# EAST BAY MUNICIPAL UTILITY DISTRICT

## 2011 ANNUAL WATER QUALITY REPORT

In 2011, EBMUD water met or surpassed every public health requirement set by the California Department of Public Health and the U.S. Environmental Protection Agency.

### PROTECTED SOURCE

Ninety percent of EBMUD's water comes from the 577-square mile watershed of the Mokelumne River on the western slope of the Sierra Nevada. This area is mostly national forest, EBMUD-owned lands and other undeveloped lands little affected by human activity. The Mokelumne watershed collects snowmelt from Alpine, Amador and Calaveras counties. The snowmelt flows into Pardee Reservoir near the town of Valley Springs.

Three large aqueducts carry water more than 90 miles from Pardee Reservoir to the East Bay and protect it from pesticides, agricultural and urban runoff, municipal sewage and industrial discharges. When water demand is high or during times of operational need, EBMUD also draws water from protected local watersheds.

### FOCUS ON WATER QUALITY

Regardless of source, all raw water is treated and filtered at one of EBMUD's water treatment plants before entering the East Bay's distribution system and reaching your tap. EBMUD takes many steps to ensure water quality including managing watershed lands and reservoirs, treating the water, operating a complex distribution system, maintaining facilities and addressing customer concerns.

In laboratories and in the field, EBMUD samples and tests your water extensively to make sure it is safe to drink. We look for more than 100 substances in the water including microorganisms, pesticides, herbicides, asbestos, lead, copper, petroleum products and by-products of industrial and water treatment processes. More than 20,000 annual laboratory tests ensure the safety of your drinking water.

EBMUD

## WATER QUALITY REGULATIONS

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

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 is available from the USEPA's Safe Drinking Water Hotline at 800-426-4791 or online at www.epa.gov/safewater.

**Contaminants 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. Contaminants that may be present in source water include:

Microbial contaminants, such as viruses, bacteria and protozoa, such as *Cryptosporidium*, 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 storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

Synthetic organic contaminants, such as pesticides and herbicides that may come from a variety of sources, including agriculture, urban storm water and residential uses.

Volatile organic chemical contaminants from industrial processes and petroleum production, and from gas stations, urban storm water 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.

**Cryptosporidium**
*Cryptosporidium* is a microbial contaminant found in surface water throughout the United States. Although filtration is highly effective in removing *Cryptosporidium*, the most commonly used filtration methods cannot guarantee 100 percent removal.

Our monitoring indicates the presence of these organisms in one of our source waters. Current test methods cannot determine if the organisms are dead or are capable of causing disease. Ingestion of *Cryptosporidium* may cause abdominal infection with symptoms including nausea, diarrhea and abdominal cramps.

*Cryptosporidium* must be ingested to cause disease, and it may be spread through means other than drinking water. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness. We encourage these individuals to consult their physician regarding appropriate precautions to take to avoid infection.

**Low resistance**
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, and 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 USEPA Safe Drinking Water Hotline at 800-426-4791 or www.epa.gov/safewater.

**Lead**
If present, elevated levels of lead can cause serious health problems. Pregnant women, infants and young children are typically more vulnerable to lead in drinking water than the general population.

Lead in drinking water is primarily from materials and components associated with lead service lines and home plumbing. EBMUD is responsible for providing high-quality drinking water and has replaced all known lead service lines in its service area, but cannot control the variety of materials used in existing home plumbing components. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing.

If you are concerned about elevated lead levels in your home's water, or if your water has been sitting for several hours, you can minimize the potential for lead exposure by running your faucet for 30 seconds to 2 minutes before using water for drinking or cooking. You also 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 USEPA Safe Drinking Water Hotline at 800-426-4791 or online at www.epa.gov/safewater/lead.

## SURPASSING REGULATIONS

In 2011, EBMUD water met or surpassed every public health requirement set by the California Department of Public Health and the U.S. Environmental Protection Agency.

The five tables show the measured levels of constituents detected in 2011 or in the most recent required year at EBMUD source waters, water treatment plants or in the distribution system.

**Table 1 – Health-Related Standards**
Constituents with primary maximum contaminant levels (MCLs) are regulated to protect your health.

**Table 2 – Aesthetic Standards**
Constituents with secondary maximum contaminant levels (MCLs) are regulated to maintain aesthetic standards for drinking water, such as odor, taste and appearance.

