2014

CENTRAL IRON COUNTY WATER CONSERVANCY DISTRICT

WATER MASTER PLAN REPORT

REGISTERED PROFESSIONAL ENGINEER
Kelly W. Crane
No. 5251963
STATE OF UTAH

ENSIGN
THE STANDARD IN ENGINEERING

Contents

List of Figures

List of Tables

EXCUTIVE SUMMARY

EXECUTIVE SUMMARY

Use of this Water Master Plan Report

This master plan document and the calculations included were performed using known and accepted methods. Actual information (usage numbers, water rate fees, population baselines) were used when available. If such information was not found, engineering estimates and assumptions were made. All such estimates or assumptions are duly noted throughout the document. Estimated figures are specific to the region, Iron County, and water systems of comparable size within the region.

It is anticipated that this master plan document will be used as a prominent planning tool when considering the future growth within the Central Iron County Water Conservancy District (CICWCD). The information herein will allow CICWCD to be informed and aware of the current overall functioning status of the culinary water system and of any existing deficiencies.

Existing System

CICWCD's existing water delivery system is functioning and currently delivers quality culinary water to all of its 652 connections (644 single connections and 8 bulk water connections). The existing system functions and serves all connections with pressures in accordance with state requirements.

CICWCD currently owns 2,800.85 acre-feet of water rights. Currently, based on 2012 - 2013 usage, the District is using almost 931 acre-feet of water annually (846 acre-feet in central system, 29 acre-feet for Chekshani Cliffs, and 56 acre-feet for Cedar Highlands), with a total of 1190 connections (1,082 ERCs in central system, 37 ERCs in Chekshani Cliffs, 71 ERCs in Cedar Highlands) on the system. CICWCD does not need to purchase additional water rights to meet current use.

CICWCD has sufficient storage capacity to meet existing needs. The total required storage is 1.62 million gallons. The District currently has 2.28 million gallons of storage (320,000 gallons at Cedar Highlands and 240,000 at Chekshani Cliffs). The procedure for calculating storage requirements will be discussed in the State Requirements section.

The state water source requirement requires that a water system be able to produce the required amount of water. This required amount of water is based on indoor and outdoor use. Currently the District exceeds the state water source requirement by 1,335 gallons per minute (gpm) for the central system, 46 gpm for Chekshani Cliffs, and 48 gpm for Cedar Highlands. No additional sources need to be developed in order to meet this requirement but as growth continues CICWCD should investigate new sources for the central system. The State Requirements section discusses the procedure for calculating source requirements.

Water Conservation

Utah has a goal of reducing the total per capita usage by 25% by 2025. The total current per capita use in CICWCD is 214 gallons/day (indoor and outdoor use). To meet the state goal, CICWCD will need to reduce per capita usage to 161 gallons/day. In order to reduce per capita water use in the future, the District must institute strict outdoor conservation practices. This can be accomplished through education and a tiered rate structure that charges a premium for large water users.

Water Rate Study

A water rate study was performed using actual water usage data provided by the District and covering the time frame from April 2012 – April 2013. It was found that the monthly average single user connection in the District used on average around 15,926 gallons per month. Based on the current water rate structure the average monthly water bill in 2012-2013 for all users in the District was $35.71.

The current water rate structure was analyzed according to its effectiveness in promoting water conservation and also the effectiveness of providing revenue for the system to stay self-sustaining and operational. Proposed water rate structures were determined to promote water conservation and to be in accordance with the Utah Division of Drinking Water's "Maximum Affordable Water Bill."

Impact Fee Study

The current impact for new users within CICWCD is $2,500 per connection. The impact fee is required to pay for the impact caused by new connections to the existing system. An impact fee study was performed to determine whether or not this amount was sufficient to cover the impact caused by new connections.

For the District the allowable impact fee is $20,055 for connection to the water system. It is recommended that an impact fee of $3,000 should be charged for any future water connections to the system.

A low interest loan can be obtained to pay for required future upgrades. Loans and improvements should be made in accordance with actual population growth. This will assure that there are sufficient impact fees to be used for loan repayment.

PROJECT OVERVIEW

PROJECT OVERVIEW

In cooperation with the Central Iron County Water Conservancy District (CICWCD), Ensign Engineering was tasked to evaluate the public water system, including supply, storage, and distribution as well as how the CICWCD system integrates with Cedar City and Enoch City. Based on the information and analysis of the system, Ensign Engineering prepared this Water Master Plan Report. The use of this water master plan will provide CICWCD the necessary information for upgrading and improving the existing water system and help CICWCD plan and budget for future growth and expansion as more demand is placed on the water system.

Growth within the CICWCD boundary has been consistent the past thirty years. The system currently serves around 1,930[1] individuals. The 2012 Governor's Office of Management and Budget also projects a growth rate of 2% for the next 50 years.

This water master plan will also discuss water management options that will encourage conservation within CICWCD (the State conservation plan requires a 25% reduction in use by 2025) in addition to analyzing the existing water system. Furthermore, this water master plan will discuss ways to better utilize the sources supplying the existing water system as well as solutions that promote sustainable design for future projects.

The Central Iron County Water Conservancy District is located in Iron County in the State of Utah as shown in Figure 1 CICWCD Boundary. CICWCD's service area consists of approximately 1,406 square miles of land with an average elevation of 5,846 ft. The current service area consists of 644 residential connections and 8 bulk water connections. Figure 2 CICWCD Subdivisions shows subdivisions served.

This master plan document makes recommendations for protecting and implementing plans to recover and reestablish the underlying aquifer and needed system improvements to remedy any current deficiencies and provide options to integrate connections with Cedar City and Enoch City. Ensign Engineering determined the demands exerted by future population growth. A Water Master Plan was created to address those portions of the system which are inadequate. The master plan identifies those portions which do not meet the current state regulations. Cost estimates for these recommended improvements were developed. These studies will be used to assist CICWCD in planning and generating revenue to fund future system improvements.

Ensign Engineering, with assistance from CICWCD staff, began the master planning study by collecting all pertinent data required to develop the base map and water system model. Base map creation is essential in model development and in understanding the current water system. The base map development also creates a method to digitally store the water system data in a GIS database. Utilization of GIS allows for a "living" record of information for the water system. Future analyses are expedited since all data will be stored in the database.

[1] Population based off of the Public Water System Master Report.

The majority of the data collected for this study was obtained from available City and County records. Descriptions of the data collected for the study is summarized in the following list:

- Population data (U.S. Census Bureau website)
- Population projection (Utah Governors office website)
- Water use data (obtained from CICWCD billing records)
- Water system details (obtained from as-built drawings and survey points collected for this study)
    - Locations of pipes
    - Slope of each pipe segment
    - Length of each pipe
    - Beginning and ending elevations
- Storage Tank details (obtained from as-built drawings)
- Water valve, fire hydrant, PRV, booster station, and water meter locations (survey points collected for this study)
- Aerial map (obtained from the Utah Automated Geographic Reference Center (AGRC))
- Current water rates
- Water source data (obtained from the Utah Division of Water Rights and District records)
- Land use data (obtained from the Utah Automated Geographic Reference Center (AGRC))

Aerial images were collected for CICWCD from the AGRC website. The pipes and tanks for the District water system were digitized for the map and shown in their correct locations. A map was created in AutoCAD and was imported into a GIS database. The GIS database was further expanded to contain the attributes of the system.

Figure 1 CICWCD Boundary

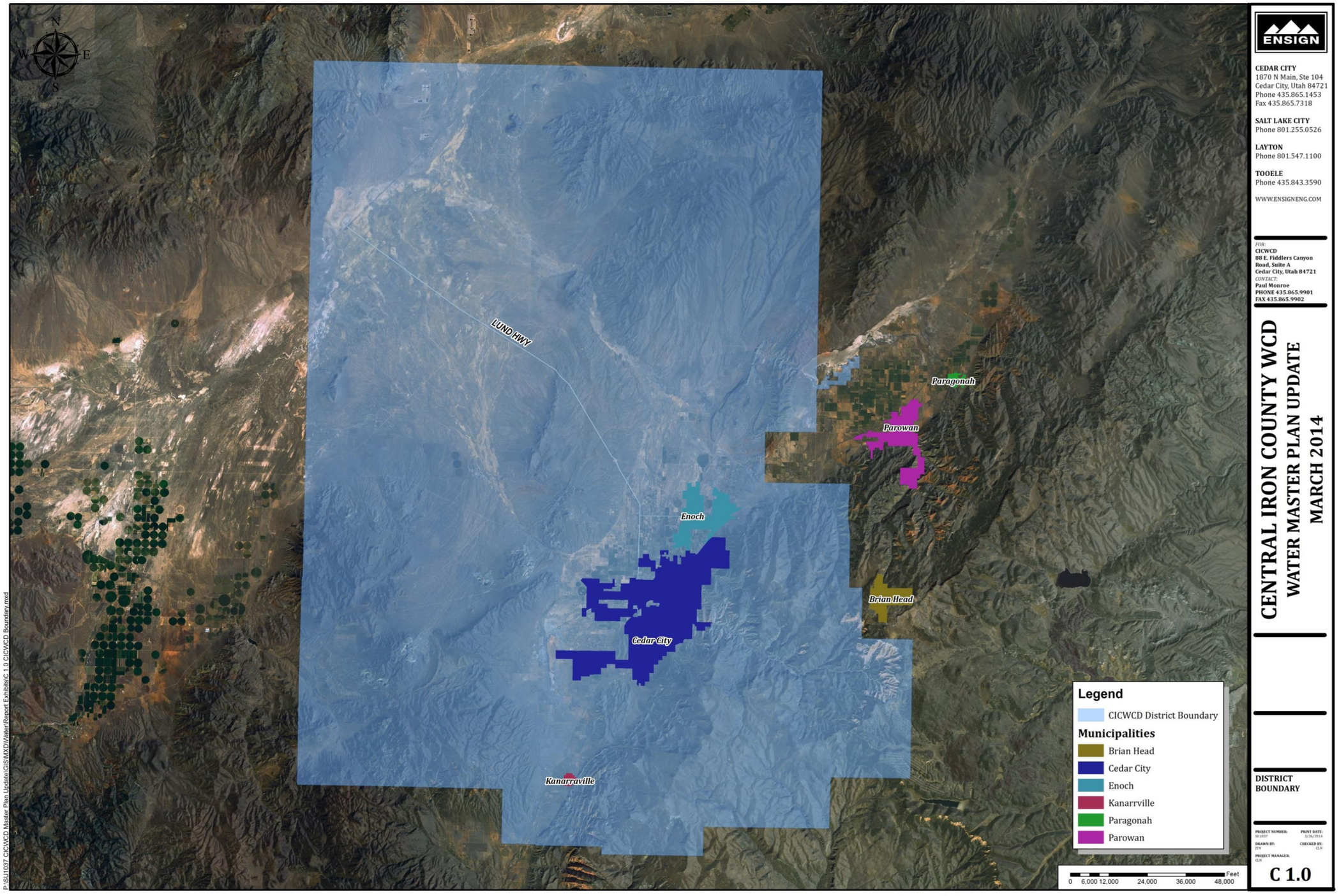
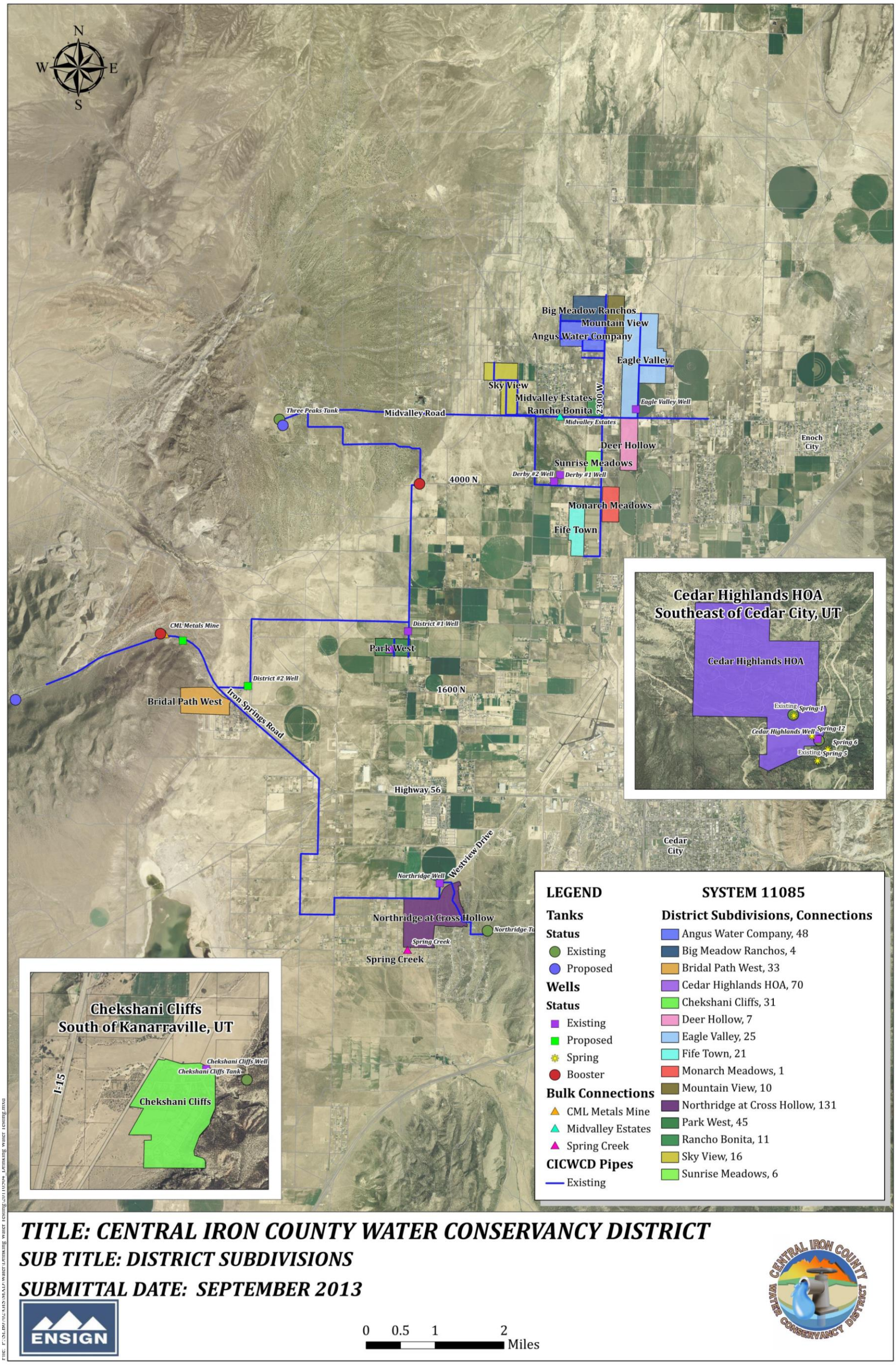


Figure 2 CICWCD Subdivisions



STATE REQUIREMENTS

1 STATE REQUIREMENTS

There are three main state requirements[2] that must be considered when evaluating a system for compliance. The first requirement is source, which considers water rights and well capacity. Second is storage, which considers water tank capacity and the third requirement is the distribution system which considers the pipe size capacity. It is essential that all three requirements are satisfied to meet state requirements. This section of the master plan will examine each requirement individually.

1.1 *Source Sizing*

In order to have adequate source sizing, a system must have capacity to deliver on the day of the highest water consumption (peak day demand) and have sufficient water rights to supply water (average yearly demand). First, this report will look at the capacity to deliver water under peak day demand and the required water rights for the average yearly demand.

1.1.1 Peak Day Demand

The state requires that a minimum of 800 gallons per day per Equivalent Residential Connection[3] (gpd/ERC) be used in determining indoor peak day demand for indoor use. If there is a high confidence that less water is used and proof through past usage data, this water can be reduced. Currently CICWCD has 1,190 ERCs consisting mainly of single family homes (1,082 in central system, 37 in Chekshani Cliffs, and 71 in Cedar Highlands). There are 8 bulk connections each assigned ERCs based on their monthly usage comparison to residential connections. The CICWCD District water system must be able to provide 952,000 gpd or 661 gallons per minute (gpm) (601 gpm for the central system, 21 gpm for Chekshani Cliffs, 39 gpm for Cedar Highlands).

Based on the Irrigated Crop Consumptive Use Zones and Normal Annual Effective Precipitation Map, the state requires 3.39 gpm per irrigated acre in the Cedar Basin for outdoor use. To determine the total number acres irrigated, it was assumed that there were 0.20 irrigated acres per ERC. The total number of irrigated acres per ERC calculated in the CICWCD is for a total state outdoor requirement of 807 gpm (734 gpm for central system and 25 gpm for Chekshani Cliffs).

[2] State of Utah Drinking water system requirements are found in the Administrative Rules R309-510.

[3] One Equivalent Residential Connection (ERC) refers to the amount of water used in a typical residence for both indoor and outdoor use. Each connection in a system is assigned a number of ERCs based on the amount of water that is used. A typical residence connection will be assigned one ERC. A connection that uses more than a typical residence (such as a laundromat) will be assigned more than one ERC. A connection that uses less than a typical residence (such as a Districthome) will be assigned less than one ERC.

To meet the requirement for source (summing indoor and outdoor use requirements), CICWCD must be able to deliver 1,468 gpm to the system from its well and springs. Reference Table 1 Peak Day Demand for indoor and outdoor peak day requirements.

Table 1 Peak Day Demand

Central System

Indoor Peak Day Demand	800 gpd
ERCs	1082
TOTAL INDOOR	**601 gpm**
Outdoor Peak Day Demand	3.39 gpm/irrigated acre
Irrigated Acres	216 acres
TOTAL OUTDOOR	**734 gpm**
TOTAL DEMAND	**1,335 gpm**

Chekshani Cliffs

Indoor Peak Day Demand	800 gpd
ERCs	37
TOTAL INDOOR	**21 gpm**
Outdoor Peak Day Demand	3.39 gpm/irrigated acre
Irrigated Acres	7 acres
TOTAL OUTDOOR	**25 gpm**
TOTAL DEMAND	**46 gpm**

Cedar Highlands

Indoor Peak Day Demand	800 gpd
ERCs	71
TOTAL INDOOR	**39 gpm**
TOTAL DEMAND	**39 gpm**

TOTAL COMBINED DEMAND	**1,420 gpm**

1.2 *Average Yearly Demand*

The state requires a minimum of 0.45 acre-feet per year of water rights per ERC for indoor use. Using 301 ERCs, CICWCD needs a minimum of 536 acre-feet per year of water rights for indoor use (487 acre-feet for the central system, 17 acre-feet for Chekshani Cliffs, and 32 acre-feet for Cedar Highlands).

For outdoor use, the state requires 1.66 acre-feet per irrigated acre of water rights. Using 238 irrigated acres, the minimum required outdoor average yearly demand is 371 acre-feet per year (359 acre-feet for the central system, 12 acre-feet for Chekshani Cliffs).

The minimum of required water rights to meet the state's requirement is 931 acre-feet per year (848 acre-feet for the central system, 29 acre-feet for Chekshani Cliffs, and 56 acre-feet for Cedar Highlands). Reference Table 2 Average Yearly Demand.

Table 2 Average Yearly Demand

Central System

Indoor Yearly Demand	0.45 acre-feet
ERCs	1,082
TOTAL INDOOR	**487 acre-feet**
Outdoor Yearly Demand	2 acre-feet
Irrigated Acres	216.4
TOTAL OUTDOOR	**359 acre-feet**
TOTAL DEMAND	**846 acre-feet**

Chekshani Cliffs

Indoor Yearly Demand	0.45 acre-feet
ERCs	37
TOTAL INDOOR	**17 acre-feet**
Outdoor Yearly Demand	2 acre-feet
Irrigated Acres	7.4
TOTAL OUTDOOR	**12 acre-feet**
TOTAL DEMAND	**29 acre-feet**

Cedar Highlands

Indoor Yearly Demand	0.45 acre-feet
ERCs	71
TOTAL INDOOR	**32 acre-feet**
TOTAL DEMAND	**32 acre-feet**
TOTAL COMBINED DEMAND	**907 acre-feet**

1.3 *Storage and Sizing*

For adequate storage sizing, the storage should be sized according to the local fire authority. CICWCD contracts with Cedar City Fire Department to provide fire service. The Cedar City Fire Department requires fire flows for a minimum of 2 hours during peak day demand. This will allow adequate storage if a fire occurs during peak day demand.

The minimum state storage requirement is 1,500 gpm for 2 hours for a total of 180,000 gallons. The state requires peak day demand storage of 400 gallons per ERC for indoor use and 2,528 gallons per irrigated acre for outdoor use in addition to the fire storage. Storage required for indoor use in CICWCD is 476,000 gallons and outdoor use storage required is 563,744 gallons. The total storage required for indoor use and outdoor use is 1,039,744 gallons (979,859 gallons for the central system, 33,507 for Chekshani Cliffs, and 28,400 for Cedar Highlands).

Summing the fire flows for peak day demand gives a total storage requirement of 1,581,766 gallons (997,859 gallons for the central system, 213,507 gallons for Chekshani Cliffs, and 208,400 gallons for Cedar Highlands). Reference Table 3 Storage Requirments.

Table 3 Storage Requirments

Central System

Fire Flow	1,500 gpm
Duration	2 hours
FIRE FLOW STORAGE	**180,000 gallons**

Indoor Peak Day Storage	400 gallons
ERCs	1082
Outdoor Peak Day Storage	2,528 gallons
Irriagated Acres	216 acres
PEAK DAY STORAGE	**979,859 gallons**

TOTAL REQUIRED STORAGE	**1,159,859 gallons**

Chekshani Cliffs

Fire Flow	1,500 gpm
Duration	2 hours
FIRE FLOW STORAGE	**180,000 gallons**

Indoor Peak Day Storage	400 gallons
ERCs	37
Outdoor Peak Day Storage	2,528 gallons
Irriagated Acres	7 acres
PEAK DAY STORAGE	**33,507 gallons**

TOTAL REQUIRED STORAGE	**213,507 gallons**

Cedar Highlands

Fire Flow	1,500 gpm
Duration	2 hours
FIRE FLOW STORAGE	**180,000 gallons**

Indoor Peak Day Storage	400 gallons
ERCs	71
PEAK DAY STORAGE	**28,400 gallons**

TOTAL REQUIRED STORAGE	**208,400 gallons**

TOTAL COMBINED STORAGE	**1,581,766 gallons**

1.4 *Distribution and Sizing*

The distribution system must be sized to meet three requirements. First, the system must be able to deliver fire flows (1,500 gpm) at a minimum pressure of 25 pounds per square inch (psi) during peak day demand throughout the system. Second, the system must be able to deliver the estimated peak instantaneous demand at a pressure of 30 psi. This is an estimate of the maximum amount of water that will be used in the system at one time. The peak instantaneous demand is 1.5 times the peak day demand for large systems for indoor use and two times peak day demand for outdoor use. Third, the system must be able to deliver peak day demand at a pressure of at least 40 psi. Reference Table 4 Utah State Pressure Requirements.

Table 4 Utah State Pressure Requirements

Peak Day Pressure	40 psi
Peak Instantaneous Pressure	30 psi
Fire Flow Pressure	20 psi
Fire Flow Required	1,500 gpm

EXISTING SYSTEM

2 EXISTING SYSTEM

Three existing conditions of CICWCD's water system are attended to in this section. The first condition will be source. This will consider water rights, well capacity and spring capacities. The second is storage which considers water tank capacity, and the third is the distribution system regarding pipe sizing capacity. Maps showing the existing system are shown in Figure 3 CICWCD Tanks, Wells, and Waterline Locations and Figure 4 Water Valve and Fire Hydrant Locations.

2.1 *Peak Day Demand*

The CICWCD water system has three springs and two culinary wells to meet the peak day demand requirement. Table 5 Existing Source Capacities shows each well and spring with its source capacity. Source capacities were given by the current water operator. Figure 3 CICWCD Tanks, Wells, and Waterline Locations shows the locations of the springs and wells. The total capacity of the springs and well are 2,015 gpm which is greater than the state requirement of 1,468 gpm (reference Section 2 State Requirements). The current sources are adequate to meet the existing demand.

Table 5 Existing Source Capacities

Source	Capacity
Northridge Well	153 gpm
Derby #1	290 gpm
Derby #2	155 gpm
Eagle Valley	170 gpm
District #1	250 gpm
West Slope	373 gpm
Park West	360 gpm
Cedar Highlands Well	70 gpm
Cedar Highlands Upper Spring	18 gpm
Cedar Highlands Lower Spring	6 gpm
Chekshani Cliffs	170 gpm
Total Available	**2,015 gpm**
Total Required	**1,468 gpm**

2.2 *Average Yearly Demand*

CICWCD owns 2,800.85 acre-feet of water rights that are available to meet the average yearly demand requirement. The state requires 956.77 acre-feet per year of water. The existing water rights are sufficient to meet the state requirement CICWCD's water rights are further discussed in Section 4 Water Rights.

2.3 *Existing Storage*

The CICWCD water system currently has 6 tanks for storage (3 in the central system, 1 in Chekshani Cliffs, and 2 in Cedar Highlands) . Three Peaks Tank is located at an elevation of 5,860, Bridal Path West Tank is located at 5,665, North Ridge Tank is at 5,910, Chekshani Cliffs Tank is at 5,690 feet, Cedar Highlands Upper Tank at 8,144 feet and the Lower Tank is located at 7,929 feet. Table 6 Tank Capacities shows the storage capacity of each reservoir and Figure 3 CICWCD Tanks, Wells, and Waterline Locations shows their locations. The total reservoir capacity is 2.55 million gallons. This is more than the required storage capacity of 1.58 million gallons.

Table 6 Tank Capacities

Tank	Volume (MG)
3 Peaks	1
Bridal Path West	0.23
Northridge	0.5
Cedar Highlands Upper	0.16
Cedar Highlands Lower	0.16
Chekshani Cliffs	0.5
Total Available	**2.55**
Total Required	**1.58**

2.4 *Existing Distribution System*

Figure 3 CICWCD Tanks, Wells, and Waterline Locations shows the existing distribution system. The central system consists of approximately 38,595 feet of six inch pipe, 136,675 feet of eight inch pipe, 22,015 of twelve inch pipe, 100,485 feet of eighteen inch pipe, and 22,155 feet of twenty four inch pipe. Chekshani Cliffs consists of 11,250 feet of eight inch line. Cedar Highlands consists of 23,650 feet of six inch pipe, 80 feet of eight inch pipe, 385 feet of ten inch pipe, and 1,250 of twelve inch pipe. Construction and improvements were made to the water system from 2005 to 2011. A 1,500,000 gallon concrete tank was built and new transmission and distribution pipelines were installed. Multiple subdivisions' pipeline infrastructure was replaced as well as improvements and construction to distribution wells and pump stations.

The central system is supplied by 7 wells and three tanks. This area has the capacity to supply water from any of the wells at any time and any of the tanks. Chekshani Cliffs is supplied by one well and has one tank for storage. Cedar Highlands is supplied by 2 springs, one well and has two tanks.

The sources for the system consist of two springs and two wells. There are currently three pressure zones in the central water system, one in Chekshani cliffs, and two in Cedar Highlands.

A hydraulic analysis was performed of the existing system and the results will be discussed in greater detail under Section 5.

