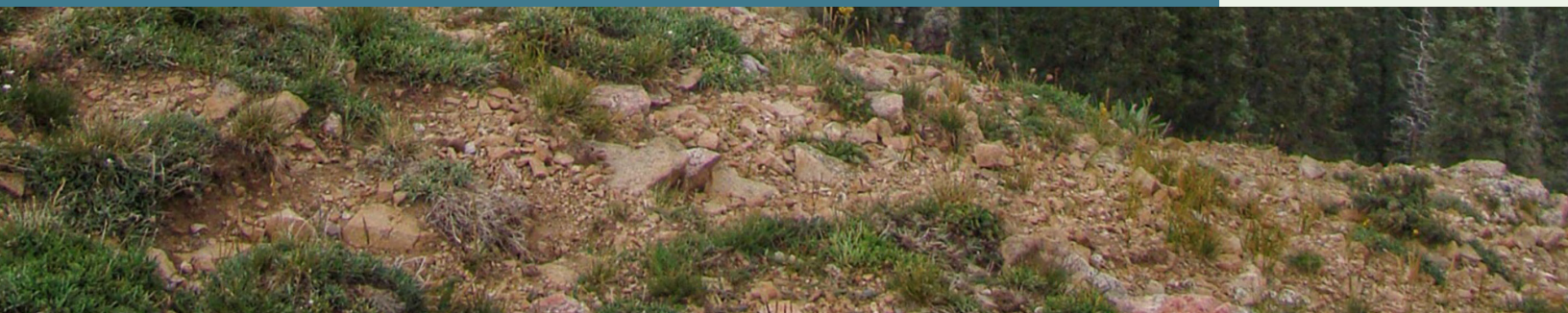




ANNUAL WATER REPORT

City of Santa Fe ♦ Water Division

2014



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Cover Photo: Santa Fe Lake in upper reaches of the Santa Fe Watershed

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EXECUTIVE SUMMARY

The purpose of this report is to provide the Santa Fe community with an annual report summarizing the state of the City of Santa Fe's Water Division and the water supplies we depend upon.

This report is submitted pursuant to City Code Section 25-9.6 SFCC 1987 and summarizes information about the City of Santa Fe's Water Division including water supply, water rights, conservation, water demand, types of water use, water quality, system maintenance, energy use, climate change, and water utility management information. Information on water conservation, as well as reclaimed wastewater (treated effluent) from the City of Santa Fe's Waste Water Division are included.

The City's surface water supply comes from the **Santa Fe River** and **Rio Grande**, both of which are treated through conventional and advanced treatment processes.

The **City Well Field** is mostly located in close proximity to the Santa Fe River and consists of 7 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.

The Water Division supplied 8,564 acre-feet of water to its water utility customers. Also, the Water Division met its acequia irrigation deliveries and provided "Living River" flows to the Santa Fe River.

The City of Santa Fe continued its water conservation efforts which, in part, contributed to a service-area gallons per capita per day (GPCD) demand of 95.

Drinking water in the City continues to be of excellent quality. With the addition of another surface water source, Buckman Regional Water Treatment Plant, to the City's water supply and less frequent use of the City's well fields, the result has been the lowering of some naturally occurring contaminants. The overall goal of the Water Division is to ensure that our water resources are managed and protected in an efficient and responsible manner to provide the Santa Fe community with clean, reliable and safe drinking water.

This report contains water data through December 2015 and anticipated 2016 data projections.



City of Santa Fe
OUR WATER SUPPLIES



Figure 1. Nichols Reservoir in the Upper Santa Fe Municipal Watershed

OUR WATER SUPPLIES

The City of Santa Fe Sangre de Cristo Water Division Produces a reliable, safe and sustainable water supply for its customers.

History

The City of Santa Fe has been relying on the Santa Fe River for its community water needs since the founding of the City over four hundred years ago. Stream gage records dating back to 1915 identify the mean inflow (50th percentile) of the Santa Fe River in the upper watershed to be approximately 4,909 acre-feet per year.

Timeline of History	
<u>1881</u>	Santa Fe Water Improvement Company built a reservoir on the Santa Fe River to divert the City's designated surface water right with an 1880 priority date.
<u>1995</u>	The City of Santa Fe purchased Sangre de Cristo Water Company from PNM
<u>1999</u>	City began managing the declared water right of 1,540 acre-feet per year and a licensed water right of 3,500 acre-feet per year on the Santa Fe River for a total of 5,040 acre-feet per year for drinking water supply.
<u>2011</u>	Operation of the Buckman Regional Water Treatment Plant begins.

Table 1. Santa Fe Water History Timeline

The City of Santa Fe has four sources of water supply (see Figure 1):

- Santa Fe River
- San Juan-Chama surface water via the Rio Grande
- City well field
- Buckman well field

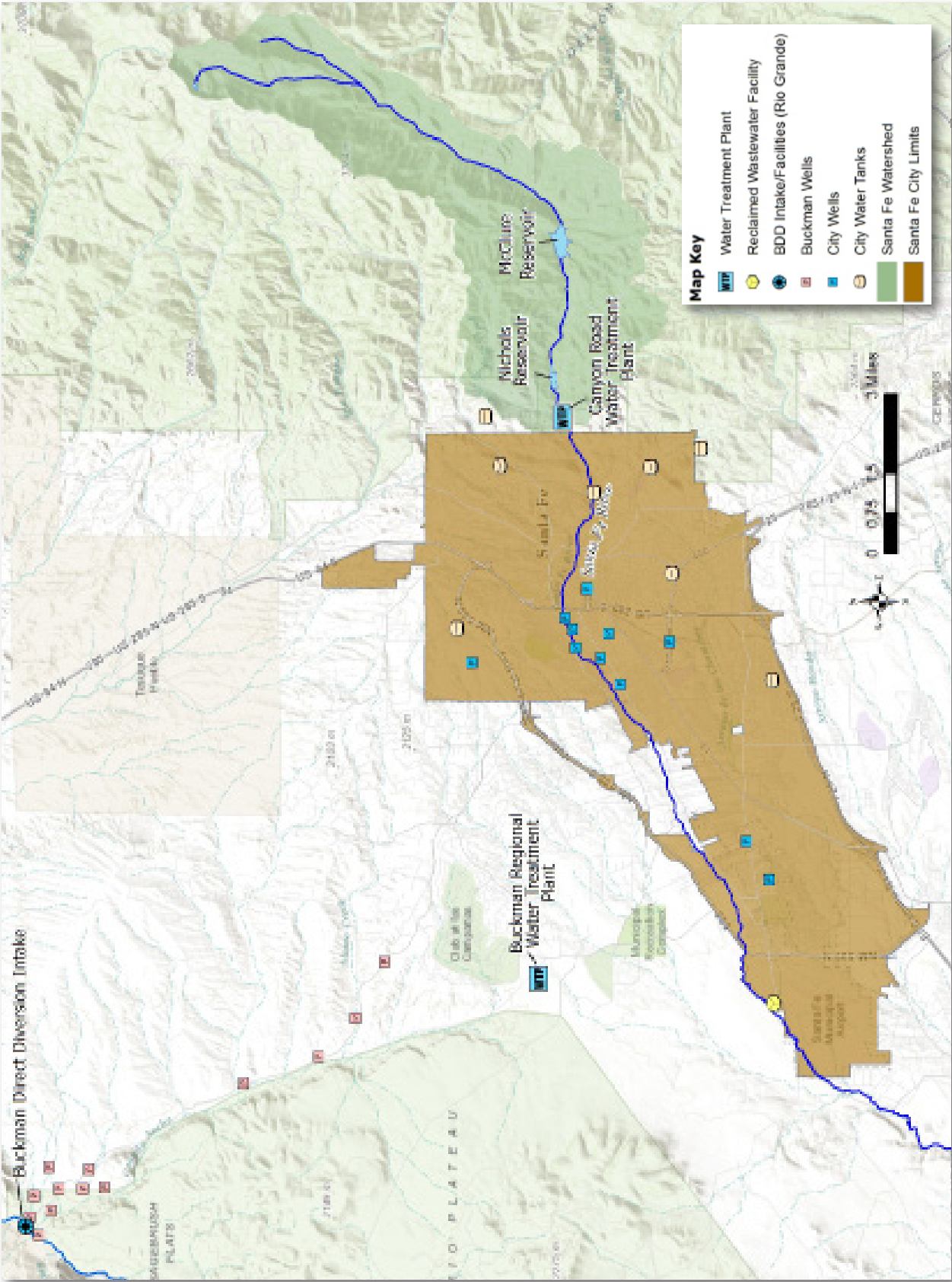
Also, the Water Division utilizes reclaimed wastewater and water conservation to reduce demand on the total supply of potable water.



