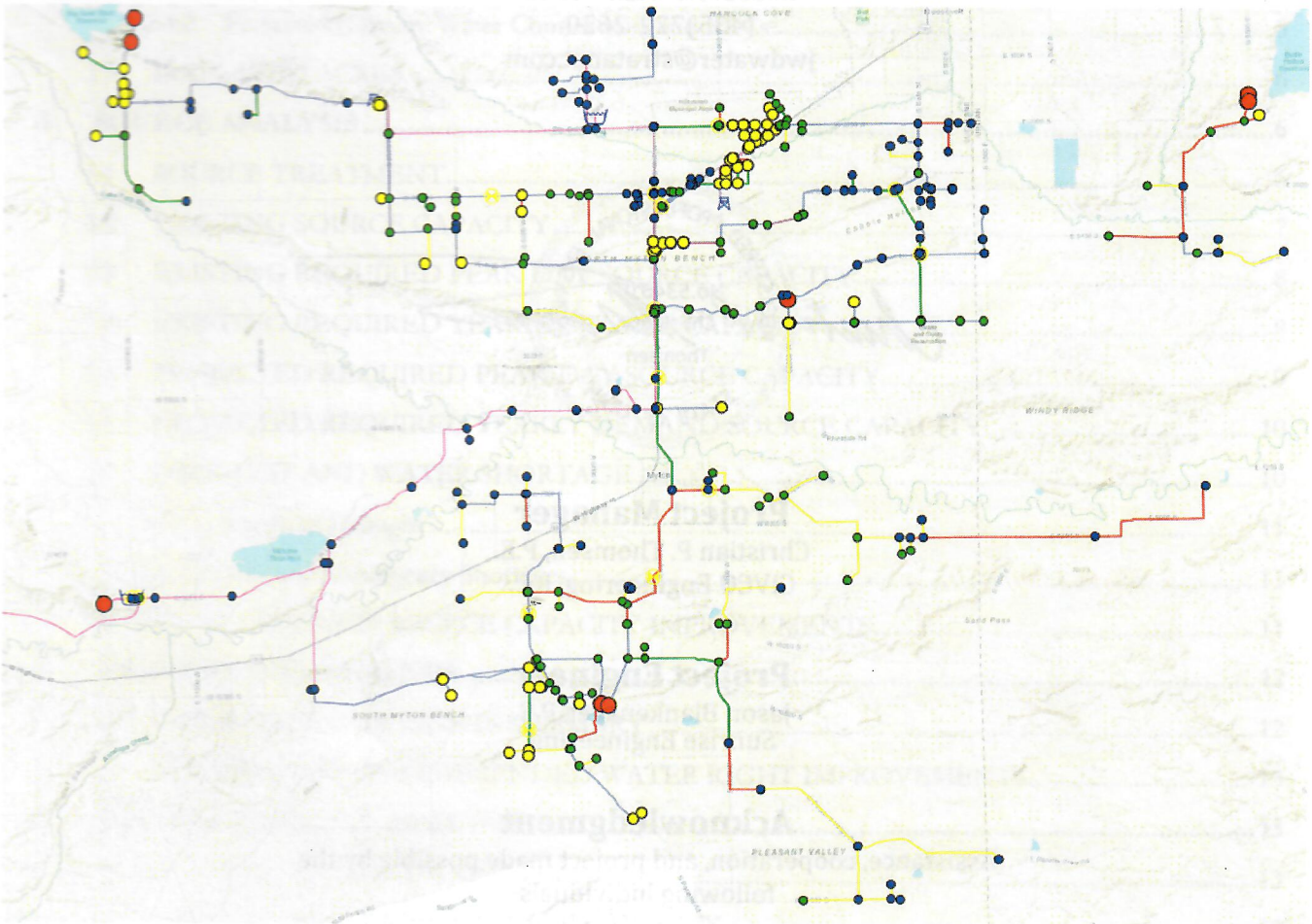
Johnson Water Improvement District

Culinary Water Master Plan



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Culinary Water Master Plan
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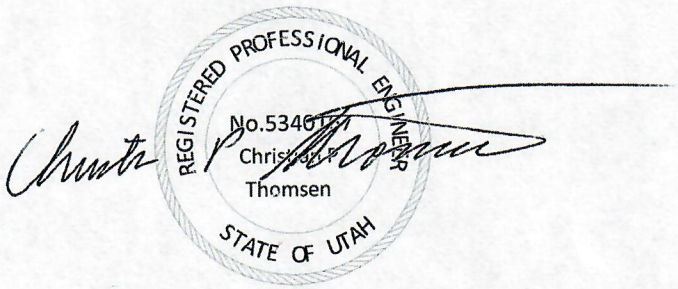