Figure 3 CICWCD Tanks, Wells, and Waterline Locations

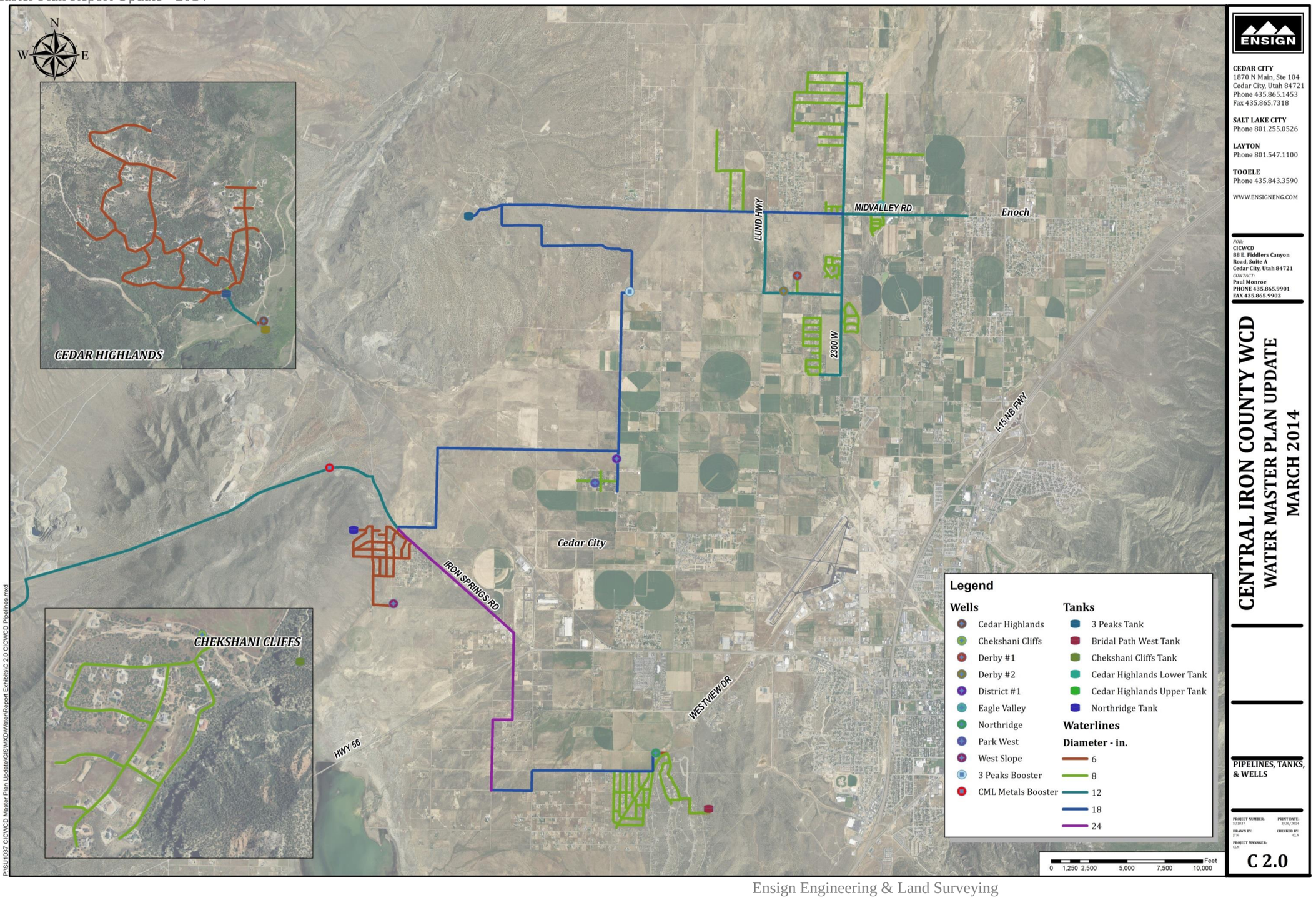
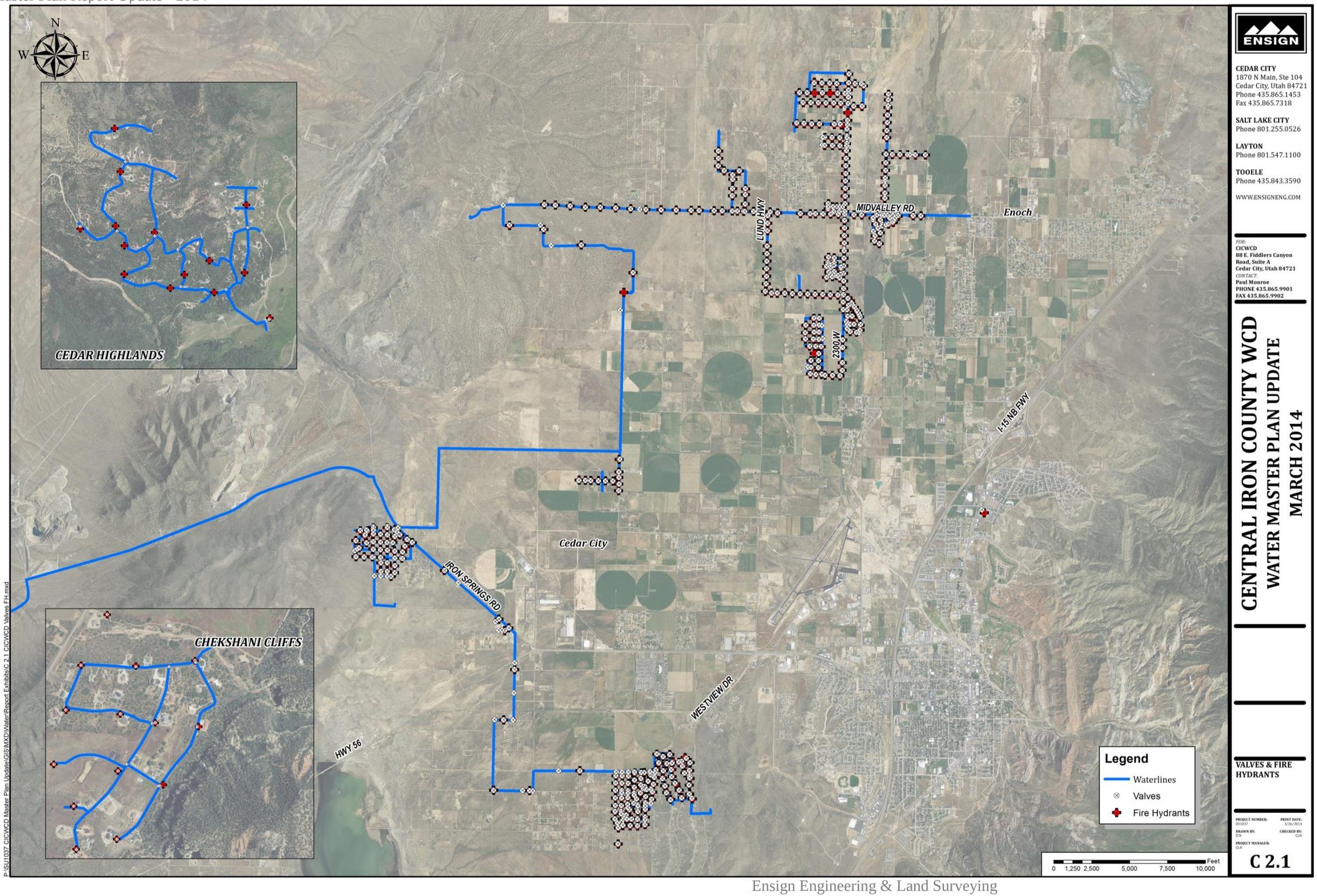


Figure 4 Water Valve and Fire Hydrant Locations



WATER RIGHTS

3 Water Rights

3.1 *Methods*

The water rights research began by searching the Utah State Division of Water Rights web page for Central Iron County Water Conservancy District. This resulted in a list of the water rights owned by the District. The list contains water right numbers, the total annual volume allotted to the water right and for what use the water right was given. Each of the water rights currently owned was closely researched during acquisition to determine adequacy of the District's allocated water amounts.

3.2 *Current Rights*

CICWCD owns 8 certificated water rights for a total of 1988 acre-feet. Of the total water right, CICWCD has 778 acre-feet of water designated for municipal use. A list of all water rights is shown in the Appendix.

3.3 *Water Right Dedication Policy*

One acre-foot of water is insufficient to satisfy the state's water requirements for lots larger than ½ acre. Table 7 State Requirements shows the state's water right requirements for different lot sizes. For each of the lot sizes, the indoor use requirement remains the same. The required volume for outdoor irrigation increases as the availability of land to be irrigated increases. A user on a larger lot will likely use more water than one acre-foot of water. Water right dedications should be correlated to the possible amount of water that will be used, based on the size of the lot. Otherwise, users in the District may use more water than the District has available.

Table 7 State Requirements

Lot Size (acres)	**5**	**2**	**1**	**0.5**
Irrigated Acreage (acres)	4	1.6	0.8	0.4
Outdoor Use (AF)	6.64	2.66	1.33	0.66
Indoor Use (AF)	0.45	0.45	0.45	0.45
Total Required Water Right	7.09	3.11	1.78	1.11

All water rights have a depletion amount. Depletion is the amount of water that can be consumed from a water right. The depletion amount depends on the use of the water. Uses like stock watering have 100% depletion and uses like irrigation have around a 50% depletion

amount[4]. The depletion amount for municipal use water varies. In the past, water companies and municipalities have been able to convert irrigation water to municipal use by specifying that the depletion amount of the municipal right will remain the same as the depletion for the irrigation.

[4] The remainder of the water right is assumed to return to the aquifer

WATER CONSERVATION

4 WATER CONSERVATION

4.1 *Introduction*

The Utah legislature revised a bill in 2004 requiring water agencies with more than 500 service connections to submit a water conservation plan to the Utah Division of Water Resources. The plans are to be updated every five years. This water conservation plan is prepared to meet the Utah Board of Water Resources requirements and to address the goals of the Central Iron County Water Conservancy District (CICWCD). Water conservation is a key element to provide for CICWCD's future water needs. Conservation can delay the need for expensive water projects, preserve the environment, and save taxpayers money.

The District's water consumption was divided into residential connections and bulk connections. In 2012-2013 the total residential usage for the District was 56,939,388 gallons and the District used 242,561,650 gallons total for bulk connections.[5]. On average, the existing water system delivers 242 gallons per day (gpd) per connection and the average per person usage is 78 gpd per person[6]. Based on total usage, the District delivers 214 gallons per capita per day (gpcd). This amount exceeds the states average in 2010 of 185 gpcd by 29 gpcd.

The purpose of this plan is to present a planning document for the District, which will guide its water conservation activities for the future to meet the 25% reduction requirement. Water conservation will benefit the District, the users, and the environment. The possible benefits include:

- Improved water service and more effective use of available water supply.
- Reduced Operation and Maintenance (O & M) costs, including lowering pumping costs.
- Development of additional water supply capabilities and diminished groundwater overdraft.
- Postponed need for new or expanded water supplies and infrastructure.
- Reduced impact of drought.
- Reduced indoor water use translates into reduced wastewater flow, which results in reduces O & M costs of waste water treatment facilities.
- Investigate water re-use options.

It is important to mention here that conservation can suppress water sales and lower water revenues. The revenue loss impacts can be mitigated by periodic rate adjustments if reduction

[5] These values were computed using data from 2012-2013.

[6] This value is calculated from residential connections only.

occurs slowly. These adjustments would be handled similarly to operating cost increases and can be integrated into financial planning.

*4.1.1 **Description of CICWCD Water System***

CICWCD's existing water delivery system is functioning and currently delivers quality culinary water to all of its 652 connections (644 single connections and 8 bulk water connections; 1,930 people). The existing system functions and serves all connections with pressures in accordance with state requirements.

CICWCD currently owns 2,800.85 acre-feet of water rights. Currently, based on 2012 - 2013 usage, the District is using almost 931 acre-feet of water annually (846 acre-feet in central system, 29 acre-feet for Chekshani Cliffs, and 56 acre-feet for Cedar Highlands), with a total of 1,190 Equivalent Residential Connections or ERCs (1,082 ERCs in central system, 37 ERCs in Chekshani Cliffs, 71 ERCs in Cedar Highlands) on the system.

The state water source requirement is that a water system be able to produce enough water for indoor and outdoor use. Currently the District exceeds the state water source requirement by 1,335 gallons per minute (gpm) for the central system, 46 gpm for Chekshani Cliffs, and 48 gpm for Cedar Highlands. No additional sources need to be developed in order to meet this requirement but as growth continues CICWCD should investigate new sources for the central system.

The CICWCD water system has three springs and two culinary wells to meet the peak day demand requirement. Table 8 Conservation Source Capacities shows each well and spring with its source capacity. Source capacities were given by the current water operator. The total capacity of the springs and well are 2,015 gpm.

Table 8 Conservation Source Capacities

Source	Capacity
Northridge Well	153 gpm
Derby #1	290 gpm
Derby #2	155 gpm
Eagle Valley	170 gpm
District #1	250 gpm
West Slope	373 gpm
Park West	360 gpm
Cedar Highlands Well	70 gpm
Cedar Highlands Upper Spring	18 gpm
Cedar Highlands Lower Spring	6 gpm
Chekshani Cliffs	170 gpm
Total Available	**2,015 gpm**

Population within the CICWCD boundary experiences an average of 3% growth annually. Implementing the existing 644 residential connections with a 3% growth rate, by the year 2050 CICWCD will have an estimated 1,922 residential connections. This growth will require the District to increases source capacity for indoor usage to 1,067 gpm and 1,303 gpm for irrigation use totaling 2,370 gpm.[7] Goals and practices will be discussed in the Water Conservation section of ways to reduce this amount.

4.1.2 Water Conservation Initiatives

Water usage within CICWCD is primarily outdoors in the spring, summer and fall periods. Water conservation efforts by the CICWCD are therefore primarily focused on reductions in outdoor water usage. There are four different groups of water users (agriculture, public entities, businesses and residential) that use water outdoors and require different efforts to encourage reductions in water usage. The CICWCD will focus its water conservation efforts on the last three groups in the order of their outdoor water usage starting with public entities and work down to individual residential users.

Agricultural water users for the most part are not directly controlled by nor obtain their water from the CICWCD. They use the majority of surface water within the CICWCD as well as pump water from the same aquifer that supplies water to the other three groups identified above. The majority of water used within the CICWCD service area is used by agriculture. Current state laws governing agricultural water rights have no incentives to promote water conservation by agriculture. The CICWCD will continue to work with state extension offices to educate and

[7] This total amount does not take in any estimates for bulk connections.

encourage responsible water usage by agricultural users but has no direct control over this water usage. As the role of agriculture within the CICWCD diminishes due to land acquisition for non-agricultural use, the CICWCD will have more impact and ability to control water usage for these new non-agricultural uses via water prices and usage regulations.

The other three groups of water users primarily get their water from municipal water systems or the CICWCD. The most effective method of promoting water conservation is a combination of water cost and education on water conservation measures. The CICWCD encourages water conservation by using a tiered rate structure that makes water more expensive as more water is used by the consumer. The municipal water systems use this same type of tiered system. Rates must be adjusted as needed to ensure they reflect the actual cost of water delivery and system upkeep. Continual education programs supported by the CICWCD are in place to increase awareness of the importance of water conservation and educate the public on best practices for the effective use of our limited water resources.

The CICWCD is currently working with the public water users to demonstrate how water audits and state of the art irrigation controllers can curb water usage and make their water usage efforts more efficient. Specifically the CICWCD has purchased modern irrigation controller for two parks within Cedar City and one in the Iron County School District at Three Peaks Elementary School. Water audits were conducted after the new controller were installed and the CICWCD will compare water usage before and after to demonstrate to Cedar City and the Iron County School District how these improvements will pay back their investment in new controllers in a short period of time as well as save water in the future. Usage data for before and after the controllers are implemented is available for comparison. The District has also encouraged the public entities to certify their key outdoor maintenance personnel under the Qualified Water Efficient Landscaper (QWEL) program. This program trains personnel to effectively design water application programs and monitor their use in outdoor applications.

In 2015, water conservation efforts will be focused on non-residential users such as businesses and churches. Businesses require a slightly different approach as a tenant, landlord and a landscape company could all be involved in the outdoor water usage at a particular business. The CICWCD intends to formulate programs to reach out to business tenant and landlords to encourage their active participation in the outdoor water use in their business or property. Free water audits can serve as a catalyst for discussions on wasted water, public image and more efficient outdoor irrigation programs. Recommendation to use landscape maintenance companies that have certified Qualified Water Efficient Landscaper (QWEL) personnel will be made to these users and well as encouragement for local landscape companies to have staff personnel certified under the QWEL Program. Recommendations for upgrading to current state of the art irrigation controllers will be made where appropriate. The CICWCD will investigate the

feasibility of funding a rebate program to encourage this upgrade to more efficient irrigation controllers.

By 2017 the CICWCD hopes to focus its conservation efforts on individual residential users in order to impact their use of water outdoors. Free water audits, more efficient irrigation controllers, a rebate program and water use education will be used to encourage residential users to more efficiently use our water resources and save on their water bills as well.

Water conservation is an ongoing effort and the CICWCD will continue the above programs and add new ones as the need arises and new information is made available. Additional areas that can be explored include: encouragement to municipalities to ensure their building codes reflect water conservation ideals, turf maintenance programs that promote water efficiency, promotion of xeriscape landscaping for both new construction and remodeling, secondary water programs and other ideas to reuse water.

4.2 *Water Conservation Goals*

The District can reduce per capita consumption by promoting and expanding water conservation. Currently there are many homes that do not have landscaping, but as landscaping is added water consumption per capita will increase substantially. As conservation goals and standards are integrated within the District, increase in per capita consumption can be avoided.

The State of Utah has proposed a goal to reduce the per capita water demand of the public systems by 25% from 1995 to 2025. To achieve this CICWCD proposes several conservation goals:

1. Reduce current consumption by 25% by the year 2025. Water use in the District will increase as more residents add landscaping to their yard and as more commercial and industrial users connect to the system. CICWCD will have to introduce strict outdoor conservation measures and education to meet the states goals in the future.

2. Maintain a financially viable water system by adopting a conservation-oriented rate structure. A conservation oriented rate structure will have the largest effect on conservation because as greater water usage becomes more expensive it encourages users to be conscientious of their use.

3. Promote xeriscaping for landscapes, open spaces and yards: Improved irrigation practices and water efficient landscaping can enhance the appearance of the District.

CICWCD has implemented processes to achieve the 25% consumption reduction goal. These include but are not limited to water rate structure adjustments, the formation of a conservation advisory board that includes many volunteers from the surrounding communities, and community outreach and training.

4.3 *Water Conservation Process*

4.3.1 Water Rate Structure

When the District was formed in 2005 a tiered water rate structure was implemented to curb excess usage by charging more per thousand gallons as usage increased. In June of 2014 the CICWCD Board passed a resolution to adjust and increase the water rate structure. The new water rate structure will increase revenue as well as promote water conservation for high water users. Table 9 Conservation Rate Structure shows the water rate structure that was passed in June 2014.

Table 9 Conservation Rate Structure

	Rate	Gallons Received
Base Rate	$30.00	No Water
1st Overage Rate	$0.70/1,000 gallons	Up to 12,000
2nd Overage Rate	$0.85/1,000 gallons	12,001-20,000
3rd Overage Rate	$1.50/1,000 gallons	20,001-30,000
4th Overage Rate	$2.50/1,000 gallons	30,001+

4.3.2 Water Meter Reading and Billing

CICWCD currently reads meters monthly and bills monthly to customers.

4.3.3 CICWCD Water Conservation Advisory Board

In 2014 the CICWCD Board created a Water Conservation Advisory Board. The mission of this board is to promote and educate the public about water conservation initiatives. The current advisory board includes members in the community who have interests in conservation, staff of the school district and local municipalities, and local experts on water conservation. These members have created list of areas of concentration that will provide research and advice on water conservation programs and policies to the General Manager and CICWCD Board.

4.3.3.1 Areas of Concentration

1. Contact large non-agricultural outdoor water users (Cedar City, Enoch City, Southern Utah University, Iron County schools and churches to determine what water conservation activities are in place and what improvements can be made.
    a. The Conservation Board in partnership with Iron County School District and Cedar City

2. Work with local nurseries and garden centers to promote the Water Wise Plants program and plants that are adapter for our area and climate zone.
3. Expand promotion of the concepts involved in xeriscaping to reduce outdoor water usage especially to large water users.
4. Construct an Outdoor Irrigation Usage Audit form to assist users in quantifying the existing system configuration and areas that can be improved for water conservation.
5. Review city ordinances on landscape requirement and suggest changes as necessary to promote water conservation.
6. Contact the Iron County Home Builders Association to determine their policies and guidance to contractors on WaterSmart and Slow the Flow programs in new construction homes and provide training and assistance in formulation of a strong water conservation policy for new construction homes
7. Department of the Interior Bureau of Reclamation matching Grants under the WaterSmart program:
    a. Water and Energy Efficiency Grants – for projects that save water, improve energy efficiency, address endangered species and other environmental issues, and facilitate transfers to new uses
    b. Title XVI – Water Reclamation & Reuse Program - Title XVI of P.L. 102-575, as amended (Title XVI), provides authority for Reclamation's water recycling and reuse program, titled "Title XVI." Through the Title XVI program, Reclamation identifies and investigates opportunities to reclaim and reuse wastewaters and naturally impaired ground and surface water in the 17 Western States and Hawaii. Title XVI is budgeted for by Reclamation's regional offices and includes funding for planning studies and the construction of water recycling projects, on a project specific basis, in partnership with local governmental entities.
    c. System Optimization Review Grants – A System Optimization Review is a broad look at system-wide efficiency focused on improving efficiency and operations of a water delivery system, water district, or water basin. The Review results in a plan of action that focuses on improving efficiency and operations on a regional and basin perspective.
    d. Advanced Water Treatment and Pilot and Demonstration Project Grants – for pilot and demonstration projects that address the technical, economic, and environmental viability of treating and using brackish groundwater, seawater, impaired waters, or otherwise creating new water supplies within a specific locale.
    e. Basin Studies - Basin Studies addresses basin-wide efforts to evaluate and address the impacts of climate change. Funding is available for comprehensive water studies that define options for meeting future water demands in river basins in the western United States where imbalances in water supply and demand exist or are projected.
8. Development of Consumer information and rebate programs to promote outdoor water conservation.

a. Lawn irrigation – smart controllers, high efficiency nozzles, drip irrigation, lawn reduction. Including homeowners, large outdoor water users and contractors during new construction.
b. Landscape Irrigation Certification Rebates – rebates to cover part of the certification cost for landscape Irrigation through the Irrigation Association (IA):
    1. Certified Irrigation Contractor - install, maintain and repair irrigation systems.
    2. Certified Irrigation Designer - establish specifications and design drawings for irrigation projects. IA certifies irrigation designers in six specialties. Landscape/turf specialties include commercial, golf course and residential irrigation; agriculture specialties include sprinkler, surface and drip-micro irrigation.
    3. Certified Landscape Irrigation Auditor - gather irrigation water-use data and test landscape irrigation systems.
    4. Certified Landscape Water Manager - evaluate, operate, manage and improve landscape irrigation systems to achieve the highest level of water conservation possible.
    5. Qualified Water Efficient Landscaper (QWEL) - The Qualified Water-Efficient Landscaper (QWEL) program provides twenty hours of educational materials designed to provide a better understanding of landscape water management for the landscape industry.

9. Improve CICWCD web page on Water Conservation.
10. Explore ideas for water reuse and recycling such as Rainwater Harvesting.
11. Expand promotion of programs such as Utah's Choice, Water Wise Plants, Slow the Flow and WaterSense.
12. Explore ideas to encourage water conservation within the agricultural community.
13. Involve the community by holding annual Water Fairs. Water Fairs will be sponsored events where CICWCD will educate and promote water conservation within the community
    a. CICWCD holds a Water Fair for 3rd Graders in Iron County School District.
    b. CICWCD is implementing a community Water Fair in coordination with the USU Extension Office.

4.4 *Linking With Useful Internet Sites*

CICWCD created a website that is used for posting monthly District-wide water consumption, recommended lawn-watering rates and times, and other water conservation-related information. The District's website will display links to the following useful sites, which District residents could visit to learn about different strategies for water conservation.

- (*http://www.conservewater.utah.gov*): Utah Division of Water Resources site.

- (*www.watereducation.utah.gov/conservation/default.asp*): Sites for Water Conservation for Kids

- (*http://www.awra.org*): The American Water Resources District is an excellent source of water-related information and literature.

- (*http://www.waterlink.co.uk*): British website for scrutinizing every detail of water consumption, and water auditing.

- (*http://extension.usu.edu/cooperative/utahhouse/files/plantlist.pdf*): There are drought resistant and water conserving plants listed on this website.

- (*http://www.conservewater.utah.gov/*): Utah Division of Water Resources' Website.

- (*http://www.epa.gov/watersense*): How to Conserve Water and Use It Effectively (EPA).

EXISTING DISTRIBUTION SYSTEM WATER MODEL

5 EXISTING DISTRIBUTION SYSTEM WATER MODEL

5.1 *Existing System Hydraulic Model*

The distribution system computer model was developed in Haestad Methods WaterCAD which allowed the system to be graphically input into the program. Once the water system pipes, wells and storage tanks were in the model, the attributes of each individual component were entered. The details included pipe material, length of pipes, elevation of the ends of each pipe, slope of each pipe, and storage tank location, size, and elevation. The CICWCD water system was analyzed using the Hazen-Williams method. This method allowed for the head loss (friction loss) for each pipe, valve, and fitting to be calculated, and is a commonly used method for water system master planning. Once the model was fully developed, the existing system was then analyzed to determine the current system performance, and assess problem areas and potential weaknesses in the distribution system.

5.2 *Model Calibration*

Ensign Engineering coordinated with the District while conducting pressure tests at fire hydrants throughout the District to calibrate the model. The values found in the model for these locations were within 5% of the actual pressure tests, which was sufficient to be able to give an adequate level of confidence in the computer model.

5.3 *Existing System Model Results*

Three different scenarios were run in the model: first, peak day demand, second, fire flow, and third, peak instantaneous demand. To add these demands to the system, nodes were inserted at valve and fire hydrant locations and elevations and assigned ERCs. Peak day demand includes flows for both indoor and outdoor use and models how the system functions during the summer. The water system will function at or below peak day demand 80% of the time. Peak instantaneous demand is the highest water demand that the system will see during a year. Fire flows assume a fire occurs during peak day demand use. The design of a water distribution system is controlled by either peak instantaneous demand or fire flows. A map of the existing system is shown in Figure 3 CICWCD Tanks, Wells, and Waterline Locations. A table of individual node pressures and flows and a map showing node locations for all three scenarios is located in the Appendix.

The first scenario was peak day demand. Peak day demand shows the pressures in the system that would occur for water demands during a peak day. Flows for the peak day demand are in gallons per day and match the state demand requirements (Reference Section 2 State Requirements). The resulting pressure from the peak day demand scenario is show in Figure 5

Peak Day Demand. For peak day demand, the majority of the pressures in the system are in the acceptable range of 40 to 120 psi.

The second scenario was for fire flows. Cedar City Fire Department requires a minimum flow of 1,500 gpm at minimum pressure of 20 psi during a peak day demand. Figure 6 Peak Instantaneous Demand shows the nodes that were and were not able to deliver required fire flows. These problem areas include the most of the southern zone, the newer developed in the northern zone, and the connections serviced outside of the District boundary.

The third scenario was for peak instantaneous demand. The peak instantaneous demand is in gallons per minute and is 1.5 times the peak day demand for indoor use and 2 times peak day demand for outdoor use. The resulting pressure from the peak instantaneous demand scenario is show in Figure 6 Peak Instantaneous Demand. In this scenario all pressures exceeded the minimum pressure constraint of 30 psi.

