

WATER CONSERVATION PLAN SOUTH DAVIS WATER DISTRICT

November 3, 2020



**Prepared by Jake Ferguson
General Manager
South Davis Water District**

WATER CONSERVATION PLAN SOUTH DAVIS WATER DISTRICT

LAST UPDATED 6/19/2020

System Profile

The South Davis Water District provides both culinary water and pressurized irrigation water to a population of around 9,500 in Davis County. The District's customers are categorized as Residential, Commercial, Wholesale, and Institutional. Below is a table showing the breakdown of these different categories along with the number of connections for each.

Category	Culinary	Irrigation
Residential	2,462	1,944
Institutional	21	25
Commercial	83	73
Wholesale	1	1

Supply

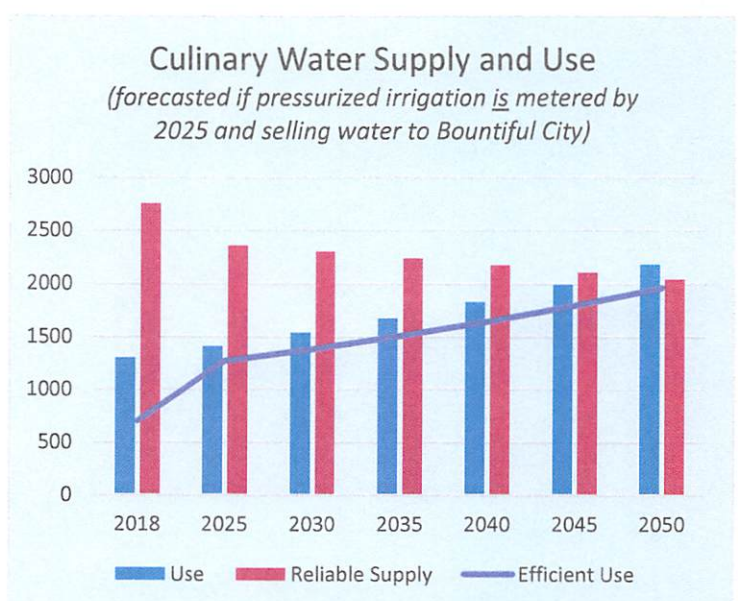
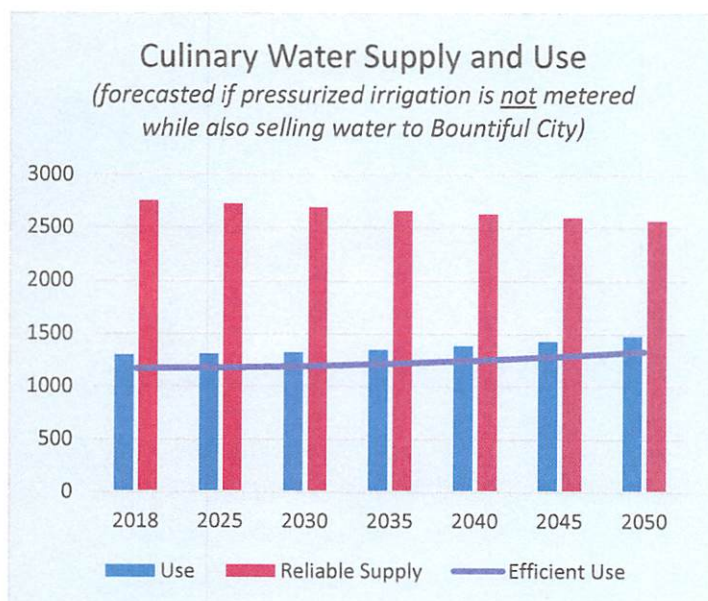
The South Davis Water District provides culinary water from sources that are owned by the District as well as water that is purchased from a water wholesaler. The sources that are owned by the District are comprised of wells, and springs. The water that is purchased from the wholesaler is treated surface water. Below is a table that breaks down the number of sources comprising the District's culinary water supply.

Culinary Water Source Type	Number of Sources
Wells	6
Springs	1
Treated Surface Water	1

The irrigation water that the District provides is purchased from a wholesaler. This water is supplemented by District owned sources. Irrigation sources are enumerated in the following table.

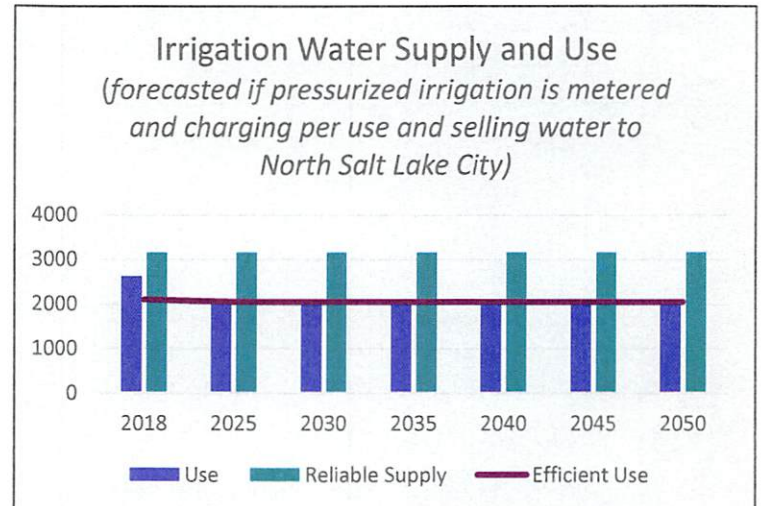
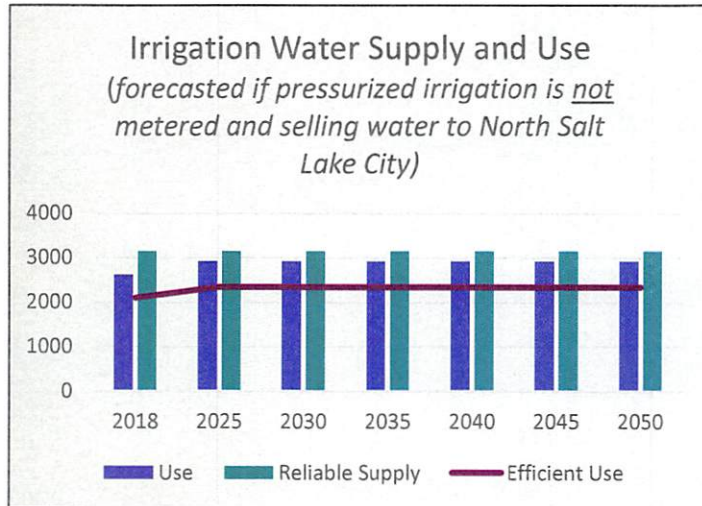
Irrigation Water Source Type	Number of Sources
Untreated Surface Water	1
Creek	1
Springs	3

