

Why are there Contaminants in my Drinking Water?

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 in drinking water may 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 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**, may 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, are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.

**Radioactive contaminants**, which can be naturally occurring, man-made from nuclear facilities and atmospheric deposition from former above ground testing, or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, 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, which must provide the same protection for public health.

Nitrates

City of Santa Fe drinking water meets the federal drinking water standard of 10 ppm for nitrates (10 mg/L as N). Nitrates have been detected in some of the City Wells up to 6.7 ppm. Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health care provider.



Arsenic

The drinking water standard for arsenic is 10 µg/L. The City’s drinking water continued to meet this standard throughout 2015. Arsenic occurs naturally in the earth’s crust. When these arsenic-containing rocks, minerals, and soil erode, they release arsenic into ground water. While our drinking water meets EPA’s standard for arsenic, it does contain low levels of arsenic. The EPA standard balances the current understanding of arsenic’s possible health effects against the costs of removing arsenic from drinking water. EPA 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.

In cooperation with Los Alamos National Laboratory (LANL) and the New Mexico Environment Department, the City currently monitors Buckman Wells 1, 6 and 8 for LANL derived contamination on a quarterly basis. Samples are analyzed for radionuclides, general inorganic chemicals, metals, high explosives and organics. This repeat sampling has occurred during the years 2001 – 2015 and has indicated that Laboratory-derived radionuclides are not present in the Buckman Wells 1, 2, 6 and 8. The results do indicate detectable levels of radionuclides associated with natural sources. These wells are part of the 13 wells that make-up the Buckman Wellfield. When these wells are used, water from these wells is delivered to the Buckman Tank prior to distribution into the system.

Cryptosporidium

Cryptosporidium is a protozoan parasite that is common in surface waters. The oocyst is the transmission stage of the organism. Cryptosporidium is introduced into our source waters via wild animal populations. Although the organism is readily removed by the conventional treatment process utilized at the Canyon Road Water Treatment facility, the oocyst is resistant to chemical disinfectants like chlorine and the primary reason to determine if additional treatment is required. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection.



In April 2007 the City began a two-year study to determine the average Cryptosporidium concentration in source water entering the Canyon Road Water Treatment facility. The sampling portion of the study was completed in March of 2009. The study is part of the requirements contained in the 2006 USEPA Long-Term Enhanced Surface Water Treatment Rule. Cryptosporidium was detected in a single untreated sample in each of the following months: December of 2007, September 2008 and October 2008. The highest 12-month consecutive mean for this study was 0.018 oocysts/L. Since the concentration is <0.075 oocysts/L, no additional treatment at the Canyon Road Water Treatment Facility was necessary. The City began a second round of sampling, one sample a month, starting in October 2015 and scheduled to end in September 2017. No Cryptosporidium oocysts were detected in three samples collected in calendar year 2015 (October, November, and December). As with Cryptosporidium oocysts, no Giardia Lamblia cysts were detected in the three samples collected during the last three months of 2015.

Any new water system treating surface water such as BDD is required to monitor Cryptosporidium for 24 consecutive months. At the BDD the untreated raw Rio Grande water Cryptosporidium test results range from 0 to 0.4 oocysts/L.

Voluntary Monitoring

The attached “Voluntary Monitoring” Table lists results from voluntary monitoring at entry points into the distribution system associated with BRWTP, and the Canyon Road WTP. Since these samples are collected at the point of entry of water into the City’s distribution system, the reported concentrations of contaminants may be further diluted in the distribution system through mixing with water from other City sources.

EPA has established secondary maximum contaminant levels (SMCL) for certain contaminants. Secondary Standards are non-enforceable standards that serve as guidelines to assist public water systems in managing their drinking water. The presence of these contaminants typically results from the erosion of natural deposits. Aluminum and manganese containing materials are used as treatment aids in the water treatment process. Other constituents without SMCLs were monitored in 2015 and are reported in the “Voluntary Monitoring” Table (these have an “NA” in SMCL column).

