WEST CORINNE
WATER CONSERVATION PLAN

FINAL
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Prepared by:

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The following Water Conservation Plan has been adopted by the West Corinne Water Board.

Cary McFarland, Water Manager

3-7-24
Date adopted

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WATER CONSERVATION GOAL AND IMPLEMENTATION PLAN

Water Conservation Goal

The water conservation goal for the Bear River region is 249 gallons per capita per day (gpcpd) by 2030 (see Utah DNR Regional M&I Water Conservation Goals, 2019). This goal includes residential, commercial, institutional, and industrial water use and excludes agriculture, mining, and power generation. West Corinne Water Company (WCWC) is committed to achieving this goal. WCWC anticipates providing 430 acre-feet annually for agricultural purposes and has a goal to reduce usage to 89 gpcpd for residential, commercial, institutional, and industrial water by 2030.

Two important characteristics of WCWC's services played a part in the development of these conservation goals. First, WCWC services a significant number of dairies and other agricultural services. Agricultural water is not included in the Bear River region's water conservation goal. These agricultural connections have used approximately 330 to 430 acre-feet over the past 5 years. Though agricultural use is expected to decrease in the near future, it is unknown what usage will be necessary in the next ten to fifty years. To ensure water supply is able to meet the agricultural demands, 430 acre-feet was used as a conservative estimate. In the annual water use reporting, the industrial water use category represents these agricultural connections.

The second important characteristic of the WCWC service area is that 90% of the residential users also obtain secondary water from Bear River Canal Company (BRCC). Secondary water is included in the state's water conservation goals, but BRCC does not have meter data for its services with WCWC's service area. Based on the assumptions and calculations in Appendix A, annual water use in the region is 28% indoor use and 72% outdoor use. Based on this assumption, WCWC will meet the Bear River region water conservation goal if they provide 89 gpcpd. Over the past 5 years WCWC has provided 140 gpcpd, requiring a 36% decrease in water usage to meet this conservation goal.

Conservation Implementation Plan

We have seen a decrease in usage based on WCWC's tiered rate structure and anticipate it will continue to result in water conservation throughout the system. WCWC will review usage twice a year and compare actual usage with the water conservation goal. Letters will be sent to all residential users over 25% of the goal encouraging water conservation.

WATER SYSTEM PROFILE AND SUPPLY INFORMATION

Service Area

West Corinne Water Company (WCWC) services unincorporated portions of Box Elder County. Most connections occur in the region between Tremonton, Brigham City, and the Great Salt Lake.
Figure 1 shows WCWC's service area.

Figure 1 – West Corinne Water Company Service Area

Service Connections

Within WCWC's service area, there are approximately 783 connections to WCWC's culinary water system. The connections are divided by type in Table 1.

Table 1 – Culinary Water Connections

Connection Type	Number of Connections	Percent of Total Connections
Residential	702	90%
Commercial	16	2%
Industrial	61	8%
Institutional	4	<1%
Total	**783**	**100%**

Residential connections comprise approximately 90% of the total connections to WCWC's culinary water system, with the remaining 10% being associated with commercial, industrial, or institutional uses. All 783 connections are metered. All industrial connections provide water for agricultural use.

Water Supply

WCWC has two primary sources: Anderson Well located in Bothwell on the west side of the system and Baker Spring located in Baker Canyon on the east side of the system. Depending on demand, WCWC also purchases water from Bear River Water Conservancy District, Brigham City, and/or Tremonton City. Table 2 provides a summary of the water source production from 2018 to 2022.