**Table 3 – Unregulated constituents**
Water agencies are required to report these substances if detected, but no maximum contaminant levels have been established.

**Table 4 – Lead and copper**
Lead and copper are regulated at the customer's tap and were most recently sampled in 2011 as required.

**Table 5 – Other water quality parameters**
These water measurements, such as pH, hardness and alkalinity, may be of interest to some consumers.

| 1 Constituents with primary MCLs | | Unit | Year sampled | MCL or [MRDL] | PHG, (MCLG) or [MRDLG] | Average | Water treatment plants: Walnut Creek | Lafayette | Orinda | Sobrante | Upper San Leandro | Typical sources |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Microbiological | Cryptosporidium in source water | #/liter | 2008 | TT | (0) | NA | 0 | 0 | 0 | 0.3 | 0 | Naturally present in the environment |
| | Total Coliform | — | 2011 | 5% | (0) | NA | zero detections found in more than 4,500 samples from the distribution system | | | | | Naturally present in the environment |
| | Turbidity | NTU | 2011 | 1 | NS | 0.03 | 0.02 – 0.10 | 0.02 – 0.09 | 0.02 – 0.10 | 0.02 – 0.10 | 0.03 – 0.10 | Soil runoff |
| | | — | | 95% ≤0.3 | NS | 100% | 100% | 100% | 100% | 100% | 100% | |
| Radioactive | Gross alpha in source water [a] | pCi/L | 2006, 2007 | 15 | (0) | <3 | <3 | <3 | <3 | <3 – 11 | <3 | Erosion of natural deposits |
| | Gross beta in source water | pCi/L | 2006, 2007 | 50 [b] | (0) | <4 | <4 | <4 | <4 | <4 – 9 | <4 | Decay of natural and man-made deposits |
| | Uranium in source water [a] | pCi/L | 2006, 2007 | 20 | 0.43 | NA | <1 | <1 | <1 | <1 | <1 | Erosion of natural deposits |
| Inorganic | Aluminum | ppb | 2011 | 1000 | 600 | <50 | <50 | <50 | <50 | <50 – 83 | <50 – 57 | Erosion of natural deposits; water treatment residue |
| | Chloramine as $Cl_2$ | ppm | 2011 | [4] | [4] | 1.9 [c] | <0.05 – 3.4 [d] | | | | | Drinking water disinfectant added for treatment |
| | Fluoride in source water [e] | ppm | 2011 | 2 | 1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.16 | Erosion of natural deposits [e] |
| Organic | Acrylamide | — | 2011 | TT | (0) | NA | met req. | NA | NA | NA | NA | Added to water during water treatment |
| | Control of DBP precursors/TOC | — | 2011 | TT | NS | NA | NA | NA | NA | met req. | met req. | Various natural and man-made sources |
| | Haloacetic acids, 5 species | ppb | 2011 | 60 | NS | 25 [c] | 14 – 34 | 17 – 35 | 16 – 22 | 26 – 40 | 16 – 41 | By-product of drinking water disinfection |
| | Trihalomethanes | ppb | 2011 | 80 | NS | 44 [c] | 37 – 60 | 35 – 49 | 39 – 48 | 42 – 53 | 28 – 70 | By-product of drinking water disinfection |

| 2 Constituents with secondary MCLs | Unit | Year sampled | MCL | PHG | Average | Water treatment plants: Walnut Creek | Lafayette | Orinda | Sobrante | Upper San Leandro | Typical sources |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | ppb | 2011 | 200 | NS | <50 | <50 | <50 | <50 | <50 – 83 | <50 – 57 | Erosion of natural deposits; water treatment residue |
| Chloride | ppm | 2011 | 250 | NS | 9 | 3 | 4 | 4 – 6 | 15 | 16 | Runoff/leaching from natural deposits |
| Color | color units | 2011 | 15 | NS | 1 | 2 | <1 | 2 | <1 | 2 | Naturally-occuring organic materials |
| Foaming agents (MBAS) | ppb | 2011 | 500 | NS | <50 | <50 | <50 | <50 – 140 | <50 | <50 | Municipal and industrial waste discharges |
| Odor | TON | 2011 | 3 | NS | 2 | 2 | 2 | 2 | 1 | 1 | Naturally-occuring organic materials |
| Specific conductance | µS/cm | 2011 | 900 | NS | 177 | 42 | 45 | 73 – 116 | 321 | 382 | Substances that form ions when in water |
| Sulfate | ppm | 2011 | 250 | NS | 16 | 0.6 | 0.6 | 3.7 – 10 | 33 | 38 | Runoff/leaching from natural deposits |
| Total dissolved solids | ppm | 2011 | 500 | NS | 106 | 33 | 29 | 53 – 67 | 170 | 240 | Runoff/leaching from natural deposits |
| Turbidity | NTU | 2011 | 5 | NS | 0.03 | 0.02 – 0.10 | 0.02 – 0.09 | 0.02 – 0.10 | 0.02 – 0.10 | 0.03 – 0.10 | Soil runoff |

