CITY OF PASADENA
WATER AND POWER DEPARTMENT

14TH ANNUAL DRINKING WATER QUALITY REPORT

Pasadena Water and Power (PWP) is pleased to provide you with our 14th Annual Water Quality Report, which contains information about the quality of the drinking water delivered to you. We are proud to report that the water delivered by Pasadena Water and Power in 2003 complied with all state and federal water quality standards.

This report answers the following questions:

- Where does PWP's water come from?
- What are the possible sources of contaminants in tap water?
- How is PWP's drinking water treated?
- What, if any, contaminants have been detected in PWP's drinking water?
- Are certain people more vulnerable to the effects of some contaminants in drinking water?
- Were there any violations of drinking water regulations?
- What are the definitions for all those regulatory and technical terms in the report?
- Who can customers contact for more information?

USEPA REGULATIONS

To ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the California Department of Health Services (DHS) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of certain 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 at (800) 426-4791 or visiting www.epa.gov/safewater.

PWP is required by the USEPA and the DHS to test well water for organic chemicals, minerals, metals and bacteria. Also, PWP is required to test regularly for bacteria and total trihalomethanes in our distribution system. Lead and copper are tested in tap water from selected residences according to the schedule set by the USEPA. The Metropolitan Water District of Southern California (MWD), our supplier of imported water, is responsible for testing their treated water.

THE WATER QUALITY CHARTS

The Detected Contaminant Charts compare the quality of your tap water to State and Federal drinking water standards. The water quality charts lists all regulated drinking water contaminants (and unregulated contaminants requiring monitoring) that were detected during the 2003 calendar year. More than 100 regulated contaminants have been tested and **were not detected** in drinking water delivered by Pasadena Water and Power. When testing was conducted, some contaminants were not detected; these are not included in the charts. Certain regulated chemicals are monitored less frequently than once each year. The results from the most recent testing done in accordance with the monitoring regulations and the respective sampling year are noted in each table. Some of the data, although more than one year old, are representative of the current drinking water quality.

JUNE 2004

PASADENA GROUNDWATER AND MWD TREATED SURFACE WATER DATA

Parameter	MCL [MRDL]	PHG [MCLG]	Pasadena Wells		MWD Weymouth Plant		MCL Violation	Typical Source of contaminant
			Average	Range	Average	Range		
Primary Standards								
Radiologicals								
Combined Radium (pCi/L)	5	n/a	0.6	0.4 - 0.8	ND	ND	No	Erosion of natural deposits
Uranium (pCi/L)	20	0.5	12	4 - 17	ND	ND - 3	No	Erosion of natural deposits
Inorganic Chemicals								
Fluoride (ppm)	2	1	1	0.4 - 1.5	0.2	ND - 0.2	No	Erosion of natural deposits
Nitrate (ppm as NO3)	45	45	21	11 - 43	2	ND - 6	No	Runoff and leaching from fertilizer use
Volatile Organic Compounds								
Carbon Tetrachloride (ppt)	500	100	ND	ND - 500	ND	ND	No	Discharge from industrial sources
Tetrachloroethylene (ppb)	5	0.06	ND	ND - 0.6	ND	ND	No	Discharge from factories, dry cleaners, auto shops
Trichloroethylene (ppb)	5	0.8	ND	ND - 0.5	ND	ND	No	Discharge from degreasing sites & other factories
Secondary Standards (1)								
Chloride (ppm)	500	n/a	30	10 - 53	79	67 - 103	No	Runoff, leaching from natural deposits
Color (units)	15	n/a	ND	ND	1	1 - 2	No	Naturally occurring organic materials
Corrosivity (SI)	non-corrosive	n/a	-0.3	-0.8 - 0.3	0.15	-0.2 - 0.3	No	Elemental balance in water
Iron (ppb)	300	n/a	21	ND - 229	ND	ND	No	Leaching from natural deposits
Odor Threshold (Units)	3	n/a	0	0	**(2)**	**(2)**	No	Naturally occurring organic materials
Specific Conductance (umho/cm)	1600	n/a	537	370 - 800	679	541 - 799	No	Substances that form ions in water
Sulfate (ppm)	500	n/a	59	23 - 109	111	41 - 138	No	Runoff, leaching from natural deposits
Total Dissolved Solids (ppm)	1000	n/a	370	240 - 544	387	291 - 458	No	Runoff, leaching from natural deposits
Unregulated Chemicals Requiring Monitoring								
Boron (ppb)	AL = 1000	n/a	179	ND - 291	140	110 - 160	No	Erosion of natural deposits
Chromium VI (ppb)	n/a	n/a	4	1 - 8	ND	ND	No	Discharge from industrial sources
Dichlorodifluoromethane (ppb)	AL = 1000	n/a	ND	ND - 2	ND	ND	No	Discharge from industrial sources
Perchlorate (ppb) **(3)**	AL = 4	n/a	ND	ND - 12	ND	ND	No	Discharge from industrial sources
Trichloropropane (ppt)	AL = 5	n/a	ND	ND - 14	ND	ND	No	Discharge from industrial sources
Vanadium (ppb)	AL = 50	n/a	8	ND - 15	ND	ND	No	Naturally occurring and industrial waste discharge
Additional unregulated parameters								
Bromodichloromethane (ppb)	n/a	n/a	ND	ND - 4	n/a	n/a	No	Discharge from industrial sources
Bromoform (ppb)	n/a	n/a	ND	ND - 1	n/a	n/a	No	Discharge from industrial sources
Chloroform (ppb)	n/a	n/a	ND	ND - 3	n/a	n/a	No	Discharge from industrial sources
Dibromochloromethane (ppb)	n/a	n/a	ND	ND - 4	n/a	n/a	No	Discharge from industrial sources
N-Nitrosodimethylamine (ppt)	n/a	n/a	ND	ND - 6	n/a	n/a	No	Discharge from industrial sources

