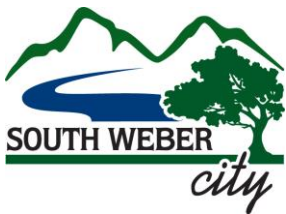


Water Conservation Plan



July 2022



Updated By
JONES & ASSOCIATES
Consulting Engineers



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SECTION I - SYSTEM PROFILE

SERVICE AREA

South Weber City serves all areas within the City boundaries, approximately 4.7 square miles (See Map 1). The City currently provides culinary water to approximately 7,965 people through 2,447 connections. This water is intended for indoor and commercial uses. Water for outdoor and landscaping needs is largely provided and managed by South Weber Water Improvement District, Weber Basin Water Conservancy District, Davis and Weber Counties Canal Company, and the South Weber Irrigation Company.

Table 1.1 below lists each type of connection and the total number of each for 2021.

Table 1.1 - Number of Connections

Connection Type	Total
Residential / Domestic	2,411
Commercial	13
Institutional	19
Industrial	4
	2,447

SUPPLY

South Weber City purchases most of its culinary water from the Weber Basin Water Conservancy District (WBWCD) and has a reliable drinking water well (Well #1) that it owns and operates. In recent years, the well has provided anywhere from 0% to 10% of the drinking water needed to meet current demands. The City intends to continue to utilize the well and plans on meeting future demand by continuing to acquire additional water from WBWCD through their current Capital Charge contract.

City ordinances do not allow culinary water to be used for irrigation unless irrigation service is unavailable. Based on individual metered water usage data, it appears that about two percent (2%) of the culinary water connections are used for irrigation. Additionally, all new development is required to have a secondary water source. Therefore, irrigation demand on the culinary water system has been deemed negligible and is not included in this report.

In general, secondary or irrigation water is supplied and managed by South Weber Water Improvement District, Weber Basin Water Conservancy District, Davis and Weber Counties Canal Company, and the South Weber Irrigation Company and is not included as part of this Plan.

Table 1.2 below shows a breakdown of the 2021 production of existing sources.

Table 1.2 - 2021 Production of Existing Water Sources

Source	Volume (Acre-Feet)	Total (Acre-Feet)
Well #1	14.71	14.71
Purchased from WBWCD	1,136.66	1,136.66
		1,151.37

STORAGE RESERVOIRS

The adopted storage level of service for the City is approximately 400 gallons per Equivalent Residential Unit (ERU). The City has three storage reservoirs in service that together can hold 2,500,000 gallons of water (See Table 1.3). Of this amount, 210,000 gallons have been designated as fire storage.

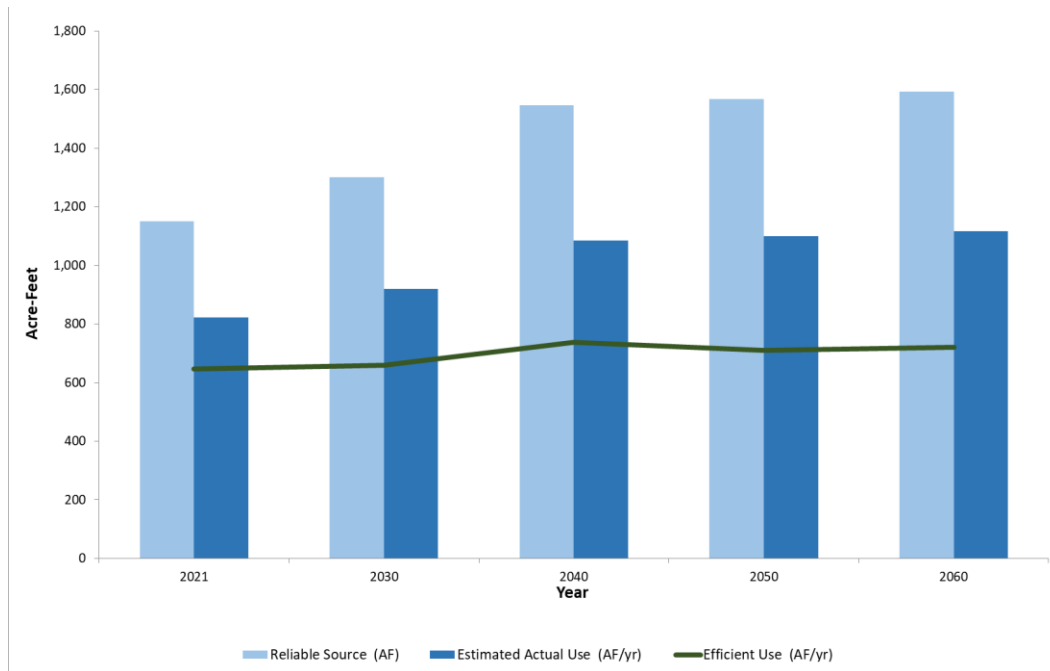
Table 1.3 - Storage Reservoir Capacity

Name	Capacity (gal)
East Reservoir	500,000
Central Reservoir	1,000,000
West Reservoir	1,000,000
Total	2,500,000
Excluding Fire	2,290,000