| 3 Unregulated constituents | Unit | Year sampled | Notification level | PHG | Average | Water treatment plants: Walnut Creek | Lafayette | Orinda | Sobrante | Upper San Leandro | Typical sources |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | ppb | 2011 | 1000 | NS | <100 | <100 | <100 | <100 | <100 | 116 | Runoff/leaching from natural deposits |
| Chlorate | ppb | 2011 | 800 | NS | 143 | 120 | 98 | 79 – 170 | 100 – 210 | 140 – 270 | By-product of sodium hypochlorite decomposition |
| N-Nitrosodimethylamine [f] (NDMA) | ppt | 2011 | 10 | 3 | 2 | <1 – 7 | 1 – 3 | 1 – 4 | 2 – 3 | <1 – 6 | By-product of drinking water chlorination |

| 4 Lead and copper | Unit | Year sampled | Regulatory action level | PHG | 90th percentile | Sites above regulatory action level | Typical sources |
|---|---|---|---|---|---|---|---|
| Copper | ppb | 2011 | 1300 | 300 | 66 | 0 out of 51 | Internal corrosion of household plumbing systems ; erosion of natural deposits; leaching from wood preservatives |
| Lead [g] | ppb | 2011 | 15 | 0.2 | 7 | 3 out of 51 | Internal corrosion of household plumbing systems ; erosion of natural deposits |

## KEY TERMS

**DBP** – Disinfection by-products. These are formed when chlorine and/or ozone reacts with natural constituents in water. Trihalomethanes (THMs), haloacetic acids (HAAs) and bromate are disinfection by-products.
**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 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.
**Notification level** – A health-based advisory level established by the California Department of Public Health for chemicals in drinking water that lack MCLs.
**Primary drinking water standard** – These standards regulate contaminants that affect health by setting MCLs and MRDLs along with their monitoring, reporting 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. Public health goals are set by the California Environmental Protection Agency.
**Regulatory action level** – The concentration which, if exceeded, triggers treatment or other requirements that a water system must follow.
**TOC** – Total organic carbon. A measure of organic compounds that could form by-products after disinfection.
**Turbidity** – A measure of the cloudiness of water. Turbidity is monitored because it is a good indication of the effectiveness of our filtration systems.
**TT** – Treatment technique. A required process intended to reduce the level of a contaminant in drinking water.
**90th percentile** – A measure that indicates 90 percent of the samples had a lower result.