VOLUNTARY MONITORING				
Contaminant	Units	SMCL	Result	Sample Date
Buckman RWTP				
Chloride	ppm	250	20	2015
pH		6.5 - 8.5	8.33	2015
Sulfate	ppm	250	48	2015
Total Dissolved Solids	ppm	500	223	2015
Strontium-90	pCi/L		0.01	2015
Nickel	ppm	10	ND	2015
Tritium	pCi/L		ND	2015
Uranium-234	pCi/L		0.949	2015
Uranium-235/236	pCi/L		0.447	2015
Uranium-238	pCi/L		0.676	2015
Conductivity	µmhos/cm		340	2015
Total Haloacetic acids	ppm		0.0094	2015
Total Trihalomethanes	ppm		0.0209	2015
Chlorine (as Cl2)	ppm		0.75	2015
Sodium	ppm		24	2015
Canyon Road WTP				
Sodium	ppm		18	2015

Contacts for Additional Information:

If you have any questions, comments, or suggestions regarding this report please contact Alex Puglisi at 505-955-4232 or write to: City of Santa Fe Water Division P.O. Box 909, Santa Fe, NM 87504

Microbial and Disinfection Byproducts Rule

The Microbial and Disinfection Byproducts (M/DBP) Rules are a set of interrelated regulations that address risks from microbial pathogens and disinfectants/ disinfection byproducts (DBPs). The Stage 2 Disinfectants and Disinfection By-Products Rule (DBPR) focuses on public health protection by limiting exposure to DBPs (known carcinogens), specifically total trihalomethanes (TTHM) and five haloacetic acids (HAA5), which can form in water through disinfectants used to control microbial pathogens.

The City of Santa Fe system has eight compliance sampling locations for TTHM and HAA5. Each location is sampled once per quarter. The average of analytical results for DBPs at a given location during the previous four quarterly samples is called the locational running annual average (LRAA). The LRAA at each location must be below the MCL (0.060 mg/L for HAA5 and 0.080 mg/L for TTHM). Results shown in the Table below indicate that the individual quarterly values during 2015 ranged from 0.001 to 0.027 mg/L for HAA5 and 0.029 to 0.069 mg/L for TTHM. The highest LRAA was 0.0101 mg/L for HAA5 and 0.0245 mg/L for TTHM, indicating that the system is in compliance.

	Sample		Highest LRAA†	Range 2015 ‡		Typical Source	
	MCL†	MCLG†		Year	Low †		High †
Haloacetic Acids (HAA5s)	.060	NA	2015	.0101	0.0013	0.0270	By-product of drinking water chlorination
Total Trihalo- methane (TTHMs)	.080	NA	2015	.0245	Low †	High †	By-product of drinking water chlorination

† = units are ppm (mg/L) ‡ = individual samples at all locations

The Stage 2 DBPR also regulates the maximum residual for disinfectants: chlorine dioxide, free chlorine, and chloramines. The disinfectants are water additives used to control microorganisms, particularly as a residual disinfectant in distribution system pipes.

The City of Santa Fe water system uses free chlorine as a disinfectant. For the year 2015, sampling was performed at 80 monitoring locations each month. The results are summarized in the table below:

	MRDL† MRDLG†		Sample Year	Highest Level Detected†	Range 2015		Violation	Typical Source
	Low†	High†	Low†	High†				
Chlorine Residual	4.0	4	2015	1.19	0.00	1.19	No	Water additives used to control microbes

† = units are ppm (mg/L)

Asbestos

The most recent sample for asbestos in the distribution system was collected on December 16, 2013. No asbestos fibers were detected in the sample collected (detection limit 0.2 million fibers per liter or MFL). Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.

