10. WATER

Like most Western cities, growth in Ivins depends on water availability. The low precipitation climate makes water one of the city's most critical natural resources. A central question in this desert setting will always be, "Is there enough water?"

Where Does Our Water Come From?

Ivins has two water systems. In the Kayenta area on the west side of Ivins, the private water system KWU serves residents and has 422 connections as of January 2024. The rest of Ivins receives water from the City, which serves 4,292 connections as of June 2024.

Ivins owns water rights and has developed sources that supply only 15% of the city's water needs. The remaining 85% is purchased from the Washington County Water Conservancy District (WCWCD) under a Regional Water Supply Agreement. This agreement includes major cities in Washington County, all of which rely entirely on WCWCD to support their future growth.

Here are the sources of water used in Ivins:

- Snow Canyon Wells: Ivins jointly owns these wells with St. George and Santa Clara. St. George operates them.
- Gunlock Wells: These wells are located near the Gunlock Reservoir. St George owns and operates them, and Ivins purchases the water.
- Regional Water Pipeline: Ivins receives water from the Virgin River through the treatment plant near Quail Creek Reservoir and wells near Sand Hollow Reservoir. Ivins buys this water from the WCWCD.

2023 Water Use
(2024+ for Black Desert's golf course)

Source	Acre-Feet	% Total
Snow Canyon wells	300	8.4%
Gunlock wells	434	12.1%
Regional Pipeline	1,263	35.2%
KWU	162	4.5%
Ivins Irrigation Co. (Ag use)	963	26.8%
Ivins Irrigation Co. (Residential)	17	0.5%
Black Desert golf course (2024+)	450	12.5%
TOTAL:	**3,589**	acre-feet

- Kayenta Water Users (KWU) receives water from the WCWCD. The current agreement between the District and KWU allows for up to 552 connections within the Kayenta development.
- Ivins Irrigation Company, a private irrigation company, provides irrigation water to agricultural properties and approximately 100 homes in Ivins.
- Ivins Irrigation Company has water rights for approximately 1,500-acre feet of water in the Santa Clara River. It is rare for the company to realize their full rights given limited supply and priority. In low water years, the company takes the first 500 acre-feet reduction in the water. All other water users share subsequent reductions. The City's reliable supply from its shares in the company is 51.8-acre feet per year.
- Black Desert Resort receives 450-acre feet of reuse and secondary water from St. George. Ivins provides culinary water for the portion of the development located within Ivins.

- Ivins holds shares in irrigation companies. That water is used for City parks. Ivins has more shares than it is using.
- The Ence Wells are owned and managed by the WCWCD. The wells were previously used as the primary potable water source for the KWU system but are now used as a backup supply. Though the water produced from the wells meets drinking water standards, it has elevated sulfate levels. Given these qualities, the wells may ultimately be used for secondary irrigation.

Ivins entered into the Regional Water Supply Agreement in 2006 with the WCWCD. In this agreement, the WCWCD agrees to provide adequate water to meet Ivins' needs. Part of the District's 20-year water supply plan is converting water from Gunlock Reservoir from an irrigation water supply to a culinary water supply. This would boost Ivins' water supplies significantly. This source west of Ivins gives the City an alternate source to the current regional pipeline, which is approaching capacity.

Where Does The Water Go?

Last year, Ivins used 166 gallons of water per capita per day. That is just under one-half acre-feet of water a year per household in the city. That is lower than the 0.59 acre-feet consumption standard set by WCWCD for one "Equivalent resident Connection" (ERC) and less than the 0.65 acre-feet per ERC availability we need to show the state that we have available. Using ERCs helps estimate how much water different uses have, from single-family homes to multifamily or commercial properties.

Water Users	Existing Units	Buildout Units	Existing ERCs	Buildout ERCs
Single-Family Housing Units	4,223	7,459	4,223	7,459
Multi-Family Housing Units	415	1,004	311	753
Total Housing Units	4,638	8,463	4,534	8,212
Vacant Lots for Single-Family Housing	465	-	-	-
Anasazi Valley SF Residences	-	500	-	500
Transient Units (Hotel, resort, STR, RV Park, etc.)	207	2,770	104	1,385
Golf Course (Black Desert Resort)	1	1	763	763
Agricultural land & property with water rights	n/a	-	88	-

