CITY OF CHENEY, WASHINGTON

WATER CONSERVATION PLAN

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ABBREVIATIONS

ASR	Aquifer Storage and Recovery	LS	Lump Sum
CSD	Cheney School District	MG	Million Gallons
CWSRF	Clean Water State Revolving Fund	MGD	Million Gallons Per Day
DSL	Distribution System Leakage	mo	Month
DOH	Department of Health	OCR	Office of Columbia River
ECY	Department of Ecology	PWB	Public Works Board
EWU	Eastern Washington University	SRF	State Revolving Fund
gpm	Gallons Per Minute	TAC	Technical Advisory Committee
HOA	Homeowners Association	USBR	United States Bureau of Reclamation
hr	Hour	WSP	Water System Plan
IACC	Infrastructure Assistance Coordinating Council	WTRP	Wastewater Treatment and Reclamation Plant
IWAC	Idaho Washington Aquifer Collaborative	WFI	Water Facility Inventory

1.0 INTRODUCTION

1.1 Purpose and Scope

The City of Cheney (the City) is seeking to improve water conservation efforts due declining aquifer levels, summer irrigation demands exceeding potable water supply, and climate change. Currently, the City is considering two primary efforts to support the development of its Water Conservation Plan: 1) Short-term water conservation strategies aimed at changing the culture of water conservation, and 2) Long-term water supply strategies aimed at identifying and implementing sustainable water supply technologies such as water reuse and aquifer storage and recovery. To support the pursuit of these efforts, a Consultant team was hired to lead the research and public planning and provide implementation recommendations for the City.

This Water Conservation Plan was developed as an information and planning tool for current and future City officials in support of the City's goal to improve water conservation and secure the long-term resiliency of the City's water supply.

This plan:

- Provides a history and current status of the City's water supply.
- Recommends short-term conservation measures focused on changing how City residents view and use their potable water resource.
- Provides a plan for implementing long-term reuse and aquifer storage and recovery (ASR) measures focused on designing and constructing facilities to treat municipal wastewater to non-potable Class A reuse and potable drinking water purposes.
- Details public planning and outreach efforts to support development of the recommendations.
    - Documents Technical Advisory Committee (TAC) meetings and decisions (see **Section 2.1** for more information on the TAC discussions).
    - Summarizes public outreach efforts and results.

1.1.1 Water Conservation Goal

The City's water system baseline supply system capacity is identified in **Section 2.4.** The baseline supply capacity is used to identify current water system deficiencies during peak summer demand and, to ultimately set a Water Conservation Goal. Meeting the Water Conservation Goal may be accomplished through adoption and implementation of the recommendations proposed in **Section 4**.

1.2 Related Guidance Documents

The following is a list of guidance documents that were used in the development of this Water Conservation Plan. A brief description of each document is provided below.

1.2.1 2019 Water System Plan

The City's 2019 Water System Plan (WSP) identifies present and future needs of the water system, describes a means for addressing those needs, and demonstrates that the system has the operational, technical, managerial, and financial capability to achieve and maintain compliance with all relevant local, state, and federal plans and regulations.

Section 4.2.2 of the 2019 WSP defines the City's existing Water Use Efficiency program. This Water Conservation Plan expands on several of the water use efficiency measures adopted in the WSP and recommends additional water conservation measures such as adoption of a Water Conservation Goal and further City Council, City Staff, Cheney School District, Eastern Washington University, and Homeowner Association actions for achieving the Water Conservation Goal.

1.2.2 2017 Comprehensive Plan

The City's 2017 Comprehensive Plan provides an initial comprehensive plan aimed at achieving a large variety of community goals. The City's Comprehensive Plan functions as:

- An internal guide, providing City staff with set goals, policies and programs leading action and budgeting activities.
- A guide for elected and appointed leaders, providing direction on decision-making and in establishing regulations.
- An outline agreement between residents and leadership, articulating and establishing expectations regarding key issues and City characteristics.

