The City of Davis historically relied on groundwater for 100% of our water supply. In June 2016, Davis began adding treated surface water from the Sacramento River to our water system.

**Regional Water Treatment (WDCWA)**

Surface water is treated at the Woodland-Davis Regional Water Treatment Facility. The City of Davis’ allotment is 10.2 million gallons per day.

In 2018, approximately 80% of the city’s water was surface water with the remainder primarily coming from the city’s deep wells. The monthly average of surface water ranged from 68% (summer months) to 95% (winter months).

**City Water Infrastructure**

The City currently has 5 deep aquifer wells and 4 intermediate wells in operation. The intermediate wells are typically only operated to ensure they are exercised properly and as required for water quality testing. In 2015, prior to the introduction of surface water, the city had 20 wells, 15 intermediate wells and 5 deep aquifer wells. The changes to the city’s water infrastructure are illustrated in the maps on the next page.

**What is WDWCA?**

WDCWA, the Woodland-Davis Clean Water Agency, is a joint powers authority responsible for managing the delivery of treated surface water from the Sacramento River for the cities of Woodland and Davis, and to UC Davis. Up until the introduction of surface water in 2016, both Davis and Woodland relied on groundwater for their water supply, and for decades this water delivery was adequate to meet the needs of each community. With a decline in groundwater quality, increasingly strict water quality regulations, and in keeping with the goals to build and maintain a resilient and sustainable water system, the cities partnered together to develop the supply from the Sacramento River. The regional surface water treatment plant, located south of Woodland, was completed in 2016.

**How much water is provided through our water rights permits?**

WDCWA’s water right permit authorizes it to utilize up to 45,000 acre feet of water per year. However, diversions will be limited during summer months and other dry periods. During these times, WDCWA will utilize up to 10,000 acre feet of water under a senior water right purchased from the Conaway Preservation Group. The water treatment facility can supply up to 30 million gallons of water per day. Of the 30 million gallons, Davis' share is 10.2 million gallons per day.
Excessive Housing Cost Burden:

SHASTA POINT RETIREMENT COMMUNITY

Water System Schematic (prior to surface water)

2019 Water System Schematic

City of Davis Distribution System
Mission
The mission of the water division is to operate and maintain the water production, transmission, and distribution infrastructure in order to deliver clean, reliable potable water for use by Davis citizens, and non-potable water for irrigation purposes.

The Water Division is housed in the Public Works – Utilities & Operations Department and has one division manager. The division employees are divided into three water crews:

- **Production** (3 team members)
- **Distribution** (6 team members)
- **Programs** (4 team members)

A water quality coordinator and a water conservation coordinator also assist the division.
Water Team Tasks

Production Crew
- Operates the water system and maintains pressure
- Monitors the City’s SCADA (Supervisory Control And Data Acquisition) system
- Operates 3 water storage tanks and 9 groundwater wells
- Coordinates deliveries of surface water from the Regional Water Plant in Woodland
- Checks chlorine residuals at well sites
- Operates the North Davis Meadows (NDM) system

Distribution Crew
- Maintains 191 miles of distribution and transmission mains
- Replaces hydrants, valves, and service lines
- Repairs main breaks
- Conducts valve exercising and flushing operations
- Support team for the other Water divisions
- Also maintains infrastructure at NDM

Programs Crew
- Monitors Aclara (the City’s meter database)
- Performs water meter reads, testing, and water meter and reader maintenance
- Performs backflow testing
- Conducts continuous use checks for single-family residences
- Conducts Underground Service Alert (USA) marking requests for the water, wastewater, and stormwater infrastructure
Water delivered by the Regional Water Plant and treated water from the City’s wells is potable water, and is also called ‘drinking water.’ As befits such a widely-consumed resource (everything from drinking, to gardening, washing, filling pools, etc.) there are a number of state-regulated tests on water quality that the City conducts. Since the inclusion of surface water into the City’s system, the quality of the drinking water has significantly changed. Surface water contains very few metals and is much softer than local groundwater.

The table above is a comparison of selected constituents to see how the quality of water has changed from 2015 (solely groundwater) to 2018 (current water supply of both surface water and groundwater).

### Annual Water Quality Report

Released every year in the spring, and required by the US Environmental Protection Agency and the California Water Resources Control Board.

CityofDavis.org/WaterQuality
Water Quality Regulations

The City is required to monitor its source water and treated drinking water for Title 22 compliance, as mandated by the California Code of Regulations. The City operates its water system under Permit 01-09-17-PER-006 and must follow the requirements of the permit to ensure delivery of safe drinking water.

The City is required to sample certain constituents weekly, quarterly, and/or annually to ensure safe drinking water is delivered. These results are reported to the State by the 10th of the following month. One full time employee, the City’s Water Quality Coordinator is responsible for the water quality programs.

