GENERAL INFORMATION

We are pleased to present our 2011 water quality report. This report is designed to inform you about the quality of drinking water we deliver to you daily. Our constant goal is to provide you with a dependable supply of drinking water. The sources of drinking water (both tap 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. This requires disinfection for all water sources.

The U.S. EPA and the California Department of Public Health 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.

Disinfectant treatment ensures your water meets public health requirements to eliminate microbial contamination. A source assessment of the San Antonio (SA) Water Wells was completed in April 2010. The SA groundwater source has the potential to be impacted by activities relating to the military installation, other domestic water supply wells, roads/streets, surface water, and freeways/state highways.

However, no substances associated with these sources have been detected in the wells. A copy of the complete assessment is available at: 30 MDOS/SGOJ, Building 13850, VAFB, CA 93437. If you would like to receive a summary of the assessment by mail, call: 30 MDOS/SGOJ at (805) 606-7811.

SOURCES OF WATER

VAFB purchases water from the California State Water Project (SWP). SWP water originates in the upper Feather River (pictured on the front) in northern California and is stored in Lake Oroville and the San Luis Reservoir. The Central Branch of the Central Coast Water Authority delivers SWP water via pipelines to VAFB from their Polonio Pass Water Treatment Plant located approximately 125 miles northeast of the base. When additional water is needed to supplement state water or the Polonio Pass Water Treatment Plant is down for maintenance, water is obtained from groundwater wells located on VAFB in the San Antonio (SA) Groundwater Basin. Water from both sources is disinfected and fluoridated.

WATER CONSERVATION

PROTECT OUR RESOURCE

We must all take steps to ensure we have an adequate supply of drinking water in the future. The best way to achieve this goal is by using water sparingly in our daily lives. VAFB is also required to prevent storm water pollution. Here are some tips on how to conserve water and also prevent storm water pollution:

- Water your lawn only when necessary. Step on your grass and if it springs back after you lift your foot then it doesn't need water. Set your sprinklers for more days in between watering. **This saves 750-1,500 gallons per month.**
- Look for leaky faucets and plumbing joints. **This saves 600 gallons per month for each leak fixed.**
- Run only full loads in washing machines and dishwashers. **This saves 300-800 gallons per month.**
- Shorten your showers. **This saves up to 700 gallons per month.**
- Catch water (while waiting for hot water) in a watering can to use on plants or in the garden. **This saves 200-300 gallons per month.**
- Turn off the water while brushing your teeth and/or shaving. **This saves 10 gallons per day.**

PREVENT WATER POLLUTION

During storm events runoff mobilizes contaminants such as oil and gasoline from parking lots, sediment and fertilizers from landscaping, and pet waste from parks. Storm water runoff eventually makes its way into groundwater or receiving water bodies such as rivers and lakes and has the potential to contaminate water supplies. Keep storm water leaving your home or workplace clean. Prevent contamination of drinking water by following these simple guidelines:

- Use a commercial car wash facility.
- Keep vehicles maintained to prevent leaks.
- Clean up after your pet.
- Use pesticides and fertilizers sparingly and never before anticipated rain.

Your water originates in the High Sierra Nevada Mountains above Lake Oroville and travels over 430 miles to reach Vandenberg AFB.

- Sweep driveways and walkways rather than hosing them down.
- If you see polluted storm water runoff or materials such as motor oil discharging or being dumped into VAFB storm drains, please call the **Storm Water Hotline at 606-7541 or 606-0503**.

Recycle waste oil and used antifreeze. Waste motor oil, used antifreeze, and car batteries can be taken to the Consolidated Collection Accumulation Facility, Building 3300 on New Mexico Avenue. Contact Black Gold Industries at 606-8438. Military Family Housing waste can be taken to Balfour Beatty Communities Self Help Center. They can be reached at 734-1488.

QUESTIONS

If you have any questions about your water quality, this report, or service, please contact the appropriate department.