(1) - Chemical is regulated by a secondary standard to maintain aesthetic qualities (taste, odor, color). **(2) -** MWD has developed a flavor-profile analysis method that can more accurately detect odor occurrences. For more information contact MWD at (213) 217-6850. **(3)** - Water delivered to consumers after blending was ND. **ND**: not detected; n/a: not applicable. Pico curies per liter (pCi/L): a measurement of radioactivity in water; parts per billion (**ppb** or ug/l), parts per million (**ppm** or mg/l) and parts per trillion (**ppt** or ng/l): standard units of measure for water analysis. **MWD** - Metropolitan Water District of Southern California.

PASADENA WATER DISTRIBUTION SYSTEM AND MWD TREATED SURFACE WATER DATA

Parameter	MCL [MRDL]	PHG [MCLG]	Pasadena		MWD Weymouth Plant		MCL Violation	Typical Source of Contaminant
			Average	Range	Average	Range		
Disinfection Byproducts and Disinfectant Residuals								
Total Trihalomethanes (ppb) **(1)**	80 *	n/a	39	ND - 85 **	51	32 - 68	No	Byproducts of chlorine disinfection
Haloacetic Acids (ppb) **(1)**	60	n/a	19	ND - 34	20	10 - 28	No	
Total Chlorine Residual (ppm)	[4]	[4]	1.4	0.9 - 1.8	2.4	n/a	No	Drinking water disinfectant added for treatment
Microbiological Contaminants								
Total Coliform Bacteria (%) **(2)**	5 **(3)**	[0]	1.3 **(4)**	0 - 1.3	0.02	0 - 0.11	No	Naturally present in the environment
Heterotrophic Plate Count (CFU/mL)	TT	n/a	n/a	n/a	TT	TT	No	

(1) - Sixteen locations in the Pasadena distribution system are tested quarterly for total trihalomethanes and haloacetic acids. * - For running annual average. **** -** Measured one time at one location only; does not represent MCL violation; running average for CY 2003 was 39 ppb. Maximum Residual Disinfectant Level [**MRDL**]: the level of a disinfectant added for water treatment that may not be exceeded at the consumerís tap; Maximum Residual Disinfectant Level Goal [**MRDLG**]: set by the USEPA to determine the level of a disinfectant added for water treatment below which there is no known or expected risk to health. **ND**: not detected; **n/a**: not applicable; parts per billion (**ppb** or ug/l), parts per million (**ppm** or mg/l): standard units of measure for water analysis.

