



Kirtland Air Force Base



Annual Consumer Confidence Report on the Quality of Drinking Water

2003 Operating Year

TEAM KIRTLAND,

During the Year 2003, drinking water issues remained high on the public's mind and TEAM KIRTLAND was at the forefront of ensuring delivery of high quality water. Staff from Bioenvironmental Engineering, Civil Engineering, Office of the Judge Advocate, Environmental Management, and Public Affairs worked together to provide the community with information regarding our water resources and water quality. Please take time to read this report. Doing so will provide you with valuable insight towards understanding Kirtland AFB water quality issues and how they pertain to you. Should you have any questions regarding this report, please contact Bioenvironmental Engineering at 846-4259.



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Kirtland Air Force Base Water System Information

This is the annual report on the quality of water delivered by Kirtland Air Force Base (AFB) during calendar year 2003. Under the "Consumer Confidence Reporting Rule" of the federal Safe Drinking Water Act (SDWA), community water systems are required to report water quality information to the consuming public. As required by regulation, results reported in 2004 are based upon samples collected and analyzed in 2003. This report presents information on the source of our water, its constituents and the health risks associated with any contaminants. Sources of drinking 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 from geologic formations. Water may also pick up substances resulting from the presence of animals or human activity or from the piping used to carry the water.

Contaminants 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 that are by-products of industrial processes and petroleum production. Organic chemical contaminants can also come from urban stormwater runoff and septic systems.
- *Radioactive contaminants*, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of contaminants. *The presence of contaminants does not necessarily indicate the water poses a health risk.* More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 800-426-4791 or going to their website: www.epa.gov/safewater.



Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer, persons undergoing chemotherapy, persons who have had organ transplants, people with HIV/AIDS or other immune system disorders, the elderly and infants can be particularly

at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Center 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.



The drinking water delivered to you is pumped from a ground water source known as the Albuquerque Basin Regional Aquifer from the Santa Fe Formation. Kirtland AFB is capable of drawing its water from 8 different wells within the Albuquerque Basin Aquifer. In 2003, 1.18 billion gallons of water were pumped from these wells. The water from the wells is mixed, chlorinated, stored and distributed. Chlorination is the only treatment process performed to prevent bacteria from growing while the water is stored and distributed through the system. Additionally, water pumped and treated by the city of Albuquerque is distributed throughout the base during periods of high water demand or low water levels. A total of 56,100 gallons of water was purchased from the city of Albuquerque in 2003. *The city of Albuquerque's Consumer Confidence Report is attached for your convenience. You can also access the report on the city's website at www.cabq.gov/waterquality.*

Kirtland Air Force Base Source Water Assessment

Through the 1996 reauthorization of the Safe Drinking Water Act, Congress authorized the U.S. Environmental Protection Agency to require each state to develop and implement a Source Water Assessment and Protection Program. Through this program, an assessment of all public water sources within the State of New Mexico is required to be completed. The New Mexico Source Water Assessment and Protection Program is part of the national effort to gather information on public drinking water source areas, and to inform water consumers about any risks to their water supply posed by various potential sources of contamination. The Source Water Assessments of public water systems throughout New Mexico involve four basic steps:

1. Determining the source water protection area for the community's water system;
2. Taking inventory of potential contaminant sources within the source water protection area;
3. Determining the susceptibility of the water supply to potential sources of contamination; and
4. Making the assessment available to the public.

During 2002, New Mexico Environment Department – Drinking Water Bureau (NMED-DWB) personnel conducted site visits, collected information on Kirtland AFB's production wells, and identified potential sources of contamination in the areas around the wells. The results of this effort by NMED-DWB are detailed in a August 21, 2002 report titled, "Source Water Assessment of Kirtland Air Force Base Water System – Public Water Supply System #NM 35 677 01." The 2002 report remained applicable to the Kirtland AFB water supply system in 2003. A specific mandate of the Safe Drinking Water Act is to make the results of this assessment available to water consumers. To meet this requirement, NMED-DWB will provide copies of this report to the public upon request. To obtain a copy of the Source Water Assessment completed for Kirtland AFB, contact the NMED-DWB in Santa Fe, NM toll free at 1-877-654-8720 or email them at SWAPP@nmenv.state.nm.us. Additionally, a copy of the report is available to consumers who contact the Kirtland AFB Environmental Management Office at 846-8577.

Monitoring Kirtland Air Force Base Drinking Water

Our staff uses only EPA-approved laboratory methods to analyze your drinking water. Bioenvironmental Engineering staff collect water samples from the entry points into the water distribution system and from residents' taps.



These samples are then shipped to a certified laboratory where all of the required water quality analyses are performed. Listed below are the types of contaminant groups Kirtland AFB monitors in its drinking water and how often monitoring is performed for each contaminant group.