Water Quality Testing

The City collects samples on a weekly, monthly, quarterly, and annual basis depending on the constituent and sampling program.

Typically, the City collects:

- 20 distribution system bacteriological samples weekly
- 4 distribution system monitoring samples monthly
- 22 groundwater well samples and 44 disinfection by-products quarterly
- 132 groundwater well samples and 4 distribution system asbestos samples annually
- 30 residential Lead and Copper Rule samples annually

The City collects samples beyond what is required by State and Federal drinking water standards in order to better understand the quality of water being delivered.

Water Quality Inquires and Concerns

The City receives and responds to various water quality questions and concerns, ranging from discolored water or changes in the taste and odor of their drinking water to general questions regarding water hardness and water testing results. Each question and complaint is address on an individual basis, and may include discussion over the phone or a field investigation to determine the cause.
Water Meter Upgrade Project

The City’s Water Meter Upgrade Project was a step toward a more modernized water metering system. The project allows the community to better manage our water resources. The Project was completed in spring of 2019.

The project involved exchanging all of the existing meters in the city, which had reached the end of their useful life, with new meters with Advanced Metering Infrastructure (AMI).

AMI allows for hourly water usage information to be transmitted over a secure network approximately four times per day. Customers registered in AquaHawk are able to view hourly water usage and set and receive usage alerts. This gives them the ability to find unusual or high usage prior to receiving their utility bill (which is two months after use).

AquaHawk

Along with the new water meters the City has a new online customer water use portal called AquaHawk. AquaHawk was launched in September 2018 and as of August 2019 there were over 3,600 registered users. This portal replaced the monthly water usage available from WaterSmart.

AquaHawk provides water customers:

- Access to their hourly water usage.
- The ability to spot and stop potential leaks.
- The potential to save money by knowing daily and hourly water use.

The ability to set usage alerts is one of the primary benefits of the water use portal, allowing for users to spot and repair leaks as quickly as possible.
Benefits and Challenges of Volumetric Rates

While volumetric rates are often an incentive for conservation (given that the less water you use, the less money you pay), rate structures that are driven largely by usage often include a level of uncertainty with revenue, as no forecast of use will perfectly match reality, and conditions such as drought and associated enforcement in water use restrictions will impact a utility with volumetric rates more heavily.

Current Rate Structure

The City’s current rate structure is a variable/fixed rate structure where the majority of revenue is generated by the volumetric rate instead of the fixed rate or service charge.

Water Utility Billing

Water rates on the utility bill consist of:
- Water base rate (based on meter size)
- Consumption charge (based on monthly water consumption)

Water usage is billed two months after use (i.e. January water usage will show up on the March city utility bill)

Water rates cover the cost of: operations and maintenance based on industry best practices; rate stabilization; capital repair and replacement costs; major capital improvement project costs; an adequate reserve fund; required debt coverage; and necessary studies to maintain an efficient and resilient utility.

Seasonal Water Use Trends

Summer water usage in the greater Sacramento area is typically 60% higher than winter water usage due primarily to the hot, dry weather and the need for irrigation. Water from the city’s deep water wells is used in the summer months to supplement surface water deliveries.
In California, water conservation and water use efficiency are a way of life. The City is responsible for providing outreach and education (in the form of flyers and handouts, workshops, public meetings and more) to encourage citizens to use water efficiently and adhere to use regulations during periods of drought.

One full time employee, the City's Conservation Coordinator for water use efficiency (and water conservation) is responsible for the water use efficiency programs.

Conservation Updates

- When comparing water production to the State baseline year of 2013, the city's annual production was 19.7% less in 2017 than 2013, and 17.4% less in 2018 than in 2013. Between 2017 and 2018, water production increased by a little over 2.5%, however production so far in 2019 has decreased from 2018.

- The City is on target to surpass our 20% by 2020 goal required under Senate Bill x7-7. The state target for the City of Davis is 172 gpcd (gallons per capita per day). For 2018, the City gpcd was 130.

- Long-term water use efficiency regulations were released by the state in Spring 2018.

- Weather patterns may change with dry and wet years but the City is committed to looking at long-term efficiency.

New Water Use Efficiency Standards

Senate bill 606 and Assembly bill 1668 call for creation of new urban water use efficiency standards for indoor use, outdoor use and water lost to leaks.

The State Water Board will adopt these standards by regulation no later than June 30, 2022.

Each urban retail water agency will annually, beginning November 2023, calculate and report its water use objective.

