

*Proudly Presented By:*



# City of Vallejo Annual Water Quality Report

*Water testing performed in 2004*



PWS ID#s: CA4810007  
CA4810021

## How Is My Water Treated and Purified?

At the Fleming Hill Treatment Plant, the treatment process consists of a series of steps. First, raw water is drawn from the Cordelia Reservoir or the Summit Reservoir and sent to a pre-ozonation contactor, where ozone is applied to aid the downstream processes. The water then goes to mixing basins where coagulants are added. The addition of these substances causes small particles to adhere to one another (called floc) making them heavy enough to settle into a basin from which sediment is removed. Following sedimentation, ozone is again applied to act as a disinfectant and an oxidizing agent to remove color, taste and odor. At this point, the water is filtered through layers of granular activated carbon and sand. As smaller, suspended particles are removed, turbidity disappears and clear water emerges. Chlorine is added as a precaution against any bacteria that may still be present. Finally, caustic soda (used to adjust the final pH and alkalinity), and fluoride (used to prevent tooth decay) are added before the water is pumped to sanitized reservoirs and into your home or business.

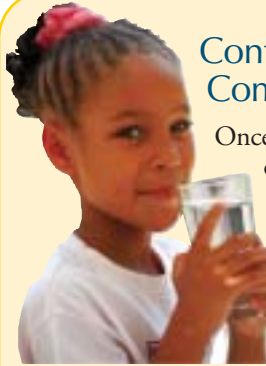
## Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water. The Solano County Water Agencies meet the second Thursday of each month at 7:00 p.m. at the Solano Irrigation District Headquarters, 508 Elmira Road, in Vacaville. Please feel free to participate in these meetings.



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

*Ang ulat na ito ay nagtataglay ng mahalagang inpormasyon. Ang kumpletong salin nito sa wikang Pilipino ay matatagpuan sa aming Web site sa [www.ci.vallejo.ca.us](http://www.ci.vallejo.ca.us). Kung nais ninyong makipagusap sa kinauukulan na may kaalaman ukol sa ulat na ito, mangyari lamang na tawagan si jun malit sa telepono (707) 648-4309.*



## Continuing Our Commitment

Once again we proudly present our annual water quality report. This edition covers all testing completed from January through December 2004. As in the past, we are committed to delivering the best quality drinking water. To that end, we remain vigilant in meeting the challenges of source water protection, water conservation, and community education while continuing to serve the needs of all of our water users.

For more information about this report, or for any questions relating to your drinking water, please call Nancy Dodsworth, Laboratory Chemist, at (707) 649-3472.

## Important Health Information

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 can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control) 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.



## Substances That Might Be In Drinking Water

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. EPA and the California Department of Health Services (CDHS) prescribe regulations that limit the amount of certain substances in water provided by public water systems. CDHS regulations also establish limits for contaminants in bottled water, which 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 substances. The presence of contaminants does not necessarily indicate that water poses a health risk.

Substances that may be present in source water include:

**Microbial Contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife;

**Inorganic Contaminants**, such as salts and metals, which 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**, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;