WATER SUPPLY & USE

As illustrated in graph 1.1 below, the City's water supply verses projected use provides enough water through the year 2060.

Graph 1.1 - Water Supply and Use



FUTURE WATER SOURCES & COST PROJECTION

The South Weber City Capital Facilities Plan and Impact Fee Analysis, completed in 2022, indicates that the City has excess capacity for water supply for its current connections. Based on the residential, commercial, and institutional growth projections, the build-out population will be 3,730 Equivalent Residential Units (ERUs). The City will continue to have the reliable water supply to meet peak day demand and average yearly demand by continuing to acquire additional source through the Capital Charge contract with WBWCD beyond 2060.

Conservation of these resources will help the supply to last over a longer period and/or allow additional water supply for additional users. By delaying or eliminating the need for additional water, the City can potentially save a significant amount of money, as well.

WATER MEASUREMENT & BILLING

Meters: All of the connections to the water system are metered and read monthly using the automated Masterlink Radio System. Table 1.4 below shows the City's current metered connections. The City has also developed a Meter Replacement Plan (See Map 2) for the replacement of all the City's meters. Replacement has been in process since 2014 and will

continue to occur in sections of the City at a rate of approximately 200 meters per year through 2023.

Table 1.4 – Metered Connections

Connection Type	Percentage of System	Reading Frequency	Replacement Schedule
Residential	98%	Monthly	As Shown on Map
Commercial	>1%	Monthly	As Shown on Map
Industrial	>1%	Monthly	As Shown on Map
Institutional	>1%	Monthly	As Shown on Map
Government	>1%	Not Read	As Shown on Map

New Development: All new developments are required to follow Title 11, Subdivision Regulations, of the City Code. As part of the approval process, the City Engineer checks the available water resources against the current Capital Facilities Plan and updated water usage data. If the water model indicates that the proposed subdivision can be served, then the subdivision is allowed to proceed through the approval process. Along with this, the Developer must obtain written approval from the secondary water provider for needed irrigation water and provide proof to the City prior to the City approving the development.

During construction of the subdivision, City staff oversees and inspects the culinary water system to ensure the installation meets current City Standards.

SYSTEM WATER LOSS CONTROL

Table 1.5 below shows the population, annual use, and percentage loss in relation to used source.

Table 1.5 – Annual Information

Year	Population	Annual Source (AF)	Annual Use (AF)	% Difference
2015	7,200	592.58	469.53	20.76%
2016	7,100	614.47	465.11	24.31%
2017	7,320	642.51	441.85	31.23%
2018	7,090	740.98	488.86	34.03%
2019	7,225	655.23	448.33	31.58%
2020	7,280	711.11	528.80	25.64%
2021	7,965	664.37	527.21	20.64%

The City monitors the amount of water taken at each of its sources. The amount of water produced from year to year from the well will vary depending on groundwater and snowpack conditions. The largest discrepancy in the available source verse the source used can be contributed to leaks, tank overflows/spills, meter reading errors and software reporting problems.

Losses are controlled through the following means:

SCADA System: Each storage reservoir is equipped with a SCADA system that provides continual monitoring of water storage and supply. In the event there are issues with the pressure or levels of water, the City’s designated employees are immediately alerted and able to quickly resolve the issue.

Independent Audit: The City contracts with American Leak Detection to annually audit the City’s water system. Their specialized equipment allows them to detect leaks that the City may otherwise not know about – due to their size (i.e. very small in nature) or location. When a leak is discovered, the City is able to quickly repair it and improve the area as needed.

In addition to this, they conduct an annual independent audit of the amount of water billed verse the amount of water used. This ensures the water being used is being paid for and usage is accurately being tracked. This audit is independent of and in addition to the City’s annual fiscal budget audit.

