

## 2. Natural Setting & Environment

*Santa Fe is located in a unique and beautiful natural setting, on the western edge of the Sangre de Cristo Mountains – a setting that has inspired residents and visitors for centuries. The city has a dry, sunny climate with more than 300 days of sunshine annually and only enough precipitation (10-14 inches annually) to support a ground cover of mostly piñon and juniper trees, some native grasses and wild flowers. Four distinct seasons produce daily temperatures that range from an average high in the low to mid-40's during the winter months to the mid-80's during the summer months. The typical first frost can occur from late-September to mid-October and the last frost can occur from late-April to mid-May.*

*Water is this area's most precious resource. Sustainable development, water conservation and the preservation of the natural setting are vital to Santa Feans.*

### **Santa Fe River**

The Santa Fe River flows out of the Sangre de Cristo Mountains from east to west and was first collected in a reservoir on the city's east side in the early 1900s. There are currently two reservoirs, McClure and Nichols, which are part of the river system as it flows into the city. Due to the reservoirs, the river no longer flows continuously through the city, though the city has considered trying to renew a continuous flow with the "Living River" initiative by regular releases from the reservoirs. The river is also a key feature in the city's multi-use Trail system as the city and county work together to complete a paved trail along the river's 7-mile reach from St. Francis Drive to where the river channel crosses underneath Highway NM 599.

The Santa Fe River is the heart of a natural drainage (arroyo) system that extends from the Sangre de Cristos in a westerly-southwesterly direction across the city. The arroyos form an important part of the local ecosystem and they extend through the urban area from northeast to southwest.

In urban and semi-developed areas, numerous wildlife species, such as coyote, skunk, and rabbit use these corridors to travel between remaining areas of native habitat. The sides of the arroyos also provide nesting and burrowing habitat for species such as coyote, burrowing owl and rabbits.

Major arroyos, such as the Arroyo de los Chamisos, have not been channelized or lined. This allows for percolation and helps with natural recharge of groundwater aquifers, as flooding has not been a recurring problem, historically, for Santa Fe. Road, street and subdivision patterns wrap around or along arroyos and follow the contours of the land. This system of arroyos provides excellent use as passive and even active park and open space in many locations.



*Photo Credit: Maria Clokey, City of Santa Fe Multi Media*

### **Escarpments**

The city's north and east sides contain many ridge-tops and steep slopes due to the city's proximity to the Sangre de Cristo Mountains and foothills. Hills and mountains are visible from most locations in the city and are good elements for orientation. The foothills are home to many sensitive biological resources and the alteration of these natural slopes can impact drainage and increase runoff.

The escarpment, ridges and foothills lying to the north and east of the city present problems in terms of the management of grading, erosion and storm runoff during and after the land development process. Several escarpments or steep slopes separate the flatter portion of Santa Fe from the higher elevations to the northwest and northeast of downtown Santa Fe. The city has specific regulations limiting the type and amount of land development on ridge tops and steep slopes.



*Photo Credit: Maria Clokey, City of Santa Fe Multi Media*

# Natural Setting & Environment

## Ground Water & Surface Water

Santa Fe receives its water supply from three sources: mountain runoff, the aquifer and the Rio Grande via the Buckman Diversion facility. Historically, as much as 40% of the city's water supply was dependent on the winter snowfall in the Sangre de Cristo Mountains above the city, stored in reservoirs. Now with the addition of the Rio Grande Diversion Facility at Buckman, Santa Fe's water management approach balances the three sources.

The city's high desert location can mean long periods without any rain or snow. Periods of drought can dramatically limit surface water supplies.

Over 20,000 acre-feet of rain water falls within Santa Fe city limits during a typical year. That is more than the average annual usage for all urban use in the city. This runoff can be used to support plants and trees, reduce potable water demand and recharge the overtaxed ground water supplies. Uncontrolled runoff causes erosion and causes maintenance problems in the millions of dollars.

An arroyo is a dry watercourse which can turn into a torrent of flowing water after thunderstorms. Arroyos can be formed by severe run-off and overgrazing and other misuses and a subsequent lack of vegetative hold on the arid landscape in the desert southwest. By capturing runoff before it ends up in the arroyos, the torrential flash flooding that scours the river channel is reduced and could lead to improved conditions for the Santa Fe River.