(2) - 130 to 159 locations in the Pasadena distribution system are tested monthly for total coliforms. **(3) -** No more than 5% of the monthly samples may be total coliform-positive. **(4)** - Highest percentage of positive samples in any month was 1.3%. **CFU/ml**: Colony Forming Units per milliliter. Treatment Technique (**TT**): a required process intended to reduce the level of a contaminant in drinking water.

PASADENA WATER SYSTEM DATA - LEAD AND COPPER LEVELS AT RESIDENTIAL TAPS

Parameter	MCL	PHG	90 th Percentile Value	Number of Sites Exceeding AL	AL Violation	Typical Source of Contaminant
Lead (ppb)	AL = 15	2	<5	1 out of 50	No	Corrosion of household plumbing
Copper (ppm)	1	0.17	0.14	0 out of 50	No	

Every **three** years, 50 residences are tested for lead and copper levels at-the-tap. The most recent set of samples was collected in 2002. Lead was detected in 35 samples. Only one lead sample exceeded the regulatory action level (AL). No violation occurred in 2002 because less than 10 percent of the samples exceeded the lead AL. Copper was detected in 50 samples. The copper action level was never exceeded. Parts per billion (**ppb** or ug/l), parts per million (**ppm** or mg/l): standard units of measure for water analysis.

PASADENA GROUNDWATER AND MWD SURFACE WATER DATA

Parameter	MCL	PHG	Pasadena Wells		MWD Weymouth Plant	
			Average	Range	Average	Range
Other Parameters						
Alkalinity (ppm)	n/a	n/a	155	95 - 237	92	79 - 102
Calcium (ppm)	n/a	n/a	60	29 - 108	37	24 - 44
Hardness (ppm)	n/a	n/a	227	101 - 413	164	111 - 194
Magnesium (ppm)	n/a	n/a	17	7 - 35	18	13 - 21
Potassium (ppm)	n/a	n/a	9	2 - 16	3	3 - 4
pH (Units)	n/a	n/a	8	7 - 8	8	8
Sodium (ppm)	n/a	n/a	35	13 - 51	69	58 - 82

n/a: not applicable; parts per million (**ppm** or mg/l): standard units of measure for water analysis

Definitions of terms used in the water quality charts:

- **Public Health Goal** (**PHG**) is 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.

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

- **Maximum Contaminant Level** (**MCL**) is 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. **Primary** MCLs are set for contaminants that affect health, along with their monitoring and reporting requirements, and water treatment requirements. **Secondary MCLs** are set to protect the odor, taste, and appearance of drinking water.

- **Regulatory Action Level** (**AL**) is the concentration of a contaminant which, when exceeded, triggers treatment or other requirements that a water system must follow.

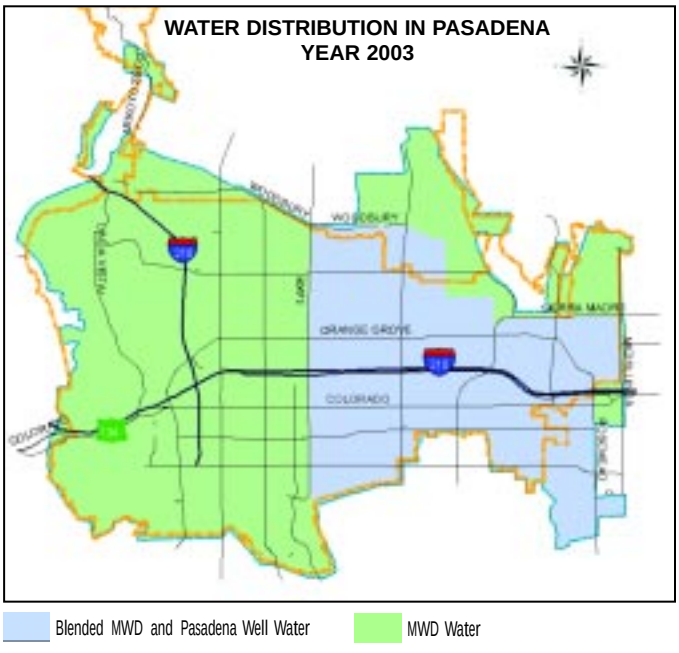
- **Treatment Technique (TT**) is a required process intended to reduce the level of a contaminant in drinking water.

