turbidity (Lowest monthly percent of samples meeting limit) | 2010 | TT=95% of samples<0.3 | NA | NA | NA | NA | NA | 100 | NA | No | Soil runoff |

Tap water samples were collected for lead and copper analyses from sample sites throughout the community

| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | AL | PHG (MCLG) | AMOUNT DETECTED (90TH%TILE) | SITES ABOVE AL/ TOTAL SITES | VIOLATION | TYPICAL SOURCE |
|--------------------------------|-----------------|-----|---------------|--------------------------------|--------------------------------|-----------|---|
| Copper (ppm) | 2008 | 1.3 | 0.3 | 0.17 | 0/32 | No | Internal corrosion of household plumbing systems; erosion of natural deposits |
| Lead (ppb) | 2008 | 15 | 0.2 | 2.5 | 0/32 | No | Internal corrosion of household water plumbing systems; erosion of natural deposits |

SECONDARY SUBSTANCES

| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | SMCL | PHG (MCLG) | Groundwater Wells | | Surface Water Sources | | VIOLATION | TYPICAL SOURCE |
|--------------------------------|-----------------|-------|---------------|--------------------|-------------------|-----------------------|----------------------|-----------|---|
| | | | | AMOUNT DETECTED | RANGE LOW-HIGH | AMOUNT DETECTED | RANGE LOW-HIGH | | |
| Aluminum (ppb) | 2010 | 200 | NS | ND | ND | 32 | 21–58 | No | Erosion of natural deposits; residual from some surface water treatment processes |
| Chloride (ppm) | 2008 | 500 | NS | 15 | 7.9–33 | 13 ¹ | 8–20 ¹ | No | Runoff/leaching from natural deposits |
| Copper (ppm) | 2008 | 1.0 | NS | 0.9 | ND–3.7 | ND | ND | No | Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives |
| Iron (ppb) | 2008 | 300 | NS | 3 | ND–35 | ND | ND | No | Leaching from natural deposits; industrial wastes |
| Odor–Threshold (TON) | 2008 | 3 | NS | 1 | 1–3 | 1.6 ¹ | 1.4–2.0 ¹ | No | Naturally occurring organic materials |
| Silver (ppb) | 2010 | 100 | NS | ND | ND | 4 | ND–16 | No | Industrial discharges |
| Specific Conductance (µS/cm) | 2008 | 1,600 | NS | 587 | 471–846 | 328 ¹ | 283–356 ¹ | No | Substances that form ions when in water |
| Sulfate (ppm) | 2008 | 500 | NS | 41 | 24–66 | 34 ¹ | 23–43 ¹ | No | Runoff/leaching from natural deposits; industrial wastes |
| Total Dissolved Solids (ppm) | 2008 | 1,000 | NS | 367 | 270–546 | 202 ¹ | 186–222 ¹ | No | Runoff/leaching from natural deposits |
| Zinc (ppm) | 2008 | 5.0 | NS | 0.008 | ND–0.065 | ND | ND | No | Runoff/leaching from natural deposits; industrial wastes |

UNREGULATED AND OTHER SUBSTANCES

| SUBSTANCE (UNIT OF MEASURE) | YEAR SAMPLED | Groundwater Wells | | Surface Water Sources | | TYPICAL SOURCE |
|-------------------------------------|-----------------|--------------------|-------------------|-----------------------|----------------------|---|
| | | AMOUNT DETECTED | RANGE LOW-HIGH | AMOUNT DETECTED | RANGE LOW-HIGH | |
| Alkalinity (ppm) | 2008 | 211 | 161–305 | 126 ¹ | 74–162 ¹ | Naturally occurring due to carbonates and bicarbonates dissolved in water |
| Boron (ppb) | 2008 | 200 | 110–310 | 166 ¹ | 120–220 ¹ | Leaching from natural deposits |
| Bromide (ppm) | 2010 | NA | NA | 0.021 | 0.014–0.027 | NA |
| Calcium (ppm) | 2008 | 44 | 14–85 | 17 ¹ | 14–19 ¹ | Contributes to hardness; leaching from natural deposits |
| Hardness (ppm) | 2008 | 190 | 84–330 | 136 ¹ | 75–173 ¹ | Measure of calcium and magnesium dissolved in water |
| Magnesium (ppm) | 2008 | 20 | 12–28 | 22 ¹ | 10–31 ¹ | Contributes to hardness; leaching from natural deposits |
| Molybdenum (ppb) | 2008 | 0.2 | ND–3 | ND | ND | Leaching from natural deposits; industrial wastes |
| pH (Units) | 2008 | 7.9 | 7.7–8.2 | 8.1 ¹ | 8.0–8.2 ¹ | Naturally occurring |
| Potassium (ppm) | 2008 | 3.8 | 2.3–6.1 | 1.5 ¹ | 0.9–2 ¹ | Leaching from natural deposits |
| Sodium (ppm) | 2008 | 58 | 39–82 | 26 ¹ | 12–39 ¹ | Leaching from natural deposits |
| Total Organic Carbon [source] (ppm) | 2010 | 0.01 | ND– 0.05 | 1.9 | 1.5–2.6 | Various natural and manmade sources |
| Vanadium (ppb) | 2008 | 14 | 8–26 | 4.2 ¹ | 3.1–7.0 ¹ | Leaching from natural deposits; industrial wastes |

Footnotes:

¹ Sampled in 2010.

² Sampled in 2008.

³ Effective 6/11/2006, the gross beta particle activity MCL is 4 millirem/year annual dose equivalent to the total body or any internal organ. 50 pCi/L is used as a screening level.

⁴ Of 1,352 samples taken in 2010, only 3 sites had Total Coliforms detected. No sites tested positive upon resampling.

⁵ Turbidity is a measure of the cloudiness of the water.

Definitions

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

μS/cm (microsiemens per centimeter): A unit expressing the amount of electrical conductivity of a solution.

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 (SMCLs) 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. EPA.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence

that addition of a disinfectant is necessary for control of microbial contaminants.

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

NA: Not applicable.

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

NS: No standard.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

pCi/L (picocuries per liter): A measure of radioactivity.

PDWS (Primary Drinking Water Standard): MCLs and MRDLs 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 EPA.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

TON (Threshold Odor Number): A measure of odor in water.

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