Contaminants	MCLG *	MCL *	Result *	Sample Year *	Violation	Typical Source
Asbestos	7	7	ND (<0.2)	2013	No	Decay of asbestos cement in water mains; erosion of natural deposits

\* units are MFL (million fibers per liter) for fibers > 10mm

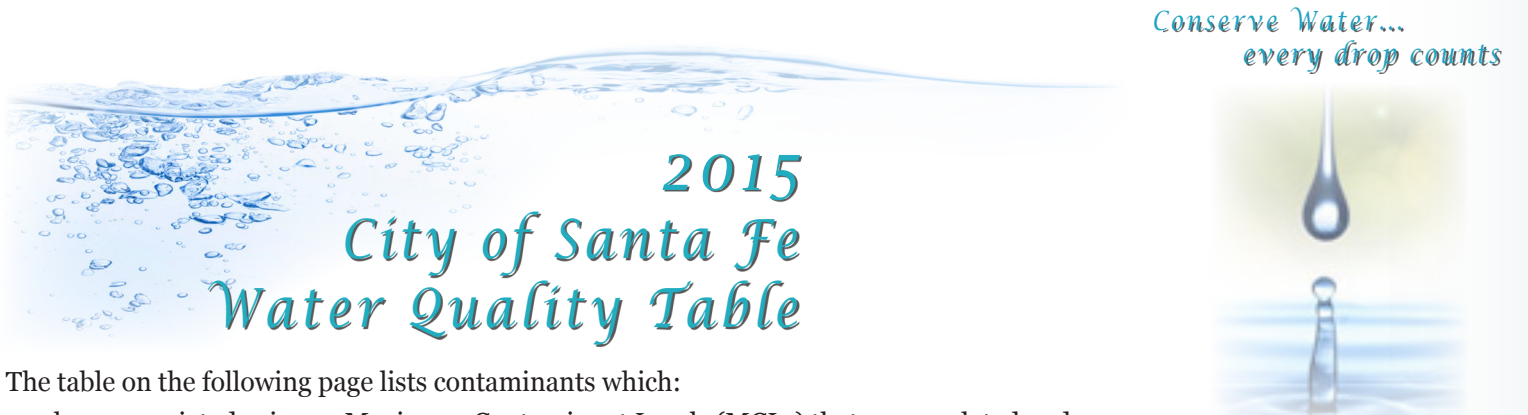
Lead and Copper Rule

Tests for lead and copper are taken from customer taps located throughout the City once every three years. The most recent round of lead and copper testing took place in August 2015. The next survey will be performed in 2018. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing.

Inorganic Contaminants	MCLG	AL**	City Water Levels (90th percentile)*	# of Sample <AL	Sample Date	Exceeds AL	Typical Source
Copper (ppm)	1.3	1.3	0.60	30 of 30	August 2015	No	Erosion of natural deposits; Leaching from wood preservatives; Corrosion of household plumbing systems
Lead (ppm)	0	.015	0.0022	30 of 30	August 2015	No	Corrosion of household plumbing systems; Erosion of natural deposits

\* Results of monitoring are used to determine the concentration at the 90th percentile (e.g., if 100 samples analyzed, the concentration at the 90th highest sample). Based on the number of samples analyzed in 2015 the 90th percentile is the 27th sample for copper and lead.

\*\* AL = Action Level



The table on the following page lists contaminants which:

- 1. have associated primary Maximum Contaminant Levels (MCLs) that are regulated and
- 2. were detected in testing conducted by the City and New Mexico Environment Department.

The table includes only those constituents found above detection limits during 2015 sampling, or during sampling in previous years if not analyzed during 2015. The EPA requires monitoring for certain contaminants less than once per year because the concentrations are not expected to vary significantly from year to year. The City is required to test for over 80 contaminants, and the vast majority of these contaminants were not found above detection limits Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these 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 Environmental Protection Agency’s (EPA) Safe Drinking Water Hotline (800) 426-4791, or visiting [www.epa.gov/safewater](http://www.epa.gov/safewater).

