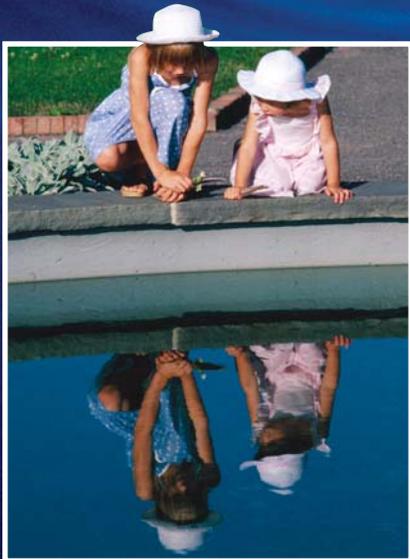




# 2003 DRINKING WATER QUALITY REPORT TO CONSUMERS



**In order to ensure that tap water is safe to drink**, the U.S. Environmental Protection Agency (USEPA) and the State Department of Health Services (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 provide the same protection for public health.

The City of Vacaville has made a commitment to ensure that your water meets the highest water quality standards and is a safe and reliable supply. 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 United States Environmental Protection Agency (USEPA) Safe Drinking Water Hotline at (1-800-426-4791), or visit the web site at <http://www.epa.gov/safewater/dwhealth.html>.

For a full table of analyses of Vacaville's water and other facts, see our Website at [www.cityofvacaville.com](http://www.cityofvacaville.com). We would like to hear your comments on this report and invite you to join our source water protection efforts. Please contact the City of Vacaville Water Quality Lab Supervisor, Tony Pirondini at (707) 469-6400.

## SOURCES OF WATER & 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.

Our water supply consists of two surface water sources and eleven deep groundwater wells. Lake Berryessa water, conveyed through Putah South Canal (PSC), provided 28.3% of the City's total consumption. Sacramento Delta water from the North Bay Aqueduct (NBA) provided an additional 34.8% in the year 2003. Groundwater from eleven deep wells made-up the balance (36.9%) of our water needs.

Treatment of surface water is divided between the City's water treatment plant located on Allison Drive and the North Bay Regional Water Treatment Plant (NBR), located on Peabody Road. This facility, which is jointly-owned by the cities of Fairfield and Vacaville, treats both PSC and NBA waters.

Nine City wells are located on or near Elmira Road. Two additional wells are located off Orange Drive and Midway Road. Future wells are

currently under development. Disinfection and sand removal is the only treatment necessary for our excellent quality groundwater. Fluoride is added to all of the supplies as required for dental health protection.

In 2003 Vacaville distributed over 5.7 billion gallons of drinking water. This water was subjected to extensive testing for both regulated and unregulated contaminants. EPA's Unregulated Contaminant Monitoring Rule (UCMR) testing included electronic data reporting that was not fully met resulting in noncompliance status. The City is now compliant with all UCMR electronic reporting requirements. In 2003, more than 70,000 analyses were performed on water samples for the assurance of public health protection.

## 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, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;
- Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

## Arsenic in Drinking Water

### Vacaville Meets the Limit!

Arsenic was detected in groundwater samples taken in 2002 between 2 and 6 ppb which is less than the standard of 50 ppb. No arsenic was detected in surface water supplies. While Vacaville's drinking water meets the current standard for arsenic, it does contain low levels of arsenic. The standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The California Department of Health Services 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.

## THMs & HAAs

For public health and safety, chlorine is added to drinking water to inhibit bacterial growth that could result in acute illness. Trihalomethanes (THMs) and Haloacetic Acids (HAAs) are by-products of chlorine disinfection. Effective January 1, 2002, the MCL for THM's was reduced from

**Este informe contiene información muy importante Sobre su agua bebr.  
Tradúzcalo ò hable con alguien que lo entienda bien.**

**Itong ulat ay mayroong mahalagang impormasyon tungkol  
sa inumin na tubig. Isalin mo o makipagusap sa makaunawa.**

100 ppb to 80 ppb. The MCL was lowered to reduce potential reproductive problems of some THM compounds. THM levels in the water distribution system ranged from <0.5 ppb to 67 ppb with an average of 19.5 ppb. The HAA's MCL is set at 60 ppb to reduce any potential health risks. HAA levels detected in the distribution system ranged from <1 ppb to 42 ppb with an average of 5.6 ppb.