Below are two charts showing the Districts forecasted culinary water use; the forecasted supply, along with efficient use. The chart on the left forecasts use if the District continues to not meter it's irrigation water. The District had a study performed that shows that the groundwater levels are correlated with the amount of water that residents put on their yards. In other words, unmetered irrigation water helps to recharge the aquifer that the District pulls water from for culinary use. The chart on the rights shows the forecast if the District was to meter irrigation water. The amount of underground water available would reduce dramatically while consumption of culinary water would increase dramatically, because the cost to meter irrigation would be so high that residents would be paying the same or more for irrigation water. Many residents would prefer to use the clean culinary water. It is also forecast that Bountiful City's need for more culinary water would increase substantially if Bountiful Irrigation was to meter its irrigation water. However, we forecast that through efficient water use we would still have enough supply even if we were to meter our irrigation water.



The District is not allowing any metered or unmetered irrigation water connections. Therefore, we do not foresee much of a change in the consumption of irrigation in the future. This of course depends on whether or not the District is forced to, or decides to meter irrigation. In 2025, we foresee North Salt Lake City using their maximum allotted amount of irrigation water as well. Below are two charts showing the District's forecasted irrigation use, reliable supply,

and efficient use. Note that the difference in efficient use, whether metering or not, would be only around 300 acre feet per year.



Water Measurement

The District meters all of the culinary sources that it owns on a daily basis. The Weber Basin connection, where the District receives its treated surface water, is read monthly by Weber Basin. The District has been trying to get Weber Basin to put in a radio read that can be read on a daily basis, but has been unsuccessful. All customer connections using culinary water are metered and read on a bi-monthly basis.

The District calibrates its production meters annually. Old meters are replaced when necessary to maintain accuracy. Old customer meters are routinely replaced. The District has replaced hundreds of old meters over the past several years. The District also performs testing on a statistically significant number of meters every year. We have determined that we are capturing about 88% of our water use. We know that we need to replace meters on some of our large apartment complexes as well as many more residential and commercial connections.

The District's irrigation water received from Weber Basin is metered at the turnouts. Weber Basin calibrates these on an annual basis. The North Canyon Creek turnout and the three springs are measured via weirs.

Billing

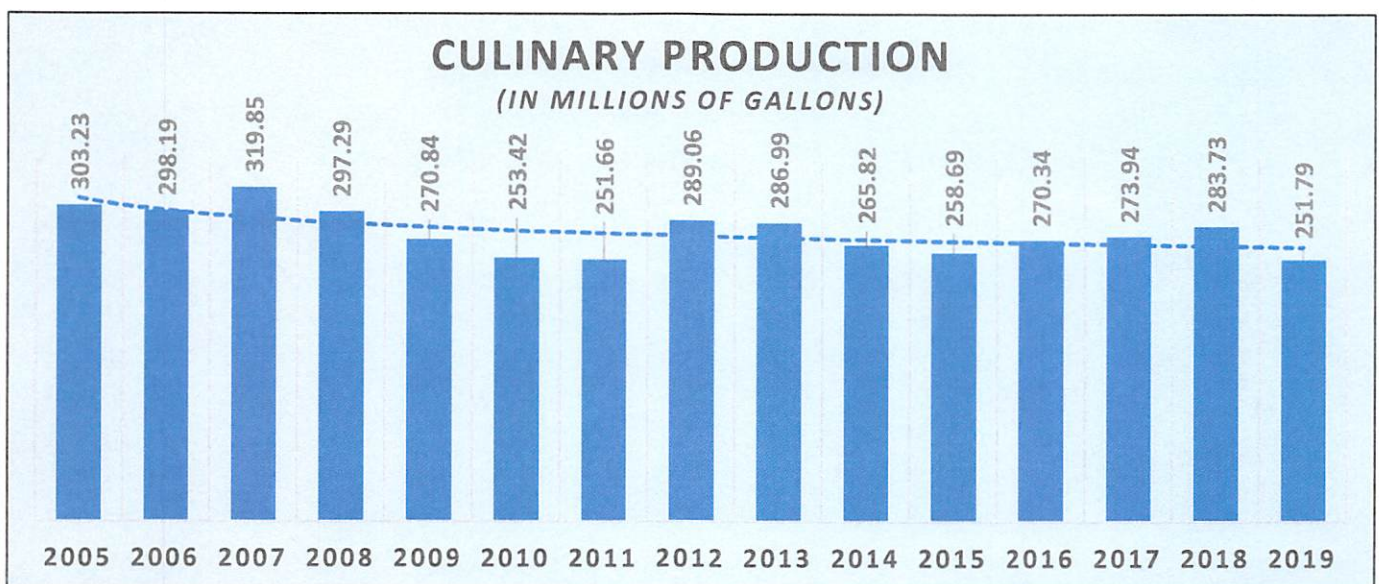
As mentioned above, the District has a tiered block rate structure for its culinary water.