Table 2 – Production from Water Sources in Acre-ft

Source	2018 Volume	2019 Volume	2020 Volume	2021 Volume	2022 Volume
Anderson Well	264.08	117.35	213.29	396.80	352.75
Baker Main Springs	571.99	884.08	427.96	394.5	243.08
Bear River Water Conservancy District	2.18	0	208.57	98.14	203.1
Brigham City	0	0	0	0	0
Tremonton City	1.88	0	6.48	0	0
Total	**840.12**	**1001.42**	**856.30**	**889.45**	**798.96**

Supply Projection

Supply projection is based on existing source yields and other projections from the water master plan. WCWC expects to increase water purchased from Bear River Water Conservancy District over the next 5 years and perpetually purchasing 350 acre-ft

beyond 2028. A second well near the existing Anderson Well is expected to connect to the water system in 2025. The anticipated flow rate from this well is 700 gpm; annual production was calculated using this rate at a maximum of 12 hours daily for the year. These annual volume projections are summarized in Table 3 and Figure 2. Production meets the required demand from current demands and efficient use demands through 2060.

Table 3 – Production Estimates from Water Sources in Acre-ft

Source	2023 Volume	2028 Volume	2033 Volume	2043 Volume	2060 Volume
Anderson Well #1	350	350	350	350	350
Anderson Well #2	0	565	565	565	565
Baker Main Springs	400	400	400	400	400
Bear River Water Conservancy District	225	350	350	350	350
Total	**975**	**1665**	**1665**	**1665**	**1665**

Figure 2 - Supply and Usage Projection

BILLING

WCWC's culinary water usage rates are determined by usage type and quantity. Table 4 provides the residential, agricultural, and commercial annual water rates. The residential and commercial rates are effective as of June 1, 2022 and the agricultural rates are effective as of July 1, 2022.

Table 4 – Annual Water Rates

Use Type	Rate	Volume
Class A – Standard Residential		
	$52.00	Up to 10,000 gallons
	$1.75	Per 1,000 gallons from 10,001 to 50,000 gallons
	$4.00	Per 1,000 gallons from 50,001 to 100,000 gallons
	$10.00	Per 1,000 gallons over 100,000
Class B - Agriculture		
	$52.00	Up to 10,000 gallons
	$1.75	Per 1,000 gallons over 10,000
Class C – Commercial		
	$70.00	Up to 10,000 gallons
	$3.25	Per 1,000 gallons from 10,001 to 50,000 gallons
	$4.00	Per 1,000 gallons from 50,001 to 100,000 gallons
	$10.00	Per 1,000 gallons over 100,000

WCWC has seen noticeable water conservation since implementing this rate structure. From June 2021 to May 2022 (the year prior to the rate change), annual usage was 708 acre-ft. From June 2022 to May 2023 (the first year with the new rate structure), annual usage in the system was 667 acre-ft. This is a 6% decrease in usage with an estimated 2% increase in number of connections.

SYSTEM WATER LOSS

WCWC has meters at all sources and all 783 connections. WCWC requires installation of culinary water meters within new developments. Having water meters in place allows WCWC to more quickly identify leaks and/or breaks within the system based on water meter readings. Meters at service connections are read monthly. Old meters are in the process of being replaced with approximately 8 left as of September 2023. The new meters are under warranty for 10 years; maintenance on the meters will be as required while the meters are under warranty.

WCWC regularly monitors and reviews their water system as part of their operation and maintenance procedures and quickly mitigates any identified issues related to water loss.

A noticeable amount of water loss comes from the Baker Springs Tank. This overflow occurs when the system demand is less than the water provided by Baker Springs. It also occurs when the transmission line from the tank to the system is running at a full capacity, but the springs produce more than this capacity. The Baker Springs source is metered but the overflow is not metered. Increasing the size of the transmission line or adding a transmission line from the tank to the system would significantly improve water conservation in WCWC's system. This project is expensive due to the length of the transmission line and only benefits the system when spring flows are high. For this reason other identified projects have a higher priority.

Table 5 shows the estimated water loss over the past 5 years. By comparing Table 2 and Table 4 we see that in 2019 flows from Baker Spring were the highest and water loss was the highest. In 2022 Spring flows were the lowest and water loss was the lowest.