Figure 2. Construction of McClure Reservoir in the Santa Fe Municipal Watershed. Circa 1946.

Source: Photo Archives, New Mexico Digital Collections.

City of Santa Fe Sources of Supply Map, Figure 3



Santa Fe Water Supplies

Surface Water

Currently, the City of Santa Fe has a license to store up to 3,985 acre-feet (combined) per year of [Santa Fe River water in McClure and Nichols Reservoirs](#). Both municipal drinking water supply reservoirs are located east of the City within the closed upper Santa Fe River municipal watershed.

Operation of the [Buckman Regional Water Treatment Plant](#) (Figure 2) commenced in January of 2011, at which time the facility started providing drinking water from the federal Bureau of Reclamation's San Juan-Chama Project's surface water supply via the Rio Grande.

As a contractor of the San Juan-Chama Project, the City of Santa Fe can provide up to 5,230 acre-feet per year of drinking water supply from the Buckman Regional Water Treatment Plant directly to the City's water utility customers. The Buckman Regional Water Treatment Plant and the Buckman Direct Diversion Project facilities are governed by a joint City of Santa Fe and Santa Fe County board.

The San Juan-Chama Project utilizes surface water runoff of the Colorado River basin from tributaries of the San Juan River via a series of diversions and underground pipelines through the Continental Divide to the Rio Grande basin. The surface water is then distributed to the Project's contractors at the outlet of Heron Reservoir near Chama, New Mexico.



Figure 4. The Rio Grande supplies water to the states of Colorado, New Mexico, and Texas.

Source	Water Rights	Available Water
Santa Fe River	5,040	Up to 5,040 plus 1,000 to living river (when available)
City Wells	3,507/4,865	Sustainable use when needed
Buckman Wells	10,000	Sustainable use when needed
Buckman Direct Diversion	5,230*	Less water quality and/or NEPA permit restrictions

Table 2. Diversion Water Rights and Supply Portfolio (acre-feet)

*City of Santa Fe's San Juan-Chama Project water

Groundwater

The City of Santa Fe has seven active groundwater wells within the City limits, most of which are focused near the Santa Fe River (see Figure 1). The [City well field](#) was installed in the 1940s and 1950s, and the wells within it have been re-drilled or upgraded over the years. Combined, the wells can produce up to 4,865 acre feet per year of drinking water supply for Santa Fe.

The City of Santa Fe also has thirteen groundwater wells in the [Buckman well field](#), which is located near the Rio Grande, approximately 15 miles northwest of Santa Fe (see Figure 1). The Buckman Wells are associated with several water rights, but are operated under one permit that allows the City of Santa Fe a maximum pumping rate of 10,000 acre-feet per year for drinking water supply. However, the City rarely pumps more than 1,000 acre-feet annually from these wells. The newest Buckman wells are about 2,000 feet deep and began producing water in 2003.

Water Rights Used for "Offsets"

In addition to water rights that the City of Santa Fe can directly divert for water supply, Santa Fe maintains a portfolio of 'offset' surface water rights that are associated with the Buckman well field and the Northwest Well. The purpose of these acquired water rights is to keep the nearby stream systems 'whole' or unaffected by the impacts that pumping groundwater has on surface water.

Table 3. Surface Water Offsets (Acre-Feet)

Stream System	Water Rights	Offsets Needed in 2014
Rio Tesuque*	49	34
Rio Nambe/Rio Pojoaque*	88	57
Rio Grande**	1,438	1,137***
La Cienega	1	2

*Includes water owned by Las Campanas

**Includes water owned by Santa Fe County and Las Campanas

***Includes impacts both above and below Otowi (113 above+1261 below)

The City of Santa Fe has acquired sufficient water rights to satisfy its current obligation on the Rio Grande, Rio Tesuque, and Rio Nambe/Rio Pojoaque through a combination of acquired surface water rights and the City's San Juan-Chama surface water.

Production by Supply Source

As shown in the 'Monthly Water Production by Source' graphs below, the City has taken advantage of increased availability of surface water from the Buckman Regional Water Treatment Plant to decrease use of the City and Buckman well fields, allowing the wells to rest for use in drier years when surface water is not as readily available. In 2014, total production for the City of Santa Fe Water Division was 8,564 acre-feet.

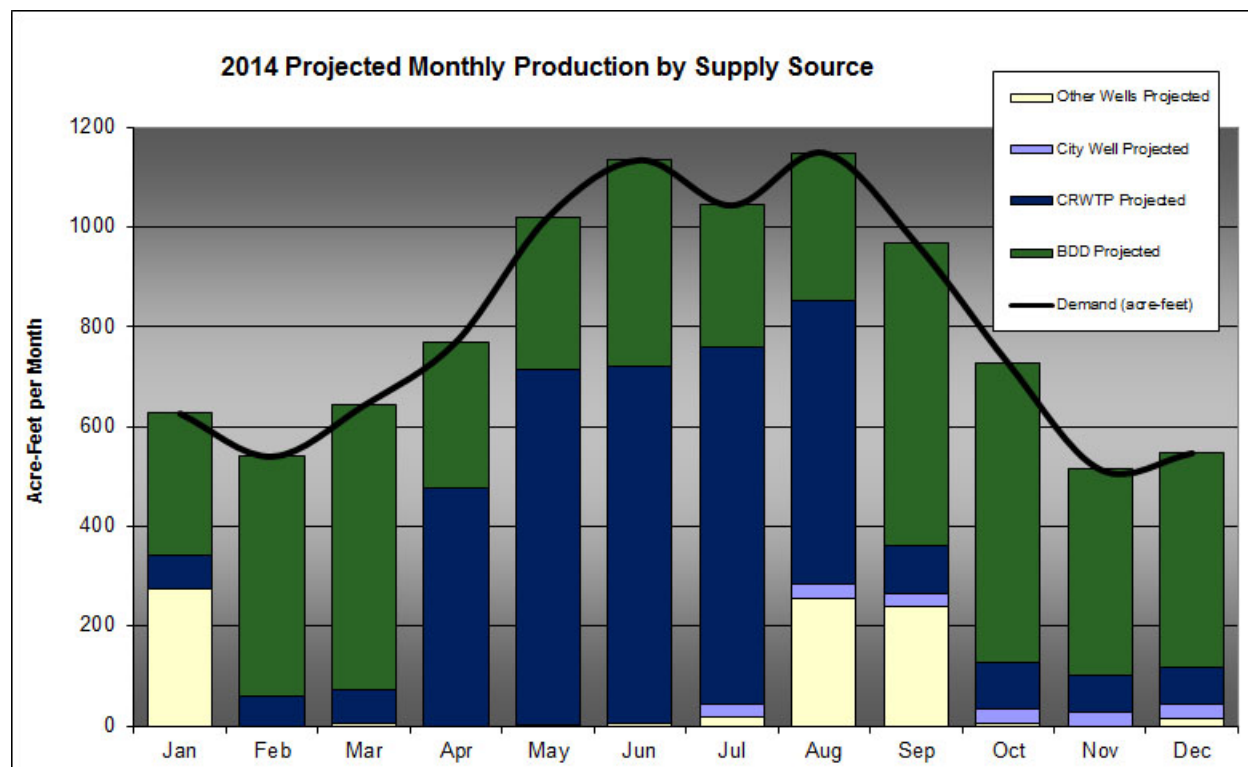


Figure 5. 2014 Actual vs. Project Monthly Production by Supply Source

Conjunctive Management is a water resources principal that promotes maximizing the use of renewable surface water as a first priority, and preserving the groundwater when needed for droughts or emergencies, allowing for its more sustainable use.

Conjunctive Use and Sustainability

The City of Santa Fe Water Division surface water supplies have the advantage of being renewable, high quality, and energy efficient (e.g. gravity flow and solar power). The disadvantage of surface water supplies is the extreme variability and impacts from seasonal precipitation and temperature changes. Groundwater supplies do not have the wild fluctuations in variability and are therefore more reliable as long as groundwater supplies are not overused. To have a sustainable and reliable water supply source, the City of Santa Fe Water Division conjunctively uses both surface water and groundwater.