Contaminant Group	Monitoring Frequency
Biological Contaminants (total coliform group)	Weekly
Total Trihalomethanes (TTHMs)	Quarterly
Nitrates & Nitrites	Annually
Lead and Copper	Once every 3 years
Inorganic Chemicals (IOCs)	Once every 3 years
Volatile Organic Compounds	Once every 3 years
Synthetic Organic Compounds	Once every 3 years
Sodium	Once every 3 years
Radionuclides	Four quarterly samples every 4 years
Unregulated Contaminants	Once every 5 years
Asbestos	Once every 9 years

DEFINITIONS OF KEY TERMS - To gain a better understanding of this report, several key terms are defined for consumers.
Maximum Contaminant Level Goal (MCLG) – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs have a built in margin of safety.
Maximum Contaminant Level (MCL) – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close as possible to the (MCLG).
Method Detection Limit (MDL) – The lowest concentration of a contaminant that can be detected using the required EPA sampling and analysis methods. A MDL is specific for each contaminant and type of analysis performed.

Table of Detected Compounds

Detected Compounds	MCLG	MCL (or AL)	Level Detected	Results Ranged From:	Sample Dates	Exceeded MCL? (yes/no)	Likely Source of Contaminant
Total Coliforms	0	1/month	1	0-1	25-Feb-03	No ⁽¹⁾	Naturally present in the environment or sample collection/laboratory error
Nitrate, as N	10 ppm	10 ppm	8.9 ppm	0.1 – 8.9 ppm	21-May-03	No	Runoff from fertilizer use or sewage
Copper	1300 ppb (AL)	1300 ppb (AL)	70.8 ppb ⁽²⁾	6 - 82 ppb	15-Aug-03	No ⁽³⁾	Corrosion of household plumbing systems
Lead	0	15 ppb (AL)	2 ppb ⁽²⁾	ND – 2 ppb	15-Aug-03	No ⁽³⁾	Corrosion of household plumbing systems
Antimony	6 ppb	6 ppb	2 ppb	ND – 2 ppb	20-Aug-03	No	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic	-	50 ppb ⁽⁴⁾	21 ppb	1 – 21 ppb	21-May-03	No	Erosion of natural deposits; runoff from orchards, runoff from glass & electronics production wastes
Barium	2 ppm	2 ppm	0.14 ppm	0.05 – 0.14 ppm	20-Aug-03	No	Erosion of natural deposits
Chromium (Total)	0.1 ppm	0.1 ppm	0.002 ppm	0.001 - 0.002 ppm	20-Aug-03	No	Discharge from steel and pulp mills; erosion of natural deposits
Fluoride	4 ppm	4 ppm	0.56 ppm	0.34 – 0.56 ppm	21-May-03	No	Erosion of natural deposits
Selenium	50 ppb	50 ppb	4 ppb	1 – 4 ppb	20-Aug-03	No	Discharge from electronics and drug factories
Sodium	NA ⁽⁵⁾	NA ⁽⁵⁾	33.6 ppm	27.3 – 33.6 ppm	20-Aug-03	No	Erosion of natural deposits.
Gross Alpha Particle Activity	0	15 pCi/L	5.6 pCi/L	0.9-5.6 pCi/L	2003 ⁽³⁾⁽⁷⁾	No	Erosion of natural deposits
Gross Beta Particles & Photon Emitters	0	4 rem/yr ⁽⁶⁾ (50 pCi/L)	7.4 pCi/L	2.9-7.4 pCi/L	2003 ⁽³⁾⁽⁷⁾	No	Decay of natural and manmade deposits
Total Trihalomethanes	-	80 ppb	2.8 ppb ⁽⁸⁾	0.61 - 8.18 ppb	2003	No	By-product of drinking water disinfection

⁽¹⁾ Confirmation samples were collected in accordance with New Mexico Environment Department Regulations. In results from subsequent samples total coliforms were not detected.

⁽²⁾ This value represents the 90th percentile value, used for compliance reporting. 90% of results in the test set were below this level.

⁽³⁾ These data represent the most recent round of sampling.

⁽⁴⁾ The new MCL for arsenic as of February 22, 2002 is 10 ppb. Drinking water systems must comply with the new MCL by January 23, 2006.

⁽⁵⁾ The EPA does not have a MCLG or MCL for sodium.

⁽⁶⁾ 4 mrem/yr represents an annual dosage, 50 pCi/L represents a concentration. The EPA considers 50 pCi/L to be the level of concern for beta particles.

⁽⁷⁾ Samples were collected once per quarter for four consecutive quarters starting in the second quarter of 2003.

⁽⁸⁾ This represents the annual average of four quarterly test results, the value used for compliance reporting. The range represents the range of actual detected concentrations.

ACRONYMS AND COMMONLY USED TERMS IN THIS REPORT

AL Action Level; the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a system must follow.

NA Not applicable or does not apply.