Figure 5 Peak Day Demand

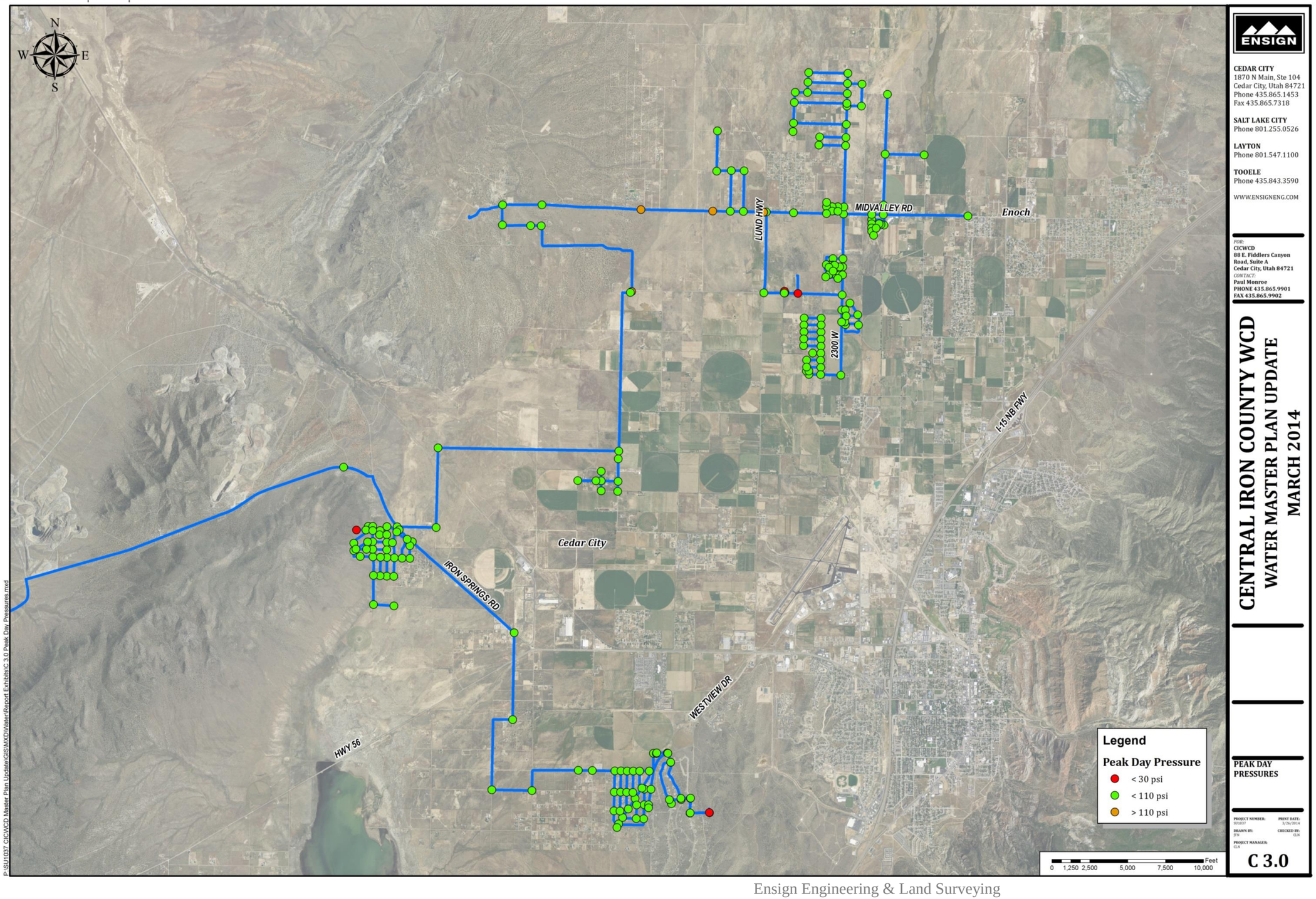


Figure 6 Peak Instantaneous Demand

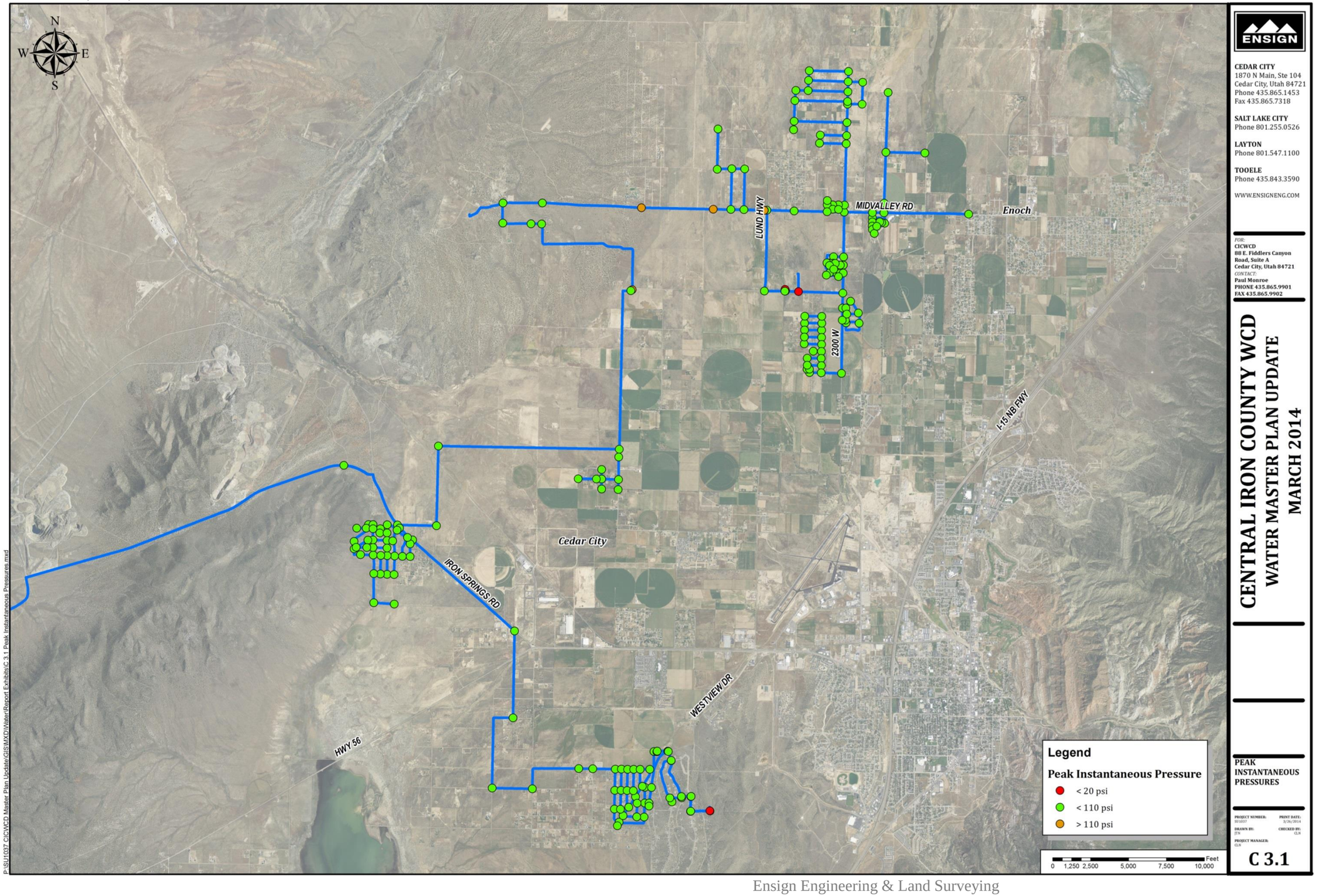
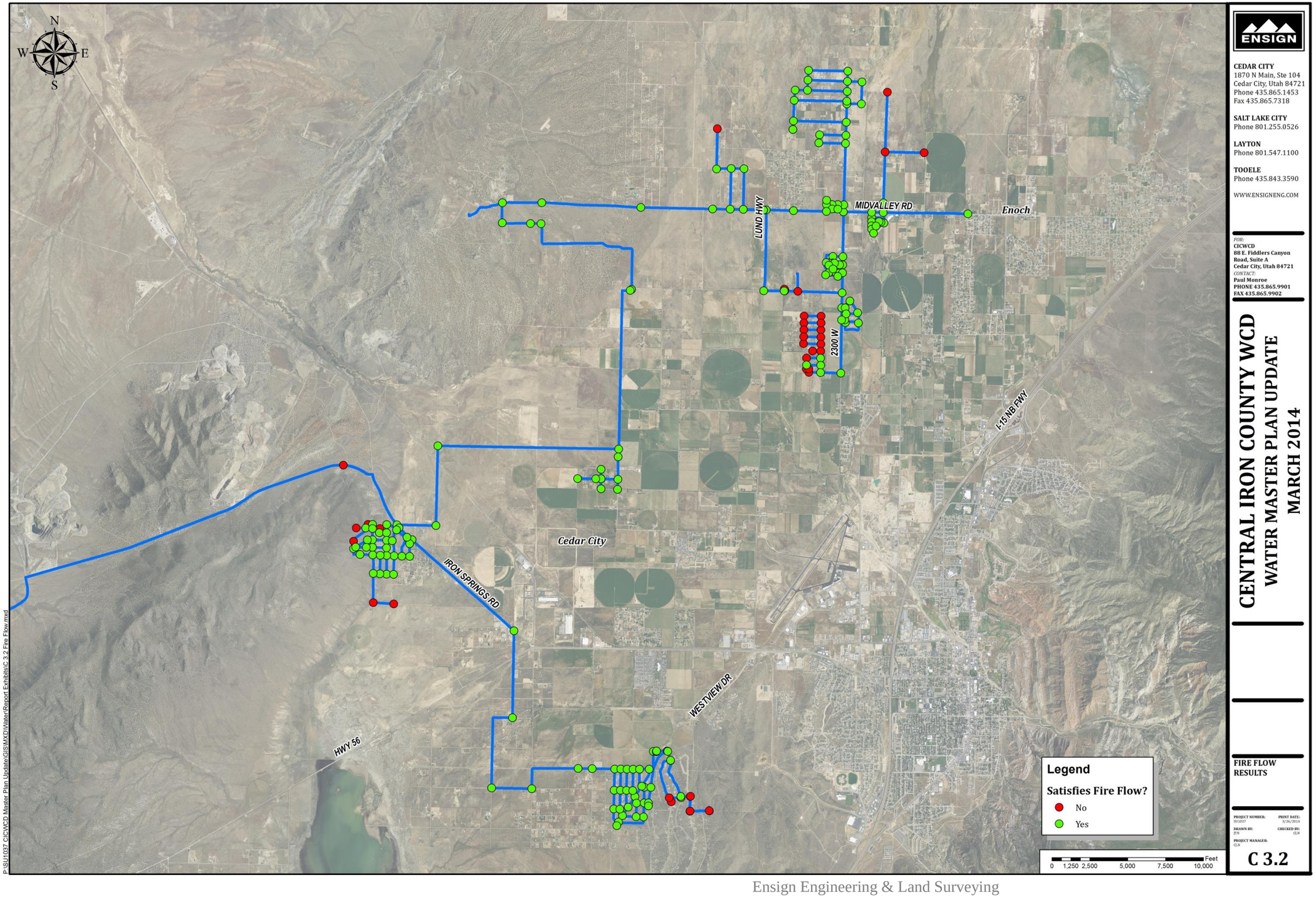


Figure 7 Fire Flow Results



FUTURE OUTLOOK

6 FUTURE OUTLOOK

6.1 *Economics and Infrastructure of Existing System*

The existing infrastructure utilized by the District is in good working condition. Most of the infrastructure was constructed within the past 10 years and has been properly maintained. The remaining infrastructure is in working condition but was installed prior to the District providing service. Some of these lines are undersized, poorly constructed, or have not been properly maintained.

With CICWCD taking the charge to help supply clean and sanitary drinking water to the population within the District boundary, CICWCD takes into consideration the importance of utilizing tax monies to incorporate private systems. An analysis is completed prior to joining more customers and infrastructure to ensure that no additional burden will be placed on existing tax payers and customers. In fact, CICWCD is careful to add systems only if they will generate revenue as to pay their own way.

6.2 *Economics of Cedar Valley Groundwater*

The groundwater level in the Cedar Valley is slowly dropping annually due to increased pumping for domestic and agricultural use. It is estimated that domestic pumping is increasing at a rate of 160 acre-feet per year and agricultural is increasing at a rate of 20 acre-feet per year. These annual increases are revealing that the annual discharge from the Cedar Valley hydrologic system continues to exceed recharge that is causing decline in groundwater levels. Estimates from a 1978 report done by Bjorklund, Sumison, and Sandberg show that the average loss of groundwater storage decreased 3,300 acre-feet from the 1940s to 1974[8] and the amount of storage lost was increased to an estimated 9,100 acre-feet in 2000 by Brooks and Mason[9]. Implementing the same technique used by Bjorkland, Sumison, and Sandberg, Utah Geological Survey calculated a storage decrease of 10,700 acre-feet in 2000[10].

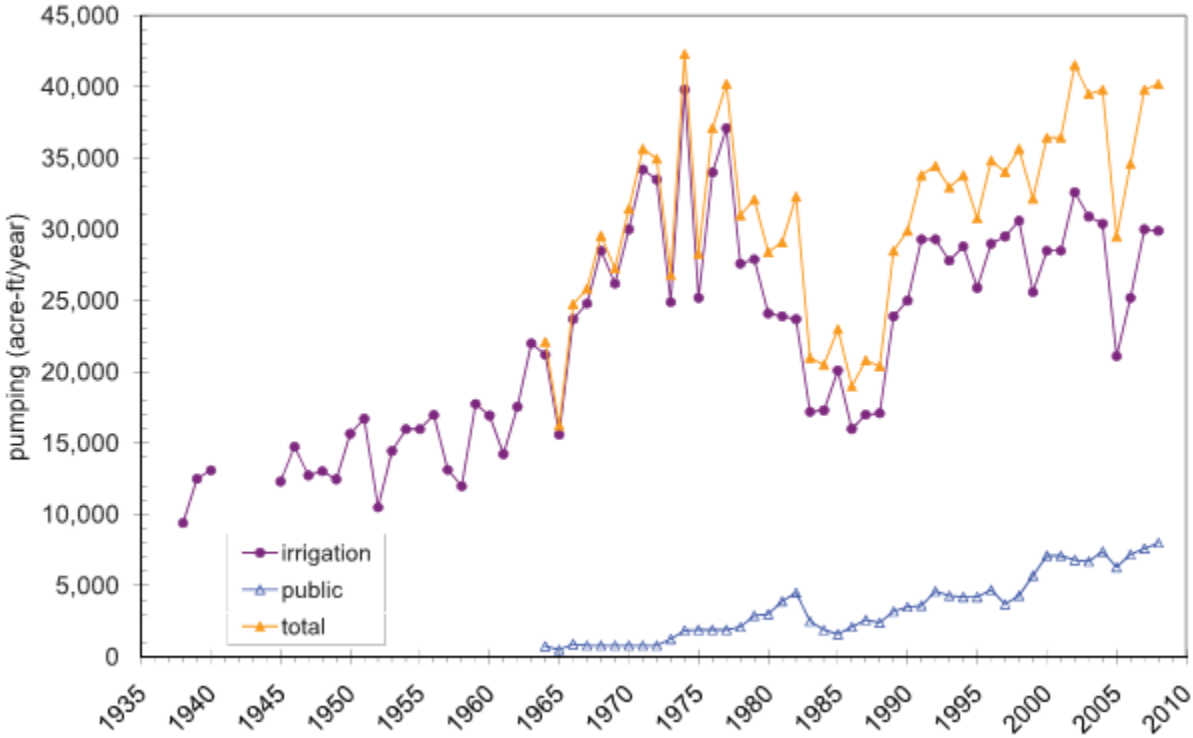
Figure 8 Annual Water Usage by Category for Cedar Valley shows the annual usage increase of municipal and agricultural water usage. Municipal water usage continues to increase where agricultural begins to remain constant. This occurs because as land is developed municipal usage increases and eventually agricultural will decrease but the agricultural decrease will be offset by the municipal increase.

[8] Bjorklund, L.J., Sumsion, C.T., and Sandberg, G.W., 1978, Ground-water resources of the Parowan—Cedar City drainage basins, Iron County, Utah: Utah Department of Natural Resources Technical Publication No. 60, 93 p., scale 1:250,000.

[9] Brooks, L.E., and Mason, J.L., 2005, Hydrology and simulation of ground-water flow in Cedar Valley, Iron County, Utah: U.S. Geological Survey Scientific Investigations Report 2005-5170, 127 p.

[10] Utah Geological Survey *Special Study 150*, 2014, 13 p.

Figure 8 Annual Water Usage by Category for Cedar Valley



The greatest amount of discharge from the aquifer occurs through well withdrawals that supply municipal and agricultural use. Following well withdrawals (greatest to least) are: evapotranspiration, subsurface outflow through Iron Springs Gap and mud Spring Wash, and spring flows (UGS).

Groundwater recharge in the Cedar Valley occurs mostly through precipitation within the drainage basin. Overall recharge occurs through (greatest to least): infiltration of precipitation falling on unconsolidated basin fill, inflow from bedrock aquifers in the surrounding hills and mountains, infiltration of irrigation water from groundwater sources, seepage from streams and major irrigation canals, infiltration of irrigation water from surface-water sources, subsurface inflow from Parowan Valley, infiltration of land-applied wastewater effluent and infiltration of irrigation water applied to lawns and gardens (UGS).

Table 10 Groundwater Budget for 2000 shows that there should be 1,000 to 3,000 acre-feet of storage gained each year. The discharge estimate is based on the annual recharge available. This balance is called the safe yield and is the most ideal scenario. Table 11 Transient Ground Water Model Budget based on a ground water model done in 2005 shows that there is an estimated 9,100 acre-feet of water being removed from storage even after recharge occurs exceeding the safe yield. Comparing the two tables show a 10,000 acre-foot to 12,000 acre-foot difference from the conceptual budget to the modeled budget (UGS).

Table 10 Groundwater Budget for 2000

		Cubic Feet/Day	Acre-ft/Year
RECHARGE	Precipitation on unconsolidated basin fill	1,228,000	10,300
	Bedrock inflow from surrounding hills and mountains	1,181,000	9900
	Recharge from irrigation with groundwater	847,000–1,026,000	7100–8600
	Seepage from streams and major irrigation canals	561,000–608,000	4700–5100
	Recharge from irrigation with surface water	584,000	4900
	Subsurface inflow	239,000	2000
	Recharge from land application of wastewater effluent	179,000	1500
	Recharge from irrigation of lawns and gardens	72,000–119,000	600–1000
	Total recharge (rounded)	4,890,000–5,128,000	41,000–43,000
DISCHARGE	Wells	4,293,000	36,000
	Evapotranspiration	358,000	3000
	Subsurface outflow	119,000	1000
	Springs	Negligible	Negligible
	Total discharge (rounded)	4,771,000	40,000
	Amount of storage gained	119,000–358,000	1000–3000

Table 11 Transient Ground Water Model Budget

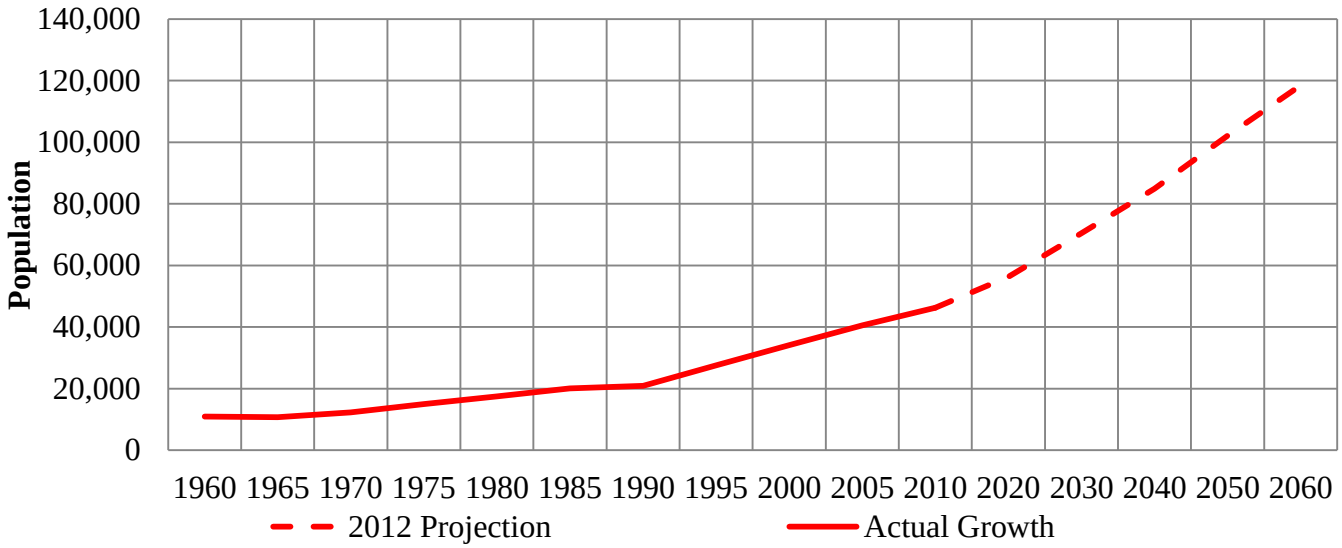
		Cubic Feet/Day	Acre-ft/Year
RECHARGE	Irrigation and precipitation on irrigated lands, including seepage from Coal Creek	2,330,000	19,500
	Winter precipitation on all areas	700,000	5900
	Subsurface Inflow		
	Parowan Valley[1]	370,000	3100
	North consolidated rock	160,000	1400
	Southeast consolidated rock	36,000	300
	East consolidated rock	84,000	700
	Southwest consolidated rock	190,000	1600
	West consolidated rock	120,000	1000
	Inflow from south of area	9500	80
	Total recharge (rounded)	4,000,000	33,500
DISCHARGE	Wells	4,080,000	34,200
	Evapotranspiration	530,000	4500
	Springs	150,000	1300
	Outflow to other areas	320,000	2700
	Total discharge	5,100,000	42,700
	Water removed from storage[2]	1,100,000	9100

6.2.1 Population Projections and Water

Groundwater sources within the Cedar Valley have been over appropriated which will not allow any new water rights to be developed. Three existing supplies are available to deliver groundwater to meet existing demands: existing developed water, conversion of agricultural water to municipal use, and development of existing rights. As population growth occurs agricultural water rights will be converted to municipal use and existing water rights will be developed as demand increases.

Growth in the Cedar Valley has been growing steadily with the latest 2012 Governor's Office of Management and Budget (GOMB) estimate of 2.26% through 2060. Using a population of 42,802 in the year 2010 and applying a 2.26% growth rate will increase to a population of 118,491 within the District boundary. Figure 9 Actual and ProjectedGrowth shows the past growth trend and the projected 2012 growth based on the GOMB.

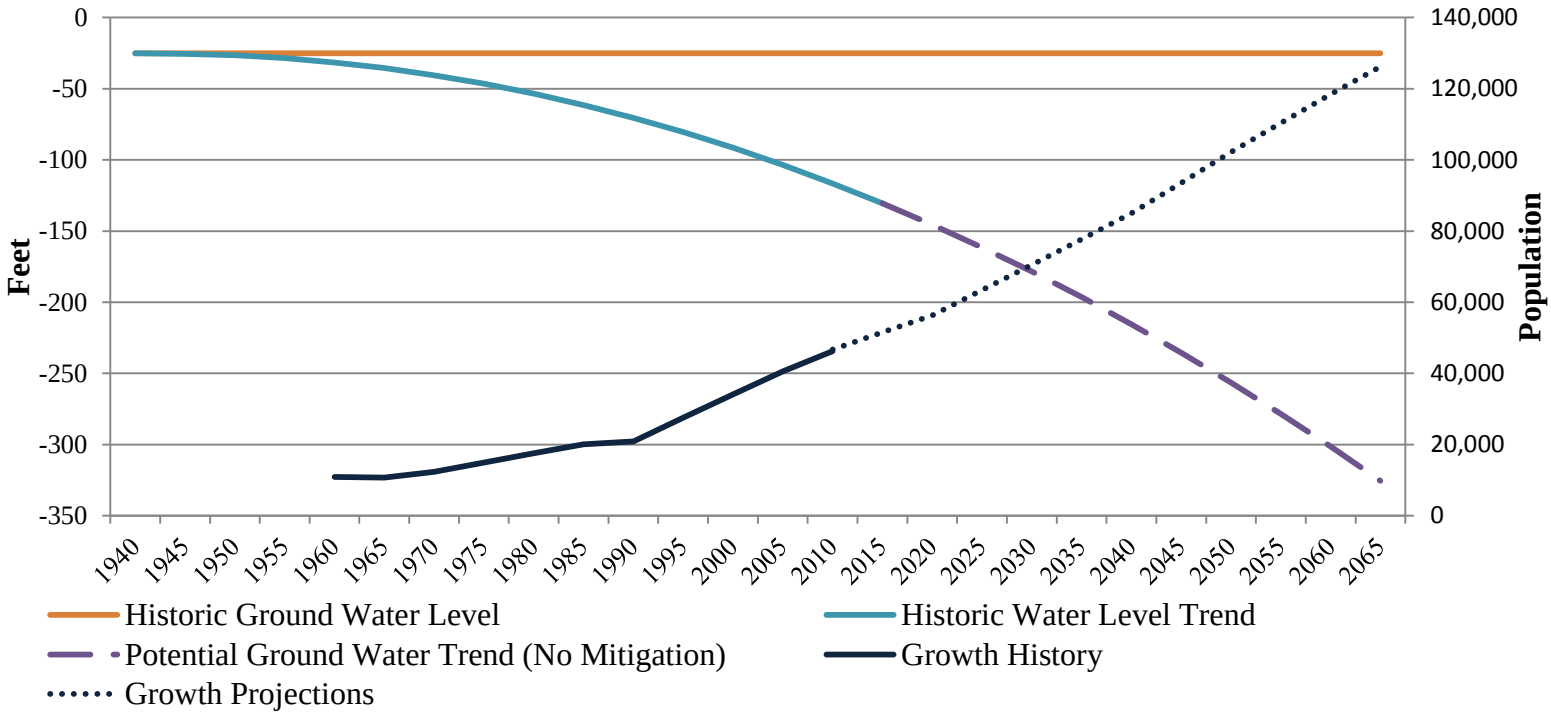
Figure 9 Actual and ProjectedGrowth



As growth continues to happen in Cedar Valley groundwater withdrawal will increase as a result. Based on Table 11 Transient Ground Water Model Budget the Cedar Valley is overdrawing from the aquifer an estimated 9,100 acre-feet annually. This is in addition to the required municipal and agricultural demand. By the year 2060 the population within the Cedar Valley is projected to be 118,491 people. To support this population it requires approximately 73,000 acre-feet. Currently there are 33,500 acre-feet available for use within the basin leaving an approximate 39,500 acre-foot deficit from the projected 73,000 acre-foot requirement. With limited water right available and the aquifer already being mined at a current rate of 9,100 acre-feet annually, the ground water level will continue to drop and accessibility of water will decline.

An indication of groundwater mining in the Cedar Valley is the decreased ground water levels. Figure 10 Ground Water Level Trend compares the historic (1940) water level with the existing water level as ground water mining has occurred. The level has dropped approximate 114 feet over the past 70 years. The dashed line displays the trend of ground water level through 2065 if no action is taken to prevent extensive ground water mining.

Figure 10 Ground Water Level Trend



To mitigate the over withdrawal of the aquifer and bring the Cedar Valley groundwater withdrawal into safe yield and restore ground water levels, CICWCD is utilizing best management practices. These practices are also the District priorities and include: increasing overall water resources by importing water from other basins, increasing groundwater recharge to the basin-fill aquifer through conjunctive management of ground and surface water resources, dispersing high discharge wells to reduce localized land subsidence, and reducing overall groundwater withdrawals in the basin.

6.3 *District Priorities*

CICWCD has implanted practices and priorities to ensure water availability for existing and future demands.

6.3.1 Coal Creek Recharge and Recovery

CICWCD is working with the Utah National Guard to construct a retention and detention areas within Coal Creek channel and in areas located at the base of Cedar Mountain to slow the flow

enough to drop excess sediment for the farmers to irrigate and for aquifer recharge and recovery. This allows CICWCD to take any excess flows during high water years and summer cloud bursts from Coal Creek and utilize them for recharge. This procedure will increase recharge in the area by capturing waters that typically flow to Quichipa Lake or Rush Lake to evaporate. These waters will be infiltrated through detention (recharge) basins to restore ground water levels.