OUR WATER SUPPLIES

PWP serves approximately 162,000 people in the City of Pasadena and certain surrounding areas of unincorporated Altadena and Los Angeles County. The City's water supply in year 2003 consisted of 7 active deep wells located in eastern portion of Pasadena and four connections with MWD. The City has interconnections with nine other local water systems that can supply water during emergencies and periods of supply shortage or high demand.

In 2003, Pasadena Water and Power delivered 37,484 acre-feet of water to its customers. Thirty nine (39%) of the water distributed in 2003 was groundwater pumped from the lower portion of Pasadena Subarea in the Raymond Groundwater Basin, a water-bearing zone underlying Pasadena, and portions of San Marino and Arcadia. Chlorine is added to all groundwater pumped from PWP wells before the water enters the City's distribution system.

The remaining water (61%) was purchased from MWD, a regional wholesaler of imported surface water. This water is a blend of Colorado River water delivered through MWD's Colorado River Aqueduct and surface water from Northern California, delivered through the State of California Water Project Aqueduct. MWD's water is filtered and disinfected with chloramine (chlorine plus ammonia) at the state-of-the-art Weymouth Filtration Plant in La Verne. Chlorine and chloramine kill microorganisms and prevent regrowth of bacteria in storage reservoirs and distribution pipelines.



SOURCES OF DRINKING WATER

In general, 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. These substances can reach surface water and groundwater sources.

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 storm water 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 storm water runoff and residential uses;
- **organic chemical contaminants**, including synthetic chemicals and volatile organic chemicals (VOCs), that are by-products of industrial processes and petroleum production and can also come from gas stations, urban storm water runoff, agricultural application and septic systems; and
- **radioactive contaminants** that can be naturally occurring or be the result of oil and gas production and mining activities.

Most contaminants detected in PWP's groundwater and surface water sources occur in tap water from erosion of natural deposits in soils. However, several detected contaminants are present in tap water as a result of the treatment process itself or from industrial or agricultural discharges.

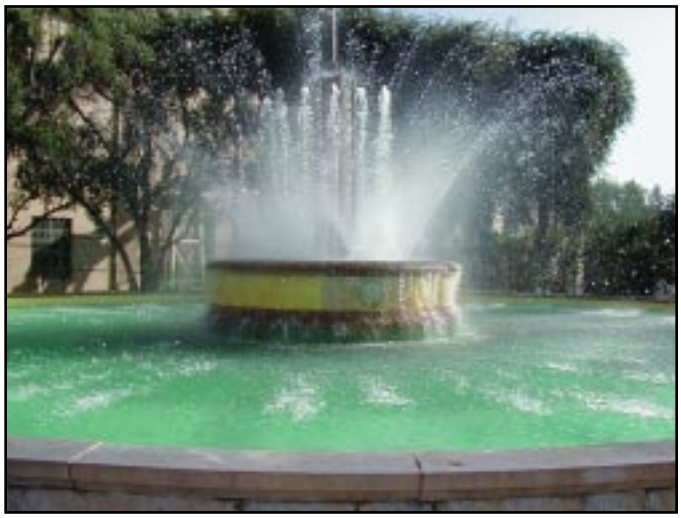
- **Perchlorate** is a component of rocket fuel, explosives, fireworks and road flares.
- **Total trihalomethanes** are a group of organic chemicals that form when chlorine and chloramine are added to disinfect the water.
- **Nitrate**, an inorganic chemical in groundwater, could come from fertilizers or septic tanks.
- **Tetrachloroethylene, Trichloroethylene, and Trichloropropane (1,2,3-TCP)** are organic solvents commonly used as degreasing agents.

TREATING YOUR WATER

Your tap water is a blend of groundwater and imported surface water. Groundwater with traces of contaminants is treated before it enters the distribution system. Imported surface water undergoes treatment, including filtration and disinfection at the Weymouth Filtration Plant. It is important to note that the amounts of contaminants in the "Range of Detection" column of the Groundwater Chart are measured **before treatment**.