Treated Effluent Water Deliveries

The City of Santa Fe's reclaimed wastewater (treated effluent) has many uses and is an important component of the City of Santa Fe Water Division's water supply portfolio. The reclaimed wastewater

from the City's treatment plant is sold directly to contractors via an onsite stand pipe.

The reclaimed wastewater has many uses, including irrigation to recreational fields and local golf courses; dust control at the regional landfill and for other construction projects; watering for livestock and wildlife on the Caja del Rio mesa; contributing to the on-site, wildlife, educational pond at the NM Game & Fish facility; and enabling flow in the lower Santa Fe River downstream of the City's wastewater treatment plant which supports the riparian ecosystem and local agriculture in the La Cienega and La Bajada areas.

The total production of reclaimed wastewater was 1,980 million gallons (6,708 acre-feet) in 2014, compared to 1,962 million gallons (6,020 acre-feet) in 2013. In 2014, 19% of the treated wastewater was reused and the remaining 81% (1,601 million gallons) flowed into the Santa Fe River. More information on current reclaimed wastewater (treated effluent) planning efforts is available at www.santafenm.gov.

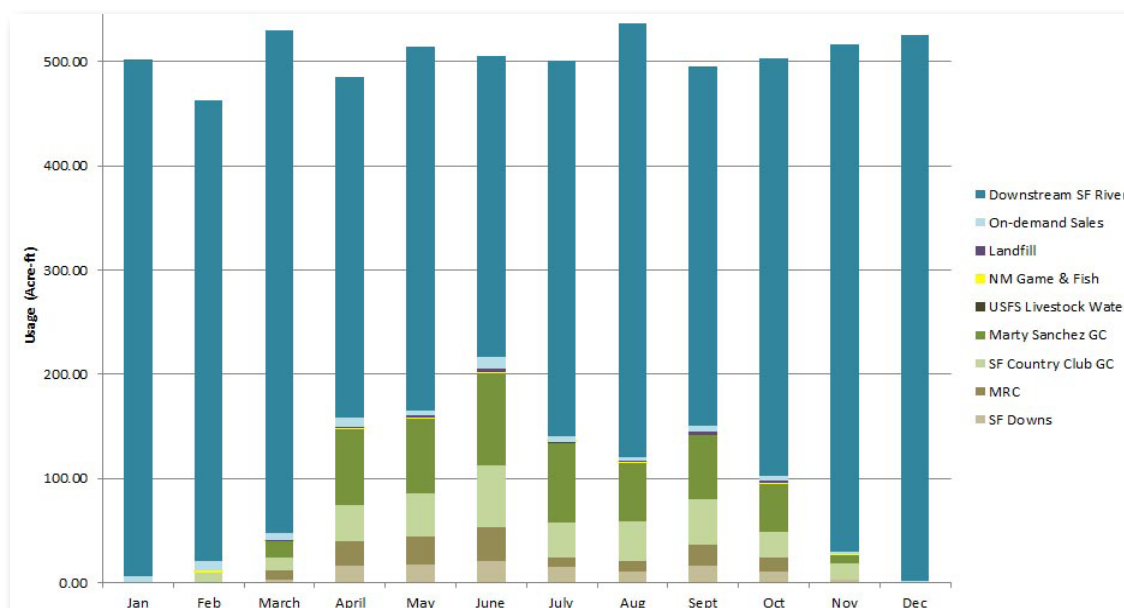


Figure 6. Treated Effluent Contractors, 2014



Figure 7. Presedimentation basins at the Buckman Direct Diversion water treatment plant. Three presedimentation and raw water storage basins allow the remaining larger particles that were not captured at the sediment removal facility to settle to the bottom for removal and store a large amount of raw water.

WATER STORAGE

The City stores its water in reservoirs (in the upper Santa Fe River Watershed and on the San Juan-Chama River/Rio Grande system); and by relinquishment water (explained below).

Municipal Reservoirs

The water utility stores Santa Fe River surface water in McClure and Nichols Reservoirs in the Santa Fe municipal watershed (see Figure 10). Historically, the City has targeted a carry-over storage from one year to the next of 40% to hedge against drought-induced summer supply deficit; however, once the Buckman Direct Diversion came online a lower carry-over storage target has been acceptable. By late 2014, McClure Reservoir was drained for a reservoir infrastructure improvement construction. Since McClure Reservoir was drained, the storage levels of only Nichols Reservoir for the end of 2014 was 457 acre-feet or 67% of the total storage capacity.



Figure 8. Construction on a new intake structure at McClure Reservoir, pictured above. Reservoir improvements took place at both Nichols and McClure Dams in 2013 and 2014, respectively. Construction of the Nichols intake structure was completed in May 2014. In November 2014, McClure reservoir was drained to begin construction of a new inclined intake structure, replacing its old vertical tower that was last updated in the 1940's.

Relinquishment Credits

New Mexico receives relinquishment credits when the quantity of Rio Grande water provided to Texas is above that required by the Rio Grande Compact. Relinquishment water allows the City to store relinquishment 'credit' water in the municipal reservoirs during times when the Rio Grande Compact would otherwise limit the City's right to store surface water.

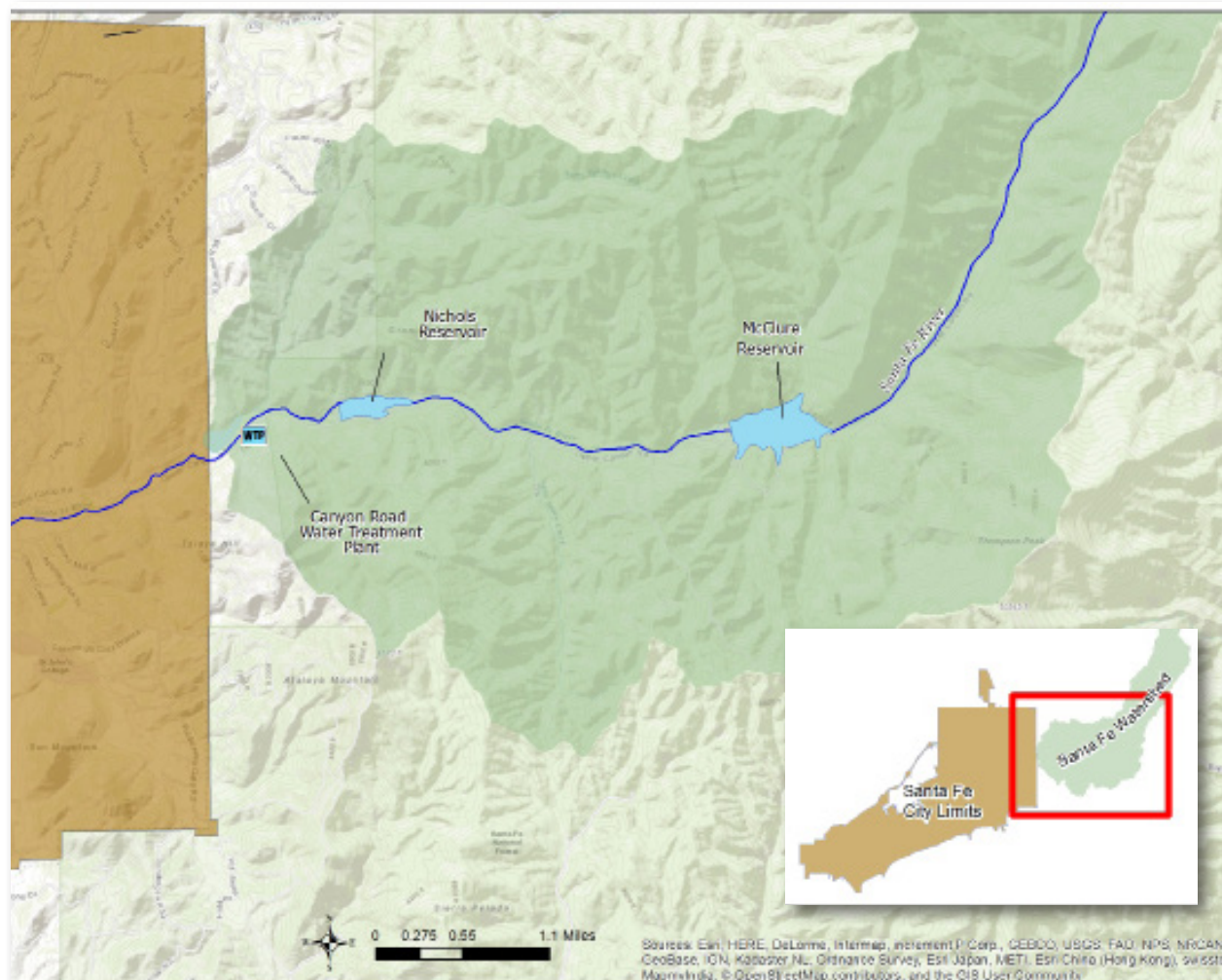


Figure 9. McClure and Nichols Reservoirs within the Santa Fe Municipal Watershed.