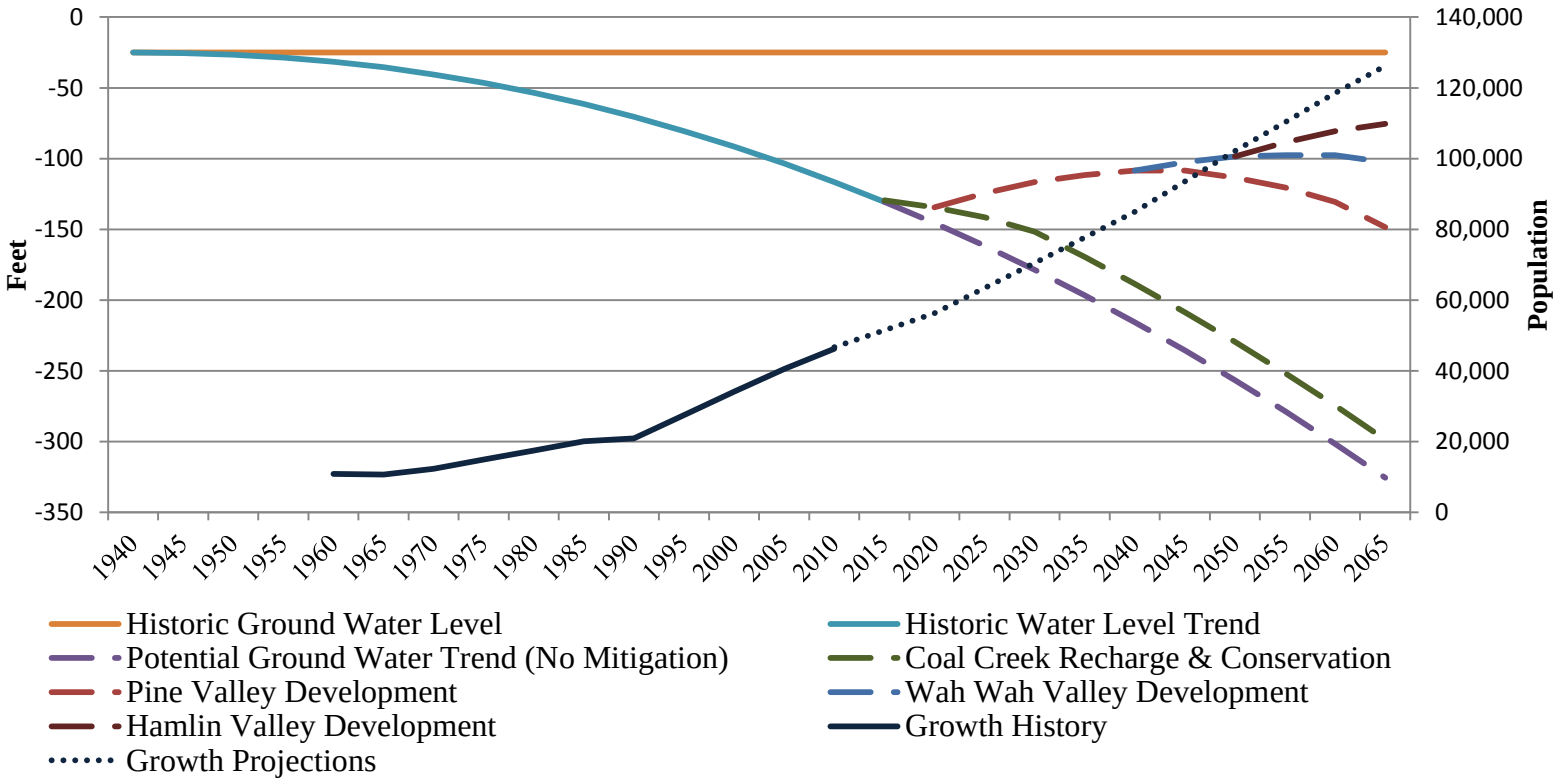
6.3.2 West Desert Filings – Water Importing

The most effective way to ensure water availability for existing and future demands is by importing water from another basin. In 2006 CICWCD filed on water rights in the West Desert with plans to construct infrastructure to bring water to the Cedar Valley. In 2014 the State Engineer approved water rights in Pine and Wah Wah Valley's totaling 21,525 acre-feet[11]. This amount of water will sustain existing demand of the Cedar Valley and allow growth and added water demand as well as restore ground water levels.

Figure 11 Water Level Comparison shows the ground water level trend as the importation of water from the West Desert valley's is imported. The sequence of importing water from Pine Valley, Wah Wah Valley, and Hamlin Valley will be important to keep the ground water level trend positive. If importing is delayed, the water level recovery will be delayed significantly and irreparable damage to the aquifer will continue to increase.

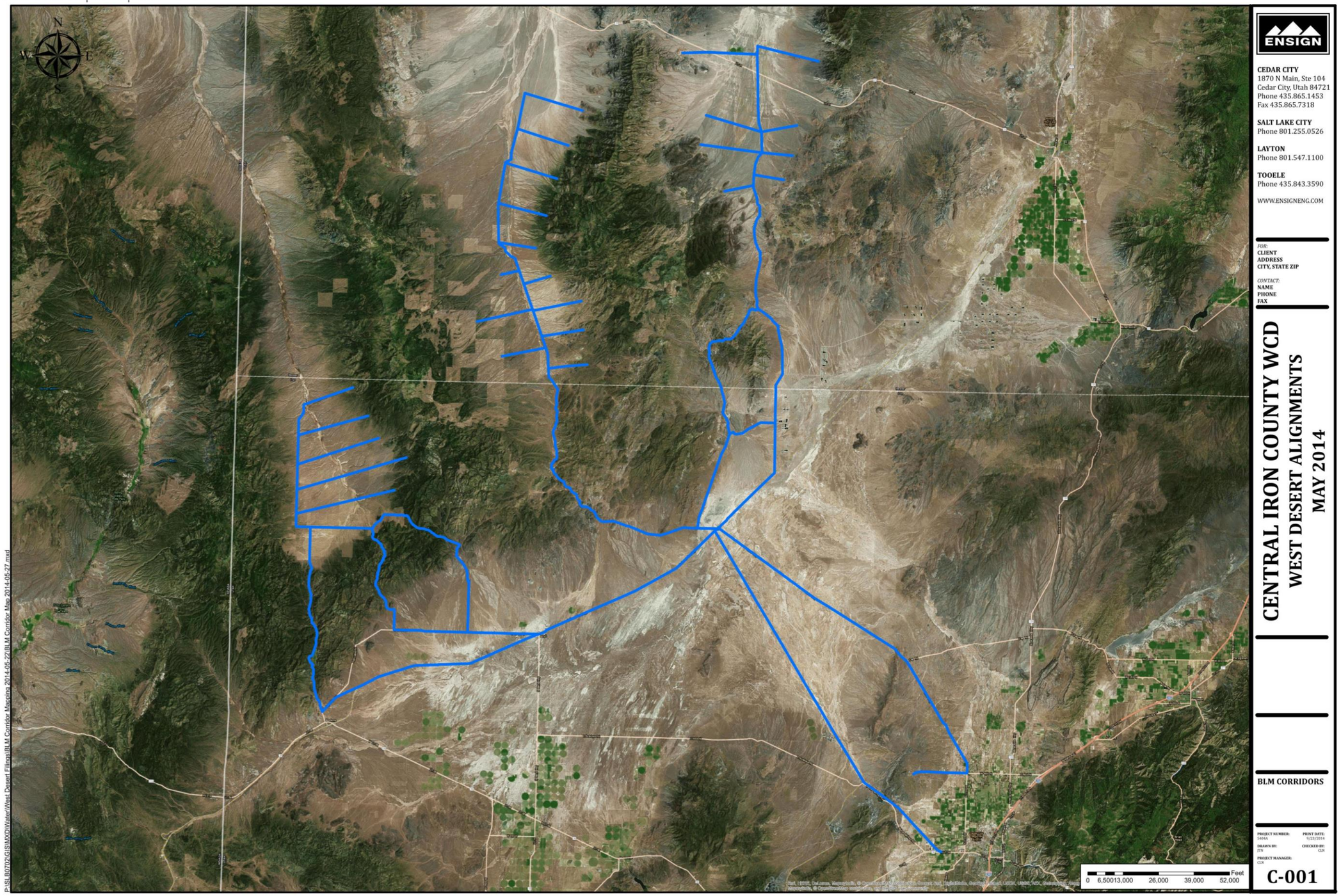
[11] Another 10,000 acre-feet has been filed on in Hamlin Valley but has not been approved.

Figure 11 Water Level Comparison



Once CICWCD received the water right approval from the State Engineer, coordination began with the BLM to create corridor alignments within Pine Valley, Wah Wah Valley, and Hamlin Valley. These corridors were completed to become part of the Regional Management Plan for the BLM in those valleys. These corridors run within the valley along alignments that followed existing roadways as much as possible and they are a quarter of a mile wide. Figure 12 BLM Corridors Centerlines shows the locations of the designated corridors on BLM land.

Figure 12 BLM Corridors Centerlines



6.3.3 Aquifer Recovery & Repair – Conjunctive Surface and Groundwater Management

Aquifer recovery is important to bringing the aquifer into safe yield. Conjunctive surface and ground water management include aquifer recharge, recovery, and repair as well as promoting conservation. Increasing recharge through surface water, effluent from Cedar City's sewer treatment plan, and other sources has proven to be a powerful tool in reducing the loss of aquifer volumes through compaction. Recovery and repair projects provide ground water stabilization as well as allow CICWCD flexibility in helping to manage the basin's water supply. The second priority is to increase groundwater recharge by utilizing excess flows from Coal Creek and potentially using West Desert water as it is supplied to the valley. Conservation, Recharge, and Recovery and Repair amounts are estimates that can be directly reduced from the existing supply demand. This would not only reduce the amount drawn from the aquifer but also increase water available and recover damage done from overdrawing in the past.

Ensign Engineering and CICWCD are working closely with the irrigation companies to determine the best solution to preserve excess water and high flows from Coal Creek and utilize them for irrigation and ground water recharge. Some of these options include creating detention ponds higher in the channel to slow the flow and reduce sediment loads as the water approaches irrigation fields. The Utah National Guard has been approached to provide the equipment and labor to construct the settling basins.

Reference Figure 16 Upper Coal Creek Channel Widening, Figure 17 Lower Coal Creek Channel Widening, and Figure 18 Settling Basins

6.3.4 Source Expansion – Dispersing High Discharge Wells

Bringing the aquifer into safe yield can also be complemented by distributing high yield wells throughout the valley. The groundwater naturally flows in a northwest direction and most of the high yield wells are located in the south end of the valley. Increasing the discharge on the north end of the aquifer will allow the south end to recover and potentially increase water levels. Where CICWCD service area is located in the north end of the valley, implementing new wells as well as coordinating service agreements with local municipalities will help balance the aquifer as well as allow more growth.

Figure 13 Water Surface Levels is from the UGS Special Study 150. This figure shows the decline in the water surface levels through the entire valley from monitoring well as early as 1939. As growth happened in the south end of the valley, pumping increased from wells near Quichipa Lake to supply Cedar City causing the greatest drop in the water levels.

To better illustrate the decline in ground water levels over the past 75 years cross sections were created to represent the drop in water levels. Figure 14 Historic Ground Water Cross Section and Figure 15 Present Ground Water Cross Section, when compared, demonstrate the decline in ground water levels within the valley.

Figure 14 Historic Ground Water Cross Section displays the historic ground water levels from the north end to the south end of the valley. When monitoring began in 1939, most areas were at levels near 25 feet below existing ground. As growth occurred and more wells were put in use water levels began to decline. In particular, the levels declined in high production areas such as the Quichipa well field. Some of the decline was as much as 114 feet (139 feet below ground level).

Figure 13 Water Surface Levels

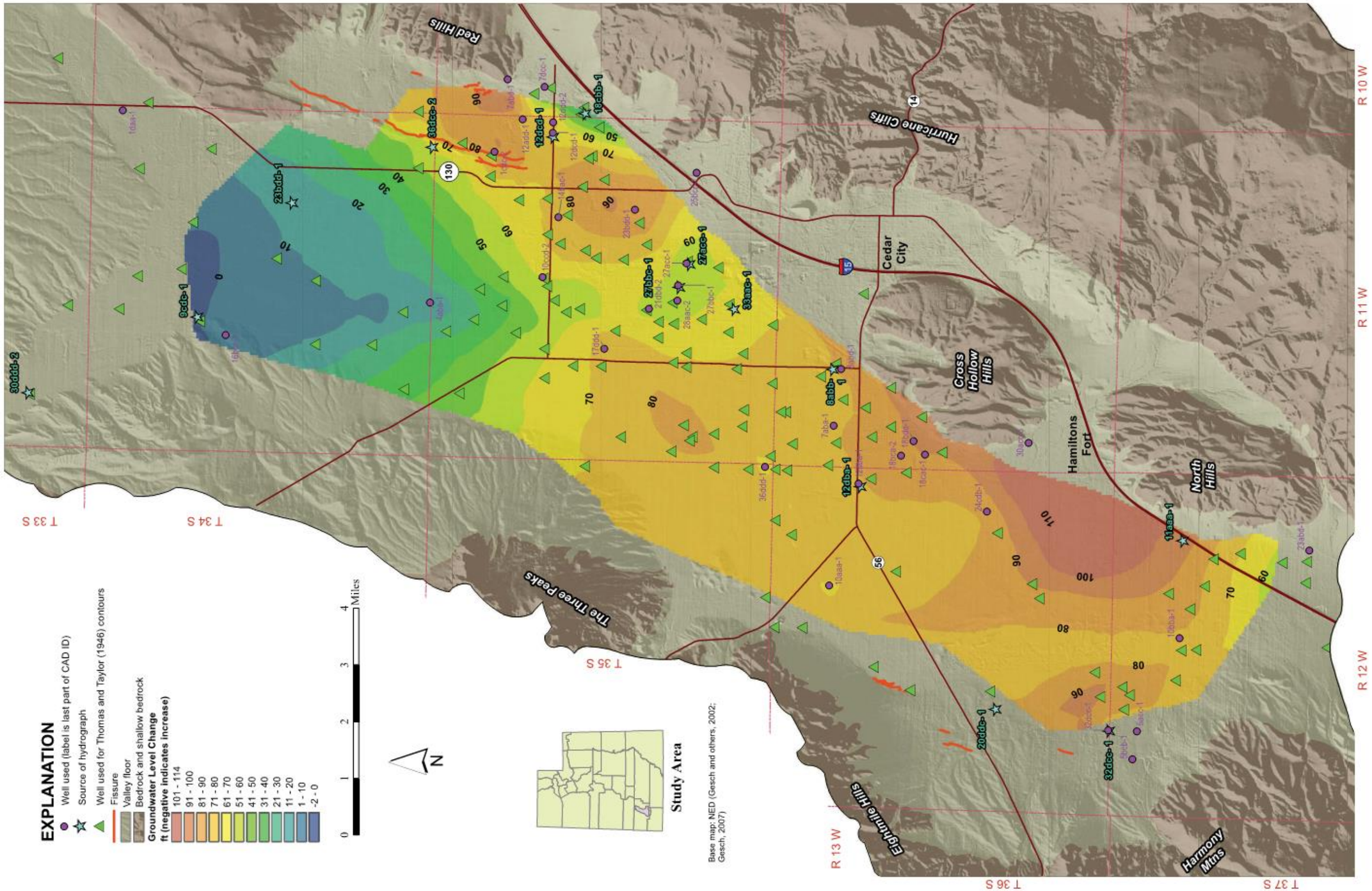


Figure 14 Historic Ground Water Cross Section

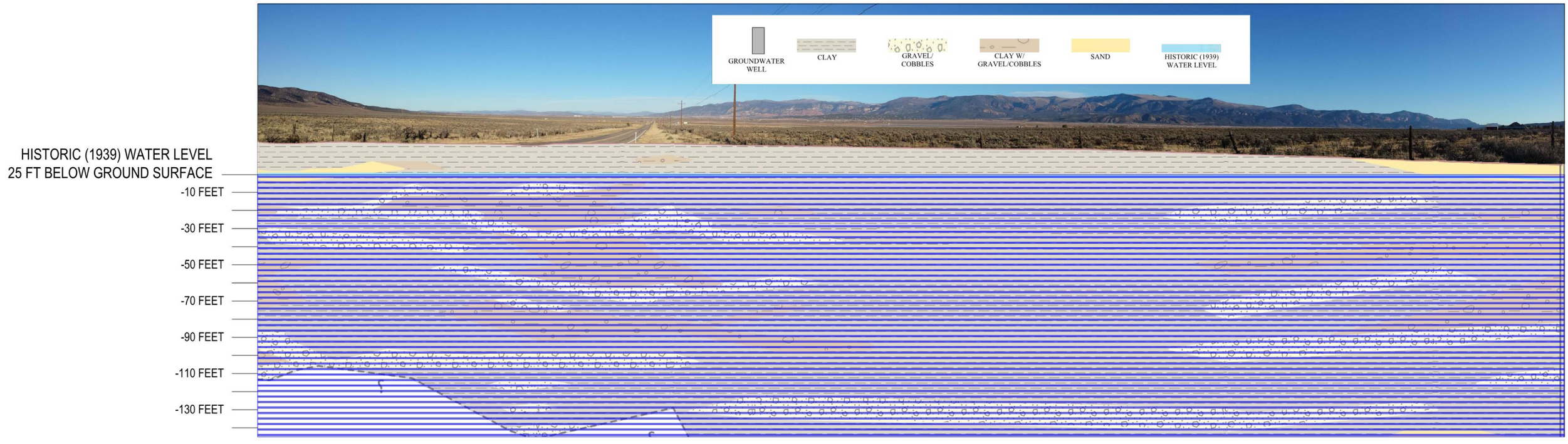
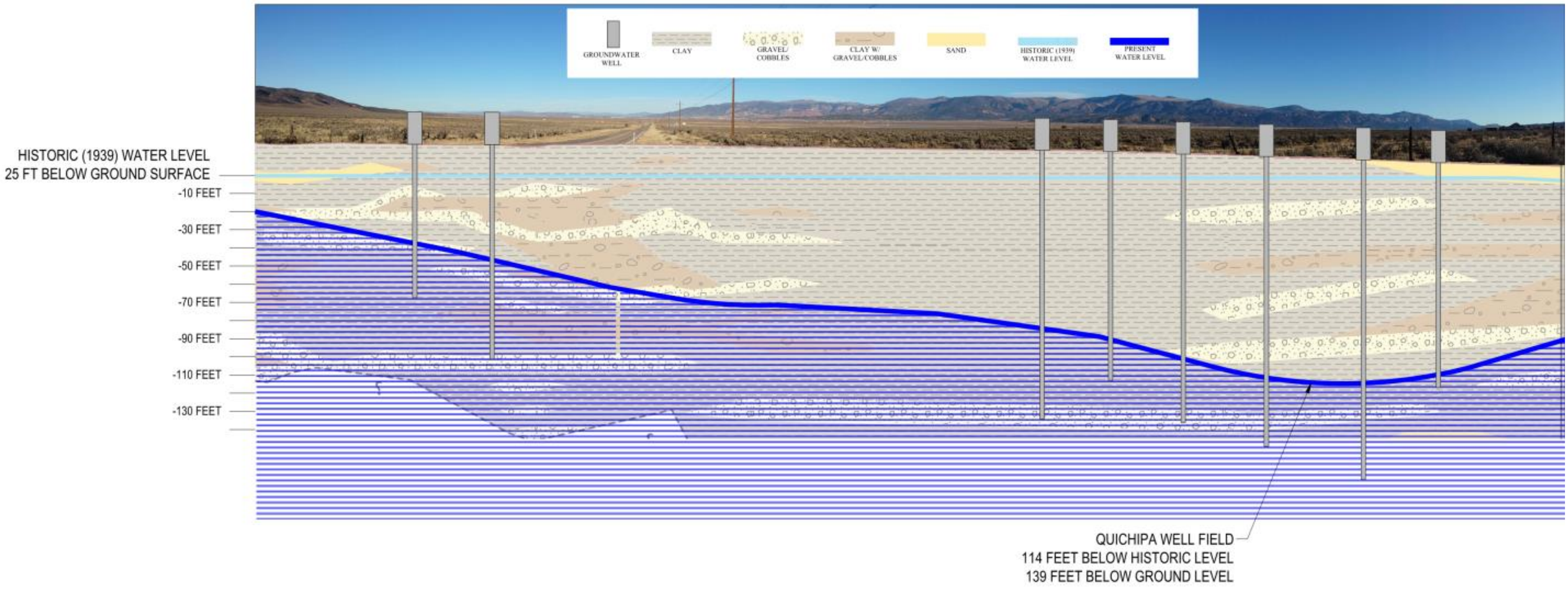


Figure 15 Present Ground Water Cross Section



With the growth and expansion of new subdivision within the District, CICWCD will need to expand its source capacity. The central service area of the District is served by seven wells. With the addition of the demand from the mine the District is approaching its source capacity state requirement and will need to develop another source. This would allow the district to have more redundancy and prepare for more growth. Reference Figure 19 WECCO Well and Figure 20 North Well Field.

The added draw and demand on the District's system by the mine is requiring more water availability that can be resolved by adding another water tank. A new tank placed in the correct location will help further balance the water system and provide more storage capacity for future growth and expansion. Reference Figure 21 Tank Locations.

6.4 *Projects to address Priorities*

6.4.1 Source Expansion

CICWCD has been working with Ensign Engineering to locate the best locations and areas for future wells.

One location is near WECCO. This location would better allow the District to service the mine that will reduce the impact of the other wells that are supplying the system.

The second location and option is to create a well field in the north end of the valley near between Rush Lake and Mud Springs Gap. This location would better prepare for the main transmission line from the West Desert.

A new storage tank placed at the correct location would help further balance the system and provide necessary storage for the mine expansions and growth within the basin. Locations for this project have included expanding the proposed tank farm at Thee Peaks, adding another tank at the Northridge site, and constructing a new tank along Desert Mound Road.

Planning and coordination with local public entities will need to begin prior to project beginning. CICWCD can correlate this process and begin the environmental course, preliminary engineering report, funding acquisition, and project alignments.