### Source Water Assessments and Vulnerability Summaries

A Source Water Assessment evaluates the quality of the water used as community drinking water supplies. Furthermore, the assessment surveys activities associated with the specific waterway and surrounding areas to determine possible contaminating activities (PCAs). The PCAs are then compiled into a Vulnerability Summary.

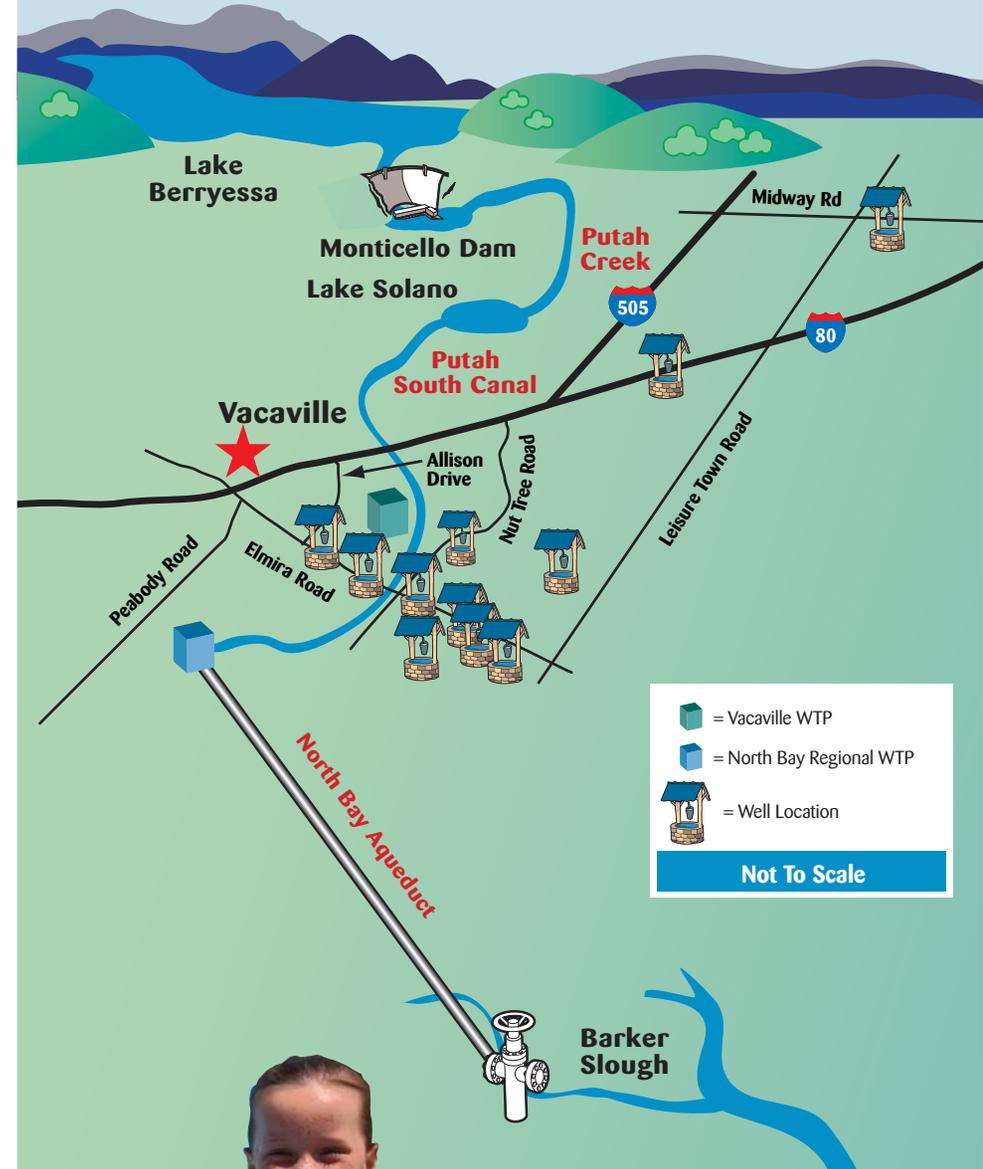
The Vulnerability Summary for the Sacramento Delta including the Barker Slough North Bay Aqueduct (NBA) was completed in 2002. The NBA is considered to be most vulnerable to cattle and sheep grazing activities. Approximately 85% of the watershed is grazing land or irrigated pastures. Cattle and sheep have direct access to Barker Slough and its tributaries. This access results in severe bank erosion as well as turbidity, total organic carbon and coliform bacteria contamination of the water source. Although the NBA source is considered vulnerable to these PCAs, be assured that all drinking water standards are met in the water delivered to customers. A multitude of barriers used by the City provide you with assurance of a safe drinking water and the protection of public health. Barriers include appropriate treatment and disinfection essential to achieving reliable and consistent water quality, annual distribution system flushing to maintain a high quality water, and DHS certified staff who undergo continual training to keep up-to-date on regulations, treatment techniques and processes.