The New Mexico State Engineer administers relinquishment credits to the City. As an alternative to using relinquishment credits, the City often releases its San Juan-Chama Project water into the Rio Grande in exchange for the permission to store Santa Fe River water, which would otherwise be prohibited by the Rio Grande Compact. The City has a current balance of 7,207 acre-feet in relinquishment credits.

The Rio Grande Compact is an interstate agreement signed in 1938 in the U.S. between the states of Colorado, New Mexico, and Texas to equitably apportion the waters of the Rio Grande Basin.

CLIMATE

Precipitation

According to the Western Regional Climate Center, Santa Fe receives on average 13.84 inches annually of precipitation. National Resource Conservation Service (NRCS) ‘SNOTEL’ weather stations measure snow-to-water equivalent (SWE) which is snowpack and precipitation in the form of water, the measurement of which is used to predict spring runoff and watershed yield. There are two SNOTEL weather stations in the upper Santa Fe River municipal watershed (see table at right).

SNOTEL Station	Elevation (Feet)	Snow-water-equivalent (SWE)
Santa Fe	11,445	212 inches of SWE for 2014
Elk Cabin	8,210	39.9 inches of SWE for 2014

Table 4. 2014 SNOTEL Data, Santa Fe Watershed

Precipitation data is also gathered in two additional locations in Santa Fe. ‘Santa Fe 2’ which is located approximately 2 miles southwest from the Santa Fe plaza, reported 11.56 inches for the year of 2014. This was 84 percent of the annual precipitation of 13.70 inches for this location. Seton Village (approximately 4.5 miles south of downtown Santa Fe) reported 11.41 inches for the year 2014. This was 78 percent of the annual precipitation of 14.65 inches for this location.



Figure 10. Snowpack in the Sangre de Cristo Mountains

Drought

Drought is defined by the National Drought Mitigation Center (NMDC) as a deficiency of precipitation over an extended period of time, usually a season or more. Drought is a normal recurrent feature in the arid southwest. Santa Fe has a very dry, high desert climate with intense sunlight. On average, the city experiences more than 300 sunny days per year. The highest temperatures in July and August are 80-90 °F with only 3-6 days per year with 90+°F highs.

In 2014, normal to below normal snow pack was expected across New Mexico. In late winter and early spring, much of the state did not receive significant precipitation. However, near to above normal precipitation took place during the later part of the year. July proved a good start to the monsoon season, yielding 134 percent of normal precipitation, but petered off in August. September was the 2nd month of the year to experience above normal precipitation, with an impressive 190 percent of normal, making it the 7th wettest on record. Overall, the 2014 calendar year's (January–October) average statewide precipitation was 94 percent, easing drought conditions.

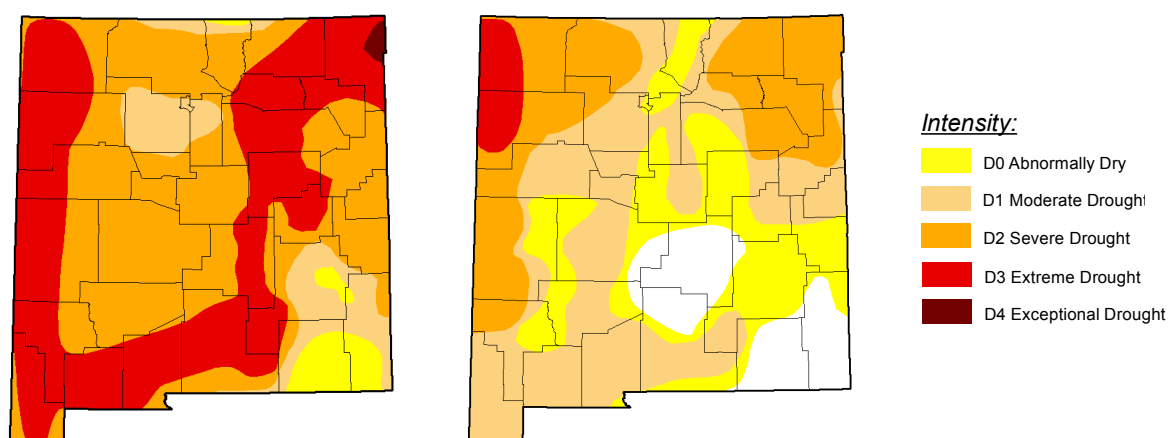


Figure11. Drought Comparisons for July 1, 2014 and December 30, 2014

Figure12. BDD intake area

The Buckman Direct Diversion facility is required to curtail diversions during critically low flow periods pursuant to federal permit conditions associated with the Endangered Species Act. Also, when flows are below ~200 cfs, the facility cannot physically divert water from the river. Even if supplemental stored water is release from upstream reservoirs, there has to be enough “carriage water” with adequate flows in the river to deliver the City’s portion of water to the BDD’s intake structure.

In 2014, BDD was offline on a number of occasions due to weather-related events.



WATER CONSERVATION

The City of Santa Fe considers water conservation to be a quasi source of supply in that all conserved water is deposited into the City's Water Bank. See the Water Demand section of this report for additional information about the rebates programs (conserved water in acre-feet). The Water Conservation Office offers the following programs, activities, and services.

Public Outreach and Marketing

The City's GPCD (gallons per capita per day) decreased from 101 gallons in 2013 to 95 gallons. In 2014, the Water Conservation Office engaged in a strategic approach to its ongoing and highly successful public outreach activities including event participation, advertising, a weekly talk radio show, and earned media. The 2014 drought awareness campaign depicted images of water-saving activities, conveying the message that it's time to practice water-saving measures and to change behavioral habits.



The City has built a comprehensive and effective water conservation program from incremental steps that began in 1997. Currently the Water Conservation Office does the following:

- Provides educational activities for all ages
- Administers rebate and incentive programs
- Enforces the water conservation requirements at outlined in various City ordinances
- Provides public outreach through media outlets and participating in community events
- Leads by example with low water use demonstration gardens.

Figure 13. At left, an ad from the 2014 "Drought On. Water Off" ad campaign.

Children's Poster Contest

A favorite in Santa Fe, the annual calendar features the winning artwork from the previous year's **Poster Contest** along with monthly water saving tips. In 2014, 5,000 copies of the Water Conservation Calendar were distributed throughout the city.



Children's Water Fiesta

The 12th Annual Children's Water Fiesta took place in spring 2014. Each day approximately 300 fourth graders from the Santa Fe Public Schools participated in hands-on, water related activities. Since 2002, the fiesta has taught the importance of water and its many uses.



Project WET

(Water Education for Teachers) is an organization dedicated to helping teachers and parents incorporate water topics into their curriculum. The Water Conservation Office hosted a workshop in summer 2014, providing an opportunity for teachers at Santa Fe Public Schools.





Figure 14. The Santa Fe Water Conservation Office Demonstration Garden. Leading by example, the Water Conservation Office has developed several demonstration areas to showcase the many ways to make landscaping more water efficient while illustrating the aesthetic quality of xeriscapes.

Qualified Water Efficient Landscaper Training

As the climate grows hotter and drier, the demand for “smart” irrigation technology is increasing. With it comes a need for “smart” landscape professionals who understand these technologies, local soil and weather conditions, and trends in water-efficient irrigation systems. QWEL is an approved US EPA WaterSense® Irrigation Auditor certification. The City of Santa Fe, in partnership with New Mexico Water Conservation Alliance, is the only agency in New Mexico offering this training.



Business and Commercial Technical Assistance

The Water Conservation Office consults with businesses and commercial utility customers, offering valuable information such as providing reminders about water conservation requirements as stated in various city ordinances, conducting free water efficiency and leak detection audits, and determining which rebates are most appropriate. Additionally, the Water Conservation Office offers free water conservation signage for restaurants and other businesses.