INCREASING RATE STRUCTURE

Table 1.6 Water Rate Schedule outlines the current water rate schedule adopted by Resolution, and the most recent version made effective on June 22, 2021. This rate schedule is based solely on usage with a tiered rate per 1,000 gallons used (no base allotment). The rate structure also considers the availability of secondary water and increases the rate substantially if a user (that has secondary water available) uses more than 10,000 gallons of water in a month.

The City has also updated the billing system to an online system that enables customers to view and track water usage throughout the current year and for prior years.

Table 1.6 - Water Rate Schedule

Gallon Allotment	Residential Using Secondary Water	Residential with Secondary Water Available (Not Using)	Residential without Secondary Water Available	Multi-Family Residential	Non-Residential
0	\$38.43	\$38.43	\$38.43	\$29.20	\$38.43
1-2,000	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
2,001-4,000	\$2.20	\$2.20	\$2.20	\$2.20	\$2.20
4,001-6,000	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50
6,001-8,000	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00
8,001-10,000	\$3.50	\$3.50	\$3.50	\$3.50	\$3.50
10,001+	\$4.00			\$4.00	
10,001-15,000		\$6.00	\$3.00		
15,001-30,000		\$6.00	\$2.30		
30,001+		\$6.60	\$3.00		
10,001-30,000					\$3.75
30,001-60,000					\$4.00
60,001+					\$4.25

WATER USE

Potable Water

Table 1.7 below shows the potable water inflow verse the water outflow for each type of use from 2005 through 2021.

Table 1.7 – Potable Water Use*

Year	INFLOW	OUTFLOW					% Diff.
	Total (AF)	Res.	Com.	Ind.	Inst.	Total (AF)	
2005	678.84	607.64	70.58	0.00	0.00	678.22	0.09%
2006	695.69	487.23	24.51	0.00	0.00	511.73	26.44%
2015	592.58	377.33	1.64	84.04	6.51	469.53	20.77%
2016	614.47	388.70	8.03	61.96	6.42	465.11	24.31%
2017	642.51	394.59	3.93	35.89	7.44	441.85	31.23%
2018	740.98	394.71	6.93	78.84	8.37	488.86	34.03%
2019	655.23	387.28	4.32	48.11	8.62	448.33	31.58%
2020	711.11	450.81	10.00	60.02	7.96	528.80	25.64%
2021	664.37	444.97	6.12	62.44	13.69	527.21	20.65%

*Information obtained from Utah Division of Water Rights Water Records/Use Information. No data available for 2007 – 2014

Based on the data represented, the analysis shows an average loss (deficiency) of 23.86% per year in the distribution system between 2005 and 2021. Further analysis indicates; however, that between 2015 and 2021 the average percentage results in 26.88% of unaccounted water. This percentage is a more accurate accounting as there were seven years between 2007 and 2014 that were either not reported or for which data was not available.

Water unaccounted for generally comes from system leaks, fire hydrant use, and meter errors. The goal of the City is to reduce the amount of lost and unaccounted for water by continuing to make system improvements.

Non-potable Water

The City does not provide or monitor non-potable water (secondary) as this is provided through and monitored by the South Weber Water Improvement District, Weber Basin Water Conservancy District, Davis and Weber Counties Canal Company, and the South Weber Irrigation Company.

USE - GALLONS PER CAPITA PER DAY

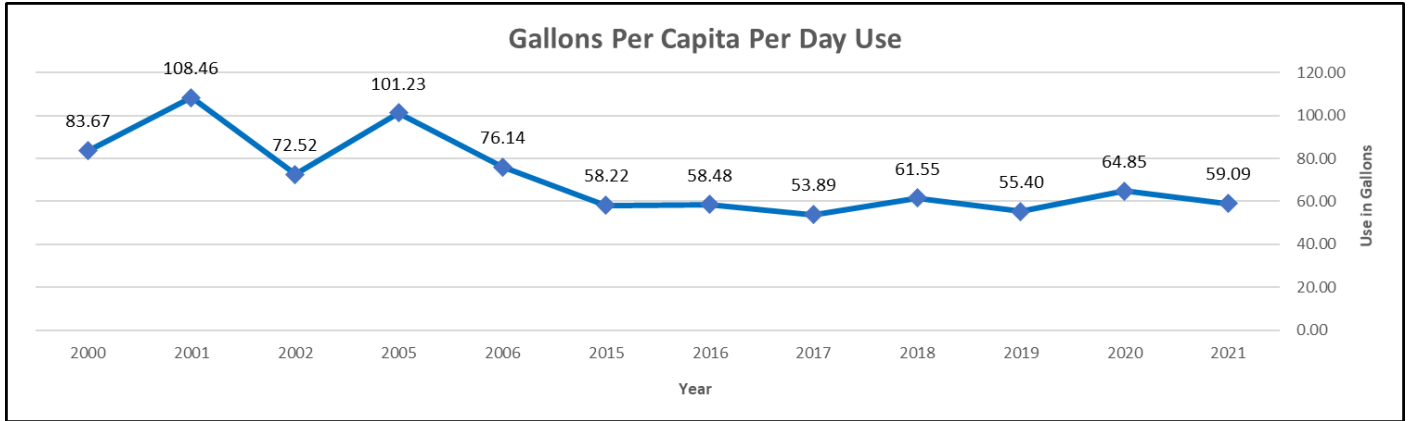
Table 1.8 below illustrates the gallons per capita per day by type of connection for 2021. The City does not provide or measure secondary water, this is done independently through the South Weber Water Improvement District, Weber Basin Water Conservancy District, Davis and Weber Counties Canal Company, and the South Weber Irrigation Company. Where available, all City connections must utilize secondary water for outdoor use.