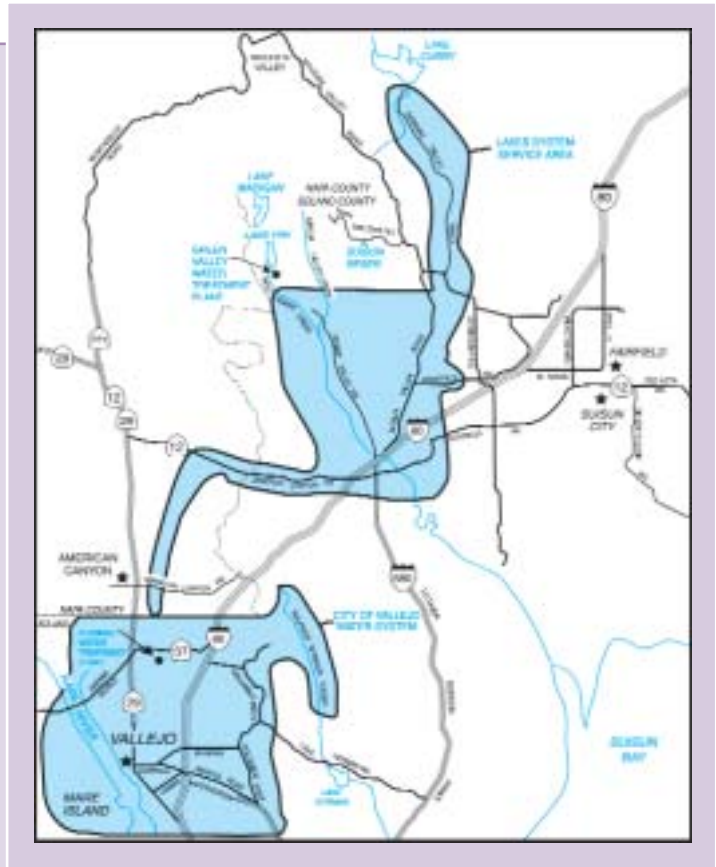
**Organic Chemical Contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and which can also come from gas stations, urban stormwater runoff, and septic systems;

**Radioactive Contaminants**, which can be naturally occurring or may 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 U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

## Where Does My Water Come From?

City of Vallejo customers are fortunate because we enjoy an abundant water supply from four sources. Water from the Solano Water Project is impounded in Lake Berryessa and transported by way of the Putah South Canal to Cordelia. State Water Project water is delivered to Lake Oroville and runs through the Sacramento River to the North Bay Aqueduct Pumping Facility at Barker Slough, where it is pumped to the Department of Water Resources (DWR) Forebay at Cordelia. Vallejo's State License Water also comes from Barker Slough. Lake Curry is a standby source for the City System located in Napa County. It will be utilized as soon as conveyance facilities are in place. Water from any or all of these sources is then pumped from Cordelia to the Fleming Hill Water Treatment Plant located on the hilltop above Six Flags Marine World. Vallejo also has three sources of water for its Lakes System that serves Gordon Valley, Old Cordelia, Green Valley and parts of American Canyon and Suisun Valley. Solano Project Water is delivered from Lake Berryessa via the Putah South Canal. Lakes Frey and Madigan are located in northern Solano County. The city owns both lakes and the surrounding land and restricts any activity that would result in contamination. Water flows into Lake Frey from Lake Madigan. Water from Lake Frey and the Putah South Canal is pumped from the Diversion Dam above the plant to the Green Valley Water Treatment Plant located at the end of Green Valley Road. During brief periods of construction or emergency repairs, Lakes System customers may be served by the Waterman Treatment Plant located in the City of Fairfield. For a copy of their water quality report call (707) 428-7594.



Water from Lake Frey and the Putah South Canal is pumped from the Diversion Dam above the plant to the Green Valley Water Treatment Plant located at the end of Green Valley Road. During brief periods of construction or emergency repairs, Lakes System customers may be served by the Waterman Treatment Plant located in the City of Fairfield. For a copy of their water quality report call (707) 428-7594.

## Source Water Assessments and Vulnerability Summaries

Source	Most Vulnerable Activities	Moderately Vulnerable Activities	Contact
Lake Frey	Illegal body contact* Wild animal access* Agricultural drainage*	Other animal operations Wildfires	Erik Nugteren (707) 648-4307
Putah South Canal	Illegal activities/ Dumping Herbicide applications	Road/Streets Storm drain discharge Recreational area	Alex Rabadoux (707) 455-1106
North Bay Aqueduct	Grazing animals* Runoff from grazing land*	Runoff from agricultural land	Erik Nugteren (707) 648-4307

\*Associated with detected contaminants

Source Water Assessments evaluate the quality of the water used as drinking water supplies for local communities. The assessment examines activities associated with the specific waterway and surrounding areas to determine their contribution to contamination. These potential contributors are then compiled into a Vulnerability Summary. Vulnerability Summaries were completed for the Putah South Canal and Lake Frey in 2001 and for the Sacramento Delta in 2002. The results of the Source Water Assessments and information about how to obtain copies of them are summarized in the adjacent table.