CULINARY WATER MINIMUM PER TWO MONTHS	\$42.00
MINIMUM NUMBER OF GALLONS PER TWO MONTHS	10,000
OVERAGE COST PER 1,000 GALLONS	
10,001 GALLONS - 20,000 GALLONS	\$1.40
20,001 GALLONS - 30,000 GALLONS	\$2.40
30,001 GALLONS - 40,000 GALLONS	\$3.40
40,001 GALLONS - INFINITE GALLONS	\$4.40

One thing that has been discussed by the Board of Trustees is the reading of meters on a monthly basis. We believe that this would help the District conserve water by giving residents a quicker look at their consumption. Residents would be able to react to service line breaks sooner. Residents would also have more incentive to conserve because the 1st tier would be halved. Instead of having 10,000 gallons to use every 2 months, residents would have 5,000 gallons per month to use before incurring a higher overage rate per 1,000 gallons.

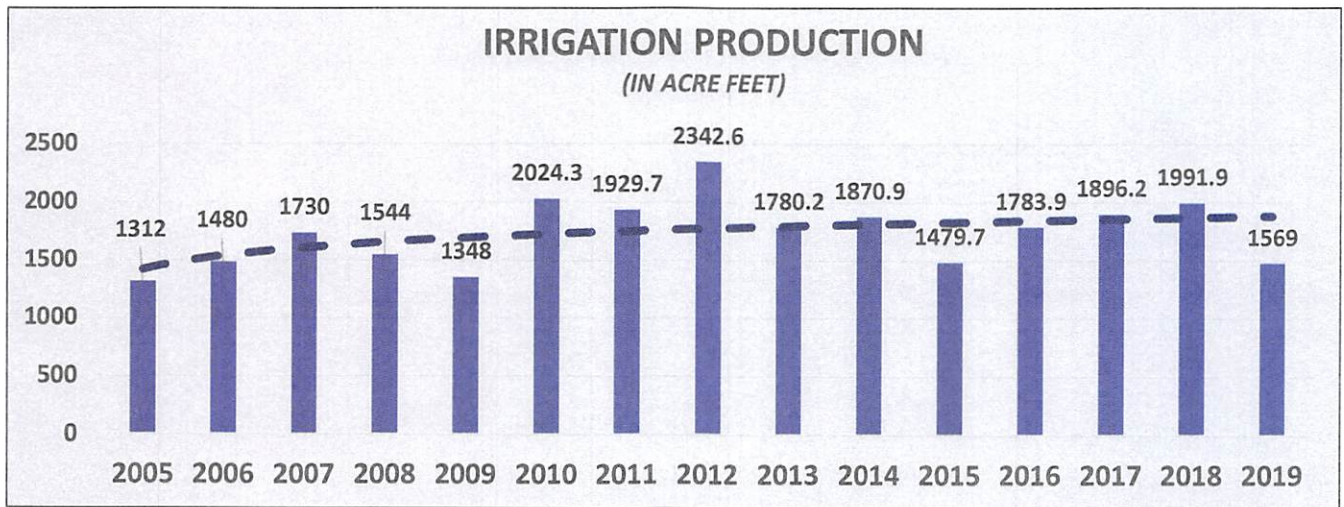
Water Use

The District's culinary water production has trended down since 2005. This downward trend has occurred in the face of new development and District expansion. Below is a chart showing this downward trend. We have removed water sold to Bountiful City in 2018 in order to show more accurately water produced for the District alone. In 2018 Bountiful City's treatment plant

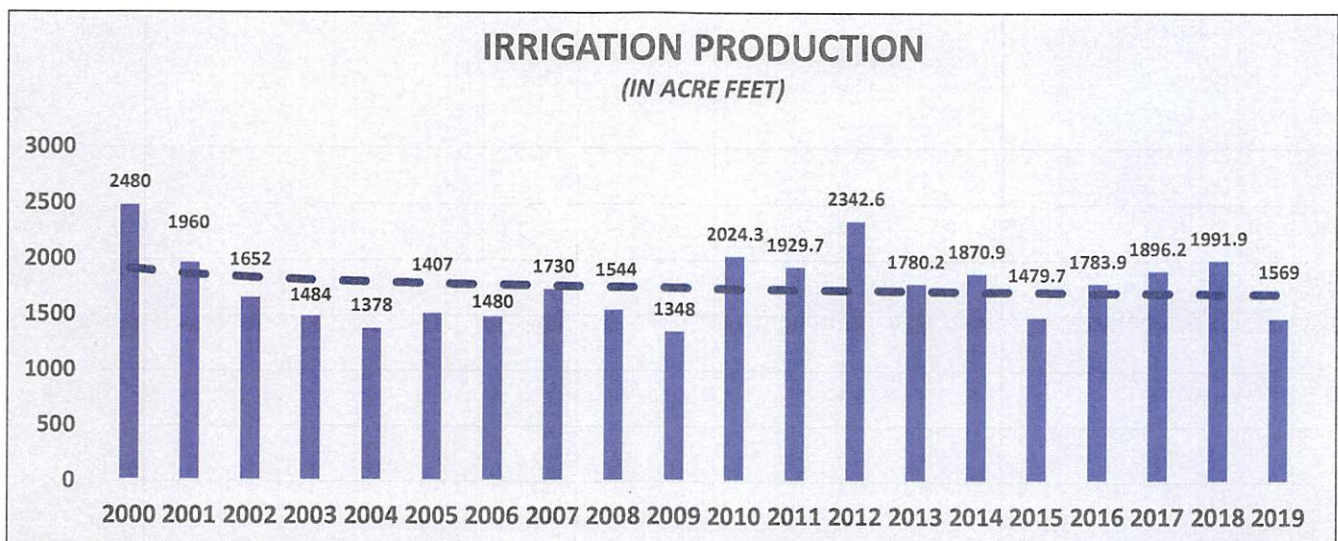


was taken out of production, and therefore, the District provided much more water to Bountiful City than usual.