Figure 16 Upper Coal Creek Channel Widening

Figure 17 Lower Coal Creek Channel Widening

Figure 18 Settling Basins

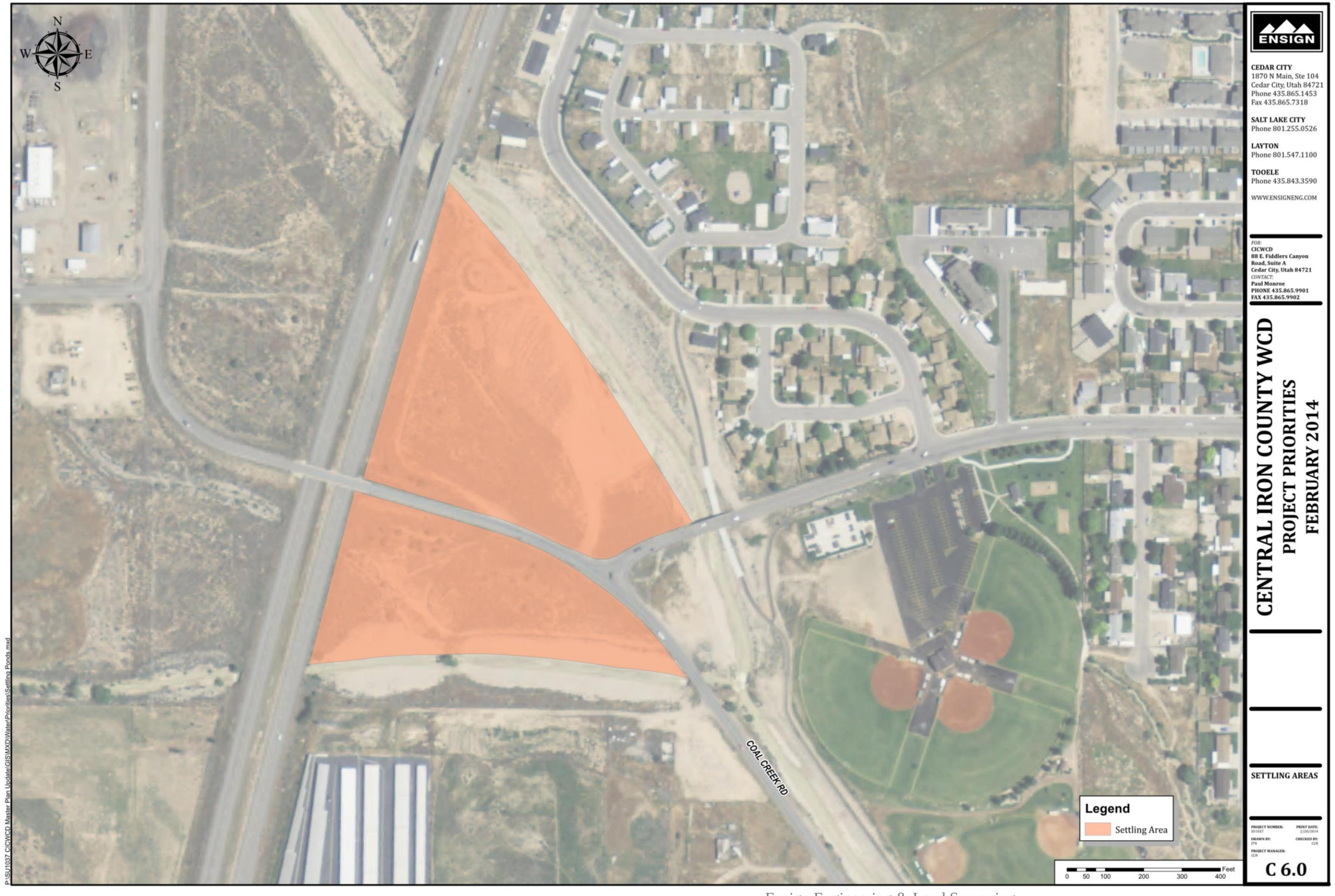


Figure 19 WECCO Well

Figure 20 North Well Field

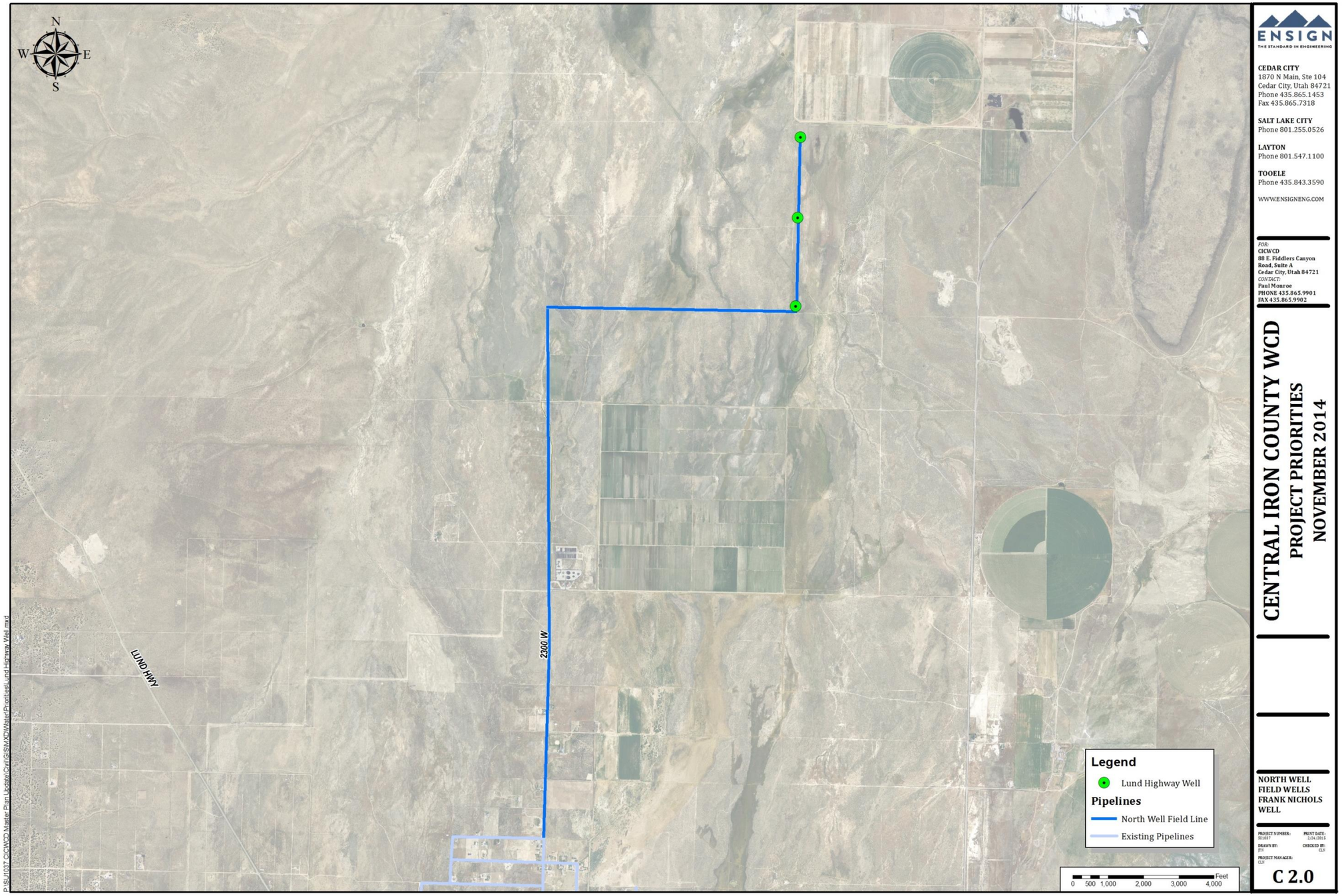
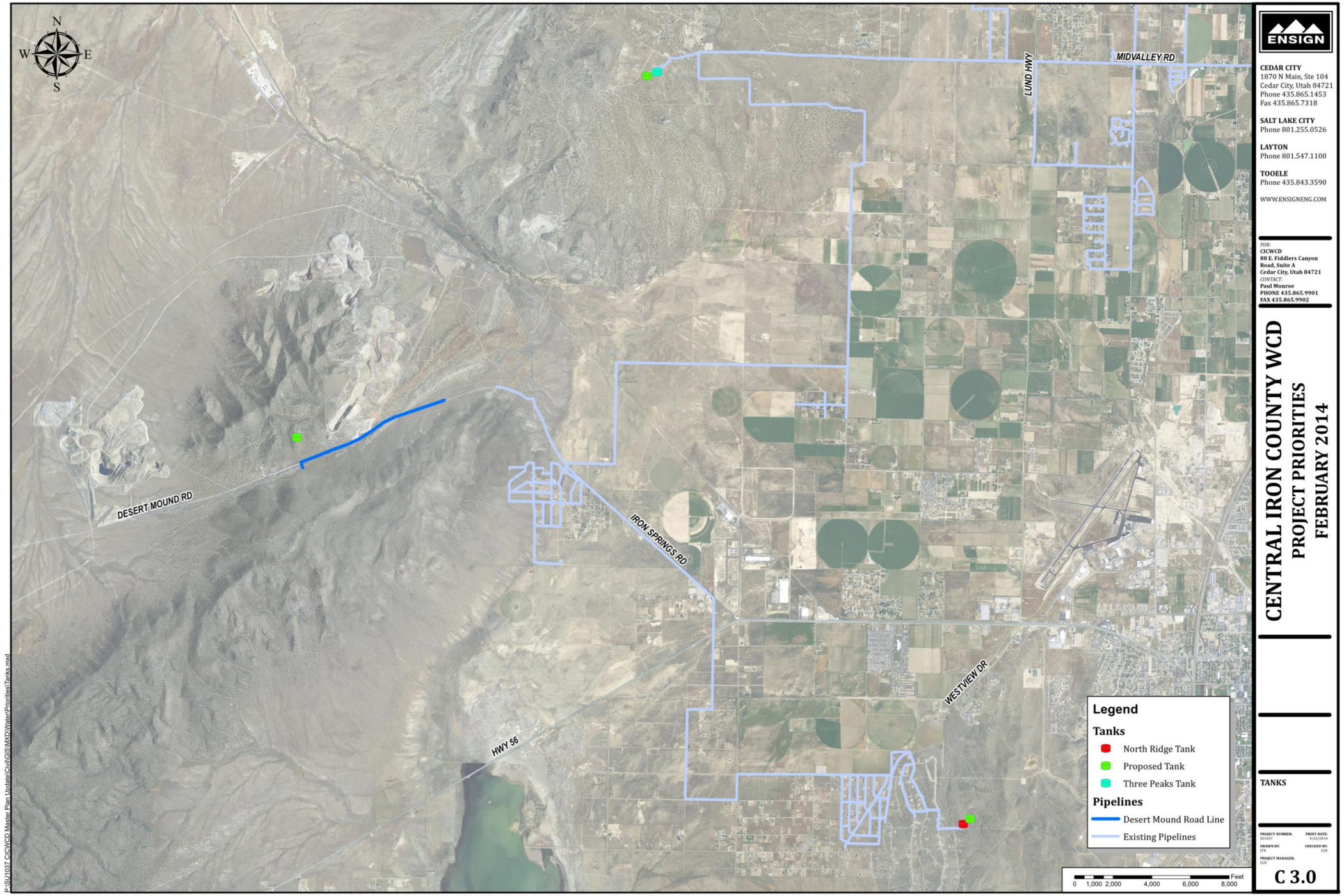


Figure 21 Tank Locations



ECONOMICS OF PROVIDING SERVICE

7 ECONOMICS OF PROVIDING WATER SERVICE

7.1 *Project Costs*

7.1.1 Aquifer Management and Recharge

The construction cost of the Aquifer Management and Recharge project will variably depend on how much work can be provided by the Utah National Guard as well as the cost to expand and create detention ponds for percolation.

Engineering costs will depend on the final scope of the project. There will need to be a permitting and approval process with Utah State Department of Environmental Quality, Water Rights and coordination with the Army Corps of Engineers.

Reference Table 12 Aquifer Management and Recharge Estimate. The estimate shows the value of the construction that will be completed by the Utah National Guard.

7.1.2 Source Expansion

The construction of a new well costs vary depending on the size, depth, and location of each individual well as well as infrastructure to plumb the well into the system, construct a building, and purchase land if necessary.

Reference Table 13 Well Estimates.

7.1.3 Storage Expansion

The construction of a new storage tank relies on location. Construction of a tank includes mobilization, sitework, construction, plumbing, and pipeline infrastructure. Two of the three (Three Peaks and Northridge) proposed locations will not need as much additional pipeline infrastructure. The third, Desert Mound Road, will require more pipeline infrastructure to connect to the existing system.

Reference Table 14 Tank Estimates.

7.1.4 West Desert Filings

Complete project estimates will be forthcoming.

7.2 *Project Funding*

Funding for Aquifer Management and Recharge can be obtained from the Department of Environmental Quality. There are small grants available to fund pilot programs as well as construct a recharge project.

Funding for each project can be obtained by submitting applications and/or reports to United States Department of Agriculture (USDA) and Utah State Division of Drinking Water State

Revolving Fund (DDW SRF). Funds can be allocated in principle forgiveness, grants, or low interest loans.

Table 12 Aquifer Management and Recharge Estimate

Aquifer Management and Recharge

Item No.	Description	Unit	Estimated Quantity	Estimated Unit Cost	Estimated Cost
1	Excavation - Upper Channel	C.Y.	130000	$ 0.90	$ 117,000.00
2	Excavation - Lower Channel	C.Y.	130000	$ 0.90	$ 117,000.00
3	Excavation - Settling Basins	C.Y.	150000	$ 0.90	$ 135,000.00
4	Box Culvert	L.S.	1	$ 150,000.00	$ 150,000.00
5	Miscallenous Work	L.S.	1	$ 37,000.00	$ 37,000.00
				Total	**$ 556,000.00**

Table 13 Well Estimates

WECCO Well Project

Item No.	Description	Unit	Estimated Quantity	Estimated Unit Cost	Estimated Cost
1	Mobilization	L.S.	1	$ 50,000.00	$ 50,000.00
2	Well Drilling	L.S.	1	$ 200,000.00	$ 200,000.00
3	Well House	L.S.	1	$ 60,000.00	$ 60,000.00
4	Plumbing	L.S.	1	$ 35,000.00	$ 35,000.00
5	Electrical	L.S.	1	$ 45,000.00	$ 45,000.00
6	18" Transmission Pipeline	L.F.	38155	$ 60.00	$ 2,289,300.00
7	Cedar City Connection	L.S.	1	$ 150,000.00	$ 150,000.00
				Total	**$ 2,829,300.00**

North Well Field Well Project

Item No.	Description	Unit	Estimated Quantity	Estimated Unit Cost	Estimated Cost
1	Mobilization	L.S.	1	$ 100,000.00	$ 100,000.00
2	Well Drilling	L.S.	4	$ 200,000.00	$ 800,000.00
3	Well House	L.S.	4	$ 60,000.00	$ 240,000.00
4	Plumbing	L.S.	4	$ 35,000.00	$ 140,000.00
5	Electrical	L.S.	4	$ 45,000.00	$ 180,000.00
6	18" Transmission Pipeline	L.F.	30000	$ 60.00	$ 1,800,000.00
7	Cedar City Connection	L.S.	1	$ 150,000.00	$ 150,000.00
				Total	**$ 3,410,000.00**

Table 14 Tank Estimates

Tank Projects

Item No.	Description	Unit	Estimated Quantity	Estimated Unit Cost	Estimated Cost
1	3 Peaks 3 MG Tank	L.S.	1	$ 2,500,000.00	$ 2,500,000.00
1	North Ridge 3 MG Tank	L.S.	1	$ 2,500,000.00	$ 2,500,000.00
1	Desert Mound 3 MG Tank	L.S.	1	$ 2,500,000.00	$ 2,500,000.00
2	12" Transmission Pipeline	L.F.	8425	$ 45.00	$ 379,125.00
				Total	**$ 2,879,125.00**

WATER USAGE & REVENUE – USER RATES & CONNECTION FEES

8 WATER USAGE & REVENUE – USER RATES & CONNECTION FEES

8.1 *Purpose of Study*

This water rate study analyzes the revenue from water user rates, and recommends modifications that should be made to CICWCD's water user rates to enable the District to continue to serve water to their customers. This study projects operating expenses and debt service, and determines the rates to produce operating revenues required to properly offset these expenses. Based upon the Water Master Plan Report (see previous Sections), the District needs to plan for future capital improvements. These improvements will both increase capacity of the source, storage, and distribution facilities to support the District's growth and to repair, replace, and improve existing facilities to continue to reliably serve existing and future customers.

The *AWWA Manual of Water Supply Practices M1* describes seven objectives that are common to most water utilities. CICWCD's water rate structure was analyzed according to these objectives which are listed below:

- Yielding necessary revenue in a stable and predictable manner
- Minimizing unexpected changes to customer bills
- Discouraging wasteful use and promoting justified uses
- Promoting fairness and equity
- Avoiding discrimination
- Maintaining simplicity, certainty, convenience, feasibility, and freedom from controversy
- Compliance with all applicable laws

This rate study is prepared as a part of this Water Master Plan Report but can be extracted to stand alone to satisfy State requirements. Based upon the recommended capital improvements from the master planning process, several capital improvements have been identified.

To finance these proposed projects, this study determined the indebtedness that will be incurred, and the annual operating and capacity revenues that will be required to offset projected operational and capital expenditures.

8.2 *Study Assumptions*

The basis of this study is the Water Master Plan. The following were assumed in order to complete this study:

Growth and Capital Improvements:

- Equivalent Residential Connections (ERCs) will be added to the system annually beginning in FY2010 as predicted by the Governor's Office of Planning and Budget's population forecast.
- New accounts will contribute operational revenue for six months of the first fiscal year of their existence and for 12 months per year thereafter.
- The District's preference of financing capital projects is grants, followed by cash reserves, and finally debt.
- Currently the District reads water meters monthly and billed monthly.

The following were used as bases for this study and are included in the appendix:

- Yearly budget summary dated January 2014
- FY2012 Audit performed by Kimball & Roberts
- Water usage records from the District (March 2012 – March 2013)

Ensign researched the District's current water rate structure, and looked at various rate structures, selected and recommends a method of analysis. After research into the standard American Water Works Association (AWWA) methods of structuring a rate schedule, it was determined that the District's current rate structure format is appropriate to fit the nature and type of water users in CICWCD, and promotes water conservation at the same time. The current rate structure consists of base rate and three different tiers based on the amount of water consumption.

8.3 *Disclosure Statement*

Numerous assumptions were made to project future revenue, expenses, and debt for CICWCD over the length of the study period for this rate study. These assumptions were based on several documents and sources, including those listed at the beginning of the master plan.

Several factors may influence the projected revenue, expense, and debt of the District's Water Budget. These include:

- The interest rate on bond issuances;
- The actual number, type, and schedule of additional accounts during the study period;
- Unforeseen regulatory and water quality requirements;
- Abnormal weather that affects water consumption and irrigation;
- Projected expenses, such as utility, permitting, and pumping costs;

- Variation in the population projections: and the possible reaction, and changing conservation practices of existing customers in response to rises in water rates;

The financial projections presented in this report, may prove inaccurate as time passes and should be reviewed in comparison to the changes in the above factors.

8.4 *Description of Current Water Rates*

Water usage charges for the Central Iron County Water Conservancy are based on the schedule shown in Table 15 Water Rate Schedule. This rate structure was most recently changed and adopted under *Resolution No. 2014-1-16*, Culinary Water Fees.

This rate structure is an increasing block rate type of structure. This type of rate structure can, when properly designed, send the appropriate conservation signals to certain customer classes if needs be.

Table 15 Water Rate Schedule

	Rate	Gallons Received
Base Rate	$30.00	No Water
1st Overage Rate	$0.70/1,000 gallons	Up to 12,000
2nd Overage Rate	$0.85/1,000 gallons	12,001-20,000
3rd Overage Rate	$1.50/1,000 gallons	20,001-30,000
4th Overage Rate	$2.50/1,000 gallons	30,001+

8.5 *Monthly Bill*

The average monthly bill for all residential users is $35.71.

8.5.1 Maximum Affordable Water Bill

The Division of Drinking Water determines funding and grant eligibility based upon the State Average Water Bill and an entities average water bill compared to what the state deems to be a "maximum affordable water bill" for the water system. This is calculated as 1.75% of the local MAGI (Median Adjusted Gross Income) for the service area. The MAGI is taken from the most recent data from the Utah State Tax Commission. It was determined that:

1. The State Average Water Bill is $39.53 (1.21% of 2012 State MAGI of $39,325)
2. The MAGI during 2012 for CICWCD is $31,312.
    a. The annual "maximum affordable water bill" = 1.75% of $31,312 = $547.96.
    b. CICWCD's actual annual average water bill = $428.50.

Figure 22 Normal Billing Frequency below shows the normal billing frequency and Figure 23 Histogram for Regular Bills is a histogram showing what percentage accounts for total months revenue.

Figure 22 Normal Billing Frequency

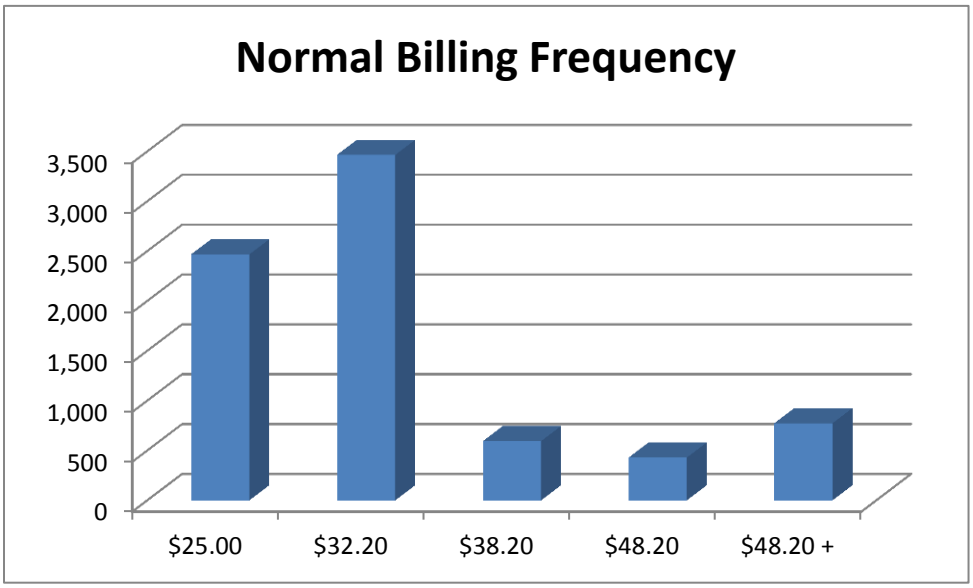
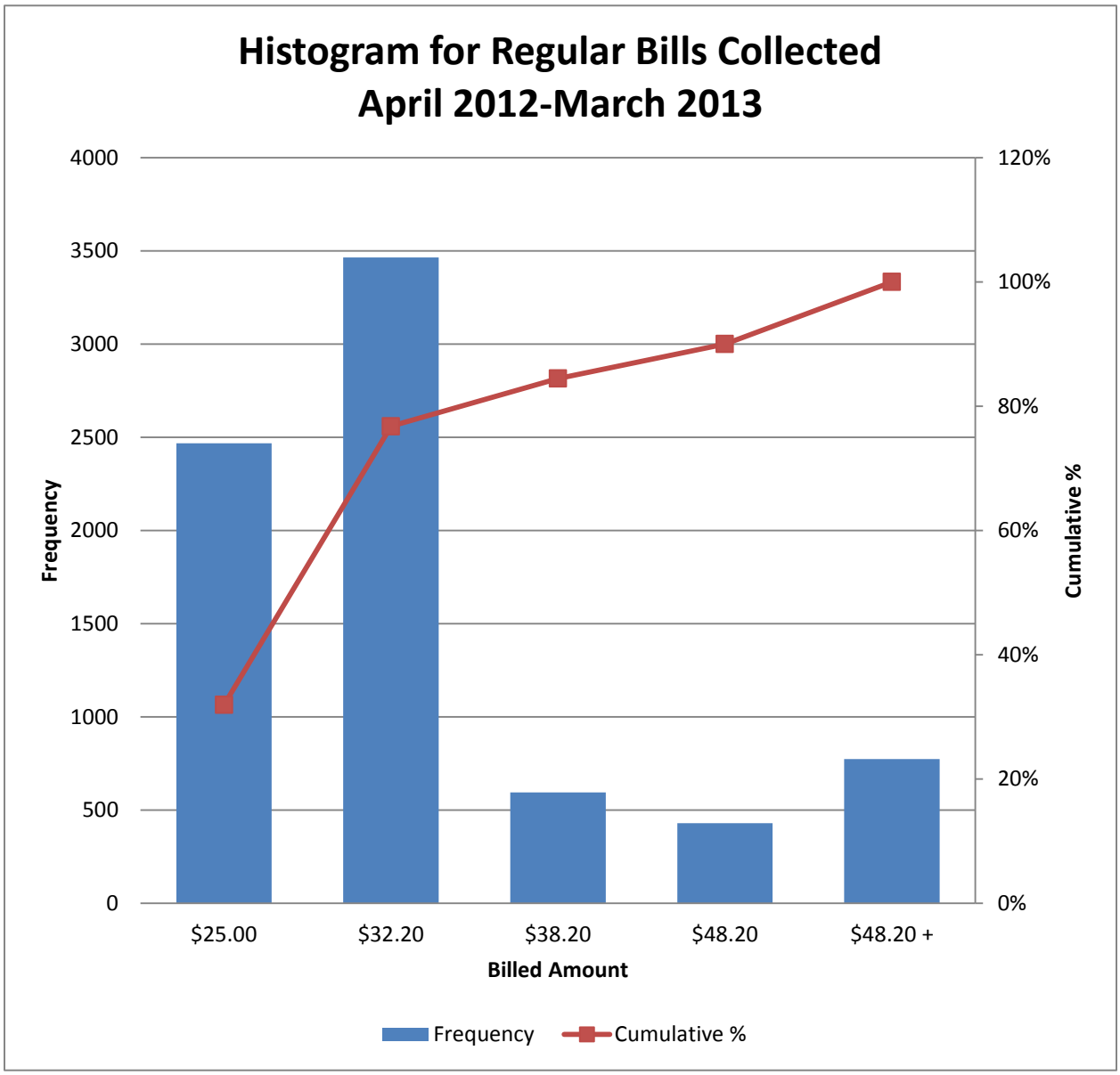


Figure 23 Histogram for Regular Bills



8.6 *Water Rate Comparison*

The current CICWCD water user rate schedule was compared to existing rate schedules in nearby communities in for a single family home. The comparison includes the existing FY2014 rate.

Enoch City

Schedule	Gallons/Month	Charges	Revenue
Tier 1 (Base)	0 to 30,000	$29.00	$ 29.00
Tier 2	30,001 to 50,000	Tier 1 + $0.40/1,000 gal	$ 37.00
Tier 3	50,001 to 70,000	Tier 2 + $0.65/1,000 gal	$ 50.00
Tier 4	70,001 to 90,000	Tier 3 + $0.85/1,000 gal	$ 67.00
Tier 5	90,001 to 120,000	Tier 4 + $1.00/1,000 gal	$ 97.00
Tier 6	120,001 and Above	Tier 5 + $1.20/1,000 gal	

Cedar City

Schedule	Gallons/Month	Charges	Revenue
Tier 1 (Base)		$17.00	$ 17.00
Tier 2	0 to 8,000	Tier 1 + $0.90/1,000 gal	$ 24.20
Tier 3	8,001 to 25,000	Tier 2 + $1.00/1,000 gal	$ 41.20
Tier 4	25,001 to 35,000	Tier 3 + $2.00/1,000 gal	$ 61.20
Tier 5	35,000 and Above	Tier 4 + $2.16/1,000 gal	

Hurricane City

Schedule	Gallons/Month	Charges	Revenue
Tier 1 (Base)		$15.50	$ 15.50
Tier 2	0 to 5,000	Tier 1 + $0.82/1,000 gal	$ 19.60
Tier 3	5,001 to 10,000	Tier 2 + $0.87/1,000 gal	$ 23.95
Tier 4	10,001 to 20,000	Tier 3 + $1.94/1,000 gal	$ 43.35
Tier 5	20,001 to 30,000	Tier 4 + $2.04/1,000 gal	$ 63.75
Tier 6	30,001 to 40,000	Tier 5 + $2.24/1,000 gal	$ 86.15
Tier 7	40,001 to 60,000	Tier 6 + $2.45/1,000 gal	$110.65
Tier 8	40,001 to 60,000	Tier 7 + $2.65/1,000 gal	

Washington City

Schedule	Gallons/Month	Charges	Revenue
Tier 1 (Base)		$17.50	$ 17.50
Tier 2	0 to 4,999	Tier 1 + $0.90/1,000 gal	$ 22.00
Tier 3	5,000 to 9,999	Tier 2 + $1.00/1,000 gal	$ 27.00
Tier 4	10,000 to 14,999	Tier 3 + $1.10/1,000 gal	$ 32.50
Tier 5	15,000 to 19,999	Tier 4 + $1.20/1,000 gal	$ 38.50
Tier 6	20,000 to 24,999	Tier 5 + $1.30/1,000 gal	$ 45.00
Tier 7	25,000 to 29,999	Tier 6 + $1.40/1,000 gal	$ 52.00
Tier 8	30,000 to 34,999	Tier 7 + $1.55/1,000 gal	$ 59.75
Tier 9	35,000 to 39,999	Tier 8 + $1.70/1,000 gal	$ 68.25
Tier 10	40,000 and Above	Tier 9 + $1.85/1,000 gal	

CICWCD

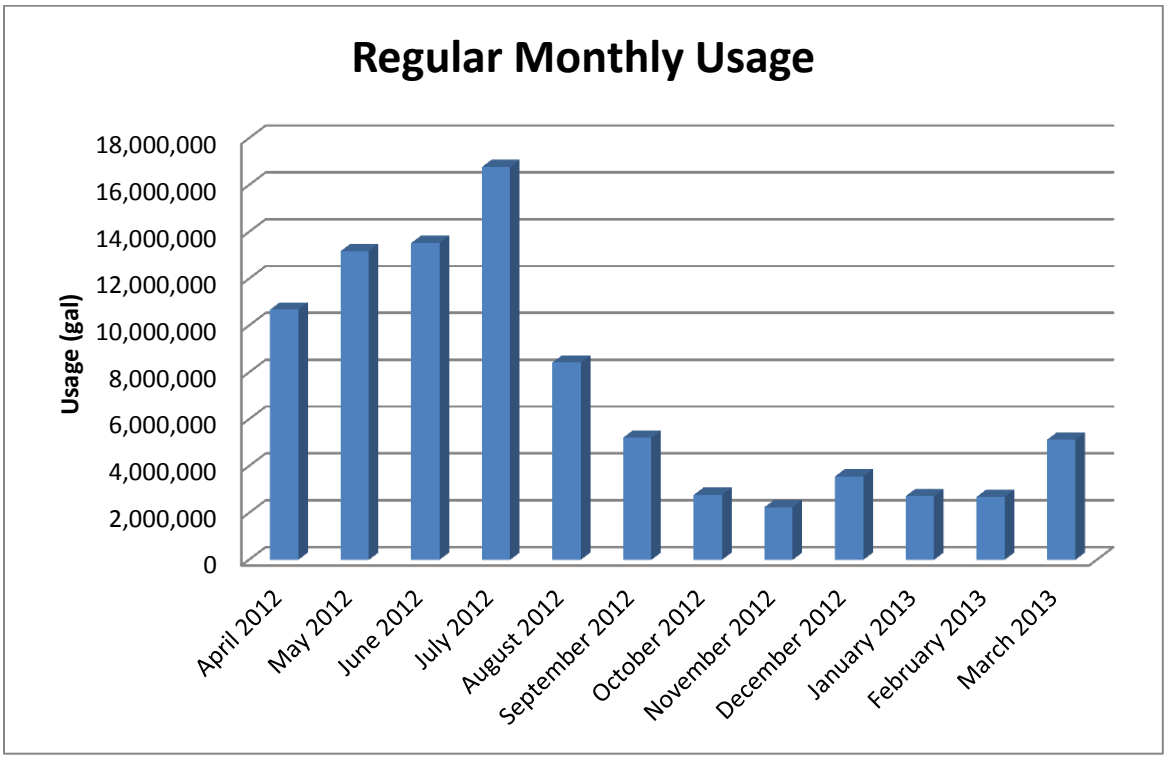
Schedule	Gallons/Month	Charges	Revenue
Tier 1 (Base)		$25.00	$ 25.00
Tier 2	0 to 12,000	Tier 1 + $0.60/1,000 gal	$ 32.20
Tier 3	12,001 to 20,000	Tier 2 + $0.75/1,000 gal	$ 38.20
Tier 4	20,001 to 30,000	Tier 3 + $1.00/1,000 gal	$ 48.20
Tier 5	30,001 and Above	Tier 4 + $1.50/1,000 gal	

8.7 *Current Water Usage*

By using the water usage data provided for 2012-2013 it was possible to quantify the usage/connection/month and to also determine the overall averages. This average water analysis was performed for the all of the water users, those living inside District Background for average monthly water usage: meters read year round.

The average monthly usage for all users is around 11,115 gallons/connection residential. The highest usage month is July while the lowest is November. See Figure 24 Regular Monthly Usage.

Figure 24 Regular Monthly Usage



8.8 *Connection Fee*

Typically, a residential service connection involves the installation of connection facilities (including a corporation stop, service line, curb stop, and miscellaneous fittings) and customer facilities (including meter box, meter, and miscellaneous fittings). It is common practice for utilities to install equipment in the road right-of-way up to the customer's property line. This delineates a clear point of cost responsibility and establishes a level of consistency relative to the average cost of a service connection

8.8.1 Current Connection Fee

Central Iron County Water Conservancy District's connection fees are as follows:

¾ inch Service - $800
1 inch Service - $1,000
1.5 inch Service - $2,000
2 inch Service - $2,500

8.9 Proposed Water Rate Structure

To achieve the 1.75% of MAGI threshold within CICWCD, it is recommended that CICWCD implement the water rate structure listed in Table 16 Proposed Rate Structure. This structure will increase the average water bill to $45.10 a month. Furthermore, by implementing an annual 3% rate increase will allow the District to generate more revenue as growth happens to pay for the District's operating expense, provide for repairs and depreciation of works owned and operated by the District, pay the interest on bods issued, and provide, as much as practicable, a sinking or other fund to pay the principals on bonds as they become due.