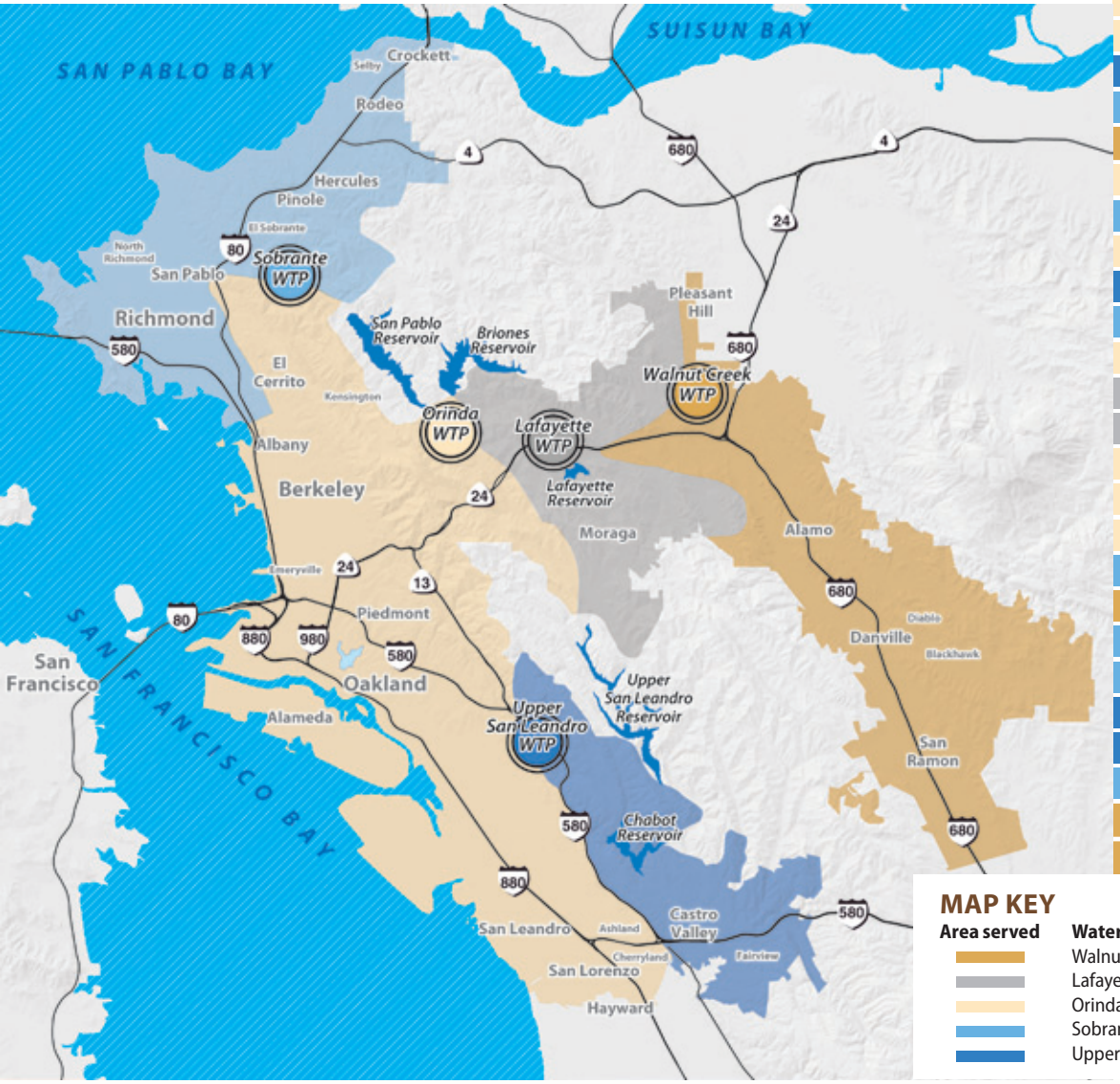
## FOOTNOTES

**a)** Uranium was detected at 1.1 pCi/L and gross alpha was detected at 4.6 pCi/L in Chabot Reservoir. This is an emergency standby reservoir that has not been used for water supply in more than 30 years. **b)** CDPH considers 50 pCi/L to be the level of concern for gross beta particles. **c)** Highest running annual average. **d)** Chloramine residuals in the distribution system are measured as an equivalent quantity of chlorine. When the chloramine residual cannot be detected, the sample is further analyzed to ensure that microbiological water quality is in compliance with the regulations. **e)** Fluoride is also added to help prevent dental decay in consumers. Current regulations require that fluoride levels in the treated water be maintained between 0.7 to 1.4 ppm with an optimum dose of 0.8 ppm. Information about fluoridation, oral health and current issues is available from www.cdph.ca.gov/certlic/drinkingwater/pages/fluoridation.aspx. **f)** Sampling locations are chosen to represent worst-case scenarios. **g)** See *Water Quality Regulations* page for additional information about lead in drinking water. **h)** Grains per gallon (gpg) is a measure of water hardness. Knowing the amount can help improve the function of dishwashers, cooling equipment and other industrial processes.

## MEETING DAILY WATER DEMAND

EBMUD provides high-quality drinking water to 1.3 million customers in Alameda and Contra Costa counties. EBMUD's water treatment plants are capable of filtering and processing a combined total of more than 375 million gallons of water daily.