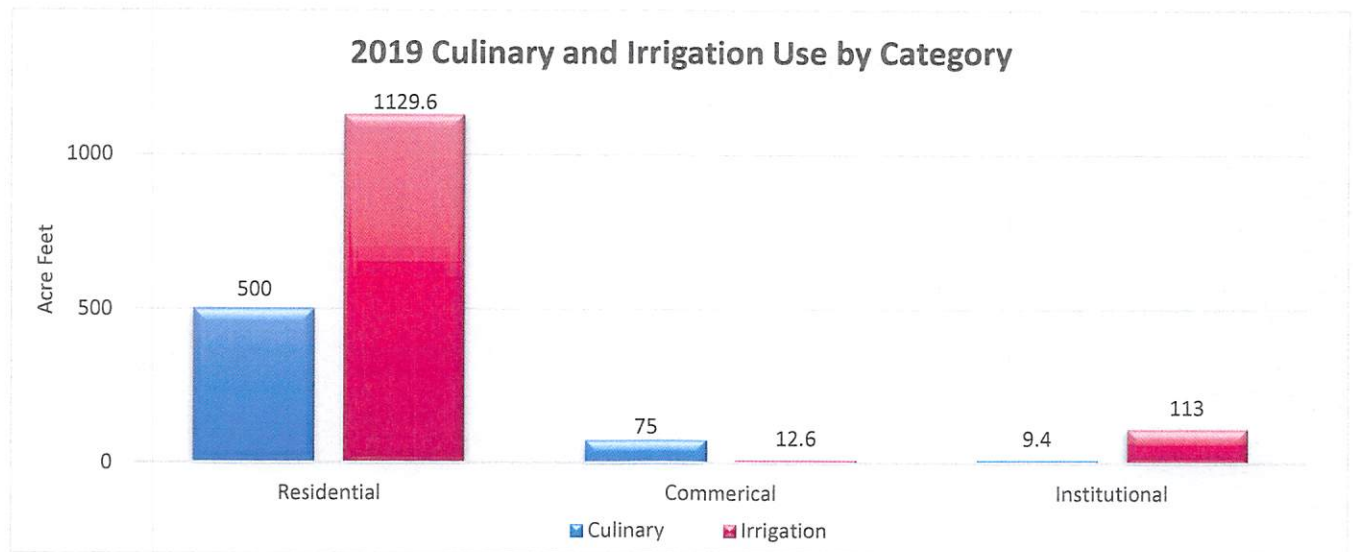
The District provides pressurized irrigation water to many of its culinary customers. Irrigation water is used exclusively outside. This water is not metered at the customers connections. Below is a chart showing irrigation production since 2005.



The District's irrigation production shows an upward trend since 2005. If you look at the trend line since 2000, however, you will see a downward trend. This is due to the institution of a no-watering time from 10:00 a.m. to 6:00 p.m. Below is the trendline from 2000 to 2019.



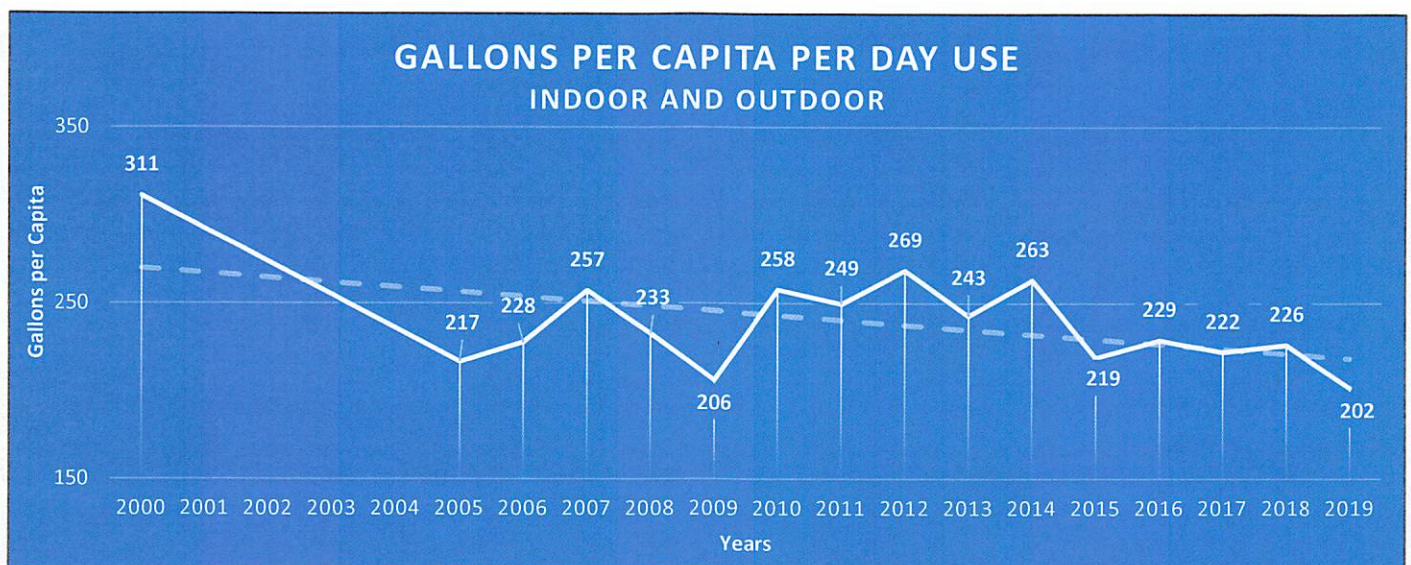
Below is a table showing the 2019 total culinary and pressurized irrigation water consumption categorized by type. The District did not sell culinary water to Bountiful City in 2019.



Below is a table showing the District's current (2019) per capita water use in gallons per capita per day (GPCD) by type and use.

	Indoor	Irrigation	Total
Residential	47	132	179
Commercial	7	1.5	8.5
Institutional	1	13	14
Total	55	146.5	201.5

Below is a graph showing the District's calculated gallons per capita per day from 2000 to 2019. The District saw a large decrease in gpcd between the years 2000 and 2019. This decrease was



109 gpcd. The average gpcd since 2005 has been 235. Since the year 2015, the District's average gpcd has been 220 gpcd. This 15 gpcd drop is a good sign that the District is starting to trend downward due to increased conservation practices.

