



TOWN OF SILVER CITY

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Keeping the Water Flowing: What it Takes to Bring Water to Your Tap

By Lisa Jimenez

Water is vital to human life. Adult bodies average 60% water, and our brains are composed of 73% water. Without water, there is no food production. Simply put, without water we die. Yet daily we turn on our faucets and don't think twice about that precious, life-giving liquid flowing from the tap. This article is the first in a series by local freelance writer Lisa Jimenez, about town government and services. Today's focus: our municipal water supply.

On the surface, Silver City's water system seems as simple as turning on the faucet and watching the water flow. After all, the water just gets pumped from the ground and distributed to household and commercial taps, right? Yes and no. Yes, the system itself is fairly simple, but keeping a sufficient volume of potable water flowing smoothly through a vast, underground spiderweb-like distribution system is complex, requiring planning, maintenance and frequent monitoring.

The "Raw Water" Source

Though perhaps difficult to imagine today, Silver City was once covered by a vast sea. Later, volcanic activity formed the major drainage features, including the Mangus Trench, running northwest, and bisected by the Continental Divide. At the bottom lies the Mimbres and Gila/San Francisco water basins, collectively known as the Gila Aquifer, which supplies all of the local water to some 5,300 homes and 600 commercial accounts in Silver City. Additionally, water is pumped to local water associations which operate their own distribution systems: Arenas Valley, Pinos Altos, Tyrone (one is residential and the other dedicated to mining operations) and Rosedale, for a total of approximately 20,000 people served by Silver City water infrastructure.

There are a total of four wellfields including Franks – the oldest of the fields, drilled in 1945; Woodward, Anderson and the more recent, most productive Gabby Hayes wellfield, which pumps 1,200 gallons per minute. There are 15 total wells - eight of which are active - almost evenly divided on either side of the Continental Divide southwest of Silver City, ranging in depth from 550 feet to over 1,000 feet deep.

From these wells, this “raw water” is pumped into large storage tanks. Raw water is water that has not yet been pumped to booster tanks where it is disinfected with chlorine gas, then pumped to three water tanks near Chloride Flats, off Highway 180, and two tanks uphill from the cemetery off Cooper Street. Water from the Chloride tanks is gravity-fed to an intermediate tank on Swan Street, then pumped uphill to “W” Mountain, then on to Pinos Altos. Water from these tanks also flows to Arenas Valley. The two “cemetery” tanks supply water to the southern half of Silver City.

A computerized system known as SCADA allows for real-time monitoring of gallons pumped per minute, and the supply present in each of the town’s raw water and local water storage tanks. This system also monitors the level of chlorine in the water, and sends out an alarm if the chlorine disinfection system malfunctions, triggering an automatic pager which notifies utility maintenance staff. To ensure continuous, sufficient flow of high quality drinking water, well checks and maintenance are required daily. Motors are checked daily, vertical turbine pumps must be pulled and inspected on a regular basis, and water quality sampling and analysis occurs several times each month. Two utilities department staff are charged with daily monitoring of all of the towns wells, booster pumps and disinfection process. Four staff are responsible for maintenance of the more than 100 miles of water lines which ultimately connect to homes, schools and businesses.

Water Usage and Conservation

Silver City and environs currently use 740 million gallons of water each year, with June consistently the month of greatest demand. This June, 96 million gallons of water were pumped to Silver City water users. Usage drops off in July and August with the onset of Monsoon rains, when less outdoor watering is needed and cooler afternoon temperatures reduce the use of the ubiquitous “swamp” cooler.

Since 1995, the highest water production occurred in 2000, when more than 992 million gallons were pumped. According to a 2017 supplement to the Town’s 40-year water plan, groundwater diversions have grown from about 500 acre feet per year in the 1950’s to an average of about 2,400 acre feet per year since year 2010. Silver City is allowed to divert up to 4,567 acre feet per year, and has an additional permit for another 940 acre feet from a wellfield near the Grant County Airport, which is slated for development as part of Phase 1 of a regional water plan. The New Mexico Office of the State Engineer determines how many acre feet may be drawn.

Current projections show a municipal water supply capable of supplying water for the next 100 years, using the current growth rate of 0.5 percent annually, which has held for the past decade. However, other factors such as continued drought and climate change predictions for a hotter and drier climate over time will continue to pressure the Mimbres Basin, where water levels have dropped significantly - more than two million acre feet - since the early 1900s.