City of Santa Fe
WATER DEMAND



Figure 15. Santa Fe at the base of the Sangre de Cristo Mountains

WATER DEMAND

Per Capita Consumption

A common metric for comparing annual water use and water conservation effectiveness is gallons per capita per day (gpcd). It's derived by dividing the amount of water supplied to the City of Santa Fe by the population of water division customers served. The calculated gpcd *does* include deliveries to wholesale customers, such as Santa Fe County.

In 2014, the City's water customers have decreased average daily water use from 101.17 gallons per person per day in 2013 to 95.30 gpcd in 2014, a decrease of 6% and the first time the city has ever fallen below the 100 gpcd threshold.

The gpcd calculation was based upon the New Mexico Office of the State Engineer's (NM OSE) methodology. The NM OSE methodology bases the population served upon

The creation of a multi-family billing category in 2006 caused a shift in total water usage from commercial to residential/multi-family. In 2014, the largest water usage sector for the 95 gpcd was single-family residences at 54%. Multi-family residences accounted for 10% and commercial accounts 21% of total water usage.

the number of water division residential

customers multiplied by 2013 American Community Survey (ACS)-derived vacancy rate, and an ACS-based residents per occupied household value. The submittal of the NM OSE gpcd fulfills a compliance requirement with the NM OSE's diversion permit for surface water to the Buckman Direct Diversion facility.

Prior to utilizing the NM OSE gpcd methodology, the City of Santa Fe Water Division gpcd method, used for the previous seventeen years, determined the population served upon the most recent (2010) U.S. Census population data (adjusted for households that rely solely on domestic well water) and updated it annually utilizing growth rates from annual housing permits.

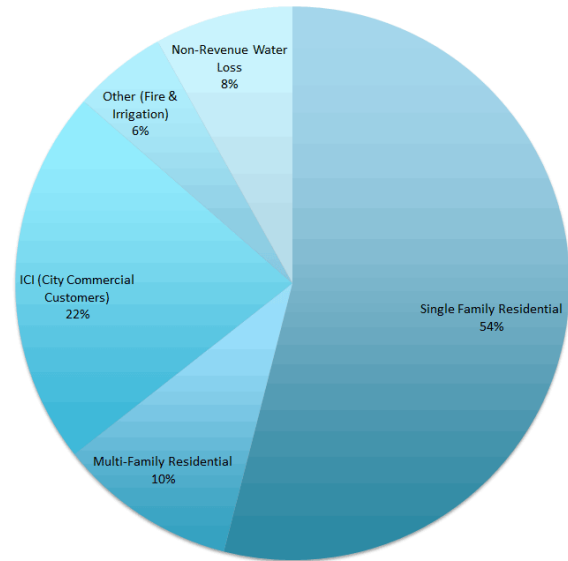


Figure 16. Percent of City Demand (2014) by Customer Category

Water Bank

New water demand on the City water system requires a water credit from the Water Bank in an equal amount, with the goal being no "net" increase in demand on the water system. The City has a series of ordinances that require all new projects to offset their water demand to the City of Santa Fe Water Division supply. The options available for the offset of new water demand include water rights acquisition and water conservation in existing development.

The City's water bank tracks the inflows (credits), allocations (debits), ownership, and designated use. For detailed information, please refer to the following ordinances and city code: 2005 Water Transfer Ordinance, 2009-38 Water Budget Requirements (effective January 1, 2010), and Water Conservation provisions in City Code Chapter 25.

As defined by ordinance, development projects that require less than 10 acre-feet of water (residential), less than 7.5 acre-feet of water (mixed use), or less than 5 acre-feet (commercial) can acquire the necessary water from the

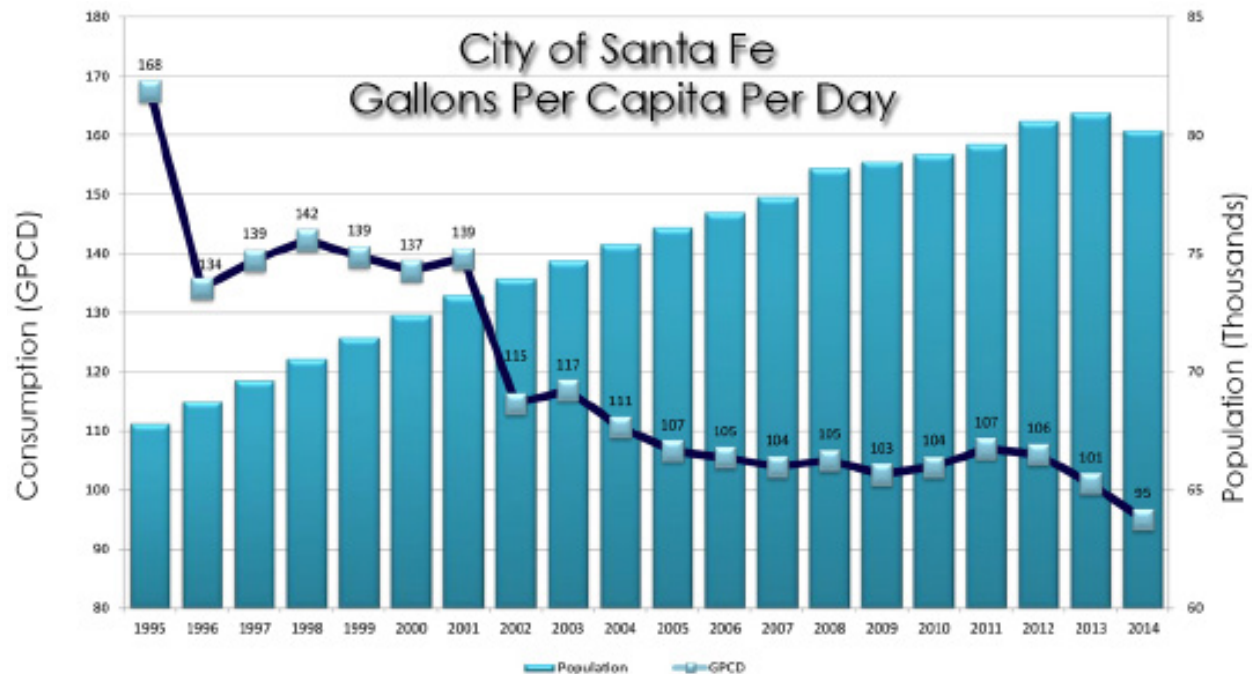


Figure 17. Santa Fe's gallons per capita per day, by year (1995-2014)

alternatives “a”, “b”, “c”, and “d” listed in following page. All projects with larger water demands must use option “a” or “b”. Water credits generated through City efforts are available for the water needs of the City (e.g. new parks, municipal buildings, convention center, etc.) or City-supported projects (e.g. affordable housing dwelling units, Santa Fe River). Once water is allocated to a project from a water credit account, the appropriate “debit” is made from the appropriate account in the water bank.

By the end of 2014, 100 acre-feet of water was available for allocation to the City's needs or City supported efforts (e.g. new parks, municipal buildings, convention centers, affordable housing dwelling units, and the Santa Fe River). An additional 35 acre-feet was available for sale to small developers. For 2014, the affordable housing unit credits are adequate. In 2014, 5 acre-feet was allocated to affordable housing units, leaving an ending balance of 23 acre-feet. The private developers held a total of 573 acre-feet of water rights and 245 acre-feet of toilet retrofit credits.

Water credits are derived from multiple sources:

- Transfer of Middle Rio Grande water rights for development projects as required under the 2005 Water Bank Ordinance (and modified by 2009- 38) or for water banking;
- Transfer of Middle Rio Grande water rights for water banking as per the 2009-38 Water Bank Ordinance
- Water conserved through the current conservation rebate program
- Toilet retrofits credits verified by June 30, 2010 by Water Budget Administration Office
- City of Santa Fe Water Division's water right acquisition program
- Water conserved by City-initiated conservation programs
- Water conserved via a conservation credit program.

Water Conservation History and Savings

Replacing inefficient water-using technologies with more efficient ones is one of the easiest ways to reduce demand. Over the years, the *Retrofit, and Rebates and Incentives* programs have greatly contributed to the City of Santa Fe's success in conserving water. These programs, and how the savings are credited have changed over the years, and they are interconnected with various regulations which have been adopted and revised in the same time period. The City's water customers continue to do an outstanding job of conserving water and reducing demand. See the ***Water Conservation Programs History and Water Savings*** on the following page.