Table 1.8 – 2021 GPCD by Use Type

	2021 Total GPCD
Residential	49.87
Commercial	0.70
Institutional	1.53
Industrial	6.99
Total	59.09

Graph 1.2 below illustrates the Gallons per Capita Per Day Use trend, indicating an overall decrease in water use and increase in conservation. Data for 2003, 2004 and 2007 thru 2014 were deleted from the graph as no data was available from the State for these years.

Graph 1.2 – Gallons Per Capita Per Day



SECTION 2 – CONSERVATION PRACTICES

CURRENT CONSERVATION

South Weber City places a high value on the conservation of water and is already practicing the following:

- The City has installed a SCADA system on each storage reservoir and the well to monitor and control components of the water system. This system has improved monitoring of the tanks, eliminating tank overflows, and decreasing lost water.
- All the connections to the water system are metered and read monthly using the automated Masterlink Radio System. The City has an annual replacement plan and typically replaces 200-250 meters each year. This ensures meters continue to function properly and are providing accurate data. In addition, any water meter that is found to not be functioning correctly, regardless of where the meter falls in the replacement plan cycle, is replaced.
- The City is able to repair leaks (on the City's infrastructure) within three days of detection.
- The City provides water conservation education and public outreach through:
 - Providing conservation tips on City's website and social media platforms.
 - Information in City's newsletter.
 - Providing a copy of the Annual Consumer Confidence Report with a utility bill.
- The City maintains membership in the Rural Water Association to educate personnel and keep up to date on source protection, public education and current regulations.
- The City requires the use of secondary water for all outdoor uses, where available.
- The City continues to complete infrastructure projects identified in the Capital Improvement Plan.

CONTACT

The following individuals are responsible for meeting efficiency goals:

Assistant Public Works Director, Bryan Wageman

1600 East South Weber Drive

South Weber, UT 84405

bwageman@southwebercity.com

EVALUATION OF EXISTING CONSERVATION EFFORTS

In the 2017 Water Conservation Plan, the City established three goals based upon the issues identified. The goals and status of each are provided below:

Goal 1 – Planned System Maintenance. The City is currently working on putting together a Capital Improvements Program that will take into account the needs of the water system along with available budget and identify the year in which these projects can be constructed. Related to that, the City is also currently analyzing current funding from the water utility fee. Potential changes to the rates may be implemented, as needed, in order to fund the construction of these projects.

Status: The City is in the process of finalizing the updates to the Water Capital Facilities Plan and beginning work on the related Impact Fee Facilities Plan and Impact Fee Analysis. Once these studies are complete, the City will evaluate the water rates.

Goal 2 – Correcting System Deficiencies. The City plans to construct projects as identified in the June 2016 Culinary Water Capital Facilities Plan. The City has identified projects to be completed and the proposed budget year for completion.