Table 16 Proposed Rate Structure

	Rate	**Gallons Received**
Base Rate	$30.00	No Water
1st Overage Rate	$0.70/1,000 gallons	Up to 12,000
2nd Overage Rate	$0.85/1,000 gallons	12,001-20,000
3rd Overage Rate	$1.50/1,000 gallons	20,001-30,000
4th Overage Rate	$2.50/1,000 gallons	30,001+

STATUTORY IMPACT FEE STUDY

9 STATUTORY IMPACT FEE STUDY

9.1 *Introduction*

The use of impact fees to finance public facilities is a concept that has already gained wide acceptance. The impact fee is frequently used as a source of capital financing in large and medium sized urban areas for system expansion. The theory, practical models, and legislation for determining growth-related costs and calculating impact-fees for new construction are well developed.

The CICWCD Water Master Plan incorporates the District's ability to facilitate future growth. These projects will be needed in order for the District to expand further and impact fees will help economically sustain these projects. The CICWCD's current impact fee is $2,500. An evaluation of this impact fee compared to impact fees in surrounding special service districts will be included.

This study discusses the framework for estimating an impact fee. It also quantifies the maximum amount that a developer or builder will be required to contribute to pay for the costs of the proposed water system.

The proposed source development and infrastructure improvement projects are expected to be funded by various state and federal agencies, in addition to the water service charges and impact fees.

9.2 *Definition of Impact Fee*

According to the Utah State Legislative Code 11-36-102, "Impact fee is a payment of money imposed upon development activity as a condition of development approval. Impact fee does not mean a tax, a special assessment, a building permit fee, and a hookup fee, a fee for project improvements, or other reasonable permit or application fee."

An impact fee is a one-time charge on new construction, typically collected at the time of building permit issuance or connection to the water or wastewater system. Impact fees are designed to ensure that new development contributes a fair share of the cost of the capital improvements needed to serve growth. The premise on which impact fees are based is that development should pay for the cost of providing the facilities necessary to accommodate growth. The costs of projects needed to support growth are financed with impact fees based on some measurement of a development's impact on future needs.

9.3 *Purpose of Impact Fees*

The impact fees are designed to cover the costs associated with providing new facilities in CICWCD and to allow new users to connect to the District's water system. The broad purpose of

impact fees is to protect the public health, safety and general welfare by providing adequate, safe, reliable water supply. The specific purpose of the impact fees calculated in this study is to fund the construction of the proposed water source improvements and infrastructure improvement project. This report documents the data, methodology, and results of the impact fee study.

9.4 *Legal Framework and Regulatory Requirement*

The methods used to calculate impact fees in this study are intended to satisfy all legal requirements governing such fees, including provisions of the U. S. Constitution, and Utah State Legislative Statutes.

1. **U. S. Constitution**: Like all land use regulations, impact fees are subject to the Fifth Amendment prohibition on taking of private property for public use without compensation. Both state and federal courts have recognized the imposition of impact fees on development as a legitimate form of land use regulation, provided the fees meet standards intended to protect against regulatory takings. To comply with the Fifth Amendment, development regulations must be shown to substantially advance a legitimate governmental interest. In the case of impact fees, that interest is in the protection of public health, safety, and welfare by ensuring that development is not detrimental to the quality of essential public services.

2. **Utah State Legislative Statutes**: Based on the Utah Impact Fee Act, a political entity such as county, municipality, or a special district imposing impact fees must prepare a written analysis of each impact fee that:

    - Identifies the impact on system improvements required by the development activity.
    - Demonstrates how those impacts on system improvements are reasonably related to the development activity.
    - Estimates the proportionate share of the costs of the impacts on system improvements that are reasonably related to the new development activity; and identifies how the impact fee was calculated.

Utah Impact Fee Act includes the following Utah State Legislative Codes:

Utah State Legislative Codes	Subject
11-36-101	Title
11-36-102	Definitions
11-36-201	Impact Fees - Analysis, Capital Facilities Plan, Notice of Plan, Summary and Exemptions
11-36-202	Impact Fees - Enactment and Required Provisions
11-36-301	Impact Fees - Accounting
11-36-302	Impact Fees - Expenditure
11-36-303	Refunds
11-36-401	Impact Fees - Challenges and Appeals
11-36-402	Challenging an Impact Fee by Arbitration, Procedure, Appeal, and Costs
44-36-501	Private Entity Assessment of Impact Fees, Notice and Hearing, and Audit

Based on the Utah Impact Fee Act (Utah State Legislative Code 11-36-201), an impact fee study is a prerequisite for a capital facility plan for a political entity such as county, municipality, or a special district. The political entity may only impose impact fees on development activities when its plan for financing system improvements establishes that impact fees are necessary to achieve equitable allocation to the costs borne in the past and to be borne in the future, in comparison to the benefits already received and yet to be received. The capital facility plan should include impacts that the proposed facility may have on the affected entity.

In calculating the impact fee, the following cost items may be included (Utah Impact Fee Act, Utah State Legislative Code 11-36-202):

- The construction contract price;
- The cost of acquiring land, improvements, materials, and fixtures;
- The planning, surveying, and engineering fees for services provided for and directly related to the construction of the system improvements; and

- The debt service charges, if the political subdivision might use impact fees as a revenue stream to pay the principal and interest on bonds, notes, or other obligations issued to finance the system improvements.

9.5 *Legal Issues Related to Impact Fee Analysis Methodology*

The preliminary planning to establish an impact fee includes a review of the legal authority and issues associated with capital recovery in the utility's operating environment. Legal authority may be granted through enabling legislation, ordinances, statutes regarding general law or home rule authorities, home charter, utility operation permits, utility service certifications, or judicial rulings. A primary legal issue related to impact fee is establishing a reasonable connection between the amount of impact fees and the cost associated with serving new development.

9.6 *Methodology*

Any one of the applicable methods described below may be used to calculate impact fees. The choice of a particular method depends primarily on the service characteristics and planning requirements for the facility type being addressed. Each method has advantages and disadvantages in a particular situation, and to some extent they are interchangeable, because they all allocate facility costs in proportion to the needs created by development.

Reduced to its simplest terms, the process of calculating impact fees involves only two steps: determining the cost of development-related capital improvements, and allocating those costs equitably to various types of development. In practice, however, the calculation of impact fees can become quite complicated because of the many variables involved in defining the relationship between development and the need for facilities. There are two common methods used in determining impact fees which will be described in further detail below.

9.6.1 Incremental Cost Method

The incremental cost method provides a method of upgrading the current system to meet future needs without major impacts on the current users. The major component of this method is determining periods of growth, growth rates, type of growth, and needed improvements to support these growths. This system of developing impact fees is recommended for growing cities or Districts that need major improvements. This allows for the current users to avoid as much impact as possible from the needed improvements. This method was not chosen for the impact fee study

9.6.2 Equity (Buy-In) Method

This method assumes that all the existing users have built up equity in the system and that the impact fees are a representative of that equity. This allows for the new users to buy into the

equity that the existing users have built up. The largest component to this method is determining the equity of the system. This includes determining assets, depreciation, and liabilities. Once these components are determined, the equity of the system is computed and the impact fees can be assessed.

9.7 *Equity (Buy-In) Method Chosen*

This section calculates impact fees for new development on the basis of achieving equity between new and existing customers. The calculation of the impact fee in this section recognizes that each user has built up a certain amount of equity in the system and that new development is responsible to pay for that equity through impact fees. The goal of this analysis is to achieve a level of equity from new customers by collecting an impact fee representative of the average equity attributable to existing customers.

An evaluation of the system assets is shown in Table 17 Total Assets. The costs shown in this Table are shown in today's replacement costs. The replacement costs were derived for total amount needed to replace the entire water system. The number of ERCs is the total number of ERCs in the system. Included in this number is the number of ERCs inside and outside the system. The cost per connection is the total replacement cost divided by the number of connections currently in the system. This amount ($20,055) is the maximum allowable impact fee for connection to the water system.

Table 17 Total Assets

Asset	Replacement Cost
Pipe (423,020 L.F.)	$ 17,415,446.89
Source (9 Wells, 2 Springs)	$ 2,900,000.00
Tanks (6)	$ 3,000,000.00
Booster Station (2)	$ 300,000.00
Equipment	$ 150,000.00
Land	$ 100,000.00
Total	**$ 23,865,446.89**
Number of ERC's	**1,190**
Cost per ERC	**$ 20,055.00**

9.8 *Impact Fees – Surrounding*

A survey of impact fees for the surrounding communities was conducted. The results of this survey are shown in Table 18 Impact Fee Comparison. The average impact fee for the surrounding communities is $2,640.34. CICWCD's current water impact fee is $2,500 per ERC.

Table 18 Impact Fee Comparison

Entity	Impact Fee
Enoch City	$ 4,703.00
Cedar City	$ 2,993.70
Hurricane City	$ 884.00
Washington City	$ 2,121.00
CICWCD	$ 2,500.00
Average	**$ 2,640.34**

9.9 *Proposed Impact Fee*

Based on surrounding communities' impact fees it is recommended that CICWCD increase the impact fee to $3,500. Also, it is recommended that CICWCD implement a basin wide impact fee of $500 to create a savings as the West Desert needs to be implemented.

APPENDIX

CENTRAL IRON COUNTY WATER CONSERVANCY DISTRICT

FINANCIAL STATEMENTS

DECEMBER 31, 2012

C O N T E N T S

Kimball & Roberts
Certified Public Accountants
A Professional Corporation
Box 663
Richfield, Utah 84701
Phone 896-6488

INDEPENDENT AUDITOR'S REPORT

The Honorable Board Members
Central Iron County Water Conservancy District
Cedar City, Utah 84721

Report on the Financial Statements

We have audited the accompanying financial statements of the business-type activities of Central Iron County Water Conservancy District, an enterprise fund, as of and for the fiscal year ended December 31, 2012, and the related notes to the financial statements, which collectively comprise the District's financial statements as listed in the table of contents. These financial statements are the responsibility of Central Iron County Water Conservancy District's management. Our responsibility is to express an opinion on these financial statements based on our audit.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall financial statement presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

CENTRAL IRON COUNTY WATER CONSERVANCY DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS

As Management of the Central Iron County Water Conservancy District (the District), we offer readers of the financial statements this narrative discussion, overview, and analysis of the District's financial activities for the year ending December 31, 2012. We encourage readers to consider the information presented here as an overview of the operations of the District. This discussion and analysis is not intended to cover every aspect of the daily activities of the District.

The purpose of Central Iron County Water Conservancy District is to provide conservation and development of water resources to the residents of the district.

Financial Highlights

* The assets of the District exceeded its liabilities as of the close of the most recent year by $21,493,930 (net position). Of this amount, $1,560,891 (unrestricted net position) may be used to meet the government's ongoing obligations to citizens, creditors, and capital expansion.

* The District's total net position increased by $275,195.

Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to the District's basic financial statements. The District's basic financial statements are comprised of four components: 1) Statement of Net Position; 2) Statement of Revenue, Expenses, and Changes in Net Position; 3) Statement of Cash Flows; and 4) Notes to the Financial Statements. This report also contains other supplementary information in addition to the basic financial statements to give the reader an overall view of the District as a whole. The financial statements are designed to provide readers with a broad overview of the District's finances, in a manner similar to a private-sector business.

Statement of Net Position

This condensed statement of net position presents information on all of the assets and liabilities of the District, with the difference between assets and liabilities reported as net position. Net position invested in capital assets are the fixed assets of the District reduced by accompanying debt and accumulated depreciation. Over time, increases or decreases in net position may serve as a useful indicator of whether the financial position of the District is improving or deteriorating.

Statement of Cash Flows

This condensed statement of cash flows provides an additional perspective of the District's financial results for the fiscal year. It provides a source and use of cash for broad categories of activities.

	2012	2011
Cash provided (used) by:		
Operating activities	(457,710)	(565,253)
Non-capital financing activities	1,993,205	1,569,656
Capital financing activities	(1,145,408)	(1,075,614)
Capital investing activities	6,729	4,721
Net Increase (Decrease) in Cash	396,816	(66,490)
Cash - Beginning of Year	378,702	445,192
Cash - End of Year	775,518	378,702

Capital Asset and Debt Administration

Capital Assets

The District's investment in capital assets as of December 31, 2012 was $31,700,723 (net of accumulated depreciation). The investment in capital assets includes land, buildings, and water rights, utility system, and office equipment.

The total increase in the District's investment in capital assets for the current year was $429,527. Major capital events during the current year are shown below by category in comparison to the prior year.

	2012	2011
Investment in Fixed Assets:		
Construction in Progress	-	-
Land and Water Rights	285,000	8,530,767
Buildings	108,581	125,000
Water Utility System	12,600	23,268,872
Office Equipment	23,346	2,562
Total Assets	429,527	31,927,201

Additional information on the District's long-term debt can be found in the notes to the financial statements.

BASIC FINANCIAL STATEMENTS

CENTRAL IRON COUNTY WATER CONSERVANCY DISTRICT
STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET POSITION
PROPRIETARY FUND TYPE
For The Year Ended December 31, 2012

	December 31, 2012	(Memorandum) (Only) December 31, 2011
OPERATING REVENUES		
Water Sales Revenue	306,320	211,397
TOTAL REVENUES	306,320	211,397
OPERATING EXPENSES		
Depreciation Expense	656,005	594,771
Dues & Memberships	4,615	542
Insurance Expense	87,933	50,969
Lease Expense	8,682	10,260
Maintenance	41,815	24,522
Water System Expense	95,463	45,926
Office, Telephone, and Postage Expense	33,536	13,701
Payroll Taxes	23,387	17,298
Professional Expenses	129,601	102,881
Cost Sharing - USU	56,320	47,765
Salaries & Wages	155,001	152,112
Employee Benefits	25,819	-
Seminar Training	1,057	1,001
Travel	8,100	15,298
Utilities Expense - Pumping	92,991	97,636
Public Education	-	-
Other Expenses	14,099	18,524
TOTAL OPERATING EXPENSES	1,434,424	1,193,206
NET OPERATING GAIN (LOSS)	(1,128,104)	(981,809)
NONOPERATING REVENUE (EXPENSES)		
Property Tax Revenue	1,736,632	1,569,565
Fee-In-Lieu of Taxes	-	114,601
Contributions from Developers	-	2,095,959
Impact Fees	63,100	52,481
Connection Fees	11,137	7,100
Other Revenue	4,007	27,536
Interest Earnings	6,729	4,721
Grant Expense	-	(9,000)
Interest & Fiscal Charges	(418,306)	(424,499)
TOTAL NONOPERATING REVENUE (EXPENSES)	1,403,299	3,438,555
NET INCOME	275,195	2,456,746
CHANGES IN NET POSITION	275,195	2,456,746
TOTAL NET POSITION - BEGINNING OF YEAR	21,218,735	18,761,989
TOTAL NET POSITION - END OF YEAR	21,493,930	21,218,735

The notes to the financial statements are an integral part of this statement.

NOTE 1 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The Central Iron County Water Conservancy District, a Utah political subdivision, (the District) is organized under the Utah Water Conservancy Act of the State of Utah. The District operates under a board of directors appointed by Iron County and provides conservation and development of water resources to the residents of the District. The District is not a component unit of any other governmental entity, and it has no component units.

The accounting policies of the District conform to accounting principles generally accepted in the United States of America as applicable to government units. The District develops, purchases, treats, and sells water to retail and wholesale customers and operates in no other industry. The following is a summary of the more significant of such policies.

A. Reporting Entity:

In evaluating how to define the District, for financial reporting purposes, management has considered all potential component units. The decision to include a potential component unit in the reporting entity was made by applying the criteria set forth in GAAP. The basic, but not only, criterion for including a potential component unit within the reporting entity is the governing body's ability to exercise oversight responsibility. The most significant manifestation of this ability is financial interdependency. Other manifestations of the ability to exercise oversight responsibility include, but are not limited to, the selection of governing authority, the designation of management, the ability to significantly influence operations and accountability for fiscal matters. The other criterion used to evaluate potential component units for inclusion or exclusion from the reporting entity is the exercise of special financial relationships, regardless of whether the District is able to exercise oversight responsibilities. Based upon the application of these criteria, no potential component units have been included in defining the District's reporting entity.

B. Financial Statement Presentation:

The District has adopted the provisions of GASB Statement No. 34, Basic Financial Statements and Management Discussion and Analysis for State and Local Governments, GASB Statement No. 37, Basic Financial Statements and Management Discussion and Analysis - for State and Local Governments: Omnibus, and GASB Statement No. 38, Certain Financial Statement Disclosures. These statements require governmental entities with more than one governmental activity to present additional accrual-based statements to better communicate the financial status of the entity. The significant changes to the District's financial statements relating to these standards are the Management's Discussion and Analysis and the titles and presentation of the financial statements to conform to the net asset presentation.

Certain balances have been restated, including the District's net position, to conform to GASB Statement No. 34 presentation.

The District reports its water development, production, storage, and distribution operations as a proprietary fund. Proprietary funds are used to account for operations that are financed and operated in a manner similar to private business enterprises where the intent of the governing body is that costs (expenses, including depreciation) of providing goods or services to the general public on a continuing basis be financed of recovered primarily through user charges.

NOTE 1 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Restricted - Expendable: Restricted expendable net position include resources which the District is legally or contractually obligated to spend in accordance with restrictions imposed by external parties.

Unrestricted: Unrestricted net position represent resources derived from user fees and intergovernmental appropriations. These resources are used for transactions relating to the development of water resource activities of the District, and may be used at the discretion of the governing board to meet current expenses for any legal purpose.

G. Property Tax

The District assesses all taxable property other than centrally-assessed property, which is assessed through the state, by May 22 of each year. The District should adopt a final tax rate prior to June 22, which is then submitted to the state for approval. Property taxes are due on November 30 of each year. Delinquent taxes are subject to a penalty of 2% or $10.00, whichever is greater. After January 15 of the following year, delinquent taxes and penalty bear interest of 6% above the federal discount rate from January 1 until paid.

Property taxes attach as an enforceable lien on property as they become delinquent. All unpaid taxes levied during the year become delinquent December 1 of the current year.

Property tax revenues are recognized when they become measurable and available. Amounts available include those property tax receivables expected to be collected within sixty days after year end.

H. Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reported period. Actual results could differ from those estimates.

NOTE 2 - CASH, CASH EQUIVALENTS, AND INVESTMENTS

The District maintains a cash and investment pool, which includes the cash account and several investments.

Deposits and investments for local governments are governed by the Utah Money Management Act (*Utah Code Annotated,* Title 51, Chapter 7, "The Act") and by rules of the Utah Money Management Council ("The Council").

The District's deposit and investment policy is to follow the Utah Money Management Act and rules of the Utah Management Council. However, the District does not have a separate deposit or investment policy that addresses specific types of deposit and investment risks to which the District is exposed.

Credit Risk:
Credit risk is the risk that the counterparty to an investment will not fulfill its obligations. The District's policy for limiting the credit risk of investments is to comply with the Money Management Act. The Act requires investment transactions to be conducted only through qualified depositories, certified dealers, or directly with issuers of the investment securities. Permitted investments include deposits of qualified depositories; repurchase agreements; commercial paper that is classified as "first-tier" by two nationally recognized statistical rating organizations, one of which must be Moody's Investor Services or Standard & Poor's; bankers acceptances; obligations of the U.S. Treasury and U.S. Government sponsored enterprises; bonds and notes of political subdivisions of the State of Utah; fixed rate corporate obligations and variable rate securities rated "A" or higher by two nationally recognized statistical rating organizations as defined in the Act.

The District is authorized to invest in the Utah Public Treasurer's Investment Fund (PTIF), an external pooled investment fund managed by the Utah State Treasurer and subject to the Act and Council requirements. The PTIF is not registered with the SEC as an investment company, and deposits in the PTIF are not insured or otherwise guaranteed by the State of Utah. The PTIF operates and reports to participants on an amortized cost basis. The income, gains, and losses, net of administration fees, of the PTIF are allocated based upon the participants' average daily balances.

Following are the District's investments at December 31, 2012:

	Fair Value	Maturity	Quality Rating
PTIF	697,400	Less than 1 Year	Not Rated

Interest Rate Risk:
Interest rate risk is the risk that changes in interest rates of debt investments will adversely affect the fair value of an investment. The District manages its exposure to decline in fair value by solely investing in the PTIF and by adhering to the Money Management Act. The Act requires that the investing remaining term to maturity of investments may not exceed the period of availability of the funds to be invested. The Act further limits the remaining term to maturity of commercial paper to 270 days or less and fixed rate negotiable deposits and corporate obligations to 365 days or less. Maturities of the County's investments are noted above.

Concentration of Credit Risk:
Concentration of credit risk is the risk of loss attributed to the magnitude of a government's investment in a single issuer. The District's policy to limit this risk is to adhere to the rules of the Money Management Council. The Council's rule 17 limits investments in a single issuer of commercial paper and corporate obligations to between 5 and 10 percent depending upon the total dollar amount held in the District's portfolio at the time of purchase. As of year-end, the District had no investments other than an investment in the Utah Public Treasurer's Investment Fund.

NOTE 4 - CHANGES IN LONG-TERM DEBT

The following is a summary of bonds payable of the District for the fiscal year ended December 31, 2012:

Proprietary Fund Debt:	Balance 12/31/11	Issued	Matured	Balance 12/31/12
Cedar Highlands 2011	25,000	-	-	25,000
Cedar Highlands 2011	250,000	-	6,000	244,000
Parity Water Revenue Bond Series 2005 A (UT-DW)	2,247,000	-	116,000	2,131,000
Parity Water Revenue Bond Series 2005 B (SBSU)	158,222	-	158,222	-
Rural Development Revenue Bonds	2,149,362	-	27,443	2,121,919
State Bank of Southern Utah Water Purchase	1,374,692	281,933	152,447	1,504,178
USDA - Phase II	2,688,186	-	32,266	2,655,920
USDA - Angus Water Company (assumed debt)	22,819	-	948	21,871
Utah Drinking Water - Phase II	3,315,000	-	153,000	3,162,000
Utah Drinking Water - Series 2009	59,000	-	3,000	56,000
Utah Drinking Water - Series 2009 Phase III	170,000	-	4,000	166,000
Total Proprietary Fund Debt	12,459,281	281,933	653,326	12,087,888

NOTE 4 - CHANGES IN LONG-TERM DEBT (CONTINUED)

$ 2,756,000 Parity Water Revenue Bond Series 2008 issued by USDA Rural Development. Due in annual installments of $140,803 through year 2049 Interest rate of 4% APR. Reserve requirement is $ 56,321.	2,655,920
$ 3,610,000 Parity Water Revenue Bond Series 2008 issued by Utah Drinking Water Board Due in annual installments of $223,952 to $224,936 through year 2029. Interest rate of 2.25% APR Reserve requirement is $ 89,912.	3,162,000
$ 65,000 Parity Water Revenue Bond Series 2009 issued by Utah Drinking Water Board Due in annual installments of from $4,300 to $4,140 through year 2029. Interest rate of 2% APR. Reserve requirement is $ 892.	56,000
$ 694,705 (principal forgiveness of $520,705) $174,000 (net loan amount) Parity Water Revenue Bond Series 2009 issued by Utah Drinking Water Board Due in annual installments of $7,776 to $8,500 through year 2040. Interest rate of 2.17% APR. Technical assistance fee. Reserve requirement is $ 1,700.	166,000
$ 25,000 Water Revenue Bonds (assumed 8/17/2012) Assumed from Cedar Highlands Home Owners Association These bonds require payment of $ 5,000 per year over five years or a single balloon payment at the end of five years with no interest.	25,000
$ 250,000 Water Revenue Bonds (assumed on 8/17/2012) Assumed from Cedar Highland Home Owners Association These bonds required yearly payments of $ 6,000 to $ 12,000 over 30 years. Interest rate is 2.38% APR	244,000
Revenue Bonds Payable at December 31, 2012:	10,561,839

All water revenue bonds are secured by revenues generated from water resources.

NOTE 5 - PENSION PLAN (Continued)

The District contributions to the various systems for the years ending December 31, 2012, 2011, and 2010 respectively were; for the Contributory System $18,467, $0.00 and $0.00 respectively. The contributions were equal to the required contributions for each year.

NOTE 6 - RISK MANAGEMENT

The District is subject to various types of risk such as tort actions, theft, damage, or destruction of assets by intent or acts of Nature, and job related illness or injury. The District has procured insurance which, in the District's estimation, is adequate to reduce the risk of loss to a manageable level.

COMPLIANCE SECTION

Compliance and Other Matters

As part of obtaining reasonable assurance about whether Central Iron County Water Conservancy District's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit and, accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance that are required to be reported under *Government Auditing Standards.*

Purpose of this Report

This purpose of this report is solely to describe the scope of our testing or internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Kimball & Roberts

KIMBALL & ROBERTS, P. C.
Certified Public Accountants

April 18, 2013
Richfield, Utah

Unmodified Opinion on Each of the Other General Compliance Requirements

In our opinion, Central Iron County Water Conservancy District complied, in all material respects, with the compliance requirements referred to above that are applicable to each of its other general compliance requirements and each of its other major state programs for the year ended December 31, 2012.

KIMBALL & ROBERTS, P. C.
Certified Public Accountants

April 18, 2013
Richfield, Utah

Presented May 15, 2014
passed June 19, 2014

CENTRAL IRON COUNTY WATER CONSERVANCY DISTRICT

FINANCIAL STATEMENTS

DECEMBER 31, 2013

KIMBALL & ROBERTS
A PROFESSIONAL CORPORATION
CERTIFIED PUBLIC ACCOUNTANTS

176 NORTH MAIN • P.O. BOX 663
RICHFIELD, UTAH 84701

CENTRAL IRON COUNTY WATER CONSERVANCY DISTRICT

FINANCIAL STATEMENTS

DECEMBER 31, 2013

C O N T E N T S

Kimball & Roberts
A Professional Corporation
Certified Public Accountants
176 North Main • P.O. Box 663
Richfield, Utah 84701

INDEPENDENT AUDITOR'S REPORT

The Honorable Board Members
Central Iron County Water Conservancy District
Cedar City, Utah 84721

Report on the Financial Statements

We have audited the accompanying financial statements of the business-type activities of Central Iron County Water Conservancy District, an enterprise fund, as of and for the year ended December 31, 2013, and the related notes to the financial statements, which collectively comprise the District's financial statements as listed in the table of contents. These financial statements are the responsibility of Central Iron County Water Conservancy District's management. Our responsibility is to express an opinion on these financial statements based on our audit.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall financial statement presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the business-type activities of Central Iron County Water Conservancy District at December 31, 2013, and the changes in financial position and cash flows, thereof, for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis on pages 3 through 7 be presented to supplement the financial statements. Such information, although not part of the financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the financial statements, and other knowledge we obtained during our audit of the financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated April 18, 2014, on our consideration of Central Iron County Water Conservancy District's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering Central Iron County Water Conservancy District's internal control over financial reporting and compliance.

Kimball + Roberts

KIMBALL & ROBERTS, P. C.
Certified Public Accountants

April 18, 2014
Richfield, Utah

CENTRAL IRON COUNTY WATER CONSERVANCY DISTRICT
MANAGEMENT'S DISCUSSION AND ANALYSIS

As Management of the Central Iron County Water Conservancy District (the District), we offer readers of the financial statements this narrative discussion, overview, and analysis of the District's financial activities for the year ending December 31, 2013. We encourage readers to consider the information presented here as an overview of the operations of the District. This discussion and analysis is not intended to cover every aspect of the daily activities of the District.

The purpose of Central Iron County Water Conservancy District is to provide conservation and development of water resources to the residents of the district.

Financial Highlights

* The assets of the District exceeded its liabilities as of the close of the most recent year by $21,836,296 (net position). Of this amount, $1,970,010 (unrestricted net position) may be used to meet the government's ongoing obligations to citizens, creditors, and capital expansion.

* The District's total net position increased by $342,366.

Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to the District's basic financial statements. The District's basic financial statements are comprised of four components: 1) Statement of Net Position; 2) Statement of Revenue, Expenses, and Changes in Net Position; 3) Statement of Cash Flows; and 4) Notes to the Financial Statements. This report also contains other supplementary information in addition to the basic financial statements to give the reader an overall view of the District as a whole. The financial statements are designed to provide readers with a broad overview of the District's finances, in a manner similar to a private-sector business.

Statement of Net Position

This condensed Statement of Net Position presents information on all of the assets and liabilities of the District, with the difference between assets and liabilities reported as net position. Net position invested in capital assets are the fixed assets of the District reduced by accompanying debt and accumulated depreciation. Over time, increases or decreases in net position may serve as a useful indicator of whether the financial position of the District is improving or deteriorating.

Statement of Net Position (continued)

	2013	2012
Current and Other Assets	2,456,558	2,110,117
Capital Assets	31,127,723	31,700,723
Total Assets	33,584,281	33,810,840
Long-Term Liabilities Outstanding	11,031,747	11,577,897
Other Liabilities	716,238	739,013
Total Liabilities	11,747,985	12,316,910
Net Position:		
Net Investment in Capital Assets	19,570,704	19,612,835
Restricted	295,582	320,204
Unrestricted	1,970,010	1,560,891
Total Net Position	21,836,296	21,493,930

As noted earlier, net position may serve over time as a useful indicator of an institution's financial position. In the case of the District, assets exceeded liabilities by $21,836,296 at the close of the most recent fiscal year. This represents an increase over the preceding year of $342,366. The unrestricted net position of $1,970,010 may be used to meet the District's ongoing obligations to customers of the District.

Statement of Revenues, Expenses, and Changes in Net Position

This condensed Statement of Revenues, Expenses, and Changes in Net Position presents information showing how the net position of Central Iron County Water Conservancy District changed during the most recent year. All changes in net position are reported as soon as the underlying event giving rise to the change occurs, regardless of the timing of related cash flows. Thus, revenues and expenses are reported in this statement for some items that will only result in cash flows in future fiscal periods. The breakdown of "operating" and "non-operating" categories are defined by accounting standards.

Statement of Revenues, Expenses, and Changes in Net Position (Continued)

	2013	2012
Operating Revenues	514,513	306,320
Operating Expenses	(1,662,378)	(1,434,424)
Net Operating Gain (Loss)	(1,147,865)	(1,128,104)
Non-Operating Revenues (Net)	1,490,231	1,403,299
Increase in Net Position	342,366	275,195
Net Position - Beginning of Year	21,493,930	21,218,735
Net Position - End of Year	21,836,296	21,493,930

Statement of Cash Flows

This condensed Statement of Cash Flows provides an additional perspective of the District's financial results for the fiscal year. It provides a source and use of cash for broad categories of activities.

	2013	2012
Cash provided (used) by:		
Operating activities	(517,037)	(457,710)
Non-capital financing activities	3,012,263	1,993,205
Capital financing activities	(909,160)	(1,145,408)
Capital investing activities	6,190	6,729
Net Increase (Decrease) in Cash	1,592,256	396,816
Cash - Beginning of Year	775,518	378,702
Cash - End of Year	2,367,774	775,518

Capital Asset and Debt Administration

Capital Assets

The District's investment in capital assets as of December 31, 2013 was $31,127,723 (net of accumulated depreciation). The investment in capital assets includes land, buildings, water rights, utility system, and equipment.

The total additions to the District's investment in capital assets for the current year was $90,059. Major capital events during the current year are shown below by category in comparison to the prior year.

	2013	2012
Investment in Fixed Assets:		
Construction in Progress	19,260	-
Land and Water Rights	8,815,767	8,815,767
Buildings	222,160	228,387
Water Utility System	22,004,249	22,634,863
Equipment	66,287	21,706
Total Assets	31,127,723	31,700,723

Additional information on the District's capital asset's can be found in the notes to the financial statements.

Debt Administration

At the end of the current year, the District had a total bonded debt and other long-term obligations outstanding of $11,557,019. The debt represents bonds secured solely by specified revenue sources (i.e. revenue bonds).

	2013	2012
Long Term Obligations:		
Revenue Bonds Payable	10,211,585	10,561,839
Other Long-Term Obligations	1,345,434	1,526,049
Total Long-Term Obligations	11,557,019	12,087,888

Additional information on the District's long-term debt can be found in the notes to the financial statements.

Notes to the Financial Statements

The notes provide additional information that is essential for a full understanding of the data provided in the government-wide and fund financial statements. The notes to the financial statements can be found at the end of this report.

The financial report is designed to provide a general overview of the District's finances for all those with an interest in government finances. Questions concerning any of the information provided in this report or requests for financial information should be addressed to Central Iron County Water Conservancy District, 88 East Fiddlers Canyon Road, Suite # A, P.O. Box 37, Cedar City, Utah 84721-0037.

(This page contains no information and
is used to assist in formatting for easier reading)

BASIC FINANCIAL STATEMENTS

CENTRAL IRON COUNTY WATER CONSERVANCY DISTRICT
STATEMENT OF NET POSITION
PROPRIETARY FUND
For the Year Ended December 31, 2013

	December 31, 2013	(Memorandum) (Only) December 31, 2012
ASSETS		
Current Assets:		
Cash and Investments	2,367,774	775,518
Accounts Receivable	39,061	34,671
Property tax receivable	49,723	1,299,928
Total Current Assets	2,456,558	2,110,117
Long-term Assets:		
Capital Assets (Net of Accumulated Depreciation):	31,127,723	31,700,723
TOTAL ASSETS	33,584,281	33,810,840
LIABILITIES AND NET POSITION		
LIABILITIES		
Current Liabilities:		
Accounts Payable	23,096	28,016
Unearned Revenues	-	17,833
Compensated Absences Payable	11,177	15,319
Payroll Taxes Payable	1,263	2,208
Accrued Interest Payable	155,430	165,646
Bonds Payable - Due Within One Year	525,272	509,991
Total Current Liabilities	716,238	739,013
Noncurrent Liabilities:		
Bonds Payable After One Year	11,031,747	11,577,897
TOTAL LIABILITIES	11,747,985	12,316,910
NET POSITION		
Net Investment in Capital Assets	19,570,704	19,612,835
Restricted For:		
Debt Service	295,582	320,204
Unrestricted	1,970,010	1,560,891
TOTAL NET POSITION	21,836,296	21,493,930
TOTAL LIABILITIES AND NET POSITION	33,584,281	33,810,840

The notes to the financial statements are an integral part of this statement.

CENTRAL IRON COUNTY WATER CONSERVANCY DISTRICT
STATEMENT OF REVENUES, EXPENSES AND CHANGES IN NET POSITION
PROPRIETARY FUND TYPE
For The Year Ended December 31, 2013

	December 31, 2013	(Memorandum) (Only) December 31, 2012
OPERATING REVENUES		
Water Sales Revenue	514,513	306,320
TOTAL REVENUES	514,513	306,320
OPERATING EXPENSES		
Depreciation Expense	663,058	656,005
Dues & Memberships	2,840	4,615
Insurance Expense	64,759	87,933
Lease Expense	9,471	8,682
Maintenance	47,120	41,815
Water System Expense	88,937	95,463
Office, Telephone, and Postage Expense	35,803	33,536
Payroll Taxes	15,155	23,387
Professional Expenses	80,917	129,601
Cost Sharing - USU	40,928	56,320
Salaries & Wages	198,101	155,001
Employee Benefits	45,409	25,819
Seminar Training	-	1,057
Travel	7,840	8,100
Utilities Expense - Pumping	154,419	92,991
West Desert Monitoring	205,112	-
Other Expenses	2,509	14,099
TOTAL OPERATING EXPENSES	1,662,378	1,434,424
NET OPERATING GAIN (LOSS)	(1,147,865)	(1,128,104)
NONOPERATING REVENUE (EXPENSES)		
Property Tax Revenue	1,675,141	1,736,632
Fee-In-Lieu of Taxes	83,055	-
Federal Grants	3,860	-
Impact Fees	83,100	63,100
Connection Fees	28,837	11,137
Other Revenue	2,834	4,007
Interest Earnings	6,190	6,729
Interest and Fiscal Charges	(392,786)	(418,306)
TOTAL NONOPERATING REVENUE (EXPENSES)	1,490,231	1,403,299
CHANGES IN NET POSITION	342,366	275,195
TOTAL NET POSITION - BEGINNING OF YEAR	21,493,930	21,218,735
TOTAL NET POSITION - END OF YEAR	21,836,296	21,493,930

The notes to the financial statements are an integral part of this statement.

CENTRAL IRON COUNTY WATER CONSERVANCY DISTRICT
STATEMENT OF CASH FLOWS
PROPRIETARY FUND
For The Year Ended December 31, 2013

	December 31, 2013	(Memorandum) (Only) December 31, 2012
CASH FLOWS FROM OPERATING ACTIVITIES:		
Cash Received From Customers	510,123	291,974
Cash Paid To Employees	(248,597)	(155,001)
Cash Paid To Suppliers	(778,563)	(594,683)
NET CASH FLOWS PROVIDED BY OPERATING ACTIVITIES	(517,037)	(457,710)
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES:		
Property Tax Revenue	3,008,403	1,993,205
Grant Revenue	3,860	-
NET CASH (USED) BY NONCAPITAL FINANCING ACTIVITIES	3,012,263	1,993,205
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:		
Other Receipts	2,834	4,007
Impact and Connection Fees	111,937	74,237
Acquisition of Capital Assets	(90,059)	(429,527)
Interest and Fiscal Charges Paid on Capital Debt	(403,002)	(422,732)
Proceeds from new bonds issued	-	281,933
Principal paid on long-term debt	(530,870)	(653,326)
NET CASH PROVIDED (USED) BY CAPITAL AND RELATED FINANCING ACTIVITIES	(909,160)	(1,145,408)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Interest Revenue	6,190	6,729
NET INCREASE (DECREASE) IN CASH AND INVESTMENTS	1,592,256	396,816
CASH AND INVESTMENTS - BEGINNING OF YEAR	775,518	378,702
CASH AND INVESTMENTS - END OF YEAR	2,367,774	775,518
RECONCILIATION OF OPERATING GAIN (LOSS) TO NET CASH USED BY OPERATING ACTIVITIES:		
Operating Gain (Loss)	(1,147,865)	(1,128,104)
Adjustments to Reconcile Net Operating Gain (Loss) to Net Cash Provided (Used) By Operating Activities:		
Depreciation	663,058	656,005
Increase (Decrease) In Operating Assets and Liabilities:		
Accounts Receivable	(4,390)	(14,346)
Accounts Payable	(4,920)	18,733
Unearned Revenue	(17,833)	(99)
Compensated Absences Payable	(4,142)	8,033
Payroll Taxes Payable	(945)	2,068
Total Adjustments	630,828	670,394
Net Cash Provided (Used) by Operating Activities	(517,037)	(457,710)

The notes to the financial statements are an integral part of this statement.

NOTE 1 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The Central Iron County Water Conservancy District, a Utah political subdivision, (the District) is organized under the Utah Water Conservancy Act of the State of Utah. The District operates under a board of directors appointed by Iron County and provides conservation and development of water resources to the residents of the District. The District is not a component unit of any other governmental entity, and it has no component units.

The accounting policies of the District conform to accounting principles generally accepted in the United States of America as applicable to government units. The District develops, purchases, treats, and sells water to retail and wholesale customers and operates in no other industry. The following is a summary of the more significant of such policies.

A. Reporting Entity:

In evaluating how to define the District, for financial reporting purposes, management has considered all potential component units. The decision to include a potential component unit in the reporting entity was made by applying the criteria set forth in GAAP. The basic, but not only, criterion for including a potential component unit within the reporting entity is the governing body's ability to exercise oversight responsibility. The most significant manifestation of this ability is financial interdependency. Other manifestations of the ability to exercise oversight responsibility include, but are not limited to, the selection of governing authority, the designation of management, the ability to significantly influence operations and accountability for fiscal matters. The other criterion used to evaluate potential component units for inclusion or exclusion from the reporting entity is the exercise of special financial relationships, regardless of whether the District is able to exercise oversight responsibilities. Based upon the application of these criteria, no potential component units have been included in defining the District's reporting entity.

B. Financial Statement Presentation:

The District has adopted the provisions of GASB Statement No. 34, Basic Financial Statements and Management Discussion and Analysis for State and Local Governments, GASB Statement No. 37, Basic Financial Statements and Management Discussion and Analysis - for State and Local Governments: Omnibus, and GASB Statement No. 38, Certain Financial Statement Disclosures. These statements require governmental entities with more than one governmental activity to present additional accrual-based statements to better communicate the financial status of the entity. The significant changes to the District's financial statements relating to these standards are the Management's Discussion and Analysis and the titles and presentation of the financial statements to conform to the net position presentation.

Certain balances have been restated, including the District's net position, to conform to GASB Statement No. 34 presentation.

The District reports its water development, production, storage, and distribution operations as a proprietary fund. Proprietary funds are used to account for operations that are financed and operated in a manner similar to private business enterprises where the intent of the governing body is that costs (expenses, including depreciation) of providing goods or services to the general public on a continuing basis be financed of recovered primarily through user charges.

NOTE 1 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

The financial statements of the District are based on all applicable Government Accounting Standards Board (GASB) pronouncements as well as applicable Financial Accounting Standards Board (FASB) Statements and Interpretations, Accounting Principles Board Opinions, and Accounting Review Boards of the Committee on Accounting Procedure issued on or before November 30, 1989, unless those pronouncements conflict with or contradict GASB pronouncements. FASB pronouncements issued after November 30, 1989 are not followed in the preparation of the accompanying financial statements.

C. Cash and Investments:

The District considers all highly liquid investments with an original maturity of three months or less to be cash and investments. Funds invested through the Utah Public Treasurers' Investment Fund are also considered cash and investments.

D. Capital Assets:

Capital assets include property and plant equipment. Capital assets are defined by the District as assets with an initial unit cost of $2,000 or more and an estimated useful life in excess of one year. Such assets are recorded at estimated fair market value at the date of donation. The costs of normal maintenance and repairs that do not add to the value of the asset or materially extend assets lives are not capitalized.

Property, plant, and equipment of the District are depreciated using the straight-line method over the following useful lives.

Buildings	40 Years
Water System	40 Years
Equipment	5 Years

E. Operating Revenues and Expenses

The statement of revenues, expenses, and changes in net position distinguishes between operating and non-operating revenues. For this purpose, operating revenues, such as user fees, result from exchange transactions associated with the principal activities of the District. Exchange transactions are those in which each party to the transactions receives or gives up essentially equal values. Nonoperating revenues arise from exchange transactions not associated with the District's principal activities (such as investment income) and from all nonexchange transactions (such as grants).

F. Net Position

The District's net position are classified as follows:

Net Investment in Capital Assets: This represents the District's total investment in capital assets, net of accumulated depreciation and outstanding debt obligations related to those capital assets.

Restricted - Expendable: Restricted expendable net position include resources which the District is legally or contractually obligated to spend in accordance with restrictions imposed by external parties.

NOTE 1 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Unrestricted: Unrestricted net position represent resources derived from user fees and intergovernmental appropriations. These resources are used for transactions relating to the development of water resource activities of the District, and may be used at the discretion of the governing board to meet current expenses for any legal purpose.

G. Property Tax

The District assesses all taxable property other than centrally-assessed property, which is assessed through the state, by May 22 of each year. The District should adopt a final tax rate prior to June 22, which is then submitted to the state for approval. Property taxes are due on November 30 of each year. Delinquent taxes are subject to a penalty of 2% or $10.00, whichever is greater. After January 15 of the following year, delinquent taxes and penalty bear interest of 6% above the federal discount rate from January 1 until paid.

Property taxes attach as an enforceable lien on property as they become delinquent. All unpaid taxes levied during the year become delinquent December 1 of the current year.

Property tax revenues are recognized when they become measurable and available. Amounts available include those property tax receivables expected to be collected within sixty days after year end.

H. Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reported period. Actual results could differ from those estimates.

I. Date of Subsequent Event Evaluation

The District's subsequent events have been evaluated through the date of the financial issuance date of April 18, 2014.

NOTE 2 - CASH AND INVESTMENTS

The District maintains a cash and investment pool, which includes the cash account and several investments.

Deposits and investments for local governments are governed by the Utah Money Management Act (*Utah Code Annotated,* Title 51, Chapter 7, "The Act") and by rules of the Utah Money Management Council ("The Council").

The District's deposit and investment policy is to follow the Utah Money Management Act and rules of the Utah Management Council. However, the District does not have a separate deposit or investment policy that addresses specific types of deposit and investment risks to which the District is exposed.

NOTE 2 - CASH AND INVESTMENTS (Continued)

Utah State law requires that District funds be deposited with a "qualified depository" as defined by the Utah Money Management Act. "Qualified Depository" includes any depository institution which has been certified by the Utah State Commissioner of Financial Institutions as having met the requirements as defined in Rule 11 of the Utah Money Management Act. Rule 11 establishes the formula for determining the amount of public funds which a qualified depository may hold in order to minimize risk of loss and defines capital requirements which an institution must maintain to be eligible to accept public funds.

The Utah Money Management Act also governs the scope of securities allowed as appropriate temporary investments for the District and conditions for making investment transactions. Investment transactions are to be conducted through qualified depositories or primary reporting dealers.

As of December 31, 2013, the District had the following deposits and investments:

Deposit and Investment Type	Fair Value
Cash on Deposit	1,626,470
State Treasurer's Investment Pool	741,314
Total Cash and Investments	2,367,784
Reported on the Financial Statements as Follows	
Cash and Investments	2,367,784
Total Cash and Investments	2,367,784

The following paragraphs discuss the District's exposure to various risks related to its cash management activities.

Custodial Credit Risk:

Deposits- Custodial credit risk for deposits is the risk that in the event of a bank failure, the District's deposits may not be recovered. The District's policy for managing custodial credit risk is to adhere to the Money Management Act. The Act requires all deposits of the District to be in a *qualified depository,* defined as any financial institution whose deposits are insured by an agency of the federal government and which has been certified by the Commissioner of Financial Institutions as meeting the requirements of the Act and adhering to the rules of the Utah Money Management Council. As of December 31, 2013, $250,000 of the District's bank balances of $1,638,974 were insured.

Investments- Custodial credit risk for investments is the risk that in the event of the failure of the counterparty, the District will not be able to recover the value of its investments that are in the possession of an outside party. The District does not have a formal policy for custodial credit risk of investments. The District's investment in the Utah Public Treasurer's Investment Fund has no custodial risk.

NOTE 2 - CASH AND INVESTMENTS (Continued)

Credit Risk:

Credit risk is the risk that the counterparty to an investment will not fulfill its obligations. The District's policy for limiting the credit risk of investments is to comply with the Money Management Act. The Act requires investment transactions to be conducted only through qualified depositories, certified dealers, or directly with issuers of the investment securities. Permitted investments include deposits of qualified depositories; repurchase agreements; commercial paper that is classified as "first-tier" by two nationally recognized statistical rating organizations, one of which must be Moody's Investor Services or Standard & Poor's; bankers acceptances; obligations of the U.S. Treasury and U.S. Government sponsored enterprises; bonds and notes of political subdivisions of the State of Utah; fixed rate corporate obligations and variable rate securities rated "A" or higher by two nationally recognized statistical rating organizations as defined in the Act.

The District is authorized to invest in the Utah Public Treasurer's Investment Fund (PTIF), an external pooled investment fund managed by the Utah State Treasurer and subject to the Act and Council requirements. The PTIF is not registered with the SEC as an investment company, and deposits in the PTIF are not insured or otherwise guaranteed by the State of Utah. The PTIF operates and reports to participants on an amortized cost basis. The income, gains, and losses, net of administration fees, of the PTIF are allocated based upon the participants' average daily balances.

Following are the District's investments at December 31, 2013:

	Fair Value	Maturity	Quality Rating
PTIF	741,314	Less than 1 Year	Not Rated

Interest Rate Risk:

Interest rate risk is the risk that changes in interest rates of debt investments will adversely affect the fair value of an investment. The District manages its exposure to decline in fair value by solely investing in the PTIF and by adhering to the Money Management Act. The Act requires that the investing remaining term to maturity of investments may not exceed the period of availability of the funds to be invested. The Act further limits the remaining term to maturity of commercial paper to 270 days or less and fixed rate negotiable deposits and corporate obligations to 365 days or less. Maturities of the County's investments are noted above.

Concentration of Credit Risk:

Concentration of credit risk is the risk of loss attributed to the magnitude of a government's investment in a single issuer. The District's policy to limit this risk is to adhere to the rules of the Money Management Council. The Council's rule 17 limits investments in a single issuer of commercial paper and corporate obligations to between 5 and 10 percent depending upon the total dollar amount held in the District's portfolio at the time of purchase. As of year-end, the District had no investments other than an investment in the Utah Public Treasurer's Investment Fund.

NOTE 3 - CAPITAL ASSETS

Capital assets activity for the year ended December 31, 2013, was as follows:

	Beginning Balance	Additions	Deletions	Ending Balance
Business Type Activities:				
Capital Assets Not Being Depreciated:				
Land, Water Rights & Easements	8,815,767	-	-	8,815,767
Construction In Progress	-	19,260	-	19,260
Total Capital Assets Not Being Depreciated	8,815,767	19,260	-	8,835,027
Capital Assets Being Depreciated:				
Buildings	233,581	-	-	233,581
Water Tanks	140,000	-	-	140,000
Water Utility System	25,203,476	15,720	-	25,219,196
Machinery and Equipment	-	3,615	-	3,615
Autos and Trucks	23,346	51,464	-	74,810
Equipment	20,862	-	-	20,862
Total Capital Assets Being Depreciated	25,621,265	70,799	-	25,692,064
Less Accumulated Depreciation For:				
Buildings	5,194	6,227	-	11,421
Water Utility System	2,708,613	646,334	-	3,354,947
Machinery and Equipment	22,502	10,498	-	33,000
Total Accumulated Depreciation	2,736,309	663,059	-	3,399,368
Total Capital Assets Being Depreciated (Net)	22,884,956	(592,260)	-	22,292,696
Business Type Activities Capital Assets, Net	31,700,723	(573,000)	-	31,127,723

NOTE 4 - CHANGES IN LONG-TERM DEBT

The following is a summary of bonds payable of the District for the fiscal year ended December 31, 2013:

Proprietary Fund Debt:	Balance December 31, 2012	Issued	Matured	Balance December 31, 2013
Cedar Highlands 2011	25,000	-	-	25,000
Cedar Highlands 2011	244,000	-	6,000	238,000
Parity Water Revenue Bond Series 2005 A (UT-DW)	2,131,000	-	119,000	2,012,000
Rural Development Revenue Bonds	2,121,919	-	28,631	2,093,288
State Bank of Southern Utah Water Purchase	1,504,178	-	158,744	1,345,434
USDA - Phase II	2,655,920	-	33,623	2,622,297
USDA - Angus Water Company (assumed debt)	21,871	-	21,871	-
Utah Drinking Water - Phase II	3,162,000	-	156,000	3,006,000
Utah Drinking Water - Series 2009	56,000	-	3,000	53,000
Utah Drinking Water - Series 2009 Phase III	166,000	-	4,000	162,000
Total Proprietary Fund Debt	12,087,888	-	530,869	11,557,019

NOTE 4 - CHANGES IN LONG-TERM DEBT (CONTINUED)

The District's total bonded debt service at December 31, 2013 was as follows:

Year Ending December 31	Principal	Interest	Total
2014	525,272	385,574	910,846
2015	569,025	368,081	937,106
2016	561,280	349,926	911,206
2017	581,058	330,976	912,034
2018	600,387	318,483	918,870
2019-2023	2,590,310	1,244,486	3,834,796
2024-2028	2,302,580	900,728	3,203,308
2029-2033	962,167	634,491	1,596,658
2034-2038	901,691	461,942	1,363,633
2039-2043	1,052,871	260,329	1,313,200
2044-2048	910,378	78,595	988,973
Total	11,557,019	5,333,611	16,890,630

Revenue Bonds at December 31, 2013 consist of the following:

$3,345,000 Parity Water Revenue Bonds Series 2005 A, issued 11/28/05. Issued by Utah Drinking Water Board. Due in annual installments of $172,051 to 171,048 through year 2027. Interest rate of 2.46% APR. Reserve requirement is $ 86,066.	2,012,000
$2,250,000 Parity Water Revenue Bond Series 2005C issued by USDA Rural Development. Due in annual installments of $121,382 through year 2047. Interest rate of 4.5% APR. Reserve requirement is $ 60,691.	2,093,288
$2,756,000 Parity Water Revenue Bond Series 2008 issued by USDA Rural Development. Due in annual installments of $140,803 through year 2049. Interest rate of 4% APR. Reserve requirement is $ 56,321.	2,622,297
$3,610,000 Parity Water Revenue Bond Series 2008 issued by Utah Drinking Water Board. Due in annual installments of $223,952 to $224,936 through year 2029. Interest rate of 2.25% APR. Reserve requirement is $ 89,912.	3,006,000

NOTE 4 - CHANGES IN LONG-TERM DEBT (CONTINUED)

$65,000 Parity Water Revenue Bond Series 2009 issued Series 2009 issued by Utah Drinking Water Board. Due in annual installments of from $4,300 to $4,140 through year 2029. Interest rate of 2% APR. Reserve requirement is $892.	53,000
$694,705 (principal forgiveness of $520,705) $174,000 (net loan amount) Parity Water Revenue Bond Series 2009 issued by Utah Drinking Water Board Due in annual installments of $7,776 to $8,500 through year 2040. Interest rate of 2.17% APR. Technical assistance fee. Reserve requirement is $ 1,700.	162,000
$25,000 Water Revenue Bonds (assumed 8/17/2012) Assumed from Cedar Highlands Home Owners Association These bonds require payment of $5,000 per year over five years or a single balloon payment at the end of five years with no interest.	25,000
$250,000 Water Revenue Bonds (assumed on 8/17/2012) Assumed from Cedar Highland Home Owners Association These bonds required yearly payments of $6,000 to $12,000 over 30 years. Interest rate is 2.38% APR	238,000
Revenue Bonds Payable at December 31, 2013:	10,211,585

All water revenue bonds are secured by revenues generated from water resources.

Other Long-Term Obligations:

$1,828,942 Capital Lease Obligation Issued by State Bank of Southern Utah in 2008. Due in annual installments of $235,500 through year 2018. Interest rate of 4.8% APR.	1,345,434
Total Long-Term Obligations Payable at December 31, 2013	11,557,019

NOTE 5 - PENSION PLAN

Plan Description:

The District contributes to the Local Governmental Contributory Retirement System and the Local Governmental Noncontributory Retirement System, which are cost-sharing multiple-employer defined benefit pension plans administered by the Utah Retirement Systems. The Systems provide refunds, retirement benefits, annual cost of living adjustments and death benefits to plan members and beneficiaries in accordance with retirement statutes.

The Systems are established and governed by the respective sections of Chapter 49 of the Utah Code Annotated 1953 as amended. The Utah State Retirement Act in Chapter 49 provides for the administration of the Utah Retirement Systems and plans under the direction of the Utah State Retirement Board whose members are appointed by the Governor. The Systems issue a publicly available financial report that included financial statements and required supplementary information for the State and School Contributory Retirement System and State and School Noncontributory Retirement System. A copy of the report may be obtained by writing to the Utah Retirement Systems, 540 East 200 South, Salt Lake City, UT 84102 or by calling 1-800-365-8772.

Funding Policy:

Plan members are required to contribute a percent of their covered salary (all or part may be paid by the employer) to the respective systems to which they belong; 13.990% to the Noncontributory System. The District is required to contribute a percent of covered salary to the respective systems; 17.290% to the Noncontributory System. The contribution rates are the actuarially determined rates and are approved by the Board as authorized by Chapter 49.

The District contributions to the various systems for the years ending December 31, 2013, 2012 and 2011 respectively were; for the Contributory System, $7,088.53, 5,372.20 and $0.00; and, for the Noncontributory System, $17,644.88, $13,094.98, and $16,043.24, respectively. The contributions were equal to the required contributions for each year.

NOTE 6 - RISK MANAGEMENT

The District is subject to various types of risk such as tort actions, theft, damage, or destruction of assets by intent or acts of Nature, and job related illness or injury. The District has procured insurance which, in the District's estimation, is adequate to reduce the risk of loss to a manageable level.