Town management has turned to conservation in an effort to extend the life of the aquifer. In 2010, Town Manager Alex Brown became concerned when the total water being pumped reached 60 percent of capacity. He realized that the easiest, most cost-effective method for reducing water demand was through water conservation.

“I realized that we had to do something,” he said. “New water infrastructure to increase capacity is expensive, and that only puts more pressure on the aquifer. Conservation is much more than a feel good activity. It’s a vitally important component for maintaining our water supply over time.”

A community input and planning process was initiated and a water conservation plan was adopted in 2013, updating a 1996 plan. Various conservation measures were recommended, several of which have been implemented, including the installation of “smart” irrigation at the Ben Altamirano sports fields in 2013, the highest water user at that time, gulping nearly 20 million gallons of water in 2012, more than 2 percent of total annual water usage. Smart irrigation has saved the town more than 24 acre-feet of water annually, according to town records. However, Silver Consolidated Schools reportedly no longer uses the smart irrigation system, and calls for information as to why that is were not returned.

Treated wastewater is now used to water the Scott Park Golf Course, saving an additional 460 acre feet per year. A recent hydrology study found that this effluent ultimately filters through the earth, helping to recharge the aquifer. As a result, the town applied to the state for recharge credits, which were approved, allowing for the development of the town’s water rights at the airport wellfield.



Unaccounted for water losses spurred installation of new “smart” water meters in 2016, resulting in faster, more accurate leak detection and measurement of total water usage, explained Robert Esqueda, Silver City Utilities Department director. “Not only does this help save water, but it also saves wear and tear on our pumping system,” he said. “We’re no longer paying to process water through the system, only for it to be lost to leakage. Now we can easily flag anything that is out of the normal range of usage, and so can the consumer. It also results in more accurate billing.”

Smart meters measure water usage every five minutes, and a graph of usage is easily printed for consumers who have questions when their water bill inexplicably increases, often due to a leak.

Manny Orosco, Silver City utilities foreman, Chris Haley and Johnny Baca, both water crewman, check a local water meter for leaks, using sonic-wave technology leak detection equipment purchased late last year as part of the town's water conservation efforts. To date, 1,259 fire hydrants, water valves and meters have been checked for leaks,

Smart meters are read much more quickly, freeing utility department staff to focus on leak detection, using sonic-wave technology leak detection equipment purchased late last year. To date, 1,259 hydrants, valves and meters have been tested, and 16 leaks discovered and repaired.

Accurate billing is key for consumers, given that water rates rise in accordance with overall usage. This tiered fee structure is designed to encourage household and commercial water conservation, said Brown, who is charged with the difficult responsibility of helping guide regional water planning and conservation efforts.

“We want to be fair to consumers, but we all need to be good stewards of the water system,” he said. “It’s important for everyone to do their part to help conserve as much water as possible. If we don’t, it will cost us all more over time.”

Fun Water Facts and Info:

- There are more than 100 miles of water distribution lines in Silver City
- Water users in Silver City and environs consume 740 million gallons annually
- Seven Utilities Department staff are dedicated specifically to the water system
- Fluoride is not added to Silver City drinking water, as it occurs naturally at optimal levels
- Though chlorine is used to disinfect the water supply and protect from cholera, typhoid and other water-borne illness, it is present at maximum amounts of 0.73 parts per million.

The Town of Silver City Utilities Department publishes an annual drinking water report, which provides consumers with water sample results for the presence of heavy metals, minerals, bacteria, nitrates and nitrites, radium and uranium, as well as chlorine levels. Reports are available at city hall, and at the Utilities Department, at the City Hall Annex. For more information, contact the Utilities Department at (575) 534-6365.

Reading your water bill:

- The account number appears top left; below is the address and the billing date appears at the top right
- Below the address is the service period, followed by the total number of days in that billing period
- The following two lines show the current meter reading and the previous reading for quick usage comparison
- Below current and previous readings follows the line-by-line breakdown of water, wastewater treatment and sewer charges; garbage collection and landfill charges and related taxes.

About the author: Lisa Jimenez is contracted by the Town of Silver City as a freelance writer.