This map of the EBMUD service area shows which water treatment plants serve your neighborhood. Lafayette, Sobrante and Upper San Leandro water treatment plants operate during periods of high demand or for operational needs.




## WHICH WATER TREATMENT PLANTS SERVE YOUR CITY?

| City | Treatment plants |
|---|---|
| Alameda | Orinda/Upper San Leandro |
| Alamo | Walnut Creek |
| Albany | Orinda |
| Berkeley | Orinda |
| Castro Valley | Upper San Leandro/Orinda |
| Crockett | Sobrante/Orinda |
| Danville | Walnut Creek |
| El Cerrito | Orinda |
| El Sobrante | Sobrante/Orinda |
| Emeryville | Orinda |
| Hayward | Upper San Leandro/Orinda |
| Hercules | Sobrante/Orinda |
| Kensington | Orinda |
| Lafayette | Lafayette/Walnut Creek |
| Moraga | Lafayette/Orinda |
| Oakland | Orinda/Upper San Leandro |
| Orinda | Orinda/Lafayette |
| Piedmont | Orinda/Upper San Leandro |
| Pinole | Sobrante/Orinda |
| Pleasant Hill | Walnut Creek |
| Richmond | Sobrante/Orinda |
| Rodeo | Sobrante/Orinda |
| San Leandro | Upper San Leandro/Orinda |
| San Lorenzo | Upper San Leandro/Orinda |
| San Pablo | Sobrante/Orinda |
| San Ramon | Walnut Creek |
| Walnut Creek | Walnut Creek/Lafayette |

## MAP KEY

| Area served | Water treatment plant | Source reservoir(s) |
|---|---|---|
| | Walnut Creek WTP | Pardee (in Sierra foothills) |
| | Lafayette WTP | Pardee |
| | Orinda WTP | Pardee, Briones |
| | Sobrante WTP | San Pablo |
| | Upper San Leandro WTP | Upper San Leandro |

## ABBREVIATIONS

**gpg** – grains per gallon
**NA** – not applicable
**NS** – no standard established
**NTU** – nephelometric turbidity unit, a measure of the cloudiness of water.
**pCi/L** – picocuries per liter, a measure of radioactivity.
**ppm** – parts per million, a proportion equivalent to about 30 seconds in one year. (mg/L)
**ppb** – parts per billion, a proportion equivalent to about 30 seconds in 1,000 years. (µg/L)
**ppt** – parts per trillion, a proportion equivalent to about 30 seconds in 1,000,000 years. (ng/L)
**TON** – threshold odor number, a measure of odor in water.
**µS/cm** – microsiemens per centimeter, a measure of electrical conductance.

| 5 Other water quality parameters | Unit | Water treatment plants: Walnut Creek | Lafayette | Orinda | Sobrante | Upper San Leandro |
|---|---|---|---|---|---|---|
| Alkalinity, bicarbonate as $CaCO_3$ | ppm | 16 | 12 | 25 – 31 | 78 | 130 |
| Alkalinity, carbonate as $CaCO_3$ | ppm | 1.8 | 1.2 | 2.4 – 3.6 | 3.8 | 6.4 |
| Calcium | ppm | 3.4 – 5.7 | 3.3 – 6.2 | 3.4 – 10.8 | 20 – 23 | 32 – 35 |
| Hardness as $CaCO_3$ | gpg [h] | 0.7 – 1.2 | 0.7 – 1.2 | 0.8 – 2.2 | 4.8 – 5.2 | 7.1 – 9.4 |
| | ppm | 12 – 20 | 12 – 21 | 14 – 37 | 81 – 88 | 120 – 160 |
| Magnesium | ppm | 0.5 – 1.3 | 0.5 – 1.5 | 0.6 – 2.5 | 6.7 – 7.9 | 14 |
| pH | pH | 8.8 – 9.3 | 8.8 – 9.3 | 8.8 – 9.4 | 8.6 – 9.0 | 8.6 – 9.3 |
| Potassium | ppm | 0.4 – 0.7 | 0.4 – 0.8 | 0.4 – 1.0 | 1.0 – 1.7 | 1.4 – 2.0 |
| Silica | ppm | 8.0 – 13.2 | 7.9 – 14.1 | 7.9 – 12.3 | 8.6 – 10.5 | 10.3 – 10.6 |
| Sodium | ppm | 4.4 – 6.2 | 4.1 – 6.3 | 4.5 – 10 | 24 – 26 | 29 – 31 |

**ENGLISH**
This report contains important information about your drinking water. Translate it, or speak with someone who understands it. To request a copy of this report in Spanish or Chinese, please call 510-287-0138.

