
DATE: June 19, 2023

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SUBJECT: SCSA No. 3 Water Use Review and ERC Estimation

PROJECT NO: 358.01.100

INTRODUCTION

As requested, we have estimated typical water use for residential connections to the Service Area public water system (not including the private well in Upper Silver Creek). This estimate is based on water billing data for 2020, 2021, and 2022, which was provided to us by the Service Area. Water billing data is a record of water use, as measured by the customers' water meters. Additionally, water production data was obtained. This data is a measure of water produced by the District and Greenfield wells and is measured with the water meters at each wellhead. Using these two data sets, the portion of annual water consumption used indoor and outdoor was also estimated. This analysis relies on the accuracy of the reported data, which we expect to be good data.

METHODOLOGY

The Service Area is required to meet the total water demand within the system. The amount of total demand is estimated based on the meter data from each of the Service Area's two source wells. The data is collected and recorded with the Service Area's SCADA system. The source data provides total water use but does not break down the water use by user type and does not directly break down the use into indoor and outdoor use.

The billing data identifies the user types (i.e., residential, commercial, institutional). However, the billing data does not identify total water use since some water is non-metered (i.e. leakage, fire

service, water quality flushing, broken meters, illegal connections). It is anticipated that leakage is the highest portion of non-metered water.

In the analysis, the billing data is used to estimate the percentage of water attributable to each type of use (residential, commercial, and institutional). Using these percentages, the total water in each category is scaled-up to equal the total anticipated production / demand.

Indoor and Outdoor Use

In order to estimate indoor vs outdoor use, it is assumed that indoor use can be predicted based on winter water demand. Flows between November and April are assumed to be primarily indoor use. The same amount of indoor use is assumed for the summer months. The remaining water demand is assumed to be outdoor.

Number of Connections

The Service Area provided the total number of connections for each use type.

Typical Residential Connection

All of the water use that is attributed to residential connections was divided by the number of connections to get a typical water demand per connection. This typical demand was further divided into indoor and outdoor use. The key results are provided in the results section as follows and included on the attached table.

RESULTS

The key results from this analysis are included on the attached spreadsheet and are summarized as follows:

1. Average annual water demand per residential connection for 2020 through 2022 (including a factor for variability) is as follows:
 - a. Total = 0.55 AF/YR/Connection
2. The estimated indoor and outdoor typical water demand per residential connection is as follows:
 - a. Indoor = 0.28 AF/YR/Connection
 - b. Outdoor (Irrigation) = 0.27 AF/YR/Connection

HANSEN, ALLEN & LUCE, INC.

SCSA NO. 3

2023 Water Use Review and ERC Estimation

358.01.001

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2023 WATER USE REVIEW AND ERC ESTIMATION BASED ON BILLING SOFTWARE DATA

Polaris Metered Annual Usage (AF)*

Year	Residential	Commercial	Institutional	Irrigation	Total (AF)
2022	70.53	2.25	0.55	0.01	73.34
2021	70.1	1.24	0.17	0.09	71.6
2020	65.98	3.86	0.12	0.15	70.11

*From Summit County Service Area #3 - Polaris Metered Usage.

Estimated Water Loss*

Year	Total Retail Use (ACFT)	Total From Sources (AF)	Estimated Water Loss %	Total Production/ Total Billed
2022	73.34	87.32	16.01	1.191
2021	71.60	85.84	16.59	1.199
2020	70.11	99.76	29.72	1.423

*Total Retail Use from Summit County Service Area #3 - Polaris Metered Usage.

Total From Sources from Arsenic Quarterly Reports on Water Production.

Estimated Annual Production (ac-ft)*

Year	Residential	Commercial	Institutional	Irrigation	Total (AF)
2022	83.97	2.68	0.65	0.01	87.32
2021	84.04	1.49	0.20	0.11	85.84
2020	93.88	5.49	0.17	0.21	99.76

*Estimated annual production. HAL distributed flows in excess of billed data equally to match production data.

Reported Number of Connections*

Year	Residential	Commercial	Institutional	Irrigation	Total
2022	194	9	2	0	209
2021	193	9	2	0	208
2020	193	9	2	0	204

*From Summit County Service Area #3 Public Water Supplier reported to the Utah Division of Water Rights.

Water Use/ERC

Year	Average Residential Water Production per ERC (AF)
2022	0.43
2021	0.44
2020	0.49
Average	0.45

Residential Variability **0.12** Three year, highest minus lowest divided by lowest.
 Max. x Residential Variability **0.55**

Polaris Metered Residential Indoor/Outdoor Water Use (%)*

Year	Indoor (%)	Outdoor (%)
2022	50	50
2021	48	52
2020	56	44
Average	51	49

*From Summit County Service Area #3 - Polaris Metered Usage.

Indoor use was based on winter water use assumed Nov-April.

Residential Level of Service (AF/YR)

Residential Level of Service (AF/YR)	0.55
Indoor (AF/YR)	0.28
Outdoor (AF/YR)	0.27

Note: At 3 FT/AC, this = 0.08 irrigated AC