INSIDE + OUTSIDE + WATER LOSS

55 GALLONS PER PERSON PER DAY TIMES POPULATION SERVED

TARGET TBD BASED ON LOCAL CLIMATE & AMOUNT OF LANDSCAPED AREA

TARGET TBD FOR WATER LOSS FROM LEAKS IN OUR SYSTEM
Water Loss Audits

Water loss control represents the efforts of water utilities to provide accountability in their operation by reliably auditing their water supplies and implementing controls to minimize system losses. Utilities have both real losses (from pipeline leakage) and apparent losses (when customer water consumption is not properly measured or billed).

Water loss control includes efforts to manage leakage to economically low levels, and reducing metering and billing errors to make sure that reliable measures of customer use are obtained.

Senate Bill 555 requires that water loss audits be submitted annually to the state on October 1 of each year. The first water loss audit submitted was in 2017. The City of Davis submits the water loss audit based on the fiscal year. The water loss audits are compiled by a team of city staff including representatives from the water, finance, and environmental resources divisions. The audits require validation from a certified water loss audit validator prior to submission.

State-Wide Water Loss Performance Standards

The State Water Resources Control Board is required to develop performance standards for water loss by July 2020 for all Urban Retail Water Suppliers. The State Water Board is required to consider life-cycle cost accounting when developing water loss performance standards.

The goal of the water loss audits is to reduce water loss within distribution systems to an economically recoverable level as shown in the graphic below.
Planning for a Resilient Utility

• Annual water shortage assessment report—required for California water utilities beginning in 2022.
• Emergency Response Plan for water distribution system—required for California water utilities (an updated risk assessment will be completed by 2020).
• Integrated Water Resources Study (IWRS)—to identity potential water resource options available to the City and their associated costs. This plan is voluntary, and the City will conduct a study update in the coming years.
• Sustainable Groundwater Management Act (SGMA)—the City is a member of the Yolo Subbasin Groundwater Agency, and more information is below.
• Climate Action and Adaptation Plan (CAAP)—will include tasks associated with all of the City’s utilities.

Climate Change Incorporated Into Local and Regional Plans

• A discussion on climate change in the broader region, including all of Yolo County, is included in the Westside Sacramento Integrated Regional Water Management Plan (IRWMP).
• Climate change is briefly discussed in the 2015 Urban Water Management Plan (UWMP) and it is anticipated that an expanded discussion will be required in the 2021 UWMP.
• Upcoming water use efficiency regulations are being set in part to address periods of drought and the changing climate in order to prepare for more frequent and persistent periods of limited water supply.
• Sustainable Groundwater Management Act and development of Groundwater Sustainability Plans to address water resources and climate change.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) requires groundwater management in priority groundwater basins, the formation of Groundwater Sustainability Agencies (GSAs) and Groundwater Sustainability Plans (GSPs).

The Basin prioritization has ranked the Yolo Subbasin (5-21.67) as a high priority. The City of Davis actively participates in the Yolo Subbasin Groundwater Agency (YSGA).

WDCWA Resiliency Planning

With 80% of the city’s water supply being surface water, resiliency planning by WDCWA is of high importance.

To plan for water resiliency, WDCWA agency staff:
• Participated in the Environmental Protection Agency (EPA) Climate Resilience Evaluation and Awareness Tool (CREAT) for water utility resiliency planning.
• Are undertaking a water portfolio risk assessment (primarily focused on water rights and water availability).

https://www.wdcwa.com
Urban Water Management Plan

Every five years all urban retail water agencies with over 3,000 connections are required to submit an updated Urban Water Management Plan (UWMP) to the Department of Water Resources (DWR).

Within UWMPs suppliers must:
- Assess the reliability of water sources over a 20-year planning time frame.
- Describe demand management measures and water shortage contingency plans.
- Report progress toward meeting water use efficiency targets.
- Discuss the use and planned use of recycled water.

Integrated Water Resources Study

The purpose of the Integrated Water Resources Study is to identify potential water resource options available to the City and their associated costs. The last study was completed in 2013.

The study includes options to reduce potable water use or augment existing potable water supplies. Sources being looked into include:
- Recycled water
- Surface water
- Groundwater
- Irrigation only non-potable (non-drinking) water

Future Studies

The City is actively looking forward with respect to sustainable water supplies. During the formation and planning for Woodland Davis Clean Water Agency, a preliminary environmental review was completed to allow the City to use ASR (the injection of treated surface water into an underground aquifer for the purposes of storage) as an option to provide sustainable water supplies. An upcoming feasibility study will help develop this option further by determining if ASR is a suitable option to expand the City’s potable water portfolio, and provide the potential to augment existing water storage capabilities to enable the City to more fully use its’ existing surface water rights.

Additional upcoming studies will look at all sources of potential water supply and provide a basis for future prioritization and determinations of capital improvement projects to provide a sustainable and safe water portfolio for the City.