**SPANISH**
Este informe contiene información muy importante sobre su agua potable. Tradúzcalo, hable con alguien que lo entienda bien, o solicite un ejemplar de este informe en español llamando al 510-287-0138.

**CHINESE**
這份報告包含有您飲用水的重要資訊。請翻譯該內容，或與了解內容的人討論，或者請致電 510-287-0138 索取中文報告。

**TAGALOG**
Ang ulat na ito ay naglalaman ng importanteng impormasyon tungkol sa inyong iniinom na tubig. Isalin ito, o makipag-usap sa isang taong nakakaintindi nito.

**VIETNAMESE**
Bản báo cáo này có các thông tin quan trọng về nước uống của quý vị. Hãy chuyển ngữ tài liệu này, hoặc nói chuyện với người có thể hiểu được bản báo cáo này.

**KOREAN**
본 보고서에는 귀하의 음료수에 관한 중요한 정보가 나와 있습니다. 번역을 부탁하거나 그 내용을 이해하시는 분으로부터 설명을 들으십시오.

**FARSI**
این گزارش حاوی اطلاعات مهمی در مورد آب آشامیدنی است. آن را ترجمه کنید، یا ازکسی که مطالب آن را می فهمد سئوال کنید.

**JAPANESE**
この報告書には、あなたの飲料水に関する重要な情報が含まれています。和訳するか、理解できる人に相談してください。

**RUSSIAN**
Здесь содержится информация о вашей питьевой воде. Переведите ее, или обратитесь к тому, кто это понимает.

**CAMBODIAN**
របាយការណ៍នេះមានព័ត៌មានសំខាន់អំពីទឹកផឹក។ សូមរកគេឲ្យបកប្រែជូនឬពិគ្រោះជាមួយអ្នកណាដែលយល់របាយការណ៍នេះ។

**PORTUGUESE**
Este relatório contém informações importantes sobre sua água potável. Traduza o relatório ou fale com alguém que o compreenda.

**ARABIC**
يحتوي هذا التقرير على معلومات هامة حول مياه الشرب التي تتناولها. ترجم التقرير أو تحدث إلى شخص يستطيع فهمه.

**HINDI**
इस रिपोर्ट में आपके पीने के पानी के बारे में महत्वपूर्ण जानकारी दी हुई है। इसका अनुवाद करें, या किसी ऐसे व्यक्ति से बात करें जो इसे समझता हो।

**FRENCH**
Ce rapport contient des informations importantes concernant votre eau potable. Faites-le traduire ou adressez-vous à quelqu'un qui est en mesure de le comprendre.

**THAI**
รายงานฉบับนี้มีข้อมูลสำคัญเกี่ยวกับน้ำดื่มของท่านขอให้แปลรายงานฉบับนี้หรือพูดคุยกับผู้ที่เข้าใจเนื้อหาในรายงานนี้

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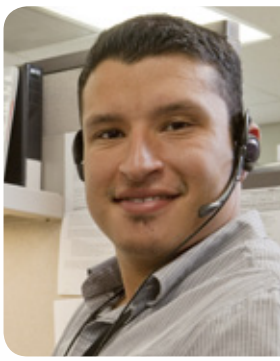
## CONTACT US

For more information about water quality or to report a water quality concern, call 866-40-EBMUD (866-403-2683) or visit www.ebmud.com.

EBMUD encourages public participation in decisions affecting drinking water quality and other matters at its Board of Directors meeting held the second and fourth Tuesdays of each month at 1:15 p.m., 375 Eleventh Street, 2nd Floor, Oakland.



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**General Manager**
Alexander R. Coate

## ADDITIONAL CONTACTS

California Department of Public Health
Drinking Water Branch • 510-620-3463

U.S. Environmental Protection Agency
Safe Drinking Water Hotline • 800-426-4791

Alameda County
Public Health Department • 510-267-8000

Contra Costa
Public Health Division • 925-313-6712

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