2019 Water Use per Source

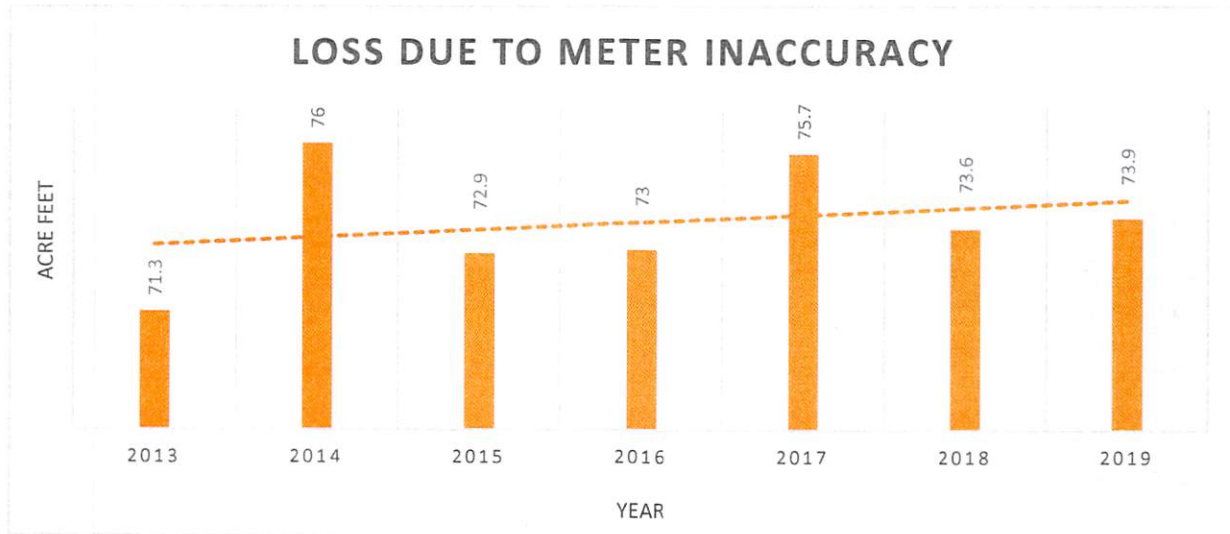
Source	Acre Feet
Bona Vista Well (Culinary) (WS008)	15.8
Enoch Spring (Culinary) (WS004)	91.9
North Canyon Well (Culinary) (WS011)	176.5
Val Vista Well #1 (Culinary) (WS005)	53.4
Val Vista Well #2 (Culinary) (WS006)	49.6
Val Vista Well #3 (Culinary) (WS007)	91.1
Treated Surface Water (Culinary) (WCD)	294.8
Surface Water (Irrigation) (WCD)	1,315
Dago, Cooper, Odell Springs (Irrigation) (WCD)	67.2
North Canyon Creek (Irrigation)	187
Total	2,342.3

Conservation Practices

The goal for the District is in line with that of the Weber River drainage area. Use in 2015 was used to determine this goal. The average regional use was 250 gpcd. The goal is 200 gpcd by the year 2030. The District's gpcd use in 2015 was 219. This is 31 gpcd better than the 2015 regional use. Interestingly, the District's average gpcd use from 2015 to 2019 was 220 gpcd, which is only 1 gpcd more than the 2015 use. In order for the District to meet this goal, it will have to drop gpcd use by 20.

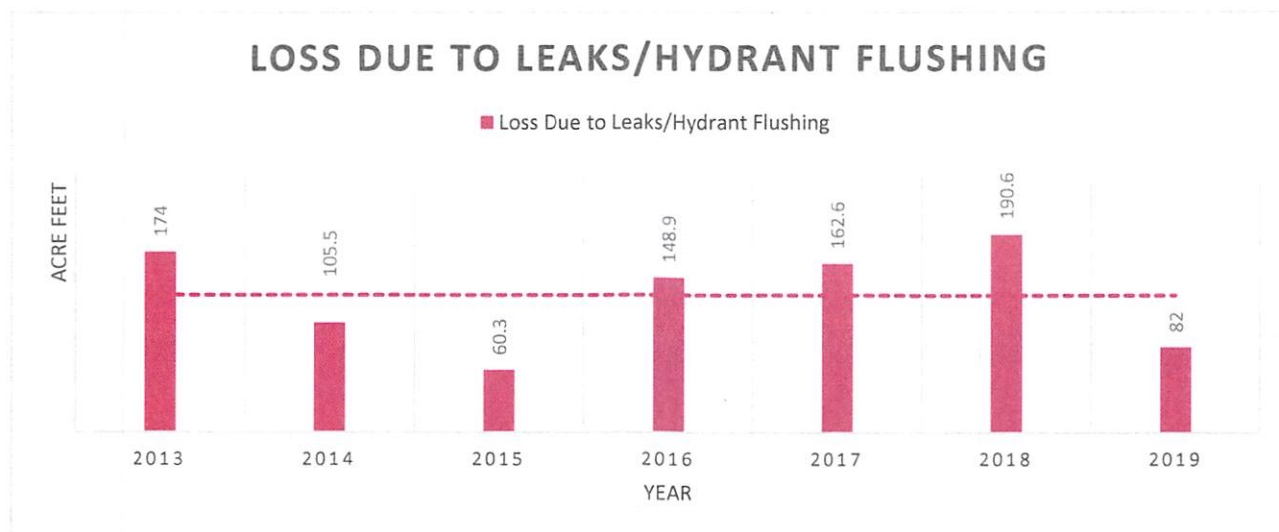
The District calculates its water loss every month. In 2019, culinary water loss due to meter inaccuracy was estimated at 74 acre feet. In testing a statistically significant number of meters on our test bench, we were able to ascertain that the District's meters are registering about 88% of water. The District is already replacing old meters at a rapid rate; however, the District is going to emphasize replacing the large meters of apartment complexes that use significantly more water through their single meters.

