

June 5, 2024

Subject: Memorandum on Water System and Existing Conditions

Mayor and Council,

Occasionally City residents will notice their water is not clear. This is the result of air entering into water lines. Typically, the air will quickly dissipate, and the water will become clear. Air does not contaminate the water. As a public water system, the city is required to submit water samples weekly to a third-party organization to test the water and ensure its safety as required by the Arizona Department of Environmental Quality.

The recent issues with air are the result of a combination of factors that include the depletion of water in Well 1, construction activities and valves being exercised in city limits, and air release valves throughout the city in need of replacement. Staff are fixing the existing air relief valves and identifying potential areas for additional air relief valves.

Depletion of Water in Well 1

In May 2024 well 1 began pumping air as the water level dropped below the well pump. Through analysis by consultants, staff believes the water drawdown is the result of a commercial well that is 400 ft away from well 1. The commercial well has been pumping large amounts of water that is transported for construction activities for the Sunzia energy transmission lines. Well 1 is estimated to be operational again the week of June 9. A timeline of events is provided below:

- Timeline:
 - May 6: staff investigates abnormal complaints of air in water and contacts Smyth Industries, the city's water engineer, for assistance.
 - May 7: The static water level is at 250.
 - May 8: residents near well 1 share that their wells have gone dry.
 - May 13: staff replaces air relief valves on the tank at well 1
 - May 17: problems persist and well 1 begins pumping only air. Well 1 is taken offline, leaving only well 2 for city water users.
 - May 17: staff contacts the Arizona Department of Water Resources (ADWR) to file a complaint and seek assistance with the neighboring commercial well. ADWR has since told staff they would be sending a notice to the parties involved to stop the transportation of water outside the Willcox Basin. (ADWR has the power to enforce a \$10,000 per day fine for transporting water outside the basin). Staff hires WW Services for assistance in fixing well 1.
 - May 20: WW Services pulls the pump for well 1 and identifies damage from pumping air. Longmire begins the video inspection. The static water level at 266.

- May 22: Staff contacts WIFA to seek funding assistance and begins applying for emergency and other funding sources.
- May 24: A special City Council meeting is held, and the Council approves staff to pursue emergency funds from WIFA and move forward with fixing well 1 at an estimated cost of \$300,000.
- May 30: Smyth Industries inspects the hydropneumatics tanks at well 1 and 2 to determine if replacement or recoating is needed. Well 1 tank is recommended for replacement.
- June 6: A special city council meeting is scheduled to determine whether to proceed in litigation for damages against SunZia, and other parties.
- June 12: Estimated date for well 1 to be operational.

Funding:

The city has identified three funding sources to address existing issues: 1) water utility reserve funds, 2) WIFA emergency and grant funds, and 3) litigation funds.

The water system operates as an enterprise fund. Fees and user rates can only be paid for operations and capital expenses. Within City limits are approximately 3,200 residents with an adjacent population of approximately 10,000 residents in Cochise County. With a declining population in the most recent census, the lowest median household income in Cochise County, and 23% of the population that falls below the poverty level keeping rates low is essential. Because most of the population lives outside of Willcox City limits, the City does not receive funding from population-based state-shared tax, online sales tax, and property tax from Cochise County residents.

The city understands that increased fees are difficult for users and seeks to safeguard residents' funds by keeping fees as low as possible while still maintaining quality services. The State of Arizona established WIFA to provide communities like Willcox with financial support and assistance. Staff has received funding from WIFA and is actively seeking additional emergency funds. WIFA also offers low-interest loans.

Future Plans:

Once well 1 is operational, staff will test well 2 and perform any necessary improvements. A SCADA system will be installed this year to monitor water levels and report on other critical information. The city will work towards identifying a new well location and will continue to seek funds to offset local user fees.

Overview of City Water System:

Before 1969, multiple wells existed throughout the community that provided water to different sections of Willcox. Some of these were owned by private individuals while some were maintained by the city.

In 1969 a well was drilled off Arizona Avenue. However, due to the amount of fluoride that existed in the water, a new well, well 3, was constructed near W Mountain because of the excellent water quality located in that area. Well 3 consisted of a gravity-fed tank, a 4-mile line extension to city limits, and two reducer valves near Fort Grant and Joe Hines and the other near well 3. The reducer valves were needed because the tank was placed at a higher elevation on W Mountain and the water flowed too quickly creating issues.

In 1979 well 2 was added to the water utility system. In 2007 well 1 was constructed as well as a new gravity-fed tank at lower elevation voiding the need for reducer valves. This was done by Martinez who now manages Smyth Industries (Mayor Mick Easthouse).

Currently, the existing Willcox Water system includes two operation wells (well 1 and well 2) that pump into an existing 1.5 MG reservoir that serves the water system by gravity. The system includes an additional well (well 3) that is not equipped to pump to the existing water system because of high levels of arsenic. Both Wells 1 and 2 were originally equipped to produce 1,200 gallons per minute (gpm) each and both have seen 40% losses in production since their original installations because of groundwater depletion and age.

A Supervisory Control and Data Acquisition (SCADA) system was installed in 2007 SCADA systems help manage and monitor water supply processes by collecting data from sensors and instruments in reservoirs, wells, and distribution networks. This data is transmitted to central control units where operators can oversee the entire system, make real-time adjustments, and ensure efficient water delivery. SCADA systems also automate many processes, reducing the need for manual work, and alert operators to any issues or anomalies that need attention. Staff is unsure when the system went offline but was recently successful in obtaining funding from Water SCADA

Common Questions:

- What is the current level of the static water of well 1?
 - The static water level at well 1 is 250 ft.
- How much water is the commercial well adjacent to the city transporting?
 - Based on current estimates, approximately 30 trucks with 5,000 gallons are begin filled each day to haul water on the transmission line. This accounts for 120,000 gallons each day or a 1/3 of what existing customers use.
- Can we drill the existing wells deeper?
 - No
- Why did the City install wells 4 miles outside of City limits?
 - The water quality was superior to the water inside of city limits.
- How much water does the City use in the Willcox basin?
 - Current estimates suggest the residents and businesses use .067%.
- How many Gallons Per Minute (GPM) does the community need?
 - Current peak demand is 750 GPM.
- With Well 1 down, how many GPM is Well 2 providing?
 - Well 2 provides 650 GPM
- Can the City use Well #3 and treat the arsenic?
 - The city can use Well #3 to treat the arsenic by diluting the water by blending it with water from other wells. However, this would require the outfit of new variable speed pumps to be able to adjust the Gallons Per Minute processed by each well. Currently, Well 3 is only pumping 80 GPM and needs a retrofit similar to Well 2. It may also require screening installed on the Well casing to help reduce the arsenic levels.

	Well #1	Well #2	Well #3
Year Drilled	1979	2007	1970
Well Depth	500 ft	730 ft	674 ft
Pump Depth	2005 – 227 ft 2023 – 266 ft	2007 – 206 ft 2023 – 350 ft	270 ft
Static Water Level	2005 – 179 ft 2024 – 250 ft	2007 – 155 ft 2023 – 224 ft 2024 – 230 ft	145 ft
Pump Age		3 years	18 years
GPM	450 GPM	650 GPM	2000 GPM
Bowl Age & Size		Size 10, 18 years	Size 10, 15 years
Motor Age	10 years	4 years	11 years
Casing Information	2009 Relined 6 in to 12 in	16 in	16 in