The savings resulting from the Rebate Program are quantified and "deposited" into the City of Santa Fe Water Bank. These credits may be allocated to programs for affordable housing and for the "living river." Some credits may also be available for purchase by developers to offset new water demand within the City of Santa Fe. For the past several years, the Water Conservation Office has offered incentive rebates for the replacement of a variety of inefficient appliances and fixtures with high-efficiency models, including toilets, clothes washers, waterless urinals, and the installation of rain water harvesting equipment such as rain barrels and cisterns. Beginning January 1, 2010 the new and expanded incentives and rebates program was incorporated into the Water Bank, keeping track of conserved water to offset new development.

COMMERCIAL USE	Qty of Rebates	\$ Amount per Rebate	Water Savings per Rebate (Acres-Feet)	\$ Amount for all Rebates	Water Savings for Water Bank (Acres-Feet)
Flushometer Valve HET		\$500.00	0.003600	\$0.00	0.0000
Tank Type HET	7	\$250.00	0.016800	\$1,750.00	0.1178
Hotel/Motel HET		\$125.00	0.002200	\$0.00	0.0000
Water Free Urinal	5	\$500.00	0.042000	\$2,500.00	0.2100
HE Clothes Washer replacement for top loading washer	2	\$350.00	0.023300	\$700.00	0.0466
HE Clothes Washer exchange for any front loading Clothes Washer		\$150.00	0.008800	\$0.00	0.0000
CPE (Commercial Process Efficiency)			0.450000	\$0.00	0.0000
			Sub Total	\$4,950.00	0.3742
RESIDENTIAL USE					
HET Residential	532	\$175.00	0.005300	\$93,100.00	2.8196
HE Clothes Washer replacement for top loading washer	103	\$350.00	0.023300	\$36,050.00	2.3999
HE Clothes Washer exchange for any front loading Clothes Washer	19	\$150.00	0.008800	\$2,850.00	0.1672
Rain Barrel 50-99 g	55	\$12.00	0.000800	\$660.00	0.0440
Rain Barrel 100-199 g	13	\$25.00	0.001500	\$325.00	0.0195
Rain Barrel 200-299 g	2	\$50.00	0.003100	\$100.00	0.0062
Water Harvesting	4	32800 Gallons \$0.25	0.000015	\$8,200.00	0.4920
			Sub Total	\$147,285.00	5.9484
			TOTAL	\$146,235.00	6.3226

Figure 18. Water Conservation Rebates 2014

Table 5. Water Conservation Program Timeline

Year	Program and/or Policy Implementation	GPCD	Water Bank Contribution (acre feet)
2014	Rebate Program expanded to include outdoor irrigation rebates	95	
2013		101	6.60
2012		106	7.15
2011	Rebate Program modified due to changes in funding	107	9.04
	Buckman Direct Diversion becomes operational		
2010	New Rebate Program created using ARRA funding	104	34.46
	Offset requirements modified again, annual accounting required, Water Bank and Conservation Credit Programs established		
2009	City adopts OSE methodology for calculating GPCD	103	67.26 in water savings from Rebate Program (2004-2009)
	Updates “Water Use in Santa Fe” to include additional customer sectors		
2008		105	
2007		104	
2006		105	
2005	First Water Conservation & Drought Management Plan adopted by City, submitted to OSE	107	
2004	Rebate Program introduced for washing machines, hot water circulators and rain barrels	111	
2003	Toilet Retrofit Program created, resulting in retrofit of 10,000 toilets	117	
2002	New construction required to offset new demand and implement water conservation requirements	115	
2001		139	
2000		137	
1999		139	
1998		142	
1997	City passes Comprehensive Water Conservation Requirements Ordinance	139	
1996	City passes Emergency Water Regulations Ordinance	134	
1995	City of Santa Fe purchases water utility	168	

Water Rate Structure

In 2007, the City of Santa Fe implemented a pricing structure that has contributed to the success of Santa Fe's Water Conservation and Drought Management Programs. In 2009, a series of rate increases was established to pay for the construction of the Buckman Direct Diversion, as well as to cover increasing operating and maintenance costs for the water infrastructure which is necessary to provide a safe, reliable and sustainable water supply. The rates increased 8.2% per year, with 2013 marking the last year of rate increase.

Effective Date	First Tier	Second Tier
January 1, 2013	6.06 per 1,000 gallons	21.72 per 1,000 gallons

The rate structure adjusts seasonally to allow for additional water usage during the months when irrigation systems are typically in use. From May 1 to August 31, residential water customers can use up to 10,000 gallons per month at the first tier rate, while the rest of the year only 7,000 gallons can be purchased at the first tier rate.

RESIDENTIAL TIERS by METER			
Meter Size	Months	Tier 1	Tier 2
All Meter Sizes	September - April	0 - 7,000 gallons	Over 7,000 gallons
	May - August	0 - 10,000 gallons	Over 10,000 gallons
MULTI-FAMILY TIERS per DWELLING UNIT			
Meter Size	Months	Tier 1	Tier 2
All Meter Sizes	September - April	0 - 7,000 gallons	Over 7,000 gallons
	May - August	0 - 10,000 gallons	Over 10,000 gallons
COMMERCIAL TIERS by METER			
Meter Size	Months	Tier 1	Tier 2
5/8" or 3/4"	September - April	0 - 7,000 gallons	Over 7,000 gallons
	May - August	0 - 10,000 gallons	Over 10,000 gallons
1"	September - April	0 - 14,000 gallons	Over 14,000 gallons
	May - August	0 - 20,000 gallons	Over 20,000 gallons
1 1/2"	September - April	0 - 28,000 gallons	Over 28,000 gallons
	May - August	0 - 40,000 gallons	Over 40,000 gallons
2"	September - April	0 - 56,000 gallons	Over 56,000 gallons
	May - August	0 - 80,000 gallons	Over 80,000 gallons
3"	September - April	0 - 112,000 gallons	Over 112,000 gallons
	May - August	0 - 160,000 gallons	Over 160,000 gallons
4"	September - April	0 - 203,000 gallons	Over 203,000 gallons
	May - August	0 - 290,000 gallons	Over 290,000 gallons
6"	September - April	0 - 448,000 gallons	Over 448,000 gallons
	May - August	0 - 640,000 gallons	Over 640,000 gallons
8"	September - April	0 - 798,000 gallons	Over 798,000 gallons
	May - August	0 - 1,140,000 gallons	Over 1,140,000 gallons

Residential Rate Structure by Tier, Table 6

Santa Fe River

As directed by ordinance, in mid-April of each year the annual target flow allocation is determined based upon projections for the year's anticipated watershed yield. The 2014 flow target was set at 300 acre-feet based upon reduced moisture content in the upper Santa Fe watershed snowpack, with total flows to the Living River amounting to 1,583 acre-feet in 2014. Below is the annual hydrograph (flow pattern) for target flows; monitoring flows for time and distance traveled within the river channel; and record-keeping of target flow volumes.

Whole Sale Deliveries

The City has contracts to deliver wholesale water to the Santa Fe County Water Utility. Since 2011 the Buckman Direct Diversion

The Target Flow ordinance requires staff to provide the governing body with an annual report that describes Target Flow operations and flow volumes for the preceding year, plus the planned Target Flow hydrograph for the coming year.