REPORT INFORMATION

❖ **Asset Management Flight, Water Resources Program,** (805) 606-7541

WATER SAMPLING INFORMATION

❖ **Bioenvironmental Engineering,** (805) 606-7811

HEALTH CONCERNS

❖ **Public Health,** (805) 606-0648

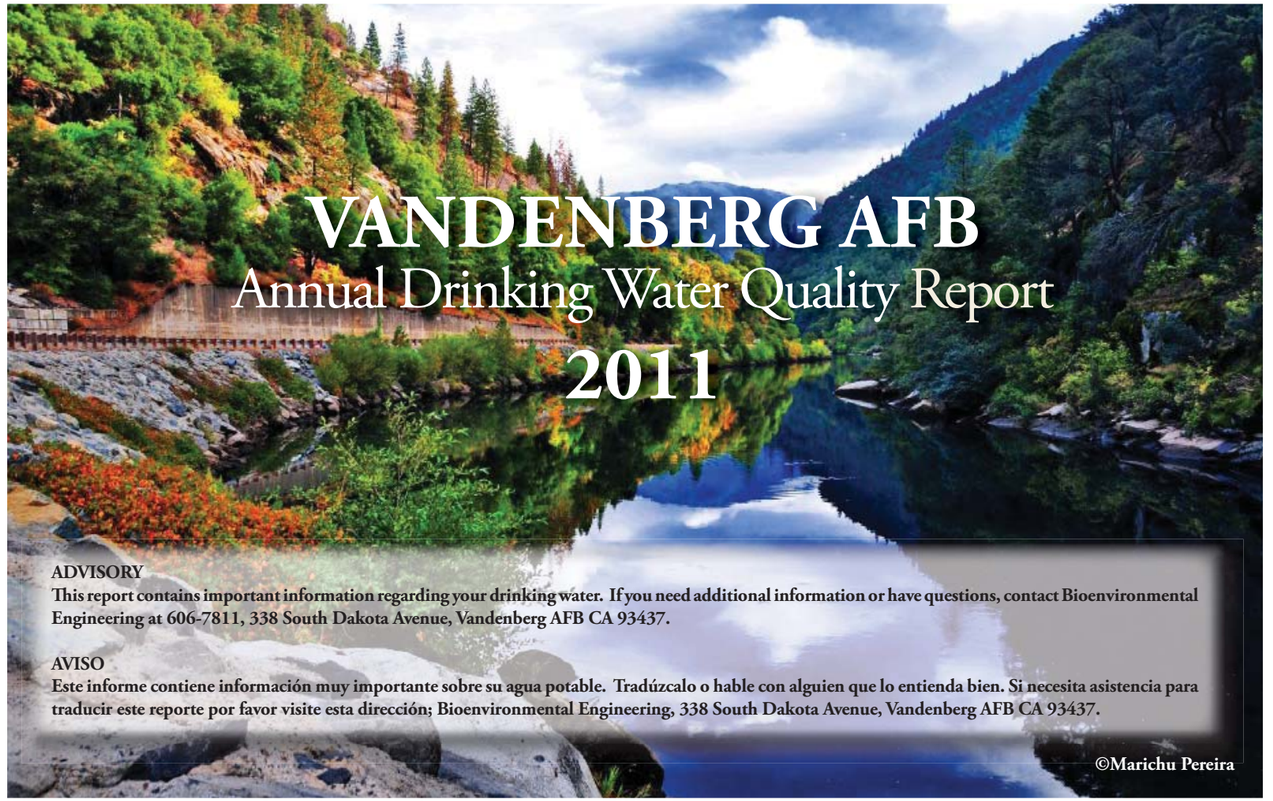
WATER COMPLAINTS

❖ **Water & Fuels Maintenance,** (805) 606-5885

WATER CONSERVATION

❖ **Utility Engineer,** (805) 606-8538

Bioenvironmental Engineering
Water Quality Program
338 South Dakota Avenue
Building 13850
Vandenberg AFB, CA 93437-6010



VANDENBERG AFB
Annual Drinking Water Quality Report
2011

ADVISORY
This report contains important information regarding your drinking water. If you need additional information or have questions, contact Bioenvironmental Engineering at 606-7811, 338 South Dakota Avenue, Vandenberg AFB CA 93437.