Furthermore, cities treating NBA water are working with the Solano County Water Agency to evaluate watershed management practices to improve water quality and reduce the significance of PCAs. Working with landowners, several watershed management practices have been evaluated in field studies including revegetation of the banks of the slough and excluding cattle from the slough by fencing.

The Vulnerability Summary for Putah South Canal (PSC) was completed in September 2000. PSC was determined to have a physical barrier effectiveness rating of "low." The results of the assessment survey indicated that PSC is most vulnerable to illegal activities/unauthorized dumping and herbicide application. Management measures along the canal are being implemented that mitigate the risk for each of these PCAs. These measures include restricted access to the canal by installation of security fencing, regular patrolling of the canal, reduction of herbicide use, replanting of canal walls with grasses, cleaning of the canal during periods of no water deliveries, and diversion of surface drainage around and away from the canal.

The Vulnerability Summary for Vacaville's groundwater wells was performed in 2003. The wells are considered most vulnerable to automobile gas stations, chemical and petroleum processing and storage, dry cleaners, septic systems, sewer collection systems, agricultural drainage and agricultural and irrigation wells. Fortunately, the wells offer various levels of protection from PCAs due to factors such as characteristics of the aquifer, the water table depth, well construction features and physical barriers. Therefore, although the PCAs listed in the assessment surveys are activities that have the potential to contaminate the wells, in actuality the PCAs are not causing nor have historically caused contamination of the water source. Additionally, Vacaville has a long-standing Source Control Program, whereby investigators perform inspections of commercial and industrial facilities. This is to ensure that no illicit discharges are taking place or have taken 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 Department of Health Services, Drinking Water Field Operations Branch, San Francisco District Office, 2151 Berkeley Way, Room 458, Berkeley, CA 94704. You may request that a summary of the assessment be sent to you by contacting Kalyanpur Y. Baliga, District Engineer, California Department of Health Services, at (510) 540-2153.