The following projects were listed and the status of each is listed below:

Project No.	Project Description	* Proposed Budget Year
2	Upsize to 8" pipe: 1375 East, south of Lester; 7600 South, west of 1375 East; 1800 East, south of 7775 South; 1750 East, south of 7775 South; Jensen Circle; 1250 East, between South Weber Dr. and Lester Dr.; <i>Status: These projects are being re-evaluated are part of the current CFP study. Some of these projects may no longer be needed based on updated fire flow requirements given by the Fire Marshal.</i>	2017- 2018
3	Install new generator at Church Street pump station <i>Status: Complete, 2018</i>	2017- 2018
4	Construct new supply line from West Bench reservoir(s) to South Weber Dr. at 475 E. for secondary feed to zone 1, including PRV; connect 925 East to S. Weber Drive <i>Status: Being evaluated as part of the current CFP study.</i>	2018- 2019
5	Relocate transmission line to East Bench Reservoir #3 <i>Status: Currently under construction, anticipated completion 2022.</i>	2018- 2019
6	West End Reservoir Rehabilitation <i>Status: Complete, 2020</i>	2019- 2020

Project No.	Project Description	* Proposed Budget Year
7	Connect Lincoln Lane and 2750 East; upsize to 8" 8075 South, 2575 East, and 2350 East (south of Deer Run Dr.); upsize US 89 crossing at 8075 S to 12"; abandon existing 4" PSV and replace with new 8" PRV and line on Peachwood Dr. <i>Status: Being evaluated as part of the current CFP study.</i>	2019- 2020
8	Automate Weber Basin well feed to West Reservoir to match supply to system demand <i>Status: Current Project, 2022</i>	2021- 2022
9	Rehabilitate Well #1; add new generator; modify controls <i>Status: Controls modification complete, currently working on generator, well rehabilitation pending.</i>	2022- 2023
10	Upsize Cottonwood Dr. to 8" line <i>Status: Complete, 2021</i>	2024- 2025
11	Upsize to 8": 7875 South; 7925 South; Peachwood Dr. between 7925 South and Peachwood Way; 8100 South between Peachwood Drive and 2300 East; 2300 East; 2175 East; 7875 South between 2100 and 2175 East; 2100 East between 7800 South and City Park <i>Status: Being evaluated as part of the current CFP study.</i>	2025- 2026
12	Upsize remaining 4" and 6" lines to 8" (30,000 lf), as funds allow <i>Status: These projects are being re-evaluated are part of the current CFP study. Some of these projects may no longer be needed.</i>	Start in 2022- 2023
15	Upsize South Weber Drive (6650 South to end) to 10" line <i>Status: Being evaluated as part of the current CFP study.</i>	2027- 2028

Status: As indicated in the table above, several projects have been completed or are currently being completed. Due to immediate need, some projects have been or are being completed sooner than originally anticipated, resulting in a delay in the completion of projects originally anticipated to be completed sooner. The City is currently in the process of evaluating current and future capital projects as part of the CFP study which may alter the inclusion and/or priority of the projects listed in the above table.

Goal 3 –Future Public Outreach. The City will designate a current employee as the Water Conservation Coordinator. This Coordinator will be responsible for overseeing conservation and public outreach efforts starting as early as January 2018. The Coordinator will also be responsible for overseeing a Water Conservation Committee. The Committee will establish annual goals and

work to implement them throughout the year. All efforts and progress made shall be documented and provided in an annual report to the Mayor and City Council.

Status: *The City is re-evaluating this goal as part of the current plan.*

NEW BEST MANAGEMENT PRACTICES & IMPLEMENTATION PLAN

In addition to continuing existing practices and implementing the Capital Facilities Plan, the City plans to also:

Goal 1 – Create a Drought Contingency Plan: By December 2023, the City will create a written Drought Contingency Plan. As the majority of water for the City is supplied by the Weber Basin Water Conservancy District (WBWCD), the City’s Drought Contingency Plan will follow the similar levels of implementation as those found in the WBWCD Drought Contingency Plan. The completion and future implementation of this Plan will be overseen by the City Manager.

Goal 2 – Increase Reporting Accuracy: The City continues to make improvements to the overall water system to increase the efficiency of water used and accuracy of the data reported. As a way to increase the level of accuracy and verify water use, the City plans to install additional meters and a dynamic meter read system. This will be completed in two parts:

1. Continue the installation of the dynamic meter read system. This system, when complete, will allow the City to monitor all usage at any given time. This is an ongoing project and part of the City’s meter replacement plan. The real-time monitoring portion of this dynamic system will be operational by January 2024.
2. By the end of 2022, the City plans to install meters on the downstream side of each reservoir to measure the amount of water leaving each tank. This will allow the City to more accurately monitor water entering and leaving the system and compare it to water used by each metered connection. It will also provide more accurate peak day demand data.

Goal 3 – Water Rate Study. Over the next five years, the City will verify the accuracy of water rates as it relates to usage and conservation and will ensure rates are consistent with State requirements and the needs of the City’s overall water system.