AVISO
Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien. Si necesita asistencia para traducir este reporte por favor visite esta dirección; Bioenvironmental Engineering, 338 South Dakota Avenue, Vandenberg AFB CA 93437.

READING THIS REPORT

This Annual Drinking Water Report presents information about your drinking water, its two sources, and how they compare to federal and California standards. To help ensure that your drinking water meets these standards, Vandenberg Air Force Base (VAFB) routinely samples and examines your water for over one hundred different water quality parameters on a weekly, monthly, quarterly, annual, and triennial basis as required by base, Air Force, state, and federal procedure or regulation.

This report will give you a representative idea of the quality of your drinking water, and goes into further detail about some of the constituents found in your water. In addition to the numerous primary drinking water testing requirements, VAFB also performed required testing for secondary drinking water standards, which help to measure your water's taste, odor, and appearance. Secondary drinking water standards are classified to be aesthetic in nature, and are not considered harmful to your health.

TOTAL TRIHALOMETHANES

The regulatory Disinfectant Byproduct Rule for Stage I sampling for Total Trihalomethanes (TTHMs) requires the last four quarters sample results be averaged to determine compliance. In 2011, our average TTHM result was 39.95 ppb, which is well below the Maximum Contaminant Level (MCL) of 80 ppb. TTHMs are widely occurring classes of Disinfection By-Products (DBPs) that form during water treatment disinfection when chlorine reacts with organic material (also known as "precursors"). Factors that influence the formation of DBPs include water temperature, pH, chlorine concentration, precursor concentration, and chlorine contact time.

Some individuals who drink water containing TTHMs in excess of the state MCL over many years may experience complications with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer. For more information, visit the EPA website at http://www.epa.gov/safewater/disinfection/.

HALOACETIC ACIDS

The regulatory Disinfectant Byproduct Rule for Stage I sampling for Haloacetic Acids (HAA) requires the last four quarters sample results be averaged to determine compliance. Compliance is achieved by maintaining maximum contaminant levels as an average at each monitoring location. VAFB had one sample with a result of 62 µg/L, and an average of 16.67 µg/L, which is well below the MCL of 60 µg/L. Factors that influence the formation of DBPs include water temperature, pH, chlorine concentration, precursor concentration, and chlorine contact time.

Some individuals who drink water containing HAA in excess of the state MCL over many years may experience complications with may develop bladder cancer or problems with their liver, kidneys, or circulatory system. For more information, visit the EPA website at http://www.epa.gov/safewater/disinfection/.

IRON AND MANGANESE

Because our iron and manganese levels at some of our wells continue to exceed secondary MCLs, we will maintain our increased monitoring of our groundwater wells. These higher levels do not pose a health risk, but rather can impact the aesthetic nature of your water. At certain concentrations, iron and manganese can precipitate out and leave stains on plumbing fixtures, dishes, and on laundered clothes.

Turbidity was also detected slightly above the secondary MCL and when elevated has the potential to hinder the disinfection process. We will continue to monitor our wells and will adjust our operations when necessary to ensure these levels are maintained at manageable levels.

IMPORTANT HEALTH INFORMATION

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised people such as cancer patients undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly individuals, and infants can be particularly at risk of infections. These people should seek advice about drinking water from their health care providers.

U.S. Environmental Protection Agency/Centers for Disease Control (U.S. EPA/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 (1-800-426-4791 or http://water.epa.gov/drink/contact.cfm).

WATER SYSTEMS IMPROVEMENTS

VAFB continually upgrades the drinking water system in order to deliver high quality drinking water. Ongoing projects include corrosion prevention and water line replacements.