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1. INTRODUCTION

Johnson Water Improvement District (JWID) provides culinary water to unincorporated areas of Duchesne County, Utah from Bridgeland to Roosevelt, Independence to Upalco and the Myton Bench. JWID serves a population of approximately 2,500 people, as well as multiple commercial, industrial, institutional, and stock watering connections. JWID culinary water is used for both indoor and outdoor watering and is used as the sole irrigation or stock water for several connections within the system. The largest water users on the system are typically oilfield users that use the provided water for a variety of purposes. The previous JWID Culinary Water Capital Facilities Plan was completed by Epic Engineering in December of 2013. As part of the previous plan, a water model was created for the JWID system and a list of recommended improvements was outlined. Since the 2013 JWID Culinary Water Capital Facilities Plan, the JWID has made significant changes to the water system including replacement of multiple sections of line along Highway 40 and in other locations and connections to the Victory Pipeline. JWID has also worked to update their GIS database to depict water lines, hydrants and meter locations accurately for existing conditions. Due to these system changes, the JWID has a need for an updated water model and master plan for its culinary water system. An area map showing the general location of JWID is provided. Figure 2.1-1

This Water System Master Plan is based on a five-point analysis of JWID's culinary water system, which includes water rights, source capacity, treatment, storage capacity, and distribution in accordance with the *State of Utah Rules Governing Public Drinking Water Systems*. This Plan analyzes each aspect of JWID's water system and identifies the deficiencies in each of these areas. An accompanying hydraulic water model has been created with this Master Plan in order to analyze the capacity and deficiencies of the existing distribution system. A Capital Improvements Plan has been included in this Water System Master Plan, which addresses the recommended improvements. The Capital Improvements Plan includes an Engineer's Opinion of Probable Costs for the recommended improvements, along with a recommended timeline for implementation. It is recommended that regularly scheduled reviews and updates of this Master Plan should occur at a minimum of every five years

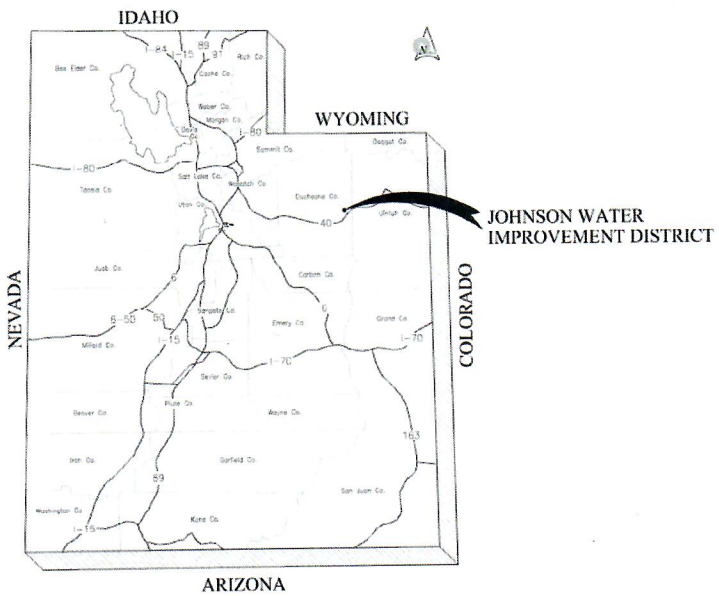

Figure 2.1-1 JWID Location Map

2. SYSTEM USER ANALYSIS

2.1 RECOMMENDED GROWTH RATE

An essential element in the development of a Culinary Water Master Plan is the projection of the system growth rate. The population growth rate gives the planner a glimpse of future demands that may need to be accommodated by the culinary water system. Specific growth records for the JWID service area are not available, so the population projection data provided by the State of Utah through the Kem C. Gardner Policy Institute at the University of Utah for Duchesne County has been considered to develop the projected growth rate for this plan. These population projections are relevant for the residential and, to some extent, the commercial use in the JWID, but a large portion of the usage in JWID is directly tied to oilfield activities and can be very unpredictable from year to year. As unpredictable as oilfield use can be, the assumption for this plan will be to use the projected growth rate for population growth to also anticipate other water use growth as well.

