

2.0 WATER USE CRITERIA

Water demand criteria are necessary to accurately develop a hydraulic model of any system and to evaluate the capacities of pumping, transmission, and storage facilities. To this end, RWD No. 1 water usage data from the past 20 years was tabulated and analyzed. Table 2-1 summarizes both the past 20 years and projected next 20 years of water purchased, sold, and customers served.

The annual trend has been a slow increase in water purchased, averaging about 1.5% annually. This is consistent with the steady increase of new residential customers at about the same rate. RWD No. 1 typically purchases 15 to 17 million gallons per year (MGY) from the City of Eskridge, but peaked at 18.5 MG in 2021. The District averages about 12 MGY in sales, with the 20% average difference being water loss. Water purchased depends largely on the annual precipitation and water loss. As reflected in Figure 2-1, the growth rate has trended steadily, but annual water usage can vary by 25%.

Since 2003, the residential customer base has grown from 154 to 195 active meters. This represents a 20-year average of 1.3%. The average daily water use, on the basis of water purchased from the City of Eskridge, has averaged 230 gallons per day (gpd) per customer. However, it is the drought years that test the integrity of a rural water district and the average customer demand was 281 gpd in 2012. Using this data as representing a drought year, and evaluating facilities based on drought year conditions, projections have been made for 2023 – 2042, extrapolating the 20-year average for meter growth combined with 280 gpd per meter. Referring to actual historical peak day usage during drought years, the peak-to-average ratio is 1.6, resulting in an anticipated peak day demand of 450 gallons per customer. The system-wide estimated current peak day demand is about 85,000 gallons.

In 10 years, the annual projected water purchased during a drought year is 23 MG, with a peak day of approximately 100,000 gallons. By 2042, the potential annual demand in a drought year is 26 MGY and a projected peak day demand of 112,000 gallons.

Twenty meters register essentially no water on a monthly basis. The vast majority of customers use between 1,000 and 10,000 gallons per month on average. Only 5 customers average over 20,000 gallons per month, with three of those averaging between 20,000 and 30,000 gallons. The two largest customers are well above this volume. Steve Gleason (12410 Blazing Star Rd.) averages 62,000 gallons per month, with a peak month over the last year of 90,000 gallons. The largest customer is Triplett, Inc., the truck stop along I-70, south of Maple Hill, averaging 73,000 gallons per month, with a maximum month demand over the last year of 97,000 gallons. These large customers are treated uniquely in the hydraulic model developed as part of this study.