CONTAMINANTS IN THE DRINKING 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 can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline (1-800-426-4791 or http://water.epa.gov/drink/contact.cfm). Notification levels are available online at the California Department of Public Health website at www.cdph.ca.gov/certlic/drinkingwater/Pages/default.aspx. Contaminants may include:

- 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.
- Microbial contaminants, such as viruses and bacteria that may come from sewage treatment plants, septic systems, household pets, agricultural livestock operations, and wildlife.
- Pesticides and herbicides that can come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals that are by-products of industrial processes and petroleum production as well as chemicals from gas stations, urban storm water runoff, and septic systems.
- Radioactive contaminants that can occur naturally or result from oil and gas production and mining activities.

TERMS USED IN THE TABLES:

AL Action Level: The concentration of a contaminant which, if exceeded, triggers increased monitoring, sampling, treatment, or other requirements that a water system must follow in order to protect public health.

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 not health concerns but 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.

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 (Cal/EPA).

SDWS Secondary Drinking Water Standard: MCL requirements for contaminants that do not affect the health at MCLs but that may affect the taste, odor, or appearance of drinking water.

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

The tables below list substances detected in VAFB's drinking water during the 2011 calendar year. Unless otherwise noted, this data is the most recent available at the time this report was compiled. The state allows monitoring for certain substances less than annually because the concentrations do not change frequently. Therefore, some of the data, though representative of the water quality, is more than one year old.

PRIMARY STANDARDS

			California State Water Project			San Antonio Well Water (VAFB)			
Substance (Contaminant)	MCL	PHG (MCLG)	SWP Water (Average)	Range Detected	Most Recent Sample Date	SA Well Water (Average)	Range Detected	Most Recent Sample Date	Typical Source of Substances
MONITORED AT THE POLONIO PASS WATER TREATMENT PLANT (SWP) AND THE SOURCE (SA) PRIOR TO THE ADDITION OF AGENTS									
Turbidity/Clarity (NTU)	0.3	NA	NA	0.04–0.09	2011	NA	NA	2010	• Soil runoff.
Aluminum (ppm)	1.0	0.6	70	ND–130	2011	ND	ND	2010	• Erosion of natural deposits; residue from some surface water treatment processes.
Arsenic (ppb)	10.0	0.004	ND	ND	2011	3.8	ND–7.8	2010	• Erosion of natural deposits; runoff from orchards; naturally occurring in groundwater.
Fluoride (ppm)	2.0	1.0	ND	ND	2011	0.29	0.21–0.40	2011	• Erosion of natural deposits.
Selenium (ppb)	50.0	NA	ND	ND	2011	1.9	ND–7.6	2010	• Discharge from petroleum, glass, and metal refineries; erosion of natural deposits; discharge from mines and chemical manufacturers; runoff from livestock lots (feed additive).
Total Trihalomethanes (TTHMs) (ppb)	80.0	NA	40	19–67	2011	39.95	20-90	Quarterly 2011	• By-product of drinking water disinfection.
Total Haloacetic Acids (HAAs) (ppb)	60.0	NA	14	8.6–18	2011	16.67	2–62	Quarterly 2011	• By-product of drinking water disinfection.
Total Chlorine Residual (ppm)	4.0 (MRDL)	4.0 (MRDLG)	2.2	1.3–3.1	2011	2.11	0.2–3.8	Weekly 2011	• Measure of the disinfectant used in the production of drinking water.
Fluoride (ppm)	2.0	1.0	ND	ND	2011	0.97	0.66–1.3	Monthly 2011	• Additive that promotes strong teeth.
MONITORED AT THE CUSTOMER'S TAP									
	AL	MCLG	VAFB Water	Total number of sites sampled	Number of sites above the AL	Sample Date			Typical Source of Substances
Lead (ppb)	15.0	2.0	0.12	30	0	June 2011			• Internal corrosion of household plumbing systems; erosion of natural deposits.
Copper (ppm)	1.3	0.17	0.54	30	0	June 2011			• Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.

▨ — Sampling Results from the VAFB distribution system are presented in the hatched box.