Our reservoirs act as blending facilities for our wells, some of which have elevated levels of nitrate, perchlorate and VOCs. Groundwater from these wells is pumped directly into the reservoir where it is blended with imported water from MWD. A small amount of the VOCs (tetrachloroethylene and trichloroethylene), nitrate and perchlorate can enter the distribution system through the blended supply.

We are proud to report that no Action Levels (AL) or Maximum Contaminant Levels (MCLs) were exceeded in the blended water entering the distribution system in 2003.



PERCHLORATE IN THE NEWS

Recent news releases about perchlorate contamination may have raised concerns. Information about perchlorate contamination can be difficult to sort out. For this reason, PWP wants to explain the facts, so you have a more in-depth understanding of the issue.

Perchlorate is an inorganic chemical used in the manufacture of rocket fuel and explosives, safety flares, matches, and fireworks. Although the Department of Health Services (DHS) has been testing water samples for perchlorate for years, it was not until 1997 when DHS developed a new testing method to identify very low concentrations of perchlorate that it was identified in wells throughout the state and in the Colorado River. USEPA and California DHS have not issued a Primary Drinking Water Standard (MCL) for perchlorate yet. In the interim, DHS has established a provisional Action Level (AL) for perchlorate, which was set at 4 ppb in 2002. Action Levels are health-based advisory levels established by DHS for chemicals in drinking water that lack MCLs. DHS recommends that utilities take wells out of service when ALs exceed 10 times the provisional amount (i.e. 40 ppb).

Although perchlorate has been identified in MWD's Colorado River supply, its State Water Project has not detected perchlorate. By blending water from Colorado River and State Project water, the perchlorate concentration is reduced to non-detectable levels (less than 4 parts per billion). The perchlorate source in the Colorado River has been determined to be an industrial site in Nevada. Beginning in 1997, the Nevada Environmental Protection Agency has taken significant steps to mitigate the leaching of perchlorate into the river, resulting in a perchlorate level reduction in MWD's supply that will continue to be further reduced over time.

Until State and Federal regulations become available, PWP has been proactively taking wells with perchlorate levels above the AL out of service. Eight of our wells were out of service due to perchlorate in 2003. PWP staff and its laboratory's monitoring practices will continue to ensure that customers receive water that complies with the Action Level.

PERCHLORATE CLEANUP

PWP's concerns are to protect its customers from any contaminant detected in its water and to prevent those contaminants from spreading in the groundwater. As soon as perchlorate was detected in Pasadena's groundwater, PWP began an investigation to locate the cause and prevent any further spreading. Similarly, the National Aeronautics and Space Administration (NASA), as part of its environmental program for the Jet Propulsion Laboratory (JPL), conducted a Remedial Investigation and a draft Feasibility Study to characterize the nature and extent of chemicals associated with past operations at JPL that might be in the groundwater surrounding JPL. These investigations found perchlorate in the groundwater hundreds of feet beneath JPL. JPL was the site for testing some of the first rockets developed by the U.S. Army beginning in the late 1930s. The customary and accepted waste management practice throughout the 1940s and 1950s was to collect liquid and solid wastes from drains and sinks and dispose of them in ground seepage pits. Some chemicals that were disposed of in the ground have been detected in the soil and groundwater beneath JPL.

PWP is working with NASA, the current owner of the JPL facility, to take actions to address the problem and clean up the soil and groundwater.

NITRATE

Nitrate is a State and Federal regulated contaminant and as a Primary Standard, has an MCL of 45 ppm. Drinking water that meets the nitrate MCL is associated with little to no risk and is considered safe for consumption. Although PWP's wells are below the MCL for nitrate, PWP still blends much of the well water with imported water from MWD to further reduce the nitrate levels. Therefore, the average nitrate levels in Pasadena's distribution system in 2003 was 11 ppm, much lower that in years before. PWP and its laboratory will continue to ensure that customers receive water that complies with nitrate standards.