Glory Hole at Lake Berryessa

**PRIMARY STANDARDS: HEALTH-RELATED STANDARDS**

SUBSTANCE	UNITS	MCL	PHG (MCLG)	RANGE	AVG	CONTAMINATE SOURCES
<b>GROUNDWATER</b>						
			<b>Clarity</b>			
Turbidity	ntu	tt	na	nd - 0.7	0.2	Soil runoff. Turbidity is a measure of the cloudiness of the water and is a good indicator of the quality of the water.
<b>Inorganic Chemicals</b>						
Aluminum	ppb	1000	600	nd - 170	20	Erosion of natural deposits; residue from some surface water treatment processes.
Arsenic	ppb	50	none	2 - 6	3	Erosion of natural deposits, glass and electronics production waste.
Barium	ppb	1000	2000	nd - 120	33	Erosion of natural deposits.
Chromium	ppb	50	100	nd - 19	9	Discharge from chrome plating and erosion of natural deposits.
Fluoride	ppm	2	1	nd - 0.36	0.19	Erosion of natural deposits.
Nitrate (as N)	ppm	10	10	0.3 - 3.6	1.7	Runoff and leaching from fertilizer use; leaching from septic tanks; erosion of natural deposits.
<b>Radioactivity</b>						
Gross Alpha Activity	pCi/L	15	none	nd - 3.9	0.69	Erosion of natural deposits.
Gross Beta Activity	pCi/L	50	none	nd - 6.1	1.82	Decay of natural and man-made deposits.
Radium 226	pCi/L	na	none	nd - 0.50	0.13	Decay of natural and man-made deposits.
Radium 228	pCi/L	na	none	nd - 3.0	0.91	Decay of natural and man-made deposits.
<b>SURFACE WATER - NBR</b>						
			<b>Clarity</b>			
Turbidity (a)	ntu	tt	na	0.07	100%	Soil runoff. Turbidity is a measure of the cloudiness of the water and is a good indicator of the quality of the water.
<b>Regulated Organic Chemicals</b>						
Total Trihalomethanes	ppb	80	na	nd - 5.8	3.4	Byproduct of drinking water disinfection.
<b>Inorganic Chemicals</b>						
Aluminum	ppb	1000	600	nd - 256	64	Erosion of natural deposits; residue from some surface water treatment processes.
Barium	ppm	1000	2000	nd - 0.28	0.07	Erosion of natural deposits.
Fluoride	ppm	2	1	nd - 0.21	0.06	Erosion of natural deposits.
<b>Radioactivity</b>						
Gross Alpha Activity (2002 NBA Untreated)	pCi/L	15	none	nd - 3.1	0.77	Erosion of natural deposits.
<b>SURFACE WATER - VWTP</b>						
			<b>Clarity</b>			
Turbidity (a)	ntu	tt	na	0.36	100%	Soil runoff. Turbidity is a measure of the cloudiness of the water and is a good indicator of the quality of the water.
<b>Inorganic Chemicals</b>						
Fluoride	ppm	2	1	0.1	0.1	Erosion of natural deposits.
<b>Radioactivity</b>						
Gross Alpha Activity (2002 PSC Untreated)	pCi/L	15	none	nd - 3.2	0.77	Erosion of natural deposits.

**LEGEND**

- al** = Action Level. The concentration of a contaminant which, if exceeded, triggers a treatment or other requirement which a water system must follow.
- MCL** = Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water. Set by the USEPA as close as possible to MCLGs as feasible.
- MCLG** = Maximum Contaminant Level Goal. The level of a contaminant in drinking water below which there is no known or expected risk to health. Set by the USEPA.
- MRDL** = Maximum Residual Disinfectant Level. The level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap. Set at 4.0 mg/L as Cl<sub>2</sub> for chlorine disinfection.
- 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. MRDL's are set by USEPA.
- na** = Not Applicable or Not Available at this time.
- nd** = Not-Detected.
- ntu** = Nephelometric Turbidity Units. The standard unit for turbidity measurements.
- pCi/L** = Pico Curies per Liter.
- 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 CA EPA.
- ppm** = Parts Per Million or milligrams per Liter (mg/L).
- ppb** = Parts Per Billion or micrograms per Liter (ug/L).
- ton** = Total Odor Number.
- tt** = Treatment Technique. A required process intended to reduce the level of a contaminant in drinking water. No public health goal is defined.
- (a)** = Range is max monthly value; 100% represents the lowest percentage of monthly compliance.
- (b)** = Not possible to differentiate between groundwater or surface water source.
- (c)** = Compliance is based on a running annual average of samples collected quarterly.
- (d)** = Standard depends on temperature.
- (e)** = This is the State action level for samples collected from inside homes.
- (f)** = To convert hardness data from ppm to grains per gallon, divide by 17.
- (g)** = The 90th percentile reflects the concentration of lead or copper at which 90% of the samples tested were found to have not exceeded. Lead and Copper results are from 2002 analyses. The next sampling is scheduled for 2005.