Chapter 2 of the Comprehensive Plan states:

> "The citizens of Cheney recognize that their individual and civic livelihood depends on a non-depleting and inter-dependent relationship with the natural environment. In Cheney, growth and economic activity are to be balanced with finite resources; sensitive areas are to be protected from damage or fragmentation, and policies supporting compact growth, resource conservation, non-motorized transportation and sustainable building practices are encouraged. Cheney will work to uphold all regulations related to the protection of these vital resources, and will seek creative solutions that add value to these measures wherever possible. Conservation of water and energy resources is to be promoted."

Goal 15 of the Comprehensive Plan aims to "sustain and improve Cheney's natural resources through sound planning, operational and implementation practice."

This Water Conservation Plan expands on plan elements and goals presented in the Comprehensive Plan through promotion of the Water Conservation Goal and recommendations in **Section 4**.

1.2.3 2016 Reclaimed Water Engineering Report

The City's 2016 Reclaimed Water Engineering Report analyzes the potential for the City to produce and use Class A reclaimed water from their Wastewater Treatment and Reclamation Plant (WTRP) to reduce the overall pumping demand on their groundwater source wells and slow the decline of the water table in the underlying aquifer.

1.2.4 2007 Cheney Groundwater Modeling Report

The 2007 Modeling Future Groundwater Withdrawals with an Emphasis on Potential Well Interference and Groundwater Mining for the Area Surrounding the City of Cheney assessed the impact to the

groundwater system that provides all of the potable water for the City of Cheney by simulating future growth scenarios that placed increasing demand on existing municipal wells.

2.0 WATER SUPPLY STATUS

The following information is intended to provide education on the history and status of the City's water supply. Data provided in this section was to used guide the short-term and long-term recommendations provided in **Section 4**.

This Water Conservation Plan does not provide a hydrogeologic analysis of Cheney's groundwater capacity. Analysis of the groundwater capacity requires separate analysis of the City's underlying aquifer(s) hydrogeologic characteristics.

2.1 History of Water System Development and Groundwater Trends

A history of the City's water system development is available in Section 1.2 of the City's 2019 Water System Plan (WSP).

Historical data reviewed in the 2007 Cheney Groundwater Modeling Report (refer to **Appendix G**) contains evidence of groundwater mining in the City's aquifer; demonstrating that the withdrawal rates exceed the groundwater recharge rates. Available records for City Wells 1-3 estimate 20 feet of water level decline from 1967-2007. The 2007 Report predicts an additional 11 feet of water level decline by the year 2026.

The City completed the 2016 Reclaimed Water Engineering Report to determine ways to sustain the City's only drinking water source, the groundwater, by reducing the groundwater mining determined in the 2007 Report. Producing Class A reclaimed water at the existing City's Wastewater Treatment and Reclamation Plant (WTRP) to be used for irrigation of Cheney parks and athletic fields is expected to reduce the water level decline to 7 feet by 2026, instead of 11 feet as estimated in the 2007 Report.

Currently, City staff implement a water management plan during peak irrigation demand scenarios to manage the decline of available groundwater. The City manages peak irrigation demand when the system capacity is reached by: 1) shutting down water to City parks; 2) shutting down water to school fields; 3) cycling irrigation requirements to residents; and, 4) enacting mandatory residential and commercial lawn watering shutdowns for all green spaces. Mandatory water shutdowns were enacted in 2015, 2017, and 2018, in response to diminished pumping capacities in City wells and to allow the reservoirs to fill.

2.2 Water System Overview

The City maintains and operates a total of eight wells, with variable depths ranging between 430-2,136 feet beneath ground surface. Well 4 is only used for irrigating Salnave, Moos and Sutton Parks, and is not used as a potable water source due to turbidity limits. Overall, the City's water system contains: approximately 244,000 linear feet (or approximately 46 miles) of water distribution lines ranging in pipe size between 4 inches and 16 inches; three booster stations servicing three pressure zones; and, five reservoirs (one reservoir is offline) that have the capacity to store approximately 2.4 million gallons of potable water above the 20 psi DOH threshold for effective storage.