As stated earlier, the District would see a reduction in culinary use if meters were read on a monthly basis instead of a bi-monthly basis. The most efficient way to read meters on a monthly basis would be to install electronic transmitting registers on the meters. **The District's 1st goal in dropping gallons per capita in culinary water is to install electronic transmitting registers on all culinary meters by the year 2028.** Below is a graph showing the District's water loss due to meter inaccuracy from 2013 to 2019. This loss has slightly increased since 2013.



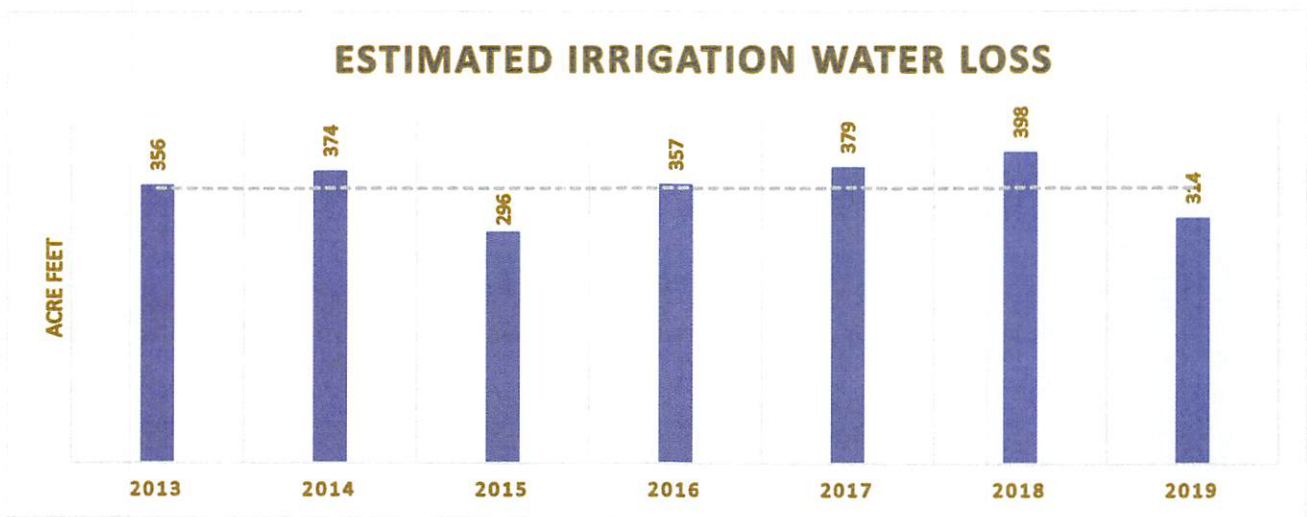
The greatest cause of culinary water loss is through water leaks and hydrant flushing. We estimate that 82 acre feet was lost in 2019. The District replaces at least 1,000 ft. of main line per year. This includes service lines branching off the main, meters, and all hydrants. This replacement program has helped the District uncover and replace a lot of leaking pipe. However, the District is not consistently metering the water that is being flushed from dead ends and other areas prone to aged water. Therefore, we are not able to separate our water loss due to leaks and water loss due to hydrant flushing. Also, the South Davis Sewer District routinely uses water from hydrants in the District without reporting their consumption to the District. By being able to separate leaks from flushing, the District would have a much better idea of where to focus resources in conserving. **Metering water flushed from hydrants and used by the sewer department by the year 2022 is the District's 2nd goal.**

Below is a graph showing the District's loss due to leaks and hydrant use from 2013 to 2019. The District's loss has trended downward slightly since 2013.



The District estimates its irrigation water consumption. It is not possible to precisely calculate water loss because irrigation consumption is not metered. However, the District's irrigation system was constructed around the same time as the culinary system, and by many of the same contractors. The number of breaks that the District has on the irrigation system roughly correlates to the number of breaks that the culinary system has. The culinary system and irrigation system have similar pressures, but the irrigation system runs at slightly higher pressures at the bottoms of the zones. The District also flushes the irrigation system more often and for longer periods than the culinary system. However, the number of irrigation connections is close to the number of culinary connections. Therefore, we feel that it is reasonable to assume that the amount of water lost from the irrigation system during the irrigation season (April 15th-October 15th) would somewhat correlate to water lost from the culinary system during that period.

The average acre foot loss from the culinary system since 2013 was 132 acre feet. The average culinary production since 2013 was 829 acre feet. This is an average loss of 16%. Due to the increase in flushing, evaporation out of reservoirs, and the higher pressures; we increased the irrigation loss to 20%. This same 20% was used above in estimating gpcd of irrigation water consumption. Below is a chart showing estimated irrigation loss.



This chart correlates exactly with production, but it gives us an idea of what we are dealing with. Fortunately, water that is lost through leaks serves to recharge the aquifer for culinary pump out. The District has taken several steps to conserve irrigation water. In 2000, the District instituted a no-watering time between 10:00 a.m. to 6:00 p.m. This restriction is strictly adhered to due to the fact that District Operators write citations for violators. The first citation is a warning. The next fine is \$30 and each subsequent citation increases by \$30. This has been a very successful program. Below is an image of the citation.

CITATION

for
VIOLATION OF REGULATION OF IRRIGATION WATER USE
in the
SOUTH DAVIS WATER DISTRICT

First Citation (warning only)

*All subsequent violations will increase incrementally by \$30 per violation.

Date: _____

Time: _____

Address: _____

Issued by: _____

*A \$30 fine will result each subsequent violation for the entirety of the current irrigation season. This fine will be automatically added to the residents water bill as a watering violation. If not paid by the end of the irrigation season, this fine (or fines) will result in a lien on the property that will be paid through property taxes. The cost of placing the lien is an additional \$30 that will be added to the lien amount.