**SECONDARY STANDARDS: AESTHETIC-RELATED**

SUBSTANCE	UNITS	MCL	GROUNDWATER		SURFACE WATER NBR		SURFACE WATER VWTP	
			RANGE	AVG	RANGE	AVG	RANGE	AVG
Aluminum	ppb	200	nd - 170	20	nd - 256	64	nd	nd
Chloride	ppm	250	8.6 - 32	15	10 - 16	13	7.1	7.1
Color	units	15	3 - 5	4	nd - 4	1	5	5
Odor - Threshold	ton	3	1 - 3	2	1.0 - 1.4	1.1	2	2
Sulfate	ppm	250	22 - 63	40	28 - 41	34	20	20
Specific Conductance	umhos/cm	1600	441 - 789	544	314 - 435	360	326	326
Total Dissolved Solids	ppm	1000/500	280 - 530	360	200 - 276	225	180	180

**ADDITIONAL SUBSTANCES ANALYZED**

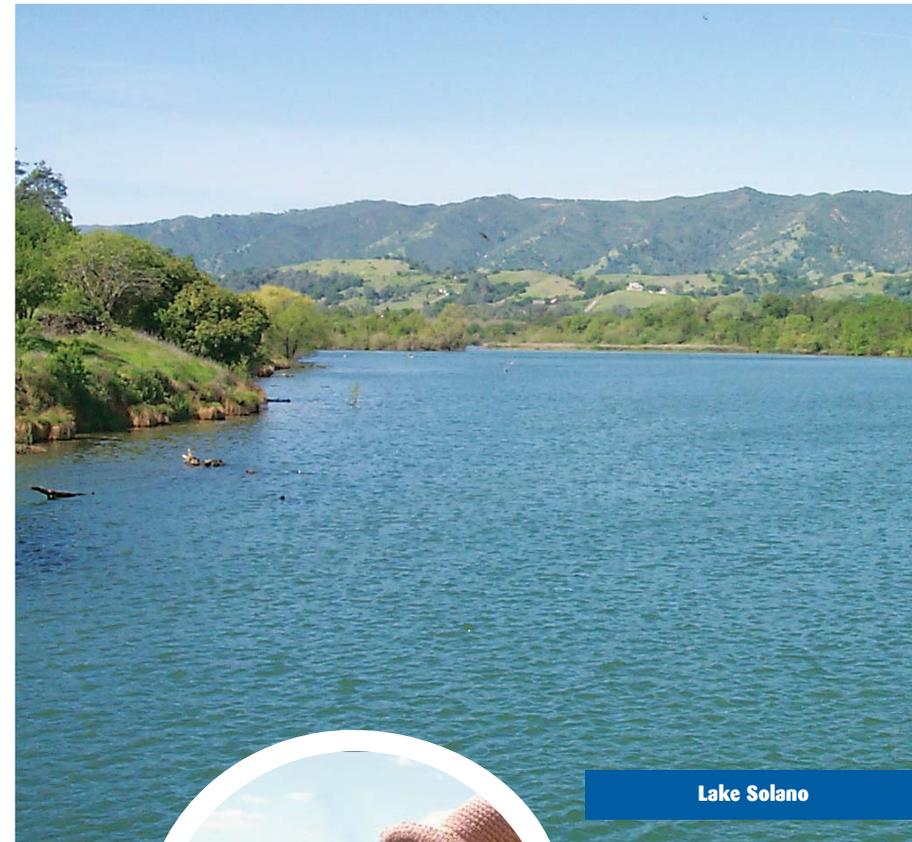
Alkalinity	ppm	No Std	199 - 331	228	78 - 157	126	178	178
Boron	ppb	No Std	nd - 270	150	140 - 270	200	nd	nd
Calcium	ppm	No Std	21 - 87	46	15 - 31	21	17	17
Hardness (f)	ppm	No Std	72 - 328	192	79 - 174	135	162	162
Magnesium	ppm	No Std	4.7 - 27	19	9.6 - 26.6	19.8	29	29
pH	units	No Std	7.4 - 8.1	7.7	8.0 - 8.3	8.2	8.5	8.5
Potassium	ppm	No Std	2.8 - 5.8	4	1.3 - 2.0	1.7	9.8	9.8
Sodium	ppm	No Std	40 - 79	53	15 - 32	25	9.8	9.8
Vanadium	ppb	al = 50	6.6 - 25	14	nd - 5	4.3	nd	nd