LEAD AND COPPER

Lead and copper have not been detected in PWP's water; however, these metals can increase when water comes into contact with plumbing materials in your home. Because domestic plumbing is the primary source of these metals, drinking water regulations require testing of tap water samples for lead and copper inside a number of representative homes every three years. If more than 10% of tap samples from homes exceed the action level set by the USEPA, the water system is required to treat the water in a way that reduces the corrosiveness of the water. Testing completed in 2002 showed some detectable lead and copper in some households, but well below the action level of concern. Lead levels in some homes could be higher than in other homes in the community as a result of the plumbing materials used. Infants and young children are more vulnerable to the effects of lead in drinking water than the general population. You can minimize exposure to lead by running the water from a tap for a few minutes in the morning, and collecting this water for your plants, therefore flushing the stagnant overnight water out of your tap before drinking.

FLUORIDE

Fluoride is a State and Federal regulated contaminant and as a Primary Standard, has an MCL of 2 ppm. As a regulated chemical, fluoride also has a PHG of 1 ppm. Pasadena's well water contains naturally occurring fluoride, which fluctuates between 0.4 to 1.5 ppm as measured in 2003. PWP does not add fluoride to the water.

TRICHLOROPROPANE (1,2,3 TCP)

1,2,3-TCP is a state regulated chemical requiring monitoring, but DHS has not set an MCL. The current AL for 1,2,3-TCP is 5 parts per trillion (ppt). Some people who use water containing 1,2,3-TCP in excess of the AL over many years may have an increased risk of getting cancer, based on studies in laboratory animals. Two of our wells contain 1,2,3-TCP in excess of the AL, the measurements fluctuate between 7 to 14 ppt as measured in 2003. The water from these two wells was blended with MWD water to non-detectable levels.

VULNERABLE POPULATIONS

Some people may be more vulnerable to contaminants in drinking water than the general population. Immune-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, persons with HIV/AIDS or other immune system disorders, infants and some elderly persons can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA and 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 at (800) 426-4791 or by visiting www.EPA.gov/safe-water.

DID YOU KNOW?

- In 2003 Pasadena put in service one new well. This well draws high quality drinking water from approximately 800 feet below the ground.
- An acre-foot of water equals 325,851 gallons - enough to serve the needs of two typical families for one year.
- Pasadena's water contains fairly high levels of calcium and magnesium which occur naturally in water. Our water is considered "hard". Water hardness or softness does not affect health. We are often asked how to convert the water hardness measured in mg/L to grains per gallon. You can divide the number in mg/L by a factor of 17.1 to arrive at grains per gallon number.
- PWP uses disinfectants such as chlorine to prevent bacteria growth in our water storage reservoirs and distribution pipelines. Our well water is blended with MWD's chloraminated water. Customers who have unique water quality needs and use specialized home treatments (kidney dialysis machines) and customers with fish tanks at home should make the necessary adjustments to remove chloramines.
- Assessments of the drinking water sources for Pasadena's water system and MWD Colorado River and State Water Project supplies were completed in 2002. A copy of the complete assessment for Pasadena's sources is available at Pasadena Water and Power, 150 S. Los Robles Ave., Suite 200. A copy of the MWD assessment can be obtained by contacting Metropolitan by phone at (213) 217-6850.

Este folleto contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien, o llame al (626) 744-3838.

June 2004

ANNUAL DRINKING WATER QUALITY REPORT

PASADENA Water & Power

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WE WANT TO HEAR FROM YOU

Comments from the public are welcomed and may be presented at City Council meetings on Mondays at 6:30 p.m. at the Pasadena Senior Center at 85 East Holly Street, Pasadena, CA 91103.

PWP encourages your water quality questions and participation.

Please write to us at:
Pasadena Water and Power
150 S. Los Robles Ave., Suite 200
Pasadena, CA 91101

You may also e-mail or call us at:

PWP AnswerLine for Customer Service Needs	(626) 744-6970 www.PWPweb.com
Water Quality Questions:	
Inna Babbitt (English)	(626) 744-4465
Tony Estrada (Spanish)	(626) 744-3838
Metropolitan Water District of Southern California	(213) 217-6850 www.mwd.dst.ca.us
California Department of Health Services Division of Drinking Water and Environmental Management	(213) 580-5723 www.dhs.ca.gov/ps/ddwem
U.S. Environmental Protection Agency Office of Groundwater and Drinking Water Safe Drinking Water Hotline	(800) 426-4791 www.USEPA.gov/safewater

For an online version of this report, visit www.PWPweb.com and click on "Your Water."