	Existing Acres	Buildout Acres	Existing ERCs	Buildout ERCs
Institutional (Civic, School, Church)	122	200	385	700
Commercial	394	500	755	1,650
Parks and Open Space (acres)	926	961	132	260
TOTAL ERCs			**6,760**	**13,470**
Acre-feet per ERC			**0.485**	**0.437**
Acre-feet			**3,279**	**5,880**

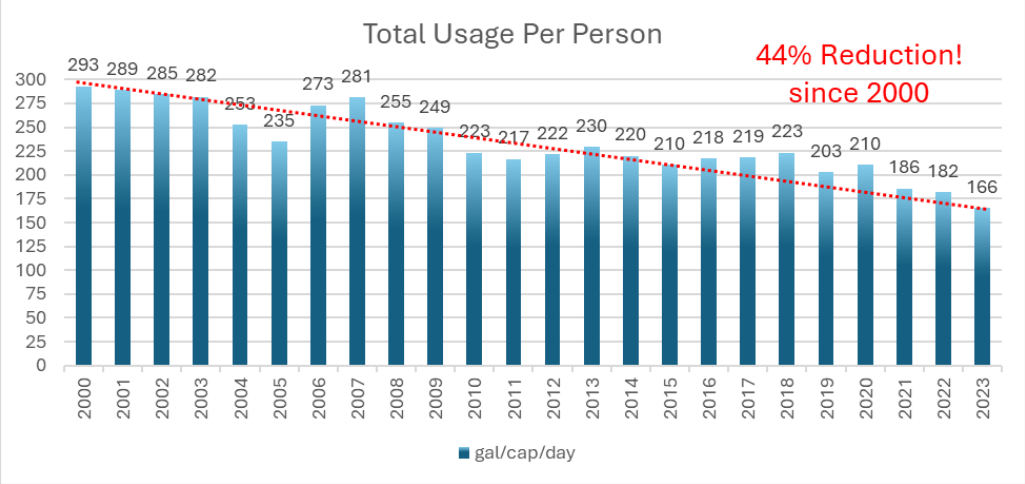
All water users in Ivins currently consume almost 3,300 acre-feet of water a year. When the City is built out, most likely sometime after 2040 or 2050, we will use nearly 6,000 acre-feet of water annually. That assumes we lower consumption by 10%, which is our conservation goal. It also assumes the City annexes the Anasazi Valley.

The City is not responsible for delivering all that water. KWU, Ivins Irrigation Company, and Black Desert's golf course rely on their own sources. That currently totals approximately 1,600 acre-feet a year.

Water Conservation

Water conservation is essential for cities that foresee growth with a limited water supply. According to the Washington County Water Conservancy District (WCWCD), the county will need aggressive conservation to ensure water supplies, even with large-scale regional reuse water development.

In 2000, the state established a goal of a 25% per capita reduction in water use by 2025. Ivins has reduced water usage by 44% since 2000. The 2023 Ivins City Water Conservation Plan has a goal to reduce per capita water use by another 10% over the next 10 years.



Conservation measures can most effectively be applied to outdoor irrigation. High-water-use landscaping on a lot as small as 10,000 square feet (1/4 acre) can result in outdoor water use exceeding indoor water use. Low-water-use desert landscaping can significantly reduce outdoor water use. Ivins encourages desert landscaping (Xeriscaping) and other conservation measures to reduce water use.

Water Conservation and Development Policies:

1. Conserve through efficient desert landscaping and other applicable technologies, including recycled water management.
2. Promote the development of new water resources.
3. Study, evaluate and develop a reliable secondary water system.
4. Develop a fair and equitable comprehensive water conservation program in conjunction with the Washington County Water Conservancy District.

5. Install water-efficient fixtures in all new construction.
6. Replace non-efficient fixtures with water-efficient fixtures in existing structures.
7. Require new development to adopt water conservation standards and water-efficient landscaping.
8. Develop, adopt and enforce residential irrigation standards on all new construction.
9. Respond rapidly, taking corrective action and instituting recurrence control on all water system leaks.
10. Periodically publish the status of city water consumption with comments and recommendations for conservation.
11. Continue to use water rate structures that reinforce low water usage.
12. Continue enforcement of Ivins city code sections that define misuse and appropriate t penalties for water waste.
13. Promote the use of new conservation technologies.
14. Use water-conserving measures for City facilities, including:
    a. Desert landscape design.
    b. Reduction in turf grass areas requiring irrigation-installation of water-saving plumbing fixtures.
    c. Use of secondary water for major irrigated areas.
    d. Use irrigation control systems that are responsive to weather conditions to reduce water runoff.
    e. Continued maintenance of delivery systems for efficient use and application.