## SPECIAL INFORMATION

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised people such as those with cancer undergoing chemotherapy, people 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. Environmental Protection Agency (EPA) and Center for Disease Control guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants can be obtained by calling EPA's Safe Drinking Water Hotline (800-426-4791).



DISTRIBUTION SYSTEM INFORMATION						
SUBSTANCE	UNITS	MCL	PHG (MCLG)	RANGE	CONTAMINATE SOURCES	
Lead (e) (g)	ppb	al = 15	2	1.9 ppb reflect the 90th percentile. Of the 33 samples analyzed, none exceeded the action level. Data is from the last required sampling of August 2002.	Erosion of natural deposits. Internal corrosion of household water plumbing systems.	
Copper (e) (g)	ppm	al=1.3	none	0.17 ppm reflect the 90th percentile. Of the 33 samples analyzed, none exceeded the action level. Data is from the last required sampling of August 2002.		
Fluoride (b) (d)	ppm	0.7 - 1.3	0.8	Distribution system-wide highest monthly average = 0.9 ppm with a minimum of 0.7 ppm and a maximum of 1.2 ppm.	Erosion of natural deposits; Water additive that promotes strong teeth.	
MICROBIOLOGICAL						
SUBSTANCE	UNITS	MCL	PHG (MCLG)	LEVEL DETECTED	CONTAMINATE SOURCES	
Coliform Bacteria	% Tests Positive	5%	0	Highest monthly value = 0%	Total Coliform is naturally present in the environment.	
SUBSTANCE		UNITS	MCL or MRDL	MCLG or MRDLG	LEVEL DETECTED	CONTAMINATE SOURCES
<b>Disinfectants &amp; Disinfection By-Products (DBP)</b>						
Total Trihalomethanes (b, c)		ppb	80	none	Average = 19.5 ppb Minimum = nd Maximum = 67.0 ppb	By-product of drinking water chlorination.
Halo-Acetic Acids		ppb	60	none	Average = 5.6 ppb Minimum = nd Maximum = 42.0 ppb	By-product of drinking water chlorination.
Chlorine		ppm	4	4	Average = 0.87 ppm Minimum = 0.02 ppm Maximum = 1.63 ppm	Drinking water disinfectant added for treatment.
Bromate		ppb	10	0	All samples were nd for Bromate for 2003	Drinking water disinfectant added for treatment.
Control of DBP Precursors (TOC)		ppm	tt	na	Average = 1.4 ppm Minimum = 1.0 ppm Maximum = 2.1 ppm	Various natural and manmade sources.



Lake Solano



**Get Involved!** The City Council meets on the second and fourth Tuesdays of each month at 7:00 p.m. in the Council Chambers at City Hall, located at 650 Merchant Street. All citizens are encouraged to participate in these meetings. Agendas and minutes for the meeting are available on-line at the City of Vacaville web site: [www.cityofvacaville.com](http://www.cityofvacaville.com).