Table 5 – Estimated Water Loss

Year	Total Retail Use (acre-ft)	Total from Sources (acre-ft)	Estimated Water Loss %	Estimated retail value loss
2022	700.80	798.93	12.28	$55,892
2021	723.54	889.45	18.65	$94,498
2020	725.98	856.3	15.22	$74,227
2019	637.59	1001.42	36.33	$207,229
2018	648.11	840.12	19.28	$109,364

WATER USE AND MEASUREMENT

Historic Water Use

WCWC meters 100% of its usage including all parks, schools, and churches. Figure 3 shows the estimated historic water use from 2018 to 2022. Water use as gallons per capita per day was calculated using the Residential, Commercial, and Institutional uses and the populations reported each year to Utah Division of Water Rights (see Figure 4).

Figure 3 - Historic Water Use

Figure 4 - Water Use, Gallons per Capita per Day

Population Projections

West Corinne Water Company primarily serves residents and businesses in unincorporated areas of Box Elder County, Utah. They cover a large geographical service

area and currently have a long land development waitlist due to limited available water sources. According to their Water Master Plan completed in August 2022, it is anticipated that WCWC's services will grow 3% over the next 20 years. This is more than double the 1.3% average growth rate that Kem C. Gardner Institute of the University of Utah projected for Box Elder County over the next 20 years. A 3% growth rate is used for 2022 through 2042. From 2042 to 2060, the growth rates from Kem C. Gardner Institute are used. Figure 5 shows the historic and projected populations for WCWC's service area from 2015 to 2060. The population data shows a steady growth rate over the next 50-year period.

Figure 5 - Projected Population, West Corinne Water Company Service Area

Projected Water Demand

Future water demand is anticipated to be directly correlated with population for all uses except agriculture. Agricultural use is anticipated to decrease in the immediate future but is dependent on the economy and other factors for long term use. Future demand based on population projections is provided in Figure 2.

WATER CONSERVATION PRACTICES

Current Water Conservation Practices

In the 2020 Water Conservation Plan update, WCWC Board of Directors established a water conservation goal to reduce per capita water use by 3% within 5 years. The usage in 2017 was 342 gallons per capita per day. In 2022, the usage was 322 gallons per capita per day, related to a 6% decrease in water use.

All existing connections are metered and all new connections are required to have a meter, thus increasing understanding and accountability for all water conservation practices. Metering is also a great way to find leaks is the system.

WCWC has employed several water conservation strategies. They provide tips for water conservation on their website. They also send out letters during the hottest months of the summer requesting that users reduce outside watering, especially during the daylight hours. The letter sent out with the April 2022 water bill is included in Appendix B.

WCWC changed their rates in 2022 to help with water conservation. The tiered structure means fees increase with higher water usage. This brings awareness to customers regarding the amount of water they use. WCWC personnel have noted that water use, and especially outdoor watering, has significantly decreased since the rate implementation.

Replacing aging infrastructure also helps prevent leaks and helps with water conservation. Several transmission lines were replaced several years ago. In 2020, Baker Springs was redeveloped. Leaks are repaired where necessary. WCWC also hires professional divers to clean and inspect their storage reservoirs. WCWC is almost finished with a project to replace old water meters in their system.

Future Water Conservation Practices

Current water conservation practices have been working and will continue to be implemented. The new rate structure is a new water conservation practice that has already made a significant improvement on water usage. The Anderson Well #2 will add to the water supply in 2025.

West Corinne will begin analyzing their water conservation twice a year. Letters will be sent out to residential users using over 25% of the water conservation goal. An example of the statement to be mailed out is below.

> "You have been identified as a high water user. We encourage you to consider how you can conserve water to help us achieve an average annual usage of 89 gallons per person per day, or no more than 2,670 gallons per person per month. For example, to meet our conservation goal, a household of 4 would need to use less than 10,680 gallons for a typical month. Water conservation is important for our community as it postpones expensive capital improvement projects that raise rates for everyone. Your participation is valuable in helping us reach our goal."