Please view separate 2015 Water Quality Table

Unregulated Contaminant Monitoring Rule (UCMR)

EPA uses the Unregulated Contaminant Monitoring Rule (UCMR) to collect data for contaminants that are suspected to be present in drinking water and do not have health-based standards set under the Safe Drinking Water Act (SDWA). Unregulated contaminant monitoring helps EPA to determine where certain contaminants occur and whether the Agency should consider regulating those contaminants in the future. UCMR sampling for the EPA required four quarterly periods was completed in the Santa Fe water system between March and December 2015.

UNREGULATED CONTAMINANT MONITORING -				
NAME	UNIT	REPORTED LEVELS*	RANGE	
			LOW	HIGH
1,4-Dioxane	ppb	0.080	0.078	0.082
Chlorate	ppb	127	23	380
Chromium	ppb	0.75	0.22	2.0
Hexavalent Chromium (Dissolved)	ppb	0.46	0.03	1.9
Molybdenum	ppb	3.7	2.1	5.3
Strontium	ppb	166	35	430
Vanadium	ppb	2.9	0.2	9.2

\* Average of all of 2015 UCMR results

The average of all of the monitoring results and the range of detections for any detected unregulated contaminants for which state or federal rules require monitoring are presented in the table. Other contaminants were collected and analyzed, as required by EPA, but they were not found above detection limits in any City of Santa Fe samples, and therefore are not included in the above table.



# City of Santa Fe 2015 Water Quality Table

## Regulated Compliance Monitoring

Contaminant	Units	MCL	MCLG	City Well Field <sup>c</sup>	Sample Date	Buckman Tank <sup>d</sup>	Sample Date	Canyon Road WTP	Sample Date	Buckman RWTP	Sample Date	Violation	Typical Source
Organic Contaminants													
1,1,1-Trichloroethane	ppb	200	200	0.1 (ND - 0.1)	2014	ND	2014	ND	2014	ND	2014	No	Discharge from metal degreasing sites and other factories
1,1-Dichloroethylene	ppb	7	7	0.21 (ND - 0.21)	2014	ND	2014	ND	2014	ND	2014	No	Discharge from industrial chemical factories
1,2-Dichloroethane	ppb	5	zero	0.20 (ND - 0.20)	2014	ND	2014	ND	2014	ND	2014	No	Discharge from industrial chemical factories
Tetrachloroethylene	ppb	5	zero	0.28 (ND - 0.28)	2014	ND	2014	ND	2014	ND	2014	No	Discharge from factories and dry cleaners
Synthetic Organic Contaminants													
Ethylene Dibromide	ppb	0.05	zero	0.007 (ND - 0.007)	2014	ND	2014	ND	2014	ND	2014	No	Discharge from petroleum refineries
Inorganic Contaminants													
Arsenic	ppb	10	0	ND	2015	ND	2015	ND	2015	ND	2015	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium	ppm	2	2	0.8 (0.1 - 0.8)	2014	ND	2014	ND	2014	ND	2015	No	Discharge from drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Bromate	ppb	10	zero	NA	NA	NA	NA	NA	NA	7.3 (ND -7.3)	2015	No	Byproduct of drinking water disinfection
Chromium	ppb	100	100	1 (ND - 1)	2014	ND	2014	ND	2015	ND	2015	No	Discharge from steel and pulp mills; erosion of natural deposits
Fluoride	ppm	4	4	0.16 (0.14 - 0.16)	2014	0.4	2014	0.11	2015	0.37	2015	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Nitrate [as N]	ppm	10	10	6.65 (3.03 - 6.65)	2015	0.18	2015	0.12	2015	0.19	2015	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion from natural deposits
Radioactive Contaminants													
Gross Alpha Emitters	pCi/L	15	0	4.4 (1.9 - 4.4)	2014	4.2	2014	ND	2014	1.2	2014	No	Erosion of natural deposits
Gross Beta/Photon Emitters	pCi/L	50 <sup>a</sup>	NA	1.5 (ND - 1.5)	2014	2.3	2014	1.4	2014	2.3	2014	No	Decay of natural and man-made deposits.
Radium 226/228	pCi/L	5	0	0.77 (0.10 - 0.77)	2014	0.07	2014	0.18	2014	0.1	2014	No	Erosion of natural deposits
Uranium	ppb	30	0	2.0 (ND - 2.0)	2014	2.0	2014	ND	2014	1	2014	No	Erosion of natural deposits;
Surface Water Contaminants													
Turbidity <sup>b</sup> (highest single measurement)	NTU	TT = 1.0	0	NA	NA	NA	NA	0.33	2015	0.18	2015	No	Soil Runoff
Turbidity <sup>b</sup> (lowest monthly % meeting limits)	NTU	TT = % <0.3 NTU	0	NA	NA	NA	NA	100.0%	2015	100.0%	2015	No	Soil Runoff
Total Organic Carbon (TOC)	NA	TT (35%-45% Removal)	NA	NA	NA	NA	NA	53% to 64% removal	2015	NA	NA	No	Naturally present in the environment