2.3 Neighboring Water Systems

The following is excerpted from Section 1.8 of the City's 2019 WSP:

> "EWU's service area lies within the boundaries of the City's Current Retail Service Area. The City has entered into an intertie agreement with EWU. Under this agreement, it is recognized that each party operates its own, independent water system, providing water to different service areas."

The City of Spokane has an intertie with the City of Medical Lake and Four Lakes Water District No. 10 near Craig Rd and State Route 902. Water Facility Inventory (WFI) Reports for Medical Lake and Water District No. 10 indicate that the Spokane intertie provides up to 200 gpm of emergency water to each water purveyor. The Four Lakes intertie represents the nearest existing intertie between a neighboring water system and the City of Spokane.

2.4 Water Use and Availability

2.4.1 Water Consumption

Water consumption uses are described in the City's 2019 WSP. The following table shows an approximate breakdown of how water is consumed within the City on an annual basis.

Table 2-1 Total Water Consumption

Customer Class	2016 Total [1] (gal)	2016 Total (%)
Single-family Residential	204,789,000	41%
Multi-family Residential	162,217,000	32%
Commercial [2]	136,262,000	27%
Total	503,268,000 [3]	100%

(1) *Per 2019 WSP; Table 2-5*

(2) *Includes schools and parks*

(3) *Does not include distribution system leakage (DSL), DSL ranges between 11%-19% per 2019 WSP; Section 4.2.7*

2.4.2 Peak Month Demand

Water demand peaks occur during summer months due to increases in irrigation uses. Based on WSP consumption data for 2016-2018, the City typically experiences peak demand during the months of July and August. In August 2016, City wells supplied approximately 90 million gallons (MG) of water to City users. This is approximately 60 MG higher than the 2016 average winter month demand of 30 MG. Irrigation represented approximately two-thirds (2/3) of total water consumption during peak month demand scenarios in 2016.

The following table shows a breakdown of use during the 2016 peak demand month.

Table 2-2 Total Peak Month Water Production

Customer Class	2016 Peak Month (gal)	2016 Peak Month (%)
Single-family Residential	12,545,000	14%
Multi-family Residential	9,937,000	11%
Commercial	8,347,000	9%
Irrigation	58,905,000	66%
Total	89,734,000 (1)(2)	100%

(1) *Total well production August, 2016*

(2) *Includes distribution system leakage (DSL)*

2.4.3 Peak Hour Demand

The 2019 WSP estimated a 2018 peak hour demand of 3,714 gallons per minute (gpm) (2019 WSP, Section 3.2.1). Peak hour demands are assumed to occur during summer irrigation months when peak month demands are anticipated as a result of increased irrigation uses.

2.4.4 Current Supply Capacity

Based on Section 3.1.1 of the City's 2019 WSP, total source capacity of the City's existing Wells 1-8 is approximately 2,620 gpm, excluding Wells 3 and 4. The 2019 WSP reports that Well 3 is offline due to mechanical issues and Well #4 is not connected to the municipal water system due to turbidity and methane issues. Per City staff, a replacement for Well 3 (not operable as of the writing of this plan) was recently drilled and could contribute approximately 1,000 gpm of capacity to the City system. Assuming a replacement Well 3 pumping capacity of 1,000 gpm, the City has approximately 3,620 gpm of potable supply capacity during normal operating conditions. However, for the purposes of this report, 2,620 gpm will be referenced as the available supply, adhering to the Department of Health recommendation to estimate total supply capacity without the largest capacity pump included in the calculation. During the irrigation season, it is common for the wells to decline in available supply. The City's Public Works Director estimates total supply capacity during irrigation months may drop to as low as 1,700 gpm. Deterioration of pumping capacity is a product of interference between existing wells and the overall decline of the water table.

2.4.5 Future Reuse Capacity

The 2016 Reclaimed Water Engineering Report is a key planning document for the implementation of the City's long-term goal to incorporate water reuse into the City's water conservation strategy. Water reuse includes treating City municipal wastewater to Class A standards for cycling back to the City's water users as a new irrigation utility via non-potable (purple pipe) distribution. The implementation strategy presented in the 2016 Report is discussed in this section, with the purpose of informing decisions and recommendations (refer to **Section 4**).