Photo Credit: karenmarrolli.wordpress.com Sangre de Cristo Mountains from Arroyo Chamiso Trail - Creative Commons



*A stunning view of the Santa Fe River all the way from the Canyon Road treatment plant past Nichols and McClure Reservoirs, stacked one above the other on the mountain. Frozen and white with snow they shone among the pines — the source of 40 percent of Santa Fe's drinking water.*

Photo Credit:  
The Santa Fe Review  
George Johnson

## Air Quality

With an elevation of 7,000 feet, at the base of the Sangre de Cristo Mountains, Santa Fe's air quality and natural light have drawn many to the area and create one of the great attributes of the city. In fact, Santa Fe's excellent air quality was recently rated as the best in the nation (American Lung Association, "State of the Air" rankings, 2012).

Air quality meets federal and state standards for monitored pollutants (Particulate Matter and Ozone). As long as the state and federal standards are met, authority for additional controls and plans rests with the Santa Fe city and county governments.

In the urban area, air quality degradation is caused primarily by emissions from motor vehicles and, to a lesser degree, commercial and industrial development. Dust from dirt roads and smoke from wood burning fireplaces also contribute to air pollution. The county land development code sets a basic requirement that allows the Board of County Commissioners to determine if a development involving a commercial or mining use should be required to limit increases in air pollution.

# Natural Setting & Environment

## Vegetation

The Santa Fe area has a great variety of plant life due to a significant variety of elevations. Elevations range from approximately 5700 to over 7700 feet in the city area and into the foothills. From 5700 to 7300 feet, piñon and juniper woodlands generally predominate. In the upper portion from about 6500 to 7300 feet, both juniper and piñon thrive along with limited amounts of oak brush. In the lower portions from 5700 and 6500 feet the tall tree line thins out and is mostly comprised of junipers. Gramma grass is primarily associated with this woodland vegetation.

The Santa Fe area rises gradually up to the foothills of the Sangre de Cristo Mountains and then steepens abruptly as it enters the mountain terrain. At this point, Tesuque Creek and the Santa Fe River cut into the mountains and it is here on the north facing slopes or those on the south side of a canyon, that the ponderosa pine predominates.

Above 7700 feet, south facing slopes contain ponderosa with some aspen trees. North facing slopes contain mixed conifers, particularly Douglas and White fir evergreens.

Typical plant species occurring in the area are blue and black gramma grasses, Indian ricegrass, galleta, dropseed, bush and ring mulhy, sacation, and broom snakeweed. Wildflowers present in the area include zinnia, globe mallow, bush pestemon, purple aster, butterfly weed, and chamisa, with species such as melilotus and solidago in the riparian zone. Shrubs include the four wing saltbush, and sagebrush, broom dalea, yucca, and cholla cactus.



Photo Credit: Maria Clokey, City of Santa Fe Multi Media



Photo Credit: Coyote by Yathin S Krishnappa (Own work) [CC BY-SA 3.0 (<http://creativecommons.org/licenses/by-sa/3.0/>)], via Wikimedia Commons

## Wildlife & Plants

Wildlife in the urban area includes species such as rabbit, coyote, whiptail lizard and bull snake. At least 357 species of vertebrate animals occur in the urban area: at least 48 species of reptiles and amphibians, 61 species of mammals, and 248 species of birds. Many of these species are migratory and are in the area only part of the year. Birds of prey including hawks, eagles, falcons, and owls receive special legal protection.

There are a number of endangered plants and animals in the Santa Fe area. The endangered plants include the Lady Tresses Orchid, the Rocky Mountain Lilly and the Santa Fe Cholla. The endangered animals include the Bald Eagle, the American Peregrine Falcon & the Whooping Crane.

Prairie Dogs are common in the Santa Fe area. In 2001, the City adopted a prairie dog re-location ordinance. Rather than killing these animals, the City and private land developers are required to trap prairie dogs and release them in locations away from urban development.

# Natural Setting & Environment