# Sampling Results

During the past year we have taken thousands of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water. Although the majority of the substances listed here are under the Maximum Contaminant Level (MCL), we feel it is important that you know exactly what was detected and how much of the substance was present in the water. The state requires us to monitor for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

## PRIMARY DRINKING WATER STANDARD (Regulated in order to protect against possible adverse health effects)

SUBSTANCE (UNITS)	YEAR SAMPLED	MCL [MRDL]	PHG (MCLG) [MRDLG]	Vallejo System Treated Water		Lakes System Treated Water		NBA Raw Water		SID Raw Water		Lake Frey Raw Water		VIOLATION	TYPICAL SOURCE
				AMOUNT DETECTED	RANGE LOW HIGH	AMOUNT DETECTED	RANGE LOW HIGH	AMOUNT DETECTED	RANGE LOW HIGH	AMOUNT DETECTED	RANGE LOW HIGH	AMOUNT DETECTED	RANGE LOW HIGH		
<b>Aluminum</b> (ppm)	2004	1	0.6	ND	ND	0.130	0.130-0.130	NA	NA	NA	NA	NA	NA	No	Erosion of natural deposits; residue from some surface water treatment processes
<b>Chlorine</b> (ppm)	2004	[4.0 (as Cl <sub>2</sub> )]	[4 (as Cl <sub>2</sub> )]	0.67	ND-1.58	0.39	ND-1.35	NA	NA	NA	NA	NA	NA	No	Drinking water disinfectant added for treatment
<b>Control of DBP precursors (TOC)</b> (ppm)	2004	TT>1	NA	2.4	1.8-2.4	<b>1.1</b>	<b>0.5-1.1</b>	NA	NA	NA	NA	NA	NA	<b>Yes<sup>2</sup></b>	Various natural and manmade sources
<b>Fluoride</b> (ppm)	2004	2	1	1.43 <sup>1</sup>	0.03-1.43 <sup>1</sup>	0.12	0.05-0.12	0.16	0.08-0.16	0.19	0.08-0.19	0.07	0.03-0.07	No	Water additive which promotes strong teeth
<b>Gross Alpha particle Activity</b> (pCi/L)	2002	15	NA	NA	NA	NA	NA	3.1	ND-3.1	4.11	ND-4.11	2.38 <sup>3</sup>	ND-2.38 <sup>3</sup>	No	Erosion of natural deposits
<b>HAAs [Halocetic Acids]</b> (ppb)	2004	60	NA	17	6-25	52	ND-78	NA	NA	NA	NA	NA	NA	No	By-product of drinking water disinfection
<b>Nitrate (as nitrate, NO<sub>3</sub>)</b> (ppm)	2004	45	45	2.75	ND-2.75	ND	ND	NA	NA	NA	NA	NA	NA	No	Runoff and leaching from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
<b>TTHMs [Total Trihalomethanes]</b> (ppb)	2004	80	NA	55	18-63	<b>113</b>	<b>70-160</b>	NA	NA	NA	NA	NA	NA	<b>Yes<sup>2</sup></b>	By-product of drinking water chlorination
<b>Turbidity</b> (NTU) <sup>4</sup>	2004	TT	NA	0.22	0.01-0.22	0.14	0.01-0.14	NA	NA	NA	NA	NA	NA	No	Soil runoff
<b>Uranium</b> (pCi/L)	2002	20	0.43	NA	NA	NA	NA	14.1	ND-14.1	NA	NA	1.83 <sup>3</sup>	ND-1.83 <sup>3</sup>	No	Erosion of natural deposits

Tap water samples were collected for lead and copper analyses from homes throughout the service areas (Lead was not detectable at the 90th percentile)