The 2016 Report analyzed the potential for the City to produce and use Class A reclaimed water from the existing Wastewater Treatment and Reclamation Plant (WTRP). The proposed reclaimed water distribution system is split into four development phases (I-IV). The total development plan includes four force mains, with one force main pumping water to a City reservoir (Reservoir 0), and the remaining three pumps pumping water from the reservoir (and future water storage locations) to specific City reuse locations (parks and fields). The timeline, implementation, and operation of each phase depends on available funding and/or coordinated street projects.

Design criteria of the initial reclaimed water treatment improvements will be capable of treating and supplying 1 million gallons per day (MGD) of reclaimed water, supporting operation of Phases I-III of the proposed reclaimed water improvements (Table 32**,** 2016 Report). The proposed reclaimed water pump station will be sized based on the design demands of the predetermined irrigation zones. The 2016 Report analyzed a pump station capable of supplying estimated irrigation demands to Phases I-III of the buildout schedule.

Due to the phased approach to full completion of the reclaimed water treatment system, this plan will only consider the Phase I reuse capacity in determining the City's current water supply status. The following table indicates the proposed areas that will be serviced by Phase I of the reclaimed water improvements. The estimated demands associated with irrigating each location are provided on the following table.

Table 2-3 Estimated Irrigation Demands for Phase I Reclaimed Water Improvements [(1)]

Name	Max Month (MG/mo)	Max Day (MGD)	Run Time (hr/day)	Peak Flow (gpm)
Hagelin Park	0.59	0.023	2	300
Cheney High School Complex	3.08	0.119	4	750
Crunks Sports Complex	3.28	0.127	4	800
Cheney Middle School	3.80	0.147	4	950
Total	10.75	0.416	12 [(2)]	1,250 [(3)]

(1) *Demand estimates per 2016 Reclaimed Water Engineering Report, Table 15*

(2) *Assumed 12-hr irrigation schedule 8 PM to 8 AM, differs from 2016 Reclaimed Water Engineering Report of 8 –hr irrigation schedule. 12-hr irrigation schedule represents greater operational flexibility and result in a more conservative reuse capacity*

(3) *Based on Hagelin Park and Cheney Middle School irrigation demands occurring simultaneously*

2.4.6 Capacity Summary

The City's peak demand, current supply capacity, future supply capacity with Phase I reclaimed water improvements, and unaccounted for capacity is summarized below:

- Peak Demand: 3,714 gpm (per 2019 WSP, Section 3.2.1)
- Supply Capacity (Current): 1,700 gpm (per, Section 2.4.4)
- Reuse Capacity (Future; Phase 1): 1,250 gpm (estimated based on 2016 Report, Table 15)

Based on the capacity summary, the City is unable to provide peak demand to water users during irrigation months. The Water Conservation Goal is based on the unaccounted capacity required to meet peak demand. Unaccounted capacity is estimated in this Water Conservation Plan by subtracting Current Supply Capacity (1,700 gpm) and Phase 1 Reuse Capacity (1,250 gpm) from the Peak Demand (3,714 gpm):

- Unaccounted Capacity: 764 gpm (or approximately 21% of total estimated peak demand)

3.0 PUBLIC PLANNING AND OUTREACH

Public planning and outreach provides opportunities for the City's stakeholders to assist in strategies and recommendations; resulting in the best alternatives for the City to pursue in order to meet the Water Conservation Goal and Long-term Reuse strategies. The Consultant team organized and led a Technical Advisory Committee (TAC), a public outreach effort, and a regional outreach effort, as described below.

3.1 Technical Advisory Committee

The purpose of the TAC was to review all aspects of the City's water conservation effort, both the short-term and long-term considerations. The TAC meetings focused on informing committee members and providing opportunities for discussion; informing public outreach decisions in order to assist the City's short-term goal to change the culture of the water conservation, and leads toward implementation of the long-term water reuse and ASR effort.