ND Not detected; the element is not present at a level above the detection limit of laboratory instruments.

pCi/L picocuries per liter, a measure of radioactivity in water

ppb parts per billion, a unit of measure equivalent to a single penny in \$10,000,000.

ppm parts per million, a unit of measure equivalent to a single penny in \$10,000.

Range The range from the highest to the lowest reported analytical values for a contaminant for the most recent EPA sampling period

(either the last round of sampling, or the 4th quarter of 2003). The EPA requires this range to be reported.

Detected Compounds

We constantly monitor for various constituents in the water supply to meet all regulatory requirements. The Detected Compounds table lists only those compounds that were detected at levels equal to or greater than laboratory method detection limits (MDLs). All detected compounds were at concentrations below the maximum contaminant level. Many other compounds are analyzed but were not present or were below the detection limits of the laboratory equipment.

A brief explanation of our results and sampling protocol for total coliform is provided below:

Total Coliform – Since we collect fewer than 40 total coliform samples per month, EPA requires us to report the highest monthly number of positive sample detections. As presented in the Detected Compounds table, we had a positive sample for this contaminant detected in February of 2003. The detection in February was a single detection with all follow-up samples negative. The single detection was not considered an exceedance of the MCL.

Compliance with National Primary Drinking Water Regulations

No compounds detected in Kirtland AFB drinking water during 2003 were at levels exceeding the EPA MCLs.

Information on Lead, Copper, Nitrate, Arsenic, and Fluoride

The results reported on the Detected Compounds table indicate that Kirtland AFB water does not exceed current regulatory levels for lead, copper, nitrate, arsenic, or fluoride. However, since consumers often inquire about these compounds some information is provided below. Additional information about the changing arsenic regulations and how Kirtland AFB will comply with the new standard is also provided here.



Lead and copper rarely occur naturally in drinking water at levels above national standards. Too much lead in the human body can cause negative health effects including serious damage to the brain, kidneys, nervous system and red blood cells. Long-term exposure to high levels of copper can result in stomach and intestinal problems. Young children and infants tend to be more sensitive to high levels of these compounds. Lead and copper are most commonly found in household drinking water where corrosion has occurred in the plumbing system. This is not usually a concern in older homes (built before 1982) because a protective mineral layer has built up on the inside of the pipes. A significant source of lead in household water is from lead solder used to join pipes. The use of lead solder was discontinued in New Mexico in 1987. Kirtland AFB sampling for lead and copper have not indicated levels in exceedance of the applicable MCLs.

During regular compliance sampling in 2003, the nitrate concentration in Kirtland AFB production Well 11 was over one half of the EPA MCL. The level triggers a requirement

to perform 4 consecutive quarters of repeat monitoring. The first of the four repeat sampling events were inadvertently missed; however, sampling began the subsequent quarter and the New Mexico Environment Department was notified of the omission. The fourth and final quarter of repeat nitrate sampling will be completed during the third quarter of 2004. Due to other operational issues since 1995, Well 11 has only supplied 0.2% of Kirtland AFB's annual water production.



The 1996 Amendments to the Safe Drinking Water Act required EPA to review the 50 parts per billion (ppb) standard for arsenic in drinking water. In January 2001, EPA published the new standard for arsenic in drinking water that required public water supplies to reduce arsenic levels to 10 ppb. The new MCL of 10 ppb became effective on February 22, 2002. Kirtland AFB is required to comply with the new standard by January 2006.

Arsenic is a naturally occurring element in the groundwater below Kirtland AFB. During the calendar year 2003, compliance sampling showed arsenic levels in Kirtland AFB's drinking water ranging from 2 ppb to 21 ppb. Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.

Kirtland AFB's Civil Engineering, Environmental Management, and Bioenvironmental Engineering groups have evaluated several alternatives to ensure compliance with the new arsenic standard by January 2006. Based on evaluations, and the results of monthly sampling conducted at each active production well, a water blending method has been selected. A project involving installation of new waterlines, storage tanks, and other water system infrastructure, will be started in 2004. Kirtland AFB's Environmental Management will continue sample collection at active production wells to monitor arsenic levels.

The Kirtland AFB water system is not required to perform supplemental fluoridation of the base's drinking water, under state or federal regulations. When naturally occurring fluoride levels are between 0.3 - 0.6 ppm (as they are in Kirtland AFB drinking water), the Centers for Disease Control and Prevention recommends that children 3-16 years of age be provided with a dietary fluoride supplement. If you have questions about whether you or your dependants may need supplementary fluoride tablets, you should call the Medical Group Pediatric Clinic at 846-3200, Option 5.

Public Involvement

Members of Bioenvironmental Engineering, Civil Engineering, Environmental Management, Office of the Judge Advocate and Public Affairs, along with CH2M HILL, prepared this Consumer Confidence Report. For questions regarding this report or water quality at Kirtland AFB, please contact Bioenvironmental Engineering at (505) 846-4259.