SUBSTANCE (UNITS)	YEAR SAMPLED	AL	PHG (MCLG)	Vallejo System Treated Water		Lakes System Treated Water		VIOLATION	TYPICAL SOURCE
				AMOUNT DETECTED (90TH% TILE)	HOMES ABOVE AL/TOTAL HOMES	AMOUNT DETECTED (90TH% TILE)	HOMES ABOVE AL/TOTAL HOMES		
<b>Copper</b> (ppb)	2003	1,300	170	61	0/50	100 <sup>5</sup>	0/11 <sup>5</sup>	No	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

## SECONDARY DRINKING WATER STANDARD (Regulated in order to protect the odor, taste and appearance of drinking water)

SUBSTANCE (UNITS)	YEAR SAMPLED	SMCL	PHG (MCLG)	Vallejo System Treated Water		Lakes System Treated Water		VIOLATION	TYPICAL SOURCE
				AMOUNT DETECTED	RANGE LOW HIGH	AMOUNT DETECTED	RANGE LOW HIGH		
Aluminum (ppm)	2004	200	NA	ND	ND	0.130	0.130-0.130	No	Erosion of natural deposits; residual from some surface water treatment processes
Chloride (ppm)	2004	500	NA	40	8.4-40	33.0	15.5-33	No	Runoff/leaching from natural deposits; seawater influence
Odor--Threshold (Units)	2004	3	NA	2.0	1.0-2.0	2.0	1.0-2.0	No	Naturally occurring organic materials
Specific Conductance (µmhos/cm)	2004	1,600	NA	427	209-427	478	150-478	No	Substances that form ions when in water; seawater influence
Sulfate (ppm)	2004	500	NA	47.9	26.1-47.9	29.8	5.8-29.8	No	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids [TDS] (ppm)	2004	1,000	NA	267	131-267	299	94-299	No	Runoff/leaching from natural deposits

## UNREGULATED SUBSTANCES

SUBSTANCE (UNITS)	YEAR SAMPLED	Vallejo System Treated Water		Lakes System Treated Water Regulated Substances	
		AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH
Calcium (ppb)	2004	25.0	12.0-44.1	19	4.8-40
Hardness (ppb) <sup>6</sup>	2004	129	58-180	115	20-162
Magnesium (ppb)	2004	16.2	6.8-24.1	16	1.9-26
pH (ppb)	2004	7.7	6.5-8.5	7.8	6.9-8.7
Sodium (ppb)	2004	25	25-25	16	16-16

### Footnotes:

<sup>1</sup> To be in compliance, 80 percent of measurements must be within the range of 0.8–1.4 ppm.

<sup>2</sup> Violation occurred in the Lake System only – refer to the *About our Violation* section in this report.

<sup>3</sup> Sampled in 2003

<sup>4</sup> Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration systems. During the reporting year, 100% of all samples taken to measure turbidity met water quality standards.

<sup>5</sup> Samples for Lakes System Treated Water taken in 2002.

<sup>6</sup> For grains per gallon divide by 17.1.

## Table Definitions

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

**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 (SMCL) 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 level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap.

**MRDLG (Maximum Residual Disinfectant Level Goal):** The level of a disinfectant added for water treatment below which there is no known or expected risk to health. MRDLs are set by the U.S. EPA.

**NA:** Not applicable

**ND:** Not detected

**NTU (Nephelometric Turbidity Units):** Measurement of the clarity, or turbidity, of water.

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

**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 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).

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

**µmhos/cm (micromhos per centimeter):** A measure of electrical conductance.

## About our Violation

In 2004, the U.S. EPA required systems serving fewer than 10,000 people to monitor for total organic carbon (TOC), trihalomethanes (THMs), and haloacetic acids (HAAs). After collecting four quarters of data, the Lakes System was found to be in violation of this new regulation. The City of Vallejo anticipates having a new technology operating by December 2005 to correct this violation. Customers affected by this violation have been notified previously.

Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of cancer.