Goal 4 - Reduce the City’s Per Capita Water Use Rate By 5% by 2027: The City’s water usage is currently 59.09 gallons per capita per day (gcpd). The goal is to bring this down approximately 5% to 54.09 gcpd. The savings will be measured in acre-feet and will be analyzed every five years by using the data that is submitted to the Division of Water Rights. This goal will be implemented by:

1. Implementation of Goals established in this report.
2. Replacement of non-functioning meters as needed.
3. New dynamic metering infrastructure will allow for real-time monitoring of water use. Once installed, the Public Works Department will monitor this system on a continual basis and investigate potential leaks and repairing where needed.

4. Improve the education and awareness of water consumers by exploring the ability for consumers to view their own water use using the City's new dynamic metering system - either through an online platform or by providing more graphical and detailed water use data on monthly water bills.
5. Public awareness and education efforts through the City's website, social media platforms, newsletter and other City outlets. The City will utilize existing messages from Slow the Flow, DWR's Conserve Utah, WaterSense, and others where appropriate.

PUBLIC INFORMATION, EDUCATION, & PROGRAMS

The City currently provides regular information to residents and educates them on wise watering practices through the City's website, social media platforms, and newsletters.

ORDINANCES & STANDARDS IN PLACE

The following ordinances and standards have been adopted and are currently in place:

- Public Work Standards, 2019
- City Code, Title 11 Subdivision Regulations
- City Code, Title 8 Water Regulations



PRESSURE ZONES

- ZONE A
- ZONE 1
- ZONE 2
- ZONE 3
- ZONE 4

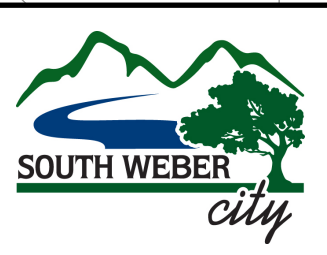
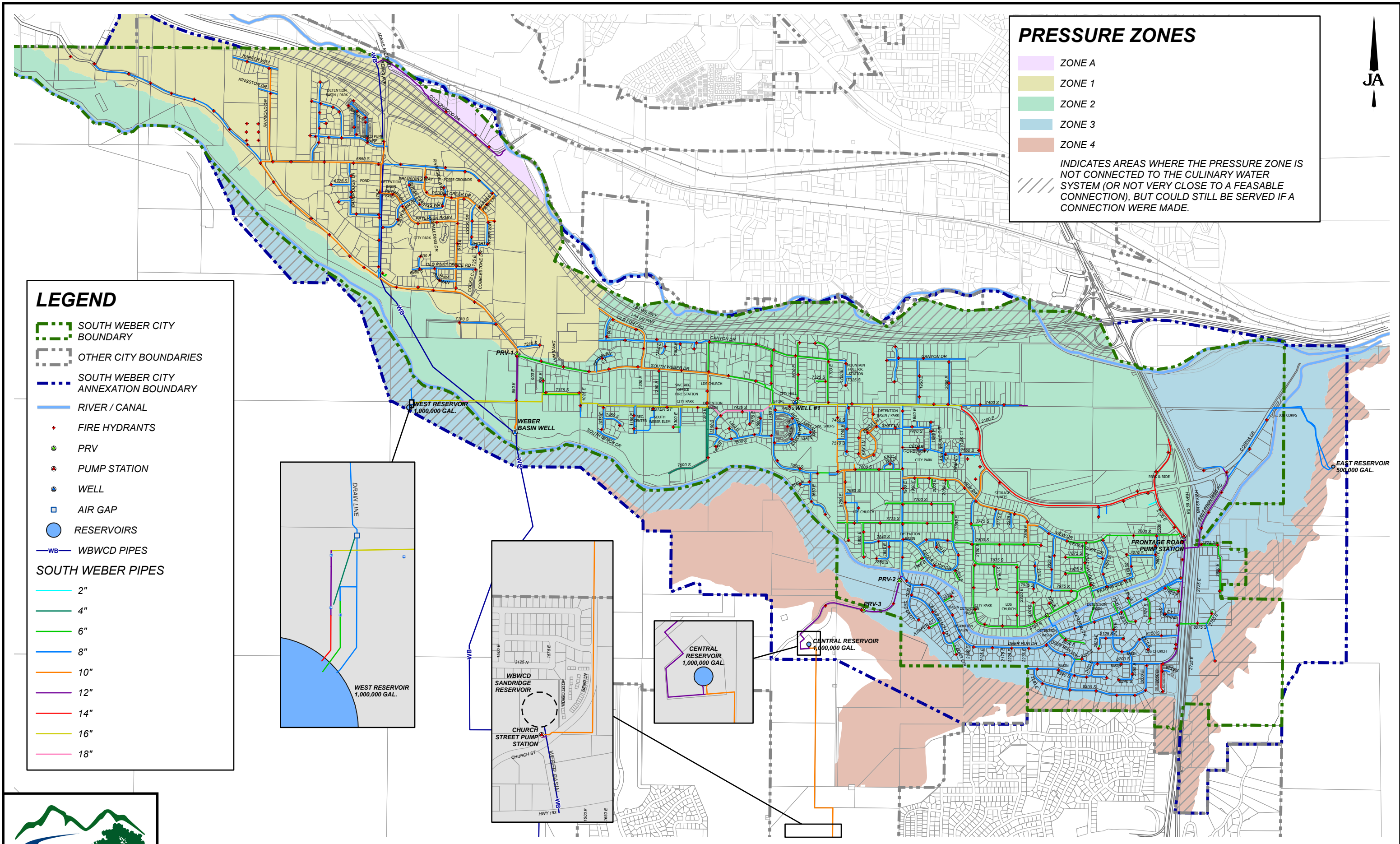
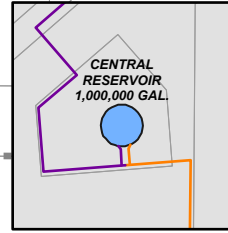
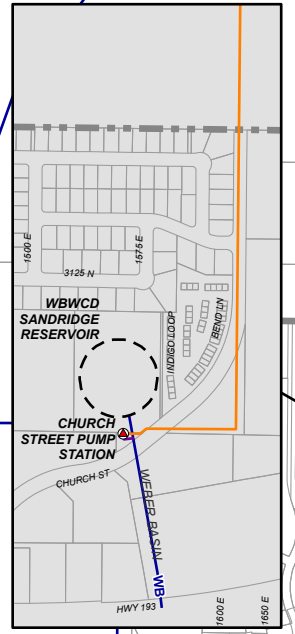
INDICATES AREAS WHERE THE PRESSURE ZONE IS NOT CONNECTED TO THE CULINARY WATER SYSTEM (OR NOT VERY CLOSE TO A FEASIBLE CONNECTION), BUT COULD STILL BE SERVED IF A CONNECTION WERE MADE.