3.1.1 Members

TAC members were invited based on their professional experience and/or leadership qualities within the Cheney community. Emphasis was given to Public Works staff, City Council members, Cheney School District staff, Eastern Washington University staff, and representatives from the various homeowner's associations. Each TAC member was selected to represent their organization and interest; thereby, allowing overall representation of a large stakeholder base.

The TAC members are listed in the following table.

Table 3-1 Technical Advisory Committee Members

Name	Organization	Initials
Todd Ableman	City of Cheney – Public Works Director	TA
Emily Audet	Cheney School District – Middle School	EA
John Ballister	Cheney Resident – Recycling Center Manager (Retired)	JB
Rick Beeler	Cheney Resident – Harvest Bluff HOA	RB
Vara Lyn Conrath	City of Cheney – Planning Commission	VC
Dan Ferguson	City of Cheney – Public Works	DF
Tricia Hughes	City of Cheney – Parks Board Chair	TH
Tom Jenkins	City of Cheney – Fire Department	TJ
Shawn King	Easter Washington University – Facilities & Planning	SK
Rob Roettger	Cheney School District – Superintendent	RR
Paul Schmidt	City of Cheney – City Council	PS
Mark Schuller	City of Cheney – City Administrator	MS
Tony Stoddard	Cheney Resident – Teacher (Retired)	TS
Keith Walker	Cheney Real Estate – Walkers Property Management	KW

3.1.2 Schedule

TAC meetings were held at the City of Cheney Utility Building Conference Room on the following dates:

Table 3-2 TAC Meeting Schedule

TAC Meeting	Date
TAC Meeting #1	March 27, 2019
TAC Meeting #2	April 17, 2019
TAC Meeting #3	May 1, 2019
TAC Meeting #4	June 5, 2019
TAC Meeting #5	June 19, 2019

3.1.3 TAC Meeting Minutes

The following sections summarize topics discussed during each of the five TAC meetings. Refer to **Appendix A** for copies of the TAC meeting minutes.

3.1.3.1 TAC Meeting #1

An overview of the City of Cheney's water system was provided by Todd Ableman and the Consultant Team. Over the past three years, the monthly water usage demand during the winter months has been around 35,000,000 gallons / month; whereas, during the peak irrigation months (July & August), the monthly demand approaches 120,000,000 gallons / month. The City manages peak irrigation demand when the system capacity is reached by: shutting down water to the parks first, then the schools, then cycling irrigation requirements to residents, and lastly, implementing irrigation moratoriums across the City. For public safety, an elevation of 20 feet must be maintained in the reservoirs for fire flows. The reservoirs contain a maximum height of 29 feet. Maintaining fire flows is critical to the community.

Aquifer levels are dropping an average of 6 inches annually and groundwater continues to be mined (not replenished due to the deeper aquifers the City is tapped into). It should be noted that pumping capacity does not necessarily reflect the source aquifer capacity. Since the aquifer is experiencing measurable declines, this would indicate that over pumping is going to be an ongoing issue into the future.

The 2018 Peak Demand was estimated at 3,714 gpm during the irrigation months in the City's 2019 WSP. The beaker exhibit (refer to **Appendix A**) illustrates the 2018 Peak Demand in 3 parts: 1) The Water Source Capacity (1,700 gpm): measured well source capacity during the irrigation season; 2) A potential Water Reuse Quantity (1,250 gpm or 1 MGD); and, 3) Approximately a 20% Conservation Goal (764 gpm). The potential Water Reuse Quantity is derived from the 2016 Reclaimed Water Engineering Report assuming a 12-hour irrigation schedule for Phase I.

Additional discussion items are detailed in the TAC #1 Meeting Minutes (refer to **Appendix A**).