SECONDARY STANDARDS

		SWP Water	Range Detected	Most Recent Sample Date	SA Well Water	Range Detected	Most Recent Sample Date	Typical Source of Substance
Secondary MCL								
MONITORED AT THE POLONIO PASS WATER TREATMENT PLANT (SWP) AND THE SOURCE (SA)								
Color	15	ND	ND	2011	2.75	ND–5	2010	• Naturally occurring organic materials.
*Iron (ppb)	300	ND	ND	2011	269.5	ND–540	2011	• Leaching from natural deposits.
*Manganese (ppb)	50	ND	ND	2011	60	50–75	2011	• Leaching from natural deposits.
Odor – Threshold	3	1	1	2011	2	1–3	2010	• Naturally occurring organic materials.
**Turbidity (NTU)	5	0.05	0.04–0.10	2011	2.7	<0.1–10.5	2010	• Soil runoff.
Total Dissolved Solids (ppm)	1,000	190	123–277	2011	525	450–560	2010	• Runoff and leaching from natural deposits.
Specific Conductance (µmho/cm)	1,600	311	208–467	2011	820	730–900	2010	• Substances that form ions when in water; seawater influence.
Chloride (ppm)	500	38	17–78	2011	107.2	89–130	2010	• Runoff and leaching from natural deposits; seawater influence.
Sulfate (ppm)	500	38	38	2011	80.7	66–100	2010	• Runoff and leaching from natural deposits.
Copper (ppm)	1	ND	ND	2011	ND	ND	2010	• Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.
Zinc (ppm)	5	ND	ND	2011	ND	ND	2010	• Runoff/leaching from natural deposits; industrial wastes.

*Iron and manganese were found at levels exceeding the secondary MCL. The secondary MCL strives to avoid unpleasant aesthetic effects such as odor, taste, and/or appearance. The high manganese and iron levels are due to leaching of natural deposits. Since exceeding a secondary MCL does not pose a risk to public health, the State allows the affected community to decide whether or not to treat for removal of these constituents.

**Turbidity was found at levels exceeding the secondary MCL. Turbidity measures the cloudiness of water and when elevated can hinder the effectiveness of disinfectants.

OTHER CONSTITUENTS MONITORED (Unregulated)–At the SWP Treatment Plant and at the Source.

	SWP Water	Range Detected	Sample Date	VAFB Water	Range Detected	Sample Date
Total Alkalinity as $CaCO_3$ (ppm)	50	34–70	2011	170	160–190	2010
Bicarbonate (MCO3) (ppm)	ND	ND	2010	207	190–230	2010
Boron (ppb)	ND	ND	2010	117	100–140	2010
Calcium (ppm)	37	22–54	2011	78.7	69–91	2010
Heterotrophic Plate Count (CFU/ml)	0.4	0–2	2011	14.3	1-47	2011
Magnesium (ppm)	6.7	6.7	2011	15.7	13–18	2010
pH	8.3	7.3–9.5	2011	7.5	7.2–7.8	2010
Potassium (ppm)	1.8	1.8	2011	3.4	3–3.9	2010
Sodium (ppm)	32	32	2011	72	63–76	2010
Sulfide (ppm)	NA	NA	2010	0.5	ND–1.8	2010
Total Organic Carbon (ppm)	1.8	1.3–2.4	2011	NA	NA	2010
Total Hardness as $CaCO_3$ (ppm)	68	40–96	2011	255	220–290	2010

ACRONYMS

CFU/mL:	Colony Forming Units per milliliter
NA:	Not Applicable
ND:	Not Detectable above testing limits
NTU:	Nephelometric Turbidity Units (a measure of turbidity/clarity)
ppb:	Parts per billion or micrograms per liter (µg/L)
ppm:	Parts per million or milligrams per liter (mg/L)
SA:	San Antonio
SWP:	State Water Project
µmho/cm:	Micromhos per centimeter (a measure of ability to conduct an electrical current)