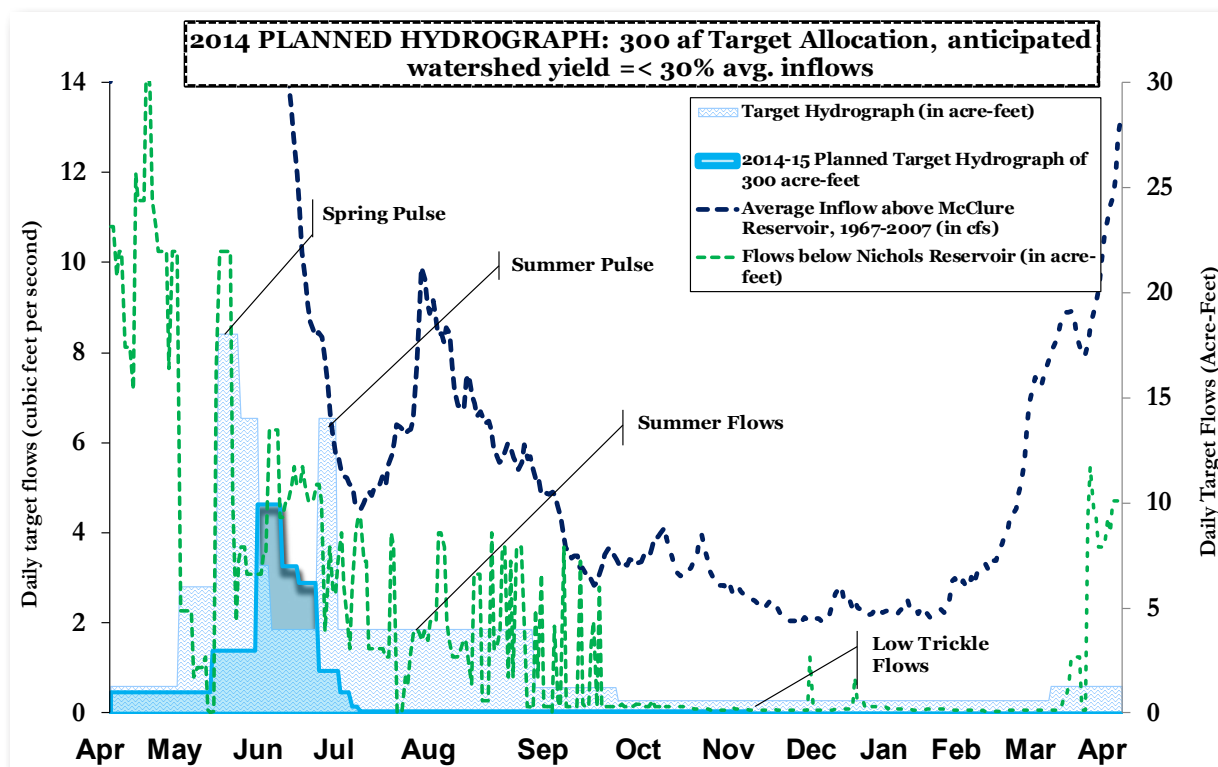


Figure 19. Santa Fe Living River Flow Hydrograph

(BDD) has become the primary source of water for Santa Fe County's water utility. Las Campanas' potable water needs are being met by Santa Fe County's Water Utility under the terms stipulated in a bulk water agreement between Santa Fe County and Las Campanas. The 2005 City/County Water Resources Agreement provides Santa Fe County with up to 500 acre-feet per year of wholesale delivery water from the City of Santa Fe, with an

WATER DEMAND



Figure 20. Buckman Direct Diversion treatment facility

additional 850 acre-feet available under drought and emergency conditions.

The Santa Fe County Water Utility typically is delivered potable water from the City of Santa Fe when the BDD facility is not producing drinking water due to poor water quality conditions in the Rio Grande. Under the water resources agreement with the City of Santa Fe, Santa Fe County Water Utility did not request any wholesale water deliveries in 2014.

City of Santa Fe
WATER RESOURCES PLANNING



Figure 21. The Buckman Direct Diversion Intake at the Rio Grande is located about 15 miles northwest of Santa Fe

WATER RESOURCES PLANNING

The overall goal of water resources planning is to ensure that our water supplies are managed and protected in an efficient and responsible manner so that the City of Santa Fe's drinking water supply is safe, reliable, and sustainable. Ongoing planning necessitates the management of a suite of water rights purchasing, leasing, and permit compliance efforts.

The management role of water resources planning involves administration of the City's "water bank," which seeks to tie land use development with the availability of requisite water rights.

The other management responsibility is source water protection and watershed management under the City of Santa Fe's Municipal Watershed Management Program, protecting 40% of the City's drinking water supply. Water resources planning and management efforts cover a broad range of duties, including being a good steward of the precious and finite resource: water.

Planning efforts include long-range planning and shorter term demand forecasting as well as specific near-term studies, reports and special projects. Part of the responsibility of water resources planning requires complex modeling and analysis of water resources and hydrologic topics.

2014 Water Quality Report
City of Santa Fe Water Division P.O. Box 900, Santa Fe, NM 87504 Customer Service (505) 955-4333 Administration (505) 955-4400

The City of Santa Fe's Water Division (the City) is pleased to provide the 2014 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 2014, 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 2014. 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 (WTP) 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 2014. 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.

Map of Water Sources

Source Water Assessment and 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 505-476-8638.

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 955-5644 to report illegal dumping in storm drains, streets and arroyos.

Do I need to take special precautions?
Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 people should seek advice about drinking water 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).

En Espanol
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 Victor Archuleta al teléfono 955-955-4370.

WATER QUALITY

The City was served by four distinct sources of supply in 2014, as described in the water supply section of this report. All four sources are treated with chlorine which is used for disinfection and pathogenic microorganism removal. Surface water is further treated by the use of conventional and advanced water treatment processes including coagulation and flocculation, sedimentation, and multi-media or microfiltration.

The City of Santa Fe is responsible for the Safe Drinking Water Act quality monitoring of all water introduced into its distribution system including the water received from the Buckman Regional Water Treatment Facility jointly run by the City of Santa Fe and Santa Fe County.

Monitoring Surface and Ground Water Quality

A 2009 collaborative study suggests that naturally-occurring uranium is present in the groundwater in the mountain zone, while arsenic is concentrated in wells along a series of north-south oriented faults in the center of the basin. More information about this study is available at the NM Environment Department.

The City continues its collaborative efforts to monitor the Buckman Well Field with the New Mexico Environment Department and Los Alamos National Laboratory to ensure that there is no evidence of contaminant migration from past and present Laboratory operations that could potentially threaten the regional aquifer

Contaminant	Units	MCL	MCLD	City Well Field ¹	Sample Date	Barham Tank ²	Sample Date	Canyon Blvd WTP	Sample Date	Backman R/WTP	Sample Date	Violation	Typical Source
Organic Contaminants													
1,1,1-Trichloroethane	ppb	200	200	0.1 (ND - 0.1)	2014	ND	2014	SD	2014	ND	2014	Ne	Discharge from metal degrading sites and other facilities
1,1-Dichloroethylene	ppb	7	7	0.01 (ND - 0.01)	2014	ND	2014	SD	2014	ND	2014	Ne	Discharge from industrial chemical facilities
1,2-Dichloroethane	ppb	5	200	0.00 (SD - 0.00)	2014	ND	2014	SD	2014	ND	2014	Ne	Discharge from industrial chemical facilities
Dichloro Ethylene	ppb	0.05	200	0.007 (ND - 0.007)	2014	ND	2014	SD	2014	ND	2014	Ne	Discharge from petroleum refineries
Trichloroethylene	ppb	5	200	0.08 (SD - 0.08)	2014	ND	2014	SD	2014	ND	2014	Ne	Discharge from factories and dry cleaning
Inorganic Contaminants													
Arsenic	ppb	10	0	4.2 (1.0 - 4.0)	2014	5	2014	SD	2014	ND	2014	Ne	Discharge of natural deposits; Runoff from organic runoff from glass and electronics production wastes
Barium	ppm	2	2	0.8 (0.1 - 0.8)	2014	ND	2014	SD	2014	0.070 (0.044 - 0.090)	2014	Ne	Discharge from drilling wastes; Discharge from metal refineries; Discharge of natural deposits
Bromide	ppb	10	200	NA	NA	NA	NA	NA	NA	1.7 (1.0 - 3.2)	2014	Ne	Byproduct of drinking water disinfection
Chromium	ppb	500	100	1 (ND - 1)	2014	ND	2014	SD	2014	ND	2014	Ne	Discharge from steel and pulp mills; Discharge of natural deposits
Fluoride	ppm	4	4	0.16 (0.14 - 0.16)	2014	0.4	2014	0.22	2014	0.23 (0.24 - 0.21)	2014	Ne	Discharge of natural deposits; Water additive which promotes strong tooth; Discharge from fertilizer and aluminum facilities
Selenium	ppb	50	50	ND	2014	ND	2014	SD	2014	1.2 (ND - 1.1)	2014	Ne	Discharge from steel/metal facilities; Discharge from plastic and fertilizer facilities
Nitrate (as N)	ppm	10	10	7.54 (2.00 - 7.04)	2014	0.4	2014	SD	2014	0.26 (0.15 - 0.40)	2014	Ne	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion from natural deposits
Radionuclide Contaminants													
Gross Alpha Radiation	pCi/L	15	0	4.4 (1.0 - 4.4)	2014	4.2	2014	SD	2014	1.2 (ND - 1.2)	2014	Ne	Discharge of natural deposits
Gross Beta Radiation	pCi/L	50 ²	NA	1.5 (ND - 1.5)	2014	2.3	2014	1.4	2014	0.45 (0.48 - 0.48)	2014	Ne	Discharge of natural and man-made deposits
Radium 226/228	pCi/L	5	0	0.77 (0.00 - 0.77)	2014	0.07	2014	0.18	2014	0.208 (0.100 - 0.208)	2014	Ne	Discharge of natural deposits
Uranium	ppb	30	0	2.8 (ND - 2.8)	2014	2.0	2014	SD	2014	1.8 (ND - 1.0)	2014	Ne	Discharge of natural deposits
Source Water Quality Contaminants													
Turbidity (highest single measurement)	NTU	TT = 1.0	0	NA	NA	NA	NA	0.32	2014	0.09	2014	Ne	Soil Runoff
Turbidity (lowest monthly 3-meeting limit)	NTU	TT = 0.3 NTU	0	NA	NA	NA	NA	99.2%	2014	99.4%	2014	Ne	Soil Runoff
Total Organic Carbon (TOC)	NA	TT (log%-up% Bioreact)	NA	NA	NA	NA	NA	47% to 62% natural ³	2014	NA	NA	Ne	Naturally present in the environment