Another project that would significantly improve water conservation is upsizing the transmission line from the tank near Baker Springs. The current water line can only

provide approximately 450 gpm to the system and anything Baker Springs produces beyond that is overflow. A larger transmission line would allow the Springs to provide more water to the system during high spring production periods so the wells would not need to run as much, and water purchased from BRWCD would decrease. This project is expensive, and spring flows are sensitive to drought conditions. It is unknown when it will be possible for WCWC to construct this project.

Contact Information for Efficiency Personnel

Table 6 contains the contact information for efficiency personal for WCWC.

Table 6 – West Corrine Water Company Contact Information

Position	Name	Email
Water Manager	Cary McFarland	carywestcorinnewater@gmail.com
Office Manager	Alyssa Huff	alyssahwcw@gmail.com
President	Steve Norman	steve.norman@fbfs.com
Vice President	Blaine Rupp	

SUMMARY AND CONCLUSIONS

West Corrine Water Company is committed to achieving 89 gpcpd water usage by 2030. To reach this goal, WCWC is implementing the following water conservation practices:

1. Require culinary water meter installation within new developments.
2. Use the 2022 rate structure to encourage water conservation.
3. Review water usage twice a year and inform high water users of the need to conserve.

APPENDIX A

WCWC usage:

1. Assume 10% of populations that does not get water from BRCC uses 249 gpcpd (goal amount for Bear River Region)
2. Average WCWC population from 2018 to 2022 x 10% of population x 249 gpcpd = Annual usage for 10% of population
   1994 x 0.1 x 249 = 49,650.6 gpd = 55.6 acre-ft annually
3. Average yearly WCWC usage from 2018 to 2022 – Usage from 10% population = Indoor usage by the other 90% of population
   313.724 acre-ft annually – 55.6 acre-ft annually = 258.1 acre-ft

BRCC usage:

1. Estimated 4.49 acre-ft/yr/irrigated acre on non-drought years
2. Assume ½ acre lots
3. Assume 50% of a lot is irrigated
4. Use 3.1 residents/household (see Kem C. Gardner Institute of the University of Utah projections for Box Elder County)
5. Step 1 x Step 2 x Step 3 / Step 4 x (Average WCWC population from 2018 to 2022 x 90%) = Outdoor usage provided by BRCC within WCWC's service area
   4.49 acre-ft/yr/irrigated acre x ½ acre/household x 0.5 irrigated acre/acre / 3.1 people/household x 1994 people x 0.9 persons using BRCC water = 649.8 acre-ft/yr

Combined WCWC and BRCC usage:

1. WCWC indoor / (WCWC indoor + BRCC outdoor) = % indoor usage
   258.1 acre-ft / (258.1 acre-ft + 649.8 acre-ft) = **28.4% indoor usage**
2. Regional goal x Indoor usage percentage = Indoor goal for 90% of population
   249 gpcpd x 0.284 = 70.7 gpcpd
3. Indoor only goal x 90% of population + Indoor/outdoor goal x 10% of population = Total goal
   70.7 gpcpd x 0.9 + 249 gpcpd x 0.1 = **89 gpcpd**

APPENDIX B

West Corinne Water Company
P.O. Box 37
Corinne, Utah 84307

Phone: 435-744-5160
Fax: 435-744-2269

April 28, 2022

To West Corinne Water Users,

In the April 14, 2022 meeting, the board made the following changes to the water rates that will go into effect June 1, 2022.

Keeping the overall financial health of the company strong, the base rate will change from $46.00 per month to $52.00 per month for Class A and Class B connections. The base rate will change from $60.00 per month to $70.00 per month for Class C connections. This will still allow use of water up to 10,000 gallons per month.