The purpose of having the no-watering time regulation (10:00 a.m. - 6:00 p.m.) is to conserve water during the hottest times of the day when water evaporates before being able to soak into the soil and is consequently wasted. This regulation also allows the reservoirs time to recharge and prepare for the evening and early morning watering when the water has time to soak into the ground properly.

In the event that watering during the no-watering time is deemed necessary, please contact the water department for special permission. The special permission is reserved for those residents who have recently planted sod or grass seed, or have other newly planted vegetation that requires more water than established vegetation. Not receiving the special permission prior to watering will result in a watering violation.

Phone: (801)-295-4468

Hours: 8:00 a.m. - 4:30 p.m.

Monday - Friday

By Order of the Board of Trustees

South Davis Water District

407 West 3100 South • Bountiful, Utah

During periods of high irrigation water consumption, the District mails out a postcard asking customers to back off consumption. This has worked very well. In fact, in 2020, we experienced a record dry spring coupled with so many people home because of the coronavirus; residents were using record amounts of water. The District sent out a postcard asking residents to back off consumption. A few days later the amount of water ordered by the

District dropped by 3 cubic feet per second. This drop has continued ever since.

Communication and education have been the most effective tools we have.

The third way that the District has been combating high irrigation consumption is by not allowing new connections to irrigation water. In this way, the District is not allowing the gpcd to increase on the irrigation side. Culinary gpcd will go up a little bit, but not as much as it would have on the irrigation side.

The next step for the District to do to combat high irrigation consumption is to install prv's in strategic areas in the irrigation system in order to reduce pressure. There are areas in the District that have pressures in the 150 psi range. This extremely high pressure not only increases the risk of massive leaks and flooding, but can result in higher consumption of water than is needed. **Therefore, the District's 3rd goal is to install prv's throughout the irrigation system by the year 2030 in order to reduce the quantity of water lost through leaks, and also reduce consumption.**

Cost Estimating & Timeline

The District's first goal is to replace its current manually read registers with electronic transmitting registers by the year 2030. We estimate that the cost of installing these registers, along with purchasing the software and other technical expenses associated with getting the system up is estimated to be around \$200,000. This \$200,000 would be spread over 3 years approximately. We estimate that revenue generated from increased overage payments would increase by roughly \$30,000. The expense of having a part-time employee manually read the meters would reduce by \$13,000 per year. We roughly estimate that we could save as much as \$5,000 per year in pumping expense. Therefore, after the 3-year installation period, we believe that the radio reads would pay for themselves in a little over 4 years.

There would be no cost associated with the District's second goal other than the time it takes Operators to put a hydrant meter on the hydrant before flushing; and then recording the gallons used. It will take a little bit of prodding from management at first to get the ball rolling.

The District's third goal is strategically installing prv's in the irrigation system. We estimate that 6 prv's would be necessary in order to reduce pressure in the needed areas. At \$60,000 per prv, we are looking at \$360,000 to install these. Doing two prv's per year we are looking at 3 years to complete this project. The District would definitely be seeking grant money in order to pay for this particular project as there would be no pay-back involved.

Conservation Staff

The District staff that comprises the Conservation Advisory Committee are the Board of Trustees. The General Manager is responsible for the administering of all policies, procedures, and carrying out all projects associated with conservation efforts. The Water Operators are responsible for writing citations during non-watering times, as well as carrying out all other conservational duties as assigned by the General Manager.

Conclusion

The District understands, like other public water suppliers, that water is a very valuable resource that should be used wisely and with discretion, especially in our very arid climate. The District will strive to achieve its overall goal of using less than 200 gpcd by the year 2030. We will complete this goal by accomplishing the three goals that are outlined above.

WATER CONSERVATION PLAN

The South Davis Water District, Utah

A Local District

RESOLUTION NO. 60

AN ORDINANCE AMENDING PROVISION OF THE OUR CITY MUNICIPAL CODE
PERTAINING TO THE ADOPTION OF A WATER CONSERVATION PLAN.

Section 1. Preamble

A. WHEREAS, the South Davis Water District operates a culinary water system; and

B. WHEREAS, the Board of Trustees understands the pressing need to use water in a more efficient manner to allow for future sustained growth of the community;

Section 2. Ordaining Clause

NOW, THEREFORE, IT IS ORDAINED BY THE DISTRICT BOARD OF TRUSTEES,
UTAH:

Section 3 Subsection 393 of the Our City Municipal Code is hereby to read as follows:

Section 4. Water Conservation Plan

The water conservation plan of Our City, adopted on the 5th day of April, 1999, and revised on this 10th day of April, 2004, is hereby readopted. The plan will be amended no less than every five years and will continue to play a vital role in the future development of Our City, Utah.

SIGNED:

Jerry Hawley, Chairman of the Board

Jerry Lynne, Board Member

WATER CONSERVATION PLAN

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development of Our City, Utah.

SIGNED:



Jerry Hawley, Chairman of the Board



Jerry Lynne, Board Member

DRAFT

**MINUTES OF THE REGULAR MEETING OF THE
BOARD OF TRUSTEES OF THE SOUTH DAVIS WATER DISTRICT
HELD NOVEMBER 4, 2020 AT THE DISTRICT OFFICE
LOCATED AT 407 WEST 3100 SOUTH, BOUNTIFUL, UTAH**

Trustees Present:

M. Jerry Hawley	Chairman
Jerry W. Lynn	Trustee

Also present:

Jake M. Ferguson	Manager
Tracie Rainey	District Clerk
Ron Mortensen	District Resident
George Naegle	District Resident
Angela Naegle	District Resident

The meeting was called to order by Trustee Hawley at 4:31 p.m., after which he welcomed all those present.

Minutes of Previous Meeting:

Trustee Lynn moved that the minutes for October 14, 2020 be approved as written. Trustee Hawley seconded the motion. The motion carried with Trustees Hawley and Lynn voting "aye".