Water Reuse, Irrigation, & Culinary Conversion

Ivins plans a secondary water system for outdoor irrigation. St. George has expanded its wastewater treatment plant to increase its output of reuse water, and there is a pipeline from the wastewater treatment plant to the Ivins Reservoir so reuse water can be delivered to Ivins.

Since the early 2000s, new construction has installed secondary water lines for potential outdoor irrigation using reuse water. However, Ivins has to connect all these homes and subdivisions so they can access the reuse water. The City's 5-Year Capital Plan has allocated $9.8 million for the initial phases of this project, and if sufficient, all the funding would come from impact fees.

However, WCWCD may build a water treatment plant somewhere between Ivins and Gunlock that would increase culinary water supplies. This could result in a different approach to using reuse water, eliminating the need to connect every home to the reuse system. Instead, WCWCD could exchange the reuse water for water from Gunlock that is now used chiefly for agricultural irrigation.

Reuse Water Storage

WCWCDs 20-year plan shows that a significant increase in reuse water is needed county-wide to accommodate expected population growth. Reuse water can be produced daily, but since it would be used for outdoor irrigation, it will be used mainly during the summer. WCWCD plans to build reservoirs

to store reuse water between fall and spring. One reservoir is planned for Ivins (Dry Wash Reservoir), and another in Santa Clara by the Ivins border (Graveyard Wash Reservoir).

Storm Watercourses

Along with almost 40 miles of storm drainpipe, three primary washes, Coyote Wash, Kayenta Wash, and Tuacahn Wash, move stormwater through the City to the Santa Clara River. Plus, just over a mile of 400 East, between Center Street and 800 South, has been designated as a flood street in the storm drain system. The flood street has a V-shaped roadway that slopes water to the middle of the street. That way, flows exceeding the storm drain capacity have a controlled flow in the roadway to the end of the street, where inlets enter the trunkline system.

In addition to the storm drain system, 10 miles of open channels move stormwater from mountain watersheds to the Santa Clara River. They also act as an outlet for several storm drainpipes. Ivins has more than 50 detention facilities in the storm drain system. Their purpose is to attenuate peak stormwater discharges. Many of the detention facilities serve the dual purpose of a recreational park.

Stormwater courses are a significant feature of Ivins and are critical in ensuring that flooding is minimized, and excess runoff reaches the Santa Clara River. Beginning in the late 1970s, dams were constructed at the base of Red Mountain to convey floodwater around Ivins to Dry Wash and Padre Canyon Wash, with floodwater ultimately entering the Santa Clara River.

In 2010, curbs and gutters were installed in the historic town center area, eliminating some of the storm problems the city was experiencing. 2012 Ivins constructed a major detention and debris basin in the Padre Canyon (Tuacahn) Wash to reduce flooding problems. Then, in 2016, two major detention and debris basins were installed in the Kayenta area. The original dams around the Red Mountain went under major rehabilitation to improve outlets and spillways.

Major storm watercourse areas subject to a 100-year flood are mapped by the Federal Emergency Management Agency. Ivins also has a flood prevention ordinance that manages the development policy in the floodplain.

Wastewater

Ivins owns, operates, and maintains the sewer collection system within the city. This collection system transmits the wastewater into St. George sewer trunk lines. St. George then treats this water at its wastewater treatment plant near the Virgin River. St. George is expanding the treatment processes to generate suitable reuse water that may become available to Ivins City.

Water Financing Strategy & Philosophy

Ivins has some of the most aggressive water conservation rates in the County. This is partly because the City has very few of its own water rights and purchases most of its water from the City of St George and the WCWCD. As a result, Ivins has higher source water supply expenses than other communities. The high cost of water may be one of the reasons that Ivins City has some of the lowest water usage.

In addition to passing through the basic water cost to residential and commercial users in Ivins, the City adds charges for operating costs and future capital replacement costs. These additional charges are held in a dedicated "Enterprise Fund" that can only be used for those two purposes. To ensure that the resulting cost is equitable for its users, the City has a rate study prepared by an outside consultant done every few years.