1- The rate for use over the 10,000 gallons of water will go to a tier rating for Class A:

10,001 to 50,000 will be $1.75 per thousand gallons – **same as last year**
50,001 to 100,000 gallons will be $4.00 per thousand gallons – **increased**
100,001 and above gallons per months will be $10 per thousand gallons – **increased**

2- The rate for use over the 10,000 gallons of water will go to a tier rating for Class C:

10,001 to 50,000 will be $3.25 per thousand gallons – **same as last year**
50,001 to 100,000 gallons will be $4.00 per thousand gallons – **increased**
100,001 and above gallons per months will be $10 per thousand gallons – **increased**

This will apply to Class A (residential) and Class C (commercial) connections.
This will be a progressive rate, the more you use, the more you will pay. Utah law requires the company to adopt a rate structure like this for culinary water, with increasing rates for each additional block of water used. The following example will show what a future bill can be: Total water use for any given month – example: 125,000 gallons

10,000 gallons - $52, base rate
10,001 to 50,000 - $70
50,001 – 100,000 - $200
100,001 – 125,000 - $250.

Total cost for the month - $572, based on usage of 125,000 gallons in any given month.

The board is providing notice of these rate changes for Class A and Class C shares now because of the ongoing drought and because we are at the start of the irrigation season. The board is in the process of adjusting the rate for Class B connections. The board will send notice to Class B connections in the coming weeks and the new rate will be effective July 1, 2022.

Again, we want to educate each shareholder to be aware of the cost of water use and to become water wise users of the drinking water that comes to each tap. After discussing it, we concluded that this was a fair approach to each user. History for the year 2021 showed we only had 70 (11%) residential taps, out of a total 647 taps, that exceeded the 50,000 gallons of water in the highest use month of the year. We determined that the majority of users (89%) are already conserving water, so will only see an increase of $6 each month for the base rate, which was largely due to inflation and purchase of additional water.

We have placed a priority water use in the following order:

1. Drinking water 2. Agricultural 3. Horticultural and 4. All other use – car/truck washing, cleaning sidewalks and patios with water, etc.

The board also wants to identify two areas of concern that are at the top of the list. (1) Leaks – a gallon a minute leak can use 43,000 gallons in a month. Please repair leaks now. (2) Keep water troughs from continually overflowing. There are several other ways to conserve drinking water, which can be found on our webpage. Please look and consider all methods of slowing the flow.

As a reminder, ***Class A*** taps are for only ***one*** residential home with less than 50 head of livestock, ***Class B*** taps are for large animal operations with no more than 500 head of livestock per connection and ***Class C*** taps are for commercial use of water. ***No tap can be altered in use.*** Examples of illegal use would be two residential homes, or a commercial water use, connected to a residential Class A tap. Altering use may result in a fine or disconnection of future water use. If for some reason this has occurred without knowing the difference between classes, we highly recommend you contact the company to discuss future use.

It is no secret we are in a drought. We, along with many others, were hoping for a better winter, with deeper snowpack and bigger than normal runoff. Unfortunately, our reservoirs will not fill, and a shortage of surface water will cause a greater stress on our current moisture conditions. If current weather trends continue, we want to be prepared for the future by acting now.

Coming into the summer, currently we see our system handling our water needs for the highest demand. We are monitoring the spring and well on a daily base. Our concerns being the flow from the spring slowing down and the well pump running extra time to meet demand. These issues are associated with a lower level of water in the aquifer and increased cost of service for the company to deliver water. We have purchased additional water from the Bear River Water conservation district for future growth, but we now have turned to using this water to meet current demand.

We are currently not selling water connections, as recommended by our water engineers. We are in the process of increasing our water source and delivery of water, but this will take time and funding to complete. Additional information can be found on our website westcorinnewater.com.

Thank you for being a part of our system and thank you for your cooperation!

West Corinne Water Board

President- Steve Norman
Vice President- Blaine Rupp
Board Members- Chad Hardy, Morgan Reeder, Frank Zerkle, Jeff Kent and Bryan Ward

Water Conservation Tips

That Keep Things Green

Nighttime Water Schedule

The hot summer days means that water is best used at night

Locate Those Leaks

Even a little drip can be costly!

Focus on Faucets

Install aerators for flow restrictions on bathroom and kitchen faucet heads

Laundry Day!

Establish a Laundry Day at home

Reduce Shower Time

Less than 10 minutes