### Note:

- a) EPA considers 50 pCi/L to be the level of concern for beta particles.
- b) Turbidity is a measure of the cloudiness of water. We monitor it because it is a good indicator of the effectiveness of our filtration system.
- c) City wellfield: Alto, Agua Fria, Ferguson, Osage, Santa Fe, St. Mikes & Torreon.
- d) Buckman Wells 1-13 and Northwest Well.

## Key to Units, Terms and Abbreviations

**NA:** Not Applicable.

**ND:** Not Detected.

**NTU:** Nephelometric Turbidity Units.

**ppm:** parts per million, or milligrams per liter (mg/L).

**ppb:** parts per billion, or micrograms per liter (µg/L).

**pCi/L:** picocuries per liter (a measure of radioactivity).

**µg/L:** Number of micrograms of substance per liter of water.

**mg/L:** Number of milligrams of substance per liter of water.

**µmhos/cm:** Micromhos per centimeter or µS/cm (microsiemens per centimeter) – a measure of electrical conductivity in water due to the presence of dissolved inorganic ions (e.g., calcium, chloride, sodium, etc.).

**Pt-Co units:** Platinum–Cobalt color units – a measure of color also called the “Hazen Scale” or “APHA color”, as defined in ASTM International Standard D1209

**(Range):** The range represents the highest and low values. Range values are not provided if only one sample was taken during the range period.

**AL:** Action level: The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements, which a water system must follow.

**LRAA:** Locational running annual average - the average of analytical results for samples at a particular monitoring location during the previous four calendar quarters. LRAA at each sampling location must be below the MCL (0.060 mg/L for Total Haloacetic Acids and 0.080 mg/L for Total Trihalomethanes)

**Maximum Contaminant Level (MCL):** The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLGs as feasible using the best available treatment technology.

**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 allow for a margin of safety.

**Maximum Residual Disinfectant Level (MRDL)** – 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.

**Maximum Residual Disinfectant Level Goal (MRDLG)** – 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.

**Secondary MCL (SMCL):** Non-mandatory water quality standards for certain contaminants established as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color and odor. These contaminants are not considered to present a risk to human health at the SMCL.

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



# 2015 Water Quality Report

City of Santa Fe Water Division P.O. Box 909, Santa Fe, NM 87504

Customer Service (505) 955-4333 Administration (505) 955-4210

The City of Santa Fe's Water Division (the City) is pleased to provide the 2015 Water Quality Report. A safe and dependable water supply is vital to our community and is the primary mission of the City. This report is provided annually and contains information on the quality of water obtained throughout the calendar year. In 2015, the City's drinking water met all U.S. Environmental Protection Agency (EPA) and State drinking water quality limits. The report contains additional details about where your water comes from, what it contains, and how it compares to standards set by federal and state regulatory agencies. It also provides educational information on contaminants which may be a concern.