Table . 2014 Water Quality Required Compliance Monitoring

The City of Santa Fe's drinking water continues to be of excellent quality. With the addition of another surface water supply (BDD) and less frequent use of the City's well field has resulting in lowering some of the naturally occurring contaminants and constituents such as arsenic, and calcium and magnesium hardness.

which provides water to the City's Buckman Wells. All samples taken in 2014 from the Buckman Wells, and shallow aquifer monitoring wells within the Buckman Well Field near the Rio Grande, did not indicate the presence of contaminants which could be associated with Laboratory operations.

Drinking Water Quality

The table on the previous page (City of Santa Fe 2014 Water Quality Table) lists contaminants which have associated Primary Maximum Contaminant Levels (MCLs) that are regulated by the U.S. Environmental Protection Agency (EPA) and New Mexico Environment Department and were detected in the City's drinking water samples collected by the City and New Mexico Environment Department (NMED) in 2014. Drinking 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, especially when they are at levels below the EPA's MCLs. Specific water quality information can be obtained by calling the City at 955-4232 or the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800-426-4791), or visiting www.epa.gov/safewater.

UTILITY MANAGEMENT

System Maintenance

The City of Santa Fe Water Division, Transmission & Distribution section (T&D) maintains existing pipelines, installs new pipelines and accepts new developments throughout the city. The T&D has been recognized and awarded by the New Mexico Occupational Health and Safety Bureau (OSHA) for outstanding job safety in confined space entry. The Water Division's Transmission and Distribution section has always worked hard to provide courteous and reliable customer service.



Figure 22. T & D staff install new pipe.

In 2014, T&D completed the following:

- Installation and repair of XX service lines
- Replacement of X large meters
- XXX meter exchanges
- Inspected XXX pressure reducing valves (PRV) quarterly
- Performed XXX new meter installs
- Operated XXX mainline isolation valves
- Replaced XX mainline valves
- Serviced XX frozen meters and service lines during winter months.
- Responded to over XXXX trouble calls

Mainline valve maintenance is necessary to ensure the proper shutdown during emergency situations. Replacing meters is required to record accurate water use and loss.



Figure 23. Solar array at BDD.

WATER UTILITY ENERGY PROGRAMS

PNM Peak Saver

This is an electrical Demand Management Program designed to relieve PNM's Grid during Peak Periods (the Peak Saver Period is from Jun 1- Sept 30 each year). It is a no-cost voluntary program that pays performance-based incentives to participants. The City of Santa Fe and EnerNOC monitors and measures the electrical consumption at the facility in real-time. In the future, it is expected that this program can reduce the water utility's on-peak usage to 10- 15%, which will result in substantial operational cost savings.

Hydroelectric Facility

This facility captures the energy of the finished water flowing from the Canyon Road Water Treatment Plant 2 miles downhill to the 5 million gallon tank located at Camino Cabra and Upper Canyon Rd. The water pressure generates 100 kilowatts of energy using a pump turbine system, which is net-metered with the St. John's booster station. Renewable energy provided by the system offsets energy the City would otherwise need to purchase from PNM, thereby effectively reducing water utility operating costs at this site. In addition to operational cost savings, the City... (WREGIS ALAN)

Buckman Direct Diversion Solar Projects

In operation since 2011, the first BDD Water Treatment Plant Solar facility produces up to 1 megawatt DC of solar electrical energy and provides approximately 1/3 the energy required to run the BDD Water Treatment Plant. Under a Power Purchase Agreement, BDD buys power generated from this privately owned and operated solar facility, the cost of which is offset by the REC payment that BDD receives from PNM. The second PV system, BDD Booster Station 2A Solar Project, was completed in June 2014 and includes high efficiency photovoltaic panels on an 8 acre area adjacent to the Buckman Direct Diversion Booster Station 2A.

Water Division Solar Projects

The Water Division has also received approval to install an 84KW photovoltaic (PV) system at its administration office located at 801 W. San Mateo. The office which houses both the Water Division and Utility Billing Division staff will have nearly 90 percent of all energy needs met through the PV system. The PV system should be operational by early 2015.

Fiscal Responsibility

The Water Division is committed to managing the water utility to maintain fiscal responsibility to its customers. This is achieved by an annual review of the finance plan and the capital improvement plan (CIP) with the goal of maintaining a high level of service while increasing effectiveness and efficiency. In early 2009, the City Governing Body approved a water rate increase in the amount of 8.2% for five consecutive years. The water utility rate increase was needed to pay for the Buckman Direct Diversion Project, a key component in providing the community with a safe and reliable supply of drinking water, and approximately \$100 million of infrastructure improvements. The last rate increase went into effect July 1, 2013 and the City does not project another increase to take place until 2021.

2015 WATER DEMAND AND SUPPLY PICTURE

In the chart below, the 2015 projected demand (black line) is approximately 10,050 acre-feet over the 12 month period. The BDD annual production is projected to be 5,769 acre-feet, Canyon Road Water Treatment Plant is projected to produce 3,200 acre-feet, and the City Wells are projected to produce 1,081 acre-feet over the 12 month period.

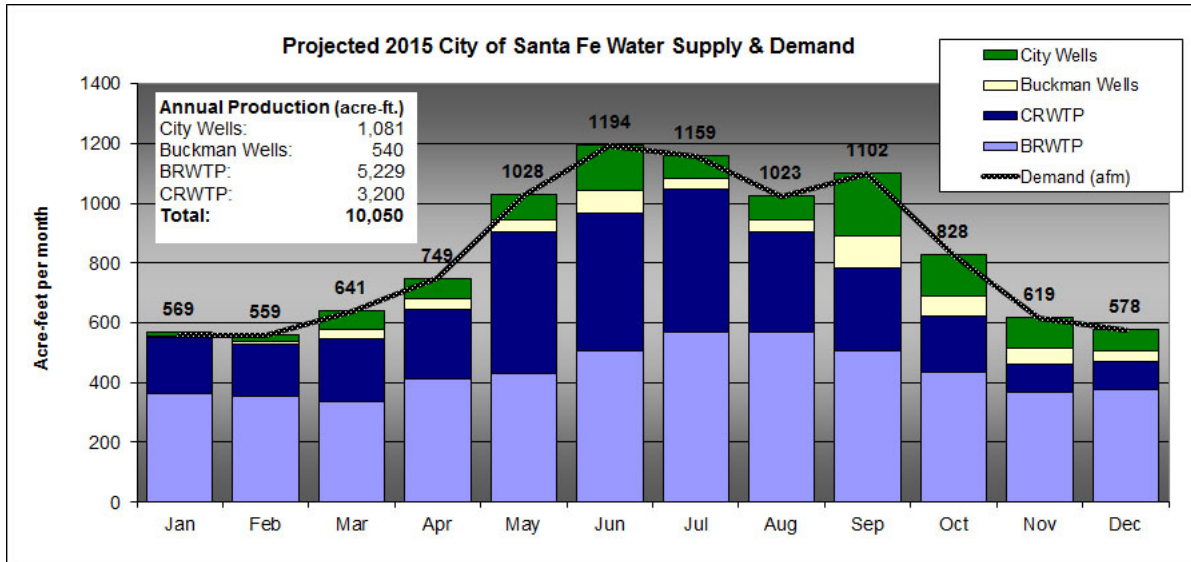


Figure 24. 2015 Projected Monthly Production by Supply Source