NOTE 7 - ROUNDING CONVENTION

A rounding convention to the nearest whole dollar has been applied throughout this report, therefore the precision displayed in any monetary amount is plus or minus $1. These financial statements are computer generated and the rounding convention is applied to each amount displayed in a column, whether detail item or total. As a result, without the overhead cost of manually balancing each column, the sum displayed amounts in a column may not equal the total displayed. The maximum difference between any displayed number or total and its actual value will not be more than $1.

COMPLIANCE SECTION

Kimball & Roberts
A Professional Corporation
Certified Public Accountants
176 North Main • P.O. Box 663
Richfield, Utah 84701

INDEPENDENT AUDITOR'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH *GOVERNMENT AUDITING STANDARDS*

The Honorable Board Members
Central Iron County Water Conservancy District
Cedar City, Utah 84721

We have audited, in accordance with the auditing standards generally accepted in the United States of America, and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of the business-type activities of Central Iron County Water Conservancy District, an enterprise fund, as of and for the year ended December 31, 2013, and the related notes to the financial statements, which collectively comprise Central Iron County Water Conservancy District's financial statements, and have issued our report thereon dated April 18, 2014.

Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered Central Iron County Water Conservancy District's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of Central Iron County Water Conservancy District's internal control. Accordingly, we do not express an opinion on the effectiveness of Central Iron County Water Conservancy District's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent or detect and correct misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether Central Iron County Water Conservancy District's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit and, accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

This purpose of this report is solely to describe the scope of our testing or internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Kimball & Roberts

KIMBALL & ROBERTS, P. C.
Certified Public Accountants

April 18, 2014
Richfield, Utah

Kimball & Roberts
A Professional Corporation
Certified Public Accountants
176 North Main • P.O. Box 663
Richfield, Utah 84701

INDEPENDENT AUDITOR'S REPORT ON COMPLIANCE AND ON INTERNAL CONTROLS OVER COMPLIANCE IN ACCORDANCE WITH THE *STATE OF UTAH LEGAL COMPLIANCE AUDIT GUIDE*

The Honorable Board Members
Central Iron County Water Conservancy District
Cedar City, Utah 84721

REPORT ON COMPLIANCE

We have audited Central Iron County Water Conservancy District's compliance with general and major state program compliance requirements described in the *State of Utah Legal Compliance Audit Guide* for the year ended December 31, 2013. The general compliance requirements applicable to the District are identified as follows:

- Cash Management
- Budgetary Compliance
- Fund Balance
- Impact Fees
- Utah Retirement Systems Compliance
- Open and Public Meetings Act
- Locally Generated Taxes and Fees
- Government Records Access Management Act
- Conflicts of Interest
- Nepotism
- Utah Public Finance Website

The District received no major assistance programs from the State of Utah.

Management's Responsibility

Compliance with the requirements referred to above is the responsibility of the District's management.

Auditor's Responsibility

Our responsibility is to express an opinion on the District's compliance based on our audit.

We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and the *State of Utah Legal Compliance Audit Guide.* Those standards and the *State of Utah Legal Compliance Audit Guide* require that we plan and perform the audit to obtain reasonable assurance about whether noncompliance with the compliance requirements referred to above that could have a material effect on the District and its major programs occurred. An audit includes examining, on a test basis, evidence about the District's compliance with those requirements and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion. Our audit does not provide a legal determination of the District's compliance with those requirements.

Opinion

In our opinion, Central Iron County Water Conservancy District complied, in all material respects, with the general compliance requirements identified for the year ended December 31, 2013.

REPORT ON INTERNAL CONTROL OVER COMPLIANCE

Management of Central Iron County Water Conservancy District is responsible for establishing and maintaining effective internal control over compliance with the compliance requirements referred to above. In planning and performing our audit, we considered the District's internal control over compliance to determine the auditing procedures for the purpose of expressing our opinion on compliance, but not for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, we do not express an opinion on the effectiveness of the District's internal control over compliance.

A *deficiency in internal control over compliance* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance on a timely basis. A *material weakness in internal control over compliance* is a deficiency, or combination of deficiencies in internal control over compliance, such that there is a reasonable possibility that material noncompliance with a compliance requirement will not be prevented, or detected and corrected, on a timely basis.

Our consideration of internal control over compliance was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be deficiencies, significant deficiencies, or material weaknesses in internal control over compliance. We did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses, as defined above. However, material weaknesses may exist that have not been identified.

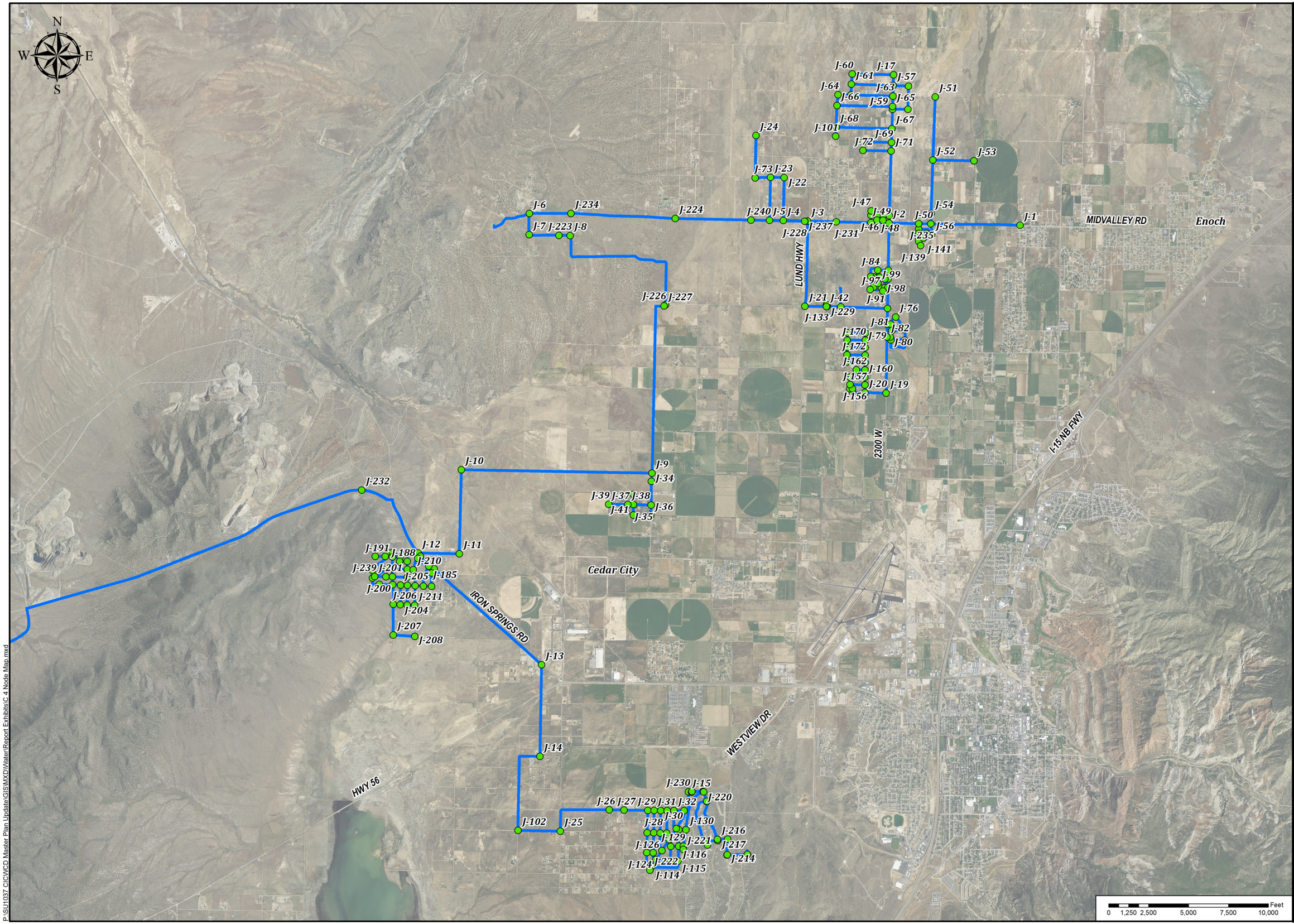
Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the District's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the District's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Kimball & Roberts

KIMBALL & ROBERTS, P. C.
Certified Public Accountants

April 18, 2014
Richfield, Utah



P:\SU1037 CICWCD Master Plan Update\GIS\MXD\Water\Report Exhibits\C 4 Node Map.mxd

ENSIGN

CEDAR CITY
1870 N Main, Ste 104
Cedar City, Utah 84721
Phone 435.865.1453
Fax 435.865.7318

SALT LAKE CITY
Phone 801.255.0526

LAYTON
Phone 801.547.1100

TOOELE
Phone 435.843.3590

WWW.ENSIGNENG.COM

FOR:
CICWCD
88 E. Fiddlers Canyon Road, Suite A
Cedar City, Utah 84721
CONTACT:
Paul Monroe
PHONE 435.865.9901
FAX 435.865.9902

CENTRAL IRON COUNTY WCD
WATER MASTER PLAN UPDATE
MARCH 2014

NODE LABELS

PROJECT NUMBER: SU1037	PRINT DATE: 3/26/2014
DRAWN BY: JTN	CHECKED BY: CLN
PROJECT MANAGER: CLN	

C 4.0

Peak Day Demand **Junction Table**

Current Time: 0.000 hours

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Satisfies Fire Flow Constraints?
J-1	5,497.57	3	70.5	True
J-2	5,500.00	6	69.5	True
J-3	5,498.19	0	70.3	True
J-4	5,492.52	6	72.8	True
J-5	5,490.60	6	73.6	True
J-6	5,801.49	4	32.0	True
J-7	5,774.92	4	43.4	True
J-8	5,697.85	8	76.7	True
J-9	5,520.00	4	70.3	True
J-10	5,474.53	0	89.7	True
J-11	5,490.00	1,503	82.8	True
J-12	5,480.00	0	87.7	True
J-13	5,492.37	0	82.8	True
J-14	5,493.63	0	82.5	True
J-15	5,524.28	0	71.5	True
J-17	5,466.69	4	83.8	True
J-18	5,520.00	3	60.8	True
J-19	5,545.35	1	49.8	True
J-20	5,546.43	1	49.3	True
J-21	5,519.70	0	61.0	True
J-22	5,488.12	0	74.7	True
J-23	5,485.28	4	75.9	True
J-24	5,477.10	3	79.4	False
J-25	5,490.00	0	84.7	True
J-26	5,500.00	0	81.1	True
J-27	5,505.71	0	78.8	True
J-28	5,510.00	13	77.2	True
J-29	5,510.99	10	76.8	True
J-30	5,514.83	13	75.2	True
J-31	5,518.83	11	73.6	True
J-32	5,520.01	7	73.1	True
J-34	5,520.00	0	70.3	True
J-35	5,520.00	13	70.3	True
J-36	5,520.00	3	70.3	True
J-37	5,520.00	18	70.2	True
J-38	5,520.00	7	70.2	True
J-39	5,510.00	7	74.6	True
J-40	5,519.39	8	70.5	True
J-41	5,520.00	8	70.2	True
J-42	5,520.00	0	60.8	True
J-43	5,496.90	3	70.8	True
J-44	5,495.36	3	71.5	True
J-45	5,493.95	1	72.1	True
J-46	5,491.74	3	73.1	True
J-47	5,490.00	0	73.8	True
J-48	5,496.23	0	71.1	True

Peak Day Demand **Junction Table**

Current Time: 0.000 hours

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Satisfies Fire Flow Constraints?
J-49	5,497.95	1	70.4	True
J-50	5,500.00	4	69.5	True
J-51	5,496.22	8	71.1	False
J-52	5,483.46	10	76.6	False
J-53	5,480.00	7	78.1	False
J-54	5,493.28	6	72.4	True
J-56	5,500.00	0	69.5	True
J-57	5,470.00	7	82.4	True
J-59	5,471.80	3	81.6	True
J-60	5,468.06	4	83.2	True
J-61	5,470.00	3	82.4	True
J-62	5,470.00	6	82.4	True
J-63	5,470.00	0	82.4	True
J-64	5,467.84	0	83.3	True
J-65	5,470.66	10	82.1	True
J-66	5,470.00	10	82.4	True
J-67	5,480.00	14	78.1	True
J-68	5,475.52	11	80.0	True
J-69	5,480.00	3	78.1	True
J-70	5,480.00	3	78.1	True
J-71	5,480.00	4	78.1	True
J-72	5,480.00	3	78.1	True
J-73	5,480.43	6	78.0	True
J-74	5,520.61	0	60.6	True
J-75	5,521.93	0	60.0	True
J-76	5,521.27	1	60.3	True
J-77	5,526.66	0	57.9	True
J-78	5,529.62	0	56.7	True
J-79	5,526.58	0	58.0	True
J-80	5,525.28	0	58.5	True
J-81	5,523.05	0	59.5	True
J-82	5,524.94	0	58.7	True
J-83	5,510.00	4	65.2	True
J-84	5,509.17	3	65.5	True
J-85	5,510.00	1	65.2	True
J-86	5,510.00	1	65.2	True
J-87	5,510.00	3	65.2	True
J-88	5,510.00	6	65.2	True
J-89	5,510.17	1	65.1	True
J-90	5,510.00	1	65.2	True
J-91	5,510.91	0	64.8	True
J-92	5,510.00	0	65.2	True
J-93	5,510.00	6	65.2	True
J-94	5,510.00	4	65.2	True
J-96	5,510.00	0	65.2	True
J-97	5,510.86	1	64.8	True

Peak Day Demand Junction Table

Current Time: 0.000 hours

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Satisfies Fire Flow Constraints?
J-98	5,511.69	0	64.4	True
J-99	5,510.00	3	65.2	True
J-101	5,479.30	0	78.4	True
J-102	5,482.03	0	87.7	True
J-103	5,542.36	0	76.5	True
J-104	5,567.38	0	77.7	True
J-105	5,689.71	0	72.7	False
J-106	5,800.19	0	36.3	False
J-107	5,850.26	0	32.4	False
J-108	5,901.92	0	16.5	False
J-109	5,519.53	0	4.5	False
J-112	5,520.00	17	73.0	True
J-113	5,530.00	8	68.7	True
J-114	5,540.02	3	64.4	True
J-115	5,590.22	3	42.7	True
J-116	5,558.86	11	56.4	True
J-117	5,539.93	8	64.6	True
J-118	5,533.82	11	67.2	True
J-119	5,532.52	4	67.8	True
J-120	5,537.26	7	65.6	True
J-121	5,540.01	8	64.4	True
J-122	5,543.39	7	62.9	True
J-123	5,525.61	11	70.6	True
J-124	5,536.25	7	66.0	True
J-125	5,560.19	3	55.7	True
J-126	5,530.00	15	68.7	True
J-127	5,530.00	7	68.7	True
J-128	5,543.65	6	62.9	True
J-129	5,574.35	3	49.7	True
J-130	5,560.11	7	56.1	True
J-131	5,765.06	0	71.7	False
J-132	5,520.00	0	4.3	False
J-133	5,520.00	0	4.3	False
J-134	5,500.00	0	69.5	True
J-135	5,500.00	6	69.5	True
J-136	5,500.00	1	69.5	True
J-137	5,500.76	3	69.2	True
J-138	5,502.42	3	68.4	True
J-139	5,504.17	0	67.7	True
J-140	5,500.00	0	69.5	True
J-141	5,500.17	0	69.4	True
J-143	5,528.20	0	69.8	True
J-144	5,470.00	7	82.4	True
J-145	5,470.67	6	82.1	True
J-155	5,547.09	3	49.0	False
J-156	5,541.58	4	51.4	True

Peak Day Demand **Junction Table**

Current Time: 0.000 hours

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Satisfies Fire Flow Constraints?
J-157	5,540.82	4	51.8	True
J-158	5,543.77	1	50.5	False
J-159	5,543.95	0	50.4	False
J-160	5,537.48	6	53.2	True
J-161	5,540.00	6	52.1	False
J-162	5,531.19	3	55.9	False
J-163	5,530.00	7	56.4	False
J-164	5,534.72	4	54.4	False
J-165	5,530.50	1	56.2	False
J-166	5,530.00	4	56.4	False
J-167	5,530.00	1	56.4	False
J-168	5,526.80	0	57.8	False
J-169	5,520.00	4	60.7	False
J-170	5,523.49	8	59.2	False
J-171	5,527.95	6	57.3	False
J-172	5,530.00	4	56.4	False
J-173	5,536.66	4	53.5	False
J-176	5,480.00	0	87.7	True
J-177	5,480.00	0	87.7	True
J-178	5,480.00	0	87.7	True
J-179	5,480.00	3	87.7	True
J-180	5,480.00	0	87.8	True
J-181	5,480.00	7	87.8	True
J-182	5,480.00	0	87.8	True
J-183	5,510.18	0	74.8	True
J-184	5,547.82	0	58.5	True
J-185	5,480.00	0	87.7	True
J-186	5,480.00	3	87.7	True
J-187	5,480.00	0	87.7	True
J-188	5,482.55	3	86.7	True
J-189	5,480.00	11	87.8	True
J-190	5,520.63	8	70.3	True
J-191	5,549.98	0	57.7	True
J-192	5,554.04	0	56.0	True
J-193	5,582.55	0	43.7	False
J-194	5,582.27	0	43.9	True
J-195	5,636.89	0	20.7	False
J-196	5,586.90	0	41.7	False
J-197	5,539.06	0	62.4	False
J-198	5,514.15	3	73.0	True
J-199	5,542.23	0	60.9	True
J-200	5,514.50	3	72.9	True
J-201	5,536.18	0	63.5	True
J-202	5,480.00	8	87.8	True
J-203	5,480.00	0	87.8	True
J-204	5,485.83	1	85.3	True

Peak Day Demand **Junction Table**

Current Time: 0.000 hours

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Satisfies Fire Flow Constraints?
J-205	5,489.06	0	83.9	True
J-206	5,500.00	0	79.2	True
J-207	5,480.00	0	87.8	False
J-208	5,480.00	0	87.8	False
J-210	5,480.00	4	87.8	True
J-211	5,480.00	0	87.8	True
J-213	5,901.92	0	16.6	False
J-214	5,850.26	6	37.2	False
J-215	5,800.19	0	57.6	False
J-216	5,689.71	8	104.5	True
J-217	5,689.91	1	104.4	True
J-218	5,740.68	7	82.2	False
J-219	5,567.38	10	156.4	True
J-220	5,542.36	3	67.0	True
J-221	5,580.03	0	47.3	True
J-222	5,540.58	1	64.2	True
J-223	5,724.75	0	65.1	True
J-224	5,532.87	3	148.1	True
J-226	5,510.68	0	157.4	True
J-227	5,510.03	0	74.9	True
J-228	5,498.86	0	70.0	True
J-229	5,520.00	0	4.3	False
J-230	5,527.83	0	70.0	True
J-231	5,500.00	0	69.5	True
J-232	5,606.28	0	33.0	False
J-234	5,729.28	0	63.2	True
J-235	5,500.00	0	69.5	True
J-236	5,500.00	0	69.5	True
J-237	5,498.93	0	162.6	True
J-238	5,572.42	0	47.9	True
J-239	5,567.73	0	49.9	True
J-240	5,513.00	0	156.6	True

Peak Instantaneous Demand Junction Table

Current Time: 0.000 hours

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
J-1	5,497.57	5	70.4
J-2	5,500.00	10	69.4
J-3	5,498.19	0	70.3
J-4	5,492.52	10	72.7
J-5	5,490.60	10	73.6
J-6	5,801.49	8	32.1
J-7	5,774.92	8	43.6
J-8	5,697.85	16	76.9
J-9	5,520.00	8	76.2
J-10	5,474.53	0	95.9
J-11	5,490.00	0	89.3
J-12	5,480.00	0	93.6
J-13	5,492.37	0	88.3
J-14	5,493.63	0	87.9
J-15	5,524.28	0	75.4
J-17	5,466.69	8	83.5
J-18	5,520.00	5	60.7
J-19	5,545.35	3	49.6
J-20	5,546.43	3	49.1
J-21	5,519.70	0	60.9
J-22	5,488.12	0	74.6
J-23	5,485.28	8	75.9
J-24	5,477.10	5	79.4
J-25	5,490.00	0	89.6
J-26	5,500.00	0	85.5
J-27	5,505.71	0	83.1
J-28	5,510.00	23	81.3
J-29	5,510.99	18	80.9
J-30	5,514.83	23	79.3
J-31	5,518.83	21	77.6
J-32	5,520.01	13	77.1
J-34	5,520.00	0	76.2
J-35	5,520.00	23	76.2
J-36	5,520.00	5	76.2
J-37	5,520.00	34	76.1
J-38	5,520.00	13	76.1
J-39	5,510.00	13	80.5
J-40	5,519.39	16	76.4
J-41	5,520.00	16	76.1
J-42	5,520.00	0	60.7
J-43	5,496.90	5	70.7
J-44	5,495.36	5	71.4
J-45	5,493.95	3	72.0
J-46	5,491.74	5	73.0
J-47	5,490.00	0	73.7
J-48	5,496.23	0	71.0
J-49	5,497.95	3	70.3

Peak Instantaneous Demand **Junction Table**

Current Time: 0.000 hours

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
J-50	5,500.00	8	69.3
J-51	5,496.22	16	70.9
J-52	5,483.46	18	76.4
J-53	5,480.00	13	77.9
J-54	5,493.28	10	72.2
J-56	5,500.00	0	69.4
J-57	5,470.00	13	82.1
J-59	5,471.80	5	81.3
J-60	5,468.06	8	82.9
J-61	5,470.00	5	82.1
J-62	5,470.00	10	82.1
J-63	5,470.00	0	82.1
J-64	5,467.84	0	83.0
J-65	5,470.66	18	81.8
J-66	5,470.00	18	82.1
J-67	5,480.00	26	77.8
J-68	5,475.52	21	79.7
J-69	5,480.00	5	77.8
J-70	5,480.00	5	77.8
J-71	5,480.00	8	77.8
J-72	5,480.00	5	77.8
J-73	5,480.43	10	77.9
J-74	5,520.61	0	60.4
J-75	5,521.93	0	59.8
J-76	5,521.27	3	60.1
J-77	5,526.66	0	57.8
J-78	5,529.62	0	56.5
J-79	5,526.58	0	57.8
J-80	5,525.28	0	58.4
J-81	5,523.05	0	59.3
J-82	5,524.94	0	58.5
J-83	5,510.00	8	65.0
J-84	5,509.17	5	65.4
J-85	5,510.00	3	65.0
J-86	5,510.00	3	65.0
J-87	5,510.00	5	65.0
J-88	5,510.00	10	65.0
J-89	5,510.17	3	64.9
J-90	5,510.00	3	65.0
J-91	5,510.91	0	64.6
J-92	5,510.00	0	65.0
J-93	5,510.00	10	65.0
J-94	5,510.00	8	65.0
J-96	5,510.00	0	65.0
J-97	5,510.86	3	64.6
J-98	5,511.69	0	64.3
J-99	5,510.00	5	65.0

Peak Instantaneous Demand **Junction Table**

Current Time: 0.000 hours

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
J-101	5,479.30	0	78.1
J-102	5,482.03	0	93.0
J-103	5,542.36	0	80.0
J-104	5,567.38	0	80.8
J-105	5,689.71	0	74.3
J-106	5,800.19	0	37.5
J-107	5,850.26	0	33.0
J-108	5,901.92	0	16.6
J-109	5,519.53	0	4.5
J-112	5,520.00	31	77.0
J-113	5,530.00	16	72.7
J-114	5,540.02	5	68.3
J-115	5,590.22	5	46.6
J-116	5,558.86	21	60.2
J-117	5,539.93	16	68.4
J-118	5,533.82	21	71.1
J-119	5,532.52	8	71.7
J-120	5,537.26	13	69.6
J-121	5,540.01	16	68.4
J-122	5,543.39	13	66.9
J-123	5,525.61	21	74.6
J-124	5,536.25	13	70.0
J-125	5,560.19	5	59.6
J-126	5,530.00	28	72.7
J-127	5,530.00	13	72.7
J-128	5,543.65	10	66.8
J-129	5,574.35	5	53.5
J-130	5,560.11	13	59.7
J-131	5,765.06	0	76.0
J-132	5,520.00	0	4.3
J-133	5,520.00	0	4.3
J-134	5,500.00	0	69.4
J-135	5,500.00	10	69.4
J-136	5,500.00	3	69.4
J-137	5,500.76	5	69.0
J-138	5,502.42	5	68.3
J-139	5,504.17	0	67.5
J-140	5,500.00	0	69.4
J-141	5,500.17	0	69.3
J-143	5,528.20	0	73.8
J-144	5,470.00	13	82.1
J-145	5,470.67	10	81.8
J-155	5,547.09	5	48.8
J-156	5,541.58	8	51.1
J-157	5,540.82	8	51.5
J-158	5,543.77	3	50.2
J-159	5,543.95	0	50.1

Peak Instantaneous Demand **Junction Table**

Current Time: 0.000 hours

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
J-160	5,537.48	10	52.9
J-161	5,540.00	10	51.8
J-162	5,531.19	5	55.6
J-163	5,530.00	13	56.1
J-164	5,534.72	8	54.0
J-165	5,530.50	3	55.8
J-166	5,530.00	8	56.1
J-167	5,530.00	3	56.1
J-168	5,526.80	0	57.4
J-169	5,520.00	8	60.4
J-170	5,523.49	16	58.9
J-171	5,527.95	10	56.9
J-172	5,530.00	8	56.1
J-173	5,536.66	8	53.2
J-176	5,480.00	0	93.6
J-177	5,480.00	0	93.6
J-178	5,480.00	0	93.5
J-179	5,480.00	5	93.3
J-180	5,480.00	0	93.2
J-181	5,480.00	13	92.8
J-182	5,480.00	0	92.6
J-183	5,510.18	0	79.3
J-184	5,547.82	0	62.9
J-185	5,480.00	0	93.4
J-186	5,480.00	5	93.3
J-187	5,480.00	0	93.0
J-188	5,482.55	5	91.7
J-189	5,480.00	21	92.6
J-190	5,520.63	16	74.6
J-191	5,549.98	0	61.3
J-192	5,554.04	0	59.3
J-193	5,582.55	0	46.7
J-194	5,582.27	0	46.6
J-195	5,636.89	0	21.3
J-196	5,586.90	0	45.5
J-197	5,539.06	0	66.0
J-198	5,514.15	5	78.0
J-199	5,542.23	0	65.3
J-200	5,514.50	5	77.4
J-201	5,536.18	0	68.0
J-202	5,480.00	16	92.6
J-203	5,480.00	0	92.6
J-204	5,485.83	3	90.0
J-205	5,489.06	0	88.6
J-206	5,500.00	0	83.8
J-207	5,480.00	0	92.5
J-208	5,480.00	0	92.5

Peak Instantaneous Demand **Junction Table**

Current Time: 0.000 hours

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
J-210	5,480.00	8	92.8
J-211	5,480.00	0	92.6
J-213	5,901.92	0	17.3
J-214	5,850.26	10	39.4
J-215	5,800.19	0	60.9
J-216	5,689.71	16	108.7
J-217	5,689.91	3	108.6
J-218	5,740.68	13	86.6
J-219	5,567.38	18	161.5
J-220	5,542.36	5	67.5
J-221	5,580.03	0	51.1
J-222	5,540.58	3	68.1
J-223	5,724.75	0	65.3
J-224	5,532.87	5	147.8
J-226	5,510.68	0	157.9
J-227	5,510.03	0	80.5
J-228	5,498.86	0	70.0
J-229	5,520.00	0	4.3
J-230	5,527.83	0	73.9
J-231	5,500.00	0	69.5
J-232	5,606.28	0	39.0
J-234	5,729.28	0	63.2
J-235	5,500.00	0	69.4
J-236	5,500.00	0	69.4
J-237	5,498.93	0	162.1
J-238	5,572.42	0	52.1
J-239	5,567.73	0	54.2
J-240	5,513.00	0	156.2