## Sources of Supply

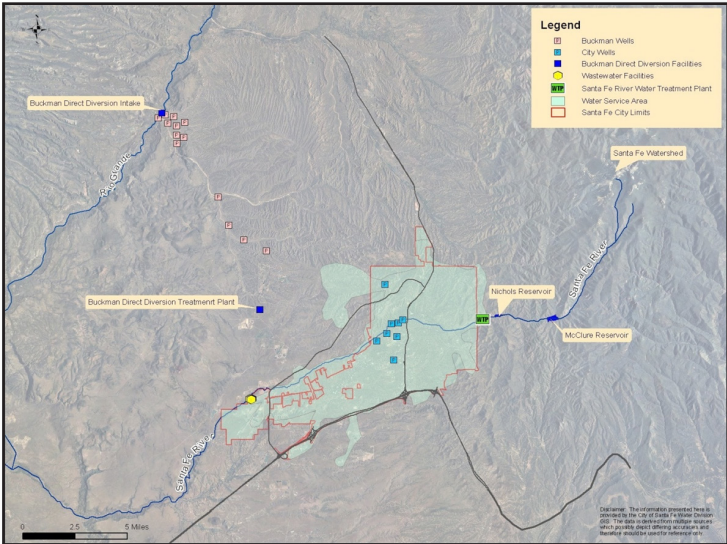
The City was served by four distinct sources of supply in 2015. The 17,000 acre Santa Fe Watershed provides surface runoff to the Santa Fe River where it is stored in the McClure and Nichols Reservoir prior to treatment. Surface water from the Santa Fe River and Rio Grande is treated through conventional and advanced treatment processes at the Canyon Road Water Treatment Plant and Buckman Regional Water Treatment Plant (BRWTP), respectively. The City Well Field is mostly located in close proximity to the Santa Fe River and consists of 8 active wells located within the City limits of Santa Fe. The Buckman Well Field consists of 13 wells located near the Rio Grande, approximately 15 miles northwest of Santa Fe. All four sources are treated with chlorine for protection of customers against disease-causing microorganisms (pathogens), including bacteria and viruses. Fluoride is added to the water supply to benefit the community as recommended by public health professionals.

In 2011, the Buckman Direct Diversion (BDD) Project surface water supply was successfully integrated into the municipal distribution system and operated in conjunction with the City's pre-existing sources of supply throughout 2015. The surface water treated at the BRWTP is taken directly from the Rio Grande. BDD not only improves sustainability for the area but also increases the City's resilience under drought conditions, replacing current groundwater pumping that cannot be sustained, and making the City's wells available as drought and emergency reserves rather than sources used to meet daily water demands.

## Do I need to take special precautions?

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, some elderly, and infants can be particularly at risk from infections. These individuals should seek advice about the safety of their drinking water supply from their health care providers. EPA/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 (800-426-4791).

## Map of Water Sources



## Source Water Assessment and its Availability

The New Mexico Environment Department (NMED) completed a Source Water Assessment for the City of Santa Fe. This assessment includes a determination of source water protection areas and an inventory of pollution sources within the areas of concern. NMED concluded: “The Susceptibility Analysis of the City of Santa Fe water utility reveals that the utility is well maintained and operated, and the sources of drinking water are generally protected from potential sources of contamination based on an evaluation of the available information. The susceptibility rank of the entire water system is **“moderately low”**. A copy of the Assessment is available by contacting NMED at 505-476-8620.

City ordinances adopted in 2005 built upon the recommendations in the Source Water Assessment. The “Safe Drinking Water and Source Water Protection” and the “Stormwater Illicit Discharge Control” ordinances provide additional controls and protections for the City's ground and surface water supplies. In addition, the City established a Stormwater Program with the goal of reducing pollutant discharged to the Santa Fe River. Please contact 955-2134 to report illegal dumping in storm drains, streets and arroyos.

## En Español

Este reporte contiene información importante sobre la calidad del agua en Santa Fe. Si tiene alguna pregunta o duda sobre este reporte puede hablarle a Víctor Archuleta al teléfono 505-955-4370.