Table 2.1-1 Duchesne County Growth Rates

Year	Census Population	Annual Growth Rate	
2015	20,821		
2025	24,277	2015 - 2025	1.66%
2035	26,596	2025 - 2035	0.96%
2045	29,178	2035 - 2045	0.97%
2055	31,205	2045 - 2055	0.69%
2065	33,153	2055 - 2065	0.62%
Average Annual Projected Growth Rate			**0.98%**

As a second point of reference, and in addition to the population growth rate, the change in quantity of water connections was analyzed. Since 2015, twenty-five new connections have been added to the JWID system, raising the total number of connections to 833. This represents a 1.0%/year increase in connections. Considering both the population projections from the University of Utah and the average increase in connections over the past few years, an average annual growth rate of 1.0% will be used for this plan. The estimated population served by the JWID at the time of this study is 2,500. Table 2.1-2 shows the projected population for the JWID service area using an annual growth rate of 1.0%.

Table 2.1-2 Projected JWID Population

Year	Projected Population
2018	2,500
2028	2,762
2038	3,050
2048	3,370
2058	3,722
2068	4,112

It is important to note that the estimated annual growth rate and subsequent projected population may not reflect that of the actual growth rate. Although deviations in the growth rate may affect the timing of required system improvements, the associated increase in revenue from system fees, including hook-up fees and user fees, will adequately provide the means to allow needed improvements. Therefore, the system growth can fluctuate as needed to reflect the needs of the JWID. Established user fees, hook-up fees, and impact fees should not require adjustment if the actual growth rate varies from the estimated 1.0% growth rate used in this study.

2.2 LENGTH OF PLANNING PERIOD

The planning period for this Water System Master Plan will be 50 years, beginning in 2018 and running through 2068. Future system analyses will also be provided for the intermediate 20-year planning period. JWID should review this Water System Master Plan every five years at a minimum or sooner if significant changes in population or the system happen.

2.3 DISTRICT BOUNDARY

The area outside of JWID's service area is serviced by six other water users. To the north of JWID is Cedarview Montwell Special Service District, Roosevelt City Water System and Ballard Water Improvement District. To the east of JWID is Ute Indian Tribe Water. To the northwest is Upper Country Water Improvement District (Upper Country) and to the west is East Duchesne Water Improvement District (EDWID). Figure 1 in Appendix B shows JWID's approximate boundary and approximate location of other water providers. The boundary information for the other water users on the map is taken from Utah Water Rights and does not show the correct boundaries. The dark black line on the map was created using information from JWID. The boundary information is the best available. It is recommended that JWID research their boundary and the surrounding water providers to create an accurate map of JWID and keep an organized file of the past and future changes to the district boundary.

JWID has recently completed a service agreement with Roosevelt City for an area where Roosevelt City has made incursions by delivering water to JWID customers. The current agreement has a sunset clause that calls for renegotiation after 15 years. It is recommended that at the end of the 15-year agreement that JWID serve the connections in their district that are in the Roosevelt City incursion area to alleviate water quality and revenue issues caused by the incursions.

2.4 CULINARY WATER CONNECTIONS

2.4.1 Existing Culinary Water Connections and ERCs

According to the data provided by JWID, there are currently 833 connections on the system that have had use in the last two years. There is a total of 948 connections recorded in the accounting software at JWID. The additional recorded connections are connections that have switched users or have not been used in the last two years. Of the connections with use, 696 are classified as Residential Connections, 91 Commercial Connections, 8 Industrial Type 1 Connections, 5 Industrial Type 2 Connections, 3 Trailer/RV Park Connections, 26 Stock Water Connections, and 4 Fracture Water Connections. The following figures show the usage from May 2017 to May 2018 based on available usage data for that year.