LEGEND

- SOUTH WEBER CITY BOUNDARY
- OTHER CITY BOUNDARIES
- SOUTH WEBER CITY ANNEXATION BOUNDARY
- RIVER / CANAL
- + FIRE HYDRANTS
- + PRV
- PUMP STATION
- WELL
- AIR GAP
- RESERVOIRS
- WBWCD PIPES

SOUTH WEBER PIPES

- 2"
- 4"
- 6"
- 8"
- 10"
- 12"
- 14"
- 16"
- 18"



NOTES:

SCALE:
1" = 1,800 ft

DATE:
06/01/2022

DESIGNED KCT

DRAWN KCT

CHECKED BKJ

JA CONSULTING ENGINEERS

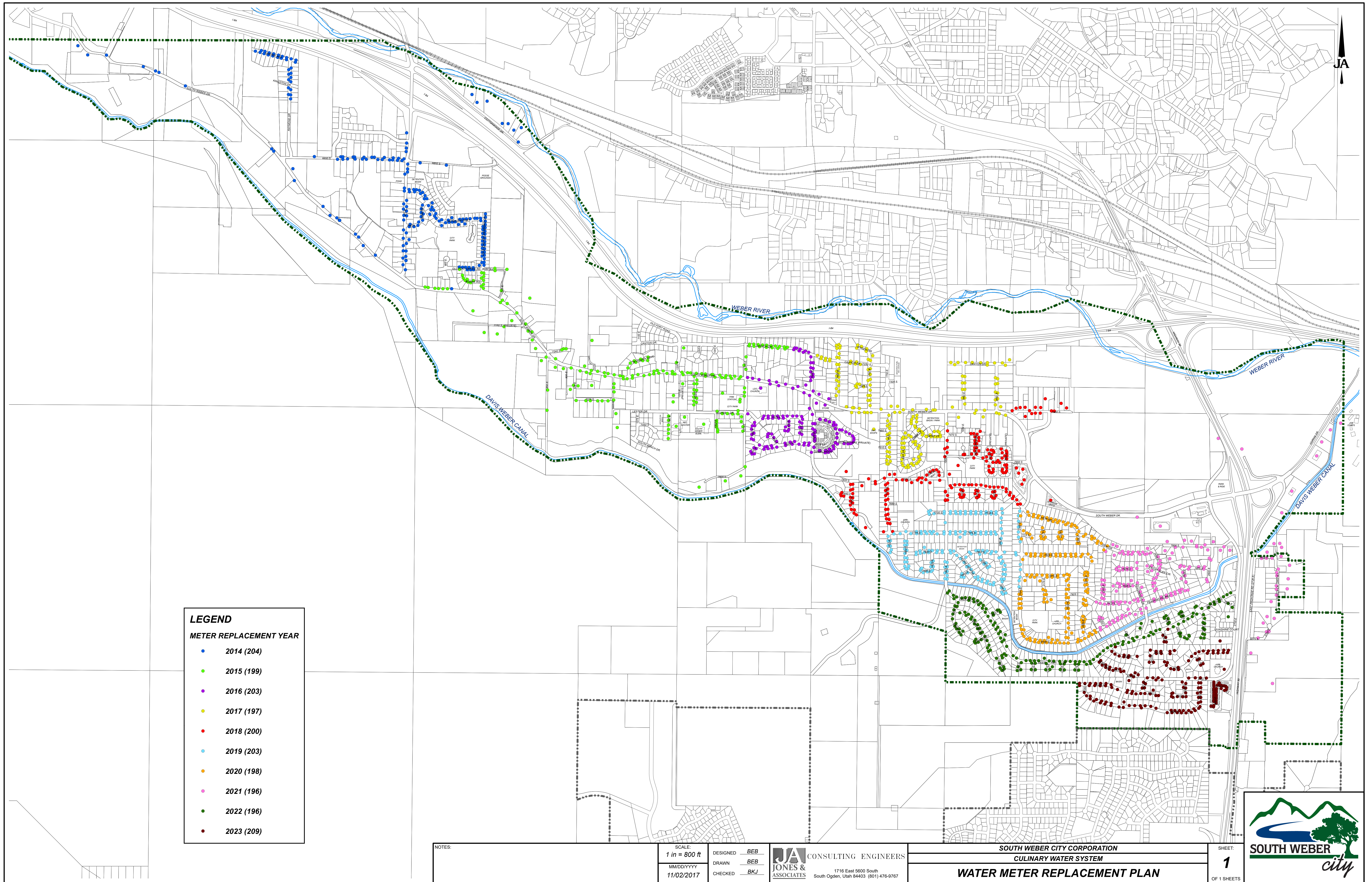
JONES & ASSOCIATES

6080 Fashion Point Drive
South Ogden, Utah 84403 (801) 476-9767

SOUTH WEBER CITY CORPORATION
WATER CONSERVATION PLAN

EXISTING WATER SYSTEM

MAP:
1



LEGEND
METER REPLACEMENT YEAR

●	2014 (204)
●	2015 (199)
●	2016 (203)
●	2017 (197)
●	2018 (200)
●	2019 (203)
●	2020 (198)
●	2021 (196)
●	2022 (196)
●	2023 (209)

NOTES:

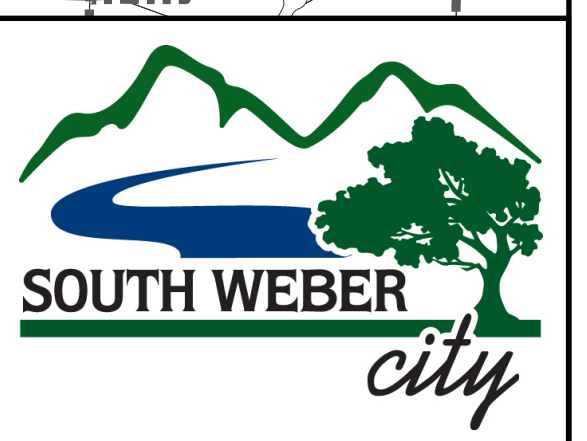
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1 in = 800 ft
MM/DD/YYYY
11/02/2017

DESIGNED: BEB
DRAWN: BEB
CHECKED: BKJ

JA CONSULTING ENGINEERS
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South Ogden, Utah 84403 (801) 476-9767

SOUTH WEBER CITY CORPORATION
CULINARY WATER SYSTEM
WATER METER REPLACEMENT PLAN

SHEET:
1
OF 1 SHEETS



JA