Expenditures Update:

The expenses for October were reviewed. Trustee Lynn moved that the expenses for October be ratified and approved. Trustee Hawley seconded the motion. The motion carried with Trustees Hawley and Lynn voting "aye".

Consider Adopting Tentative Budget for 2021:

Mr. Ferguson presented the 2021 tentative budget. The budget was reviewed and a discussion was held. Mr. Ferguson proposes a general operating expense increase of 3.9%. A few of the significant changes in the budget that are proposed for 2021, include: a cost of living increase for employees in the amount of 1.3% and a performance increase of around 3%. Two District projects to be completed in 2021 include the 625 West water line replacement and the 2900 South water line replacement. Weber Basin has increased their water rates by 12% which will require an increase in the water purchase expense. The District is in need of a mini excavator, which will increase the equipment lease budget. Mr. Ferguson also proposes that the District replace the 2011 Dodge truck as it is getting older and requiring several expensive repairs. The water sampling budget will decrease since the EPA sampling is completed for now.

After further discussion, it was motioned by Trustee Lynn that the tentative 2021 budget be tentatively adopted and that the District hold a public hearing on Wednesday December 9, 2020 at 6:00 pm. Trustee Hawley seconded the motion. The motion carried with Trustees Hawley and Lynn voting "aye".

Consider Approving Resolution #60-District Water Conservation Plan:

The Trustees were able to review the Water Conservation Plan prior to the meeting. There were no problems or concerns with the plan. Trustee Lynn moved that the South Davis Water District Water Conservation Plan and resolution #60 be approved. Trustee Hawley seconded the motion. The motion carried with Trustees Hawley and Lynn voting "aye".

Discuss the Procedure of Appointing a New Board Member to Waine Ivie's Seat for the Duration of Mr. Ivie's Time in Office:

Ms. Rainey reported that an ad will run in The Clipper informing members of the District of a Trustee vacancy and when and where to submit an application. This matter will be taken care of at the Dec. 9th, 2020 board meeting.

Manager's Report:

Mr. Ferguson reported that District personnel have been very busy repairing several water line breaks. The recent cold weather has caused several water lines to split and break.

Mr. Ferguson reported that the newly rehabilitated Val Verda Well is pumping an enormous amount of sand. Mr. Ferguson, along with the District's contracted engineer are researching the problem. They are considering trying a screen or installing a sand separator. The water is unable to be introduced into the District's water system until this problem is resolved. Mr. Ferguson will report further on this matter at the next board meeting.

Water Outlook:

No snow pack to report.

Financial Statement:

The Trustees reviewed the District's finances, there were no questions or concerns.

There being no further business, the meeting adjourned at 5:12 p.m.

District Clerk



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Entity: South Davis Water District

Body: [South Davis Water District Board of Trustees](#)

Subject: Local Districts Water and Irrigation

Notice Title: Board of Trustees Monthly Meeting

Notice Type: Meeting

Event Start Date & Time: November 4, 2020 04:30 PM

Event End Date & Time: November 4, 2020 05:00 PM

Description/Agenda:

SOUTH DAVIS WATER DISTRICT BOARD MEETING
WEDNESDAY, NOV. 4, 2020
4:30 P.M.

NOTICE IS HEREBY GIVEN that the South Davis Water District will hold its regular Board Meeting at the District Office located at 407 W. 3100 S., Bountiful, Utah, at the time given above. The Public is invited to attend this meeting.

The South Davis Water District does not discriminate on the basis of race, color, national origin, sex, religion, age or disability in employment or the provision of services. If you are disabled and need assistance in understanding or participating in the meeting, please notify the District at least two days in advance of the meeting and we will try to provide the required assistance. The person to contact for assistance is Tracie Gallagher at 801-295-4468.

This meeting may be held as an electronic meeting with one or more Trustees participating via speaker telephone. The anchor location will be the regular meeting place of the Board of Trustees of the South Davis Water District located at 407 West 3100 South, Bountiful, Utah.

If you are not on the agenda, the Board of Trustees will not be able to discuss your item of business until another meeting. For most items it is desirable for the Board of Trustees to be informed of background information prior to consideration at a Board Meeting. If you wish to have an item placed on the agenda, contact the District Manager at 801-295-4468.

AGENDA

1. Call To Order – Welcome to all those present

Meeting Location:

407 W 3100 S
Bountiful UT, 84010

[Map this!](#)

Contact Information:

Tracie Gallagher
tracie@southdaviswater.us
(801)295-4468

Audio File Address

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2. Approve minutes of previous meeting–Oct. 2020
3. Approval of expense report–Oct. 2020
4. Consider Adopting Tentative Budget for 2020
5. Consider Approving Resolution #60– District Water Conservation Plan
6. Discuss the Procedure of Appointing a New Board Member to fill Wayne Ivie's Seat for the Duration of His Time in Office.
6. Manager's Report
 - a. Construction and Maintenance
 - b. Water Outlook
 - c. Financial Statement
7. Adjournment

Notice of Special Accommodations:

The South Davis Water District does not discriminate on the basis of race, color, national origin, sex, religion, age or disability in employment or the provision of services. If you are planning to attend this public meeting and, due to a disability, need assistance in understanding or participating in the meeting, please notify the District at least two days in advance of the meeting and we will try to provide the required assistance. The person to contact for assistance is Tracie Gallagher at 801-295-4468

Notice of Electronic or telephone participation:

This meeting may be held as an electronic meeting with one or more Trustees participating via speaker telephone. The anchor location will be the regular meeting place of the Board of Trustees of the South Davis Water District located at 407 W. 3100 S., Bountiful, Utah.

Other Information

This notice was posted on: November 02, 2020 09:45 AM

This notice was last edited on: November 03, 2020 03:37 PM

Board/Committee Contacts

Member	Email	Phone
Jerry Hawley	jerryhawley@mail@gmail.com	(801)201-9386
Jerry Lynn	jlynn2@gmail.com	(801)295-6208
Wayne Ivie	ivie.wo@comcast.net	(801)698-4444

[Please give us feedback](#)