Water Quality

The City's goal is to provide our residents with a safe and dependable drinking water supply. The water is tested regularly to ensure that it meets all safe drinking water standards. The City submits an annual report to residents with the testing results completed by Ivins and its water source suppliers.

All sources of drinking water are subject to potential contamination by contaminants that are naturally occurring or manmade. The presence of contaminants does not necessarily indicate that the water poses a health risk. The City's annual study consistently shows that all contaminants tested for are well below acceptable minimums if the contaminants are even present in our water.

Supporting City Documents

See the Reports & Studies page on the City's website for the most current version of these reports:

- Water Conservation Plan (2023)
- Sanitary Sewer Management Plan (2016)
- Sewer Master Plan (2016)
- Sewer Impact Fee Facilities Plan (2017)
- Sewer Impact Fee Analysis (2017)
- Stormwater Management Plan (2021)
- Water Quality Report (2023)
- Culinary Water Master Plan (2019)

Obstacles

- Universal compliance with the terms of the WCWCD 20-year plan County-wide.
- Difficulties in accurately determining the impact of climate change and drought.
- Environmental law and both Federal and State requirements that must be met to develop water resources. The cost of water development, storage, and distribution.

Goal

Provide clean, safe, affordable drinking water and wastewater services to everyone in the community and maintain a system that is resilient in the face of floods, drought, and other climate risks.

Action Plan

- Evaluate water availability when making zoning or land use changes.
- Replace existing water meters with Advanced Metering Infrastructure (AMI) metering systems.
- Educate residents and promote the use of AMI monitoring to identify leaks and other system losses quickly.

- Implement Transparent Water Billing that educates residents on their household water use.
- Develop, adopt and enforce city residential irrigation standards for all new construction.
- Continue to analyze the city's water delivery systems to identify and repair leaks.
- Identify and promote alternative types of low-water-use turf grasses where turf is permitted.
- Continue to promote WCWCD conservation programs, including decorative turf replacement.

Water Policies

- Periodically update the master plans, facility plans, and rate studies for culinary water, secondary water, sewer, and storm drains to ensure the system can meet the City's goals.
- Periodically review the Ivins Water Conservation ordinance to assess if the existing requirements are appropriate and if there are other strategies the City could incorporate.
- Evaluate and consider combining the KWU water system with the city's culinary water system.
- Users of large volumes of water for landscaping and other exterior purposes shall be encouraged to use secondary and irrigation water rather than culinary water.
- Discourage any development within known 100-year storm watercourses or flood-prone areas. The exception is development compatible with periodic flooding, which will permit the free passage of flood waters and does not involve habitable buildings or result in significant property damage.
- Continue to enforce and refine, when necessary, current watercourse protection, conveyance, and management of stormwater regulations.
- Seek to minimize flooding risk by:
    - Preparing a plan for regional detention structures to prevent increased peak storm flows arising from property development.
    - Increasing detention in stormwater systems to decrease peak flow.
    - Protecting and expanding natural floodable areas and locating appropriate uses, such as parks in these areas.
    - Discourage the channelization of streams and encourage the preservation of natural watercourses.
    - Prevent the development of habitable structures within a storm watercourse.
- Recognize stormwater runoff as a resource and a potential water source for other uses.
- Implement the following drainage policies:
    - Minimize the increase in flow rate from developing properties unless downstream facilities exist to accommodate the increased flow rates.
    - Maintain the flow of storm runoff within its usual drainage basin and path as much as possible.
    - Discourage the use of retention basins by providing adequate detention areas.
    - Encourage the design of drainage facilities that adequately handle storm runoff. Minimize flooding nuisance in 10-year flood events with the goal of keeping all roads open and deliverable.

    - Design all city underground conveyance systems for a 25-year flood event.
    - Protect life and property in a 100-year flood event by conveying stormwater using the combination of pipelines, channels, and roadways and planning regional detention facilities to ensure that these facilities are not overwhelmed.
    - Control peak flow discharges from the Ivins City boundary into other areas so that development in Ivins does not negatively affect other jurisdictions.
- To operate a functional city-wide irrigation system, the city will study and evaluate a reliable secondary system.
- Work with Ivins Irrigation Company to determine if there are any opportunities to combine the city's secondary water delivery system with the existing irrigation system. Also, discuss combining water storage.
- Identify whether the Ence Wells could be used as a water source for the system.
- The permitted capacity of the treatment facility shall not be exceeded.
- Enforce State laws and local ordinances requiring sewer connection.