3.1.3.2 TAC Meeting #2

A series of Conservation Measures were introduced by the Consultant Team. The Conservation Measures are measures or efficiencies which may be implemented by the City in order to achieve the stated Conservation Goal. The Conservation Measures were presented as followed:

1. Water Conservation Programs and Policies;
2. Water Conservation Technologies and Practices; and,
3. Xeriscape.

Water Conservation Programs and Policies may be administered by the City directly or by community agencies (i.e. Cheney School District, HOAs, etc.). City Policies include adoption of the Conservation

Goal and development of low water using design standards for all new development. City Programs are aimed at increasing community water user awareness of impacts on the City water system and rewarding users who work toward decreasing their water consumption through a combination of rebates and community recognition.

Water Conservation Technologies and Practices are tools available to the City and community which may be used in conjunction with the Water Conservation Programs and Policies. Water Conservation Technologies and Practices are separated into indoor and outdoor measures. Indoor measures include installing low water using appliances and fixtures, repairing household leaks, and practicing simple steps toward reducing indoor water use. Outdoor measures include installing weather-based irrigation system components and xeriscape.

Xeriscape is a type of landscaping that conserves water through the use of drought tolerant and/or native species in conjunction with other water saving techniques. Irrigation of traditional lawn surfaces is the largest contributor to peak summer demands on the City's water system. Xeriscaping offers the greatest reduction of water use to the City's water system by eliminating the need to irrigate residential and commercial lawn surfaces.

Public introduction of the Water Conservation Plan would include education of the current issues associated with City's water system and the potential Conservation Measures the City is considering implementing to meet peak demands. One of the goals of the Water Conservation Study is to change the culture of water conservation by making Cheney the poster child of water conservation in Eastern Washington.

Additional discussion items are detailed in the TAC #2 Meeting Minutes (refer to **Appendix A**). Refer to **Appendix B** for Conservation Measure details.

3.1.3.3 TAC Meeting #3

At TAC Meeting #3 the TAC elected to begin the public education process by presenting water conservation materials at the 2019 MayFest event in downtown Cheney. Presentation materials prepared by the TAC for distribution at MayFest included an educational trifold pamphlet describing why City residents should conserve water and indoor and outdoor conservation measures. A survey was also developed by the TAC to help better understand Cheney water user's receptiveness to proposed water conservation measures. A public virtual open house tour was drafted for online water conservation educational purposes.

Water reuse was briefly discussed as a potential long-term strategy for addressing the effects of regionally declining aquifer levels. Reuse improvements were previously identified in the City's 2016 Reclaimed Water Engineering Report (Esvelt Environmental Engineering). Funding future non-potable irrigation solutions such as the reuse improvements will be a significant challenge for the City due to the City's relatively low water rates. The City may have to raise water rates in order to become more competitive for favorable future grant and loan funding packages.

Additional discussion items are detailed in the TAC #3 Meeting Minutes (refer to **Appendix A**). **Appendix C** contains the Water Survey and Water Conservation Informational Brochure distributed at MayFest.

3.1.3.4 TAC Meeting #4

During TAC #4, the TAC reviewed the water survey results from the MayFest event and reviewed the draft Water Conservation Plan prepared by the Consultant Team. Short-term water conservation recommendations were discussed and validated by the TAC for inclusion in the final Plan. Water survey results from the MayFest event and subsequent mailers are summarized in **Table 3-3**.

Additional discussion items are detailed in the TAC #4 Meeting Minutes (refer to **Appendix A**).

3.1.3.5 TAC Meeting #5

Copies of the revised Water Conservation Plan were distributed prior to TAC Meeting #5. TAC Meeting #5 focused on discussing the overall water survey results, reviewing the new discolored water brochure, news release, and revised Draft Water Conservation Plan, and validating the Draft Plan long-term recommendations presented in Section 4 and Implementation Plan presented in Section 5.

Additional discussion items are detailed in the TAC #5 Meeting Minutes (refer to **Appendix A**).

3.2 Local Outreach

The content and approach of the public education component was formulated in the TAC meetings. Public education resulting from the TAC meetings was intended to be the initial steps of the public education process on water conservation and reuse. As reviewed in **Section 3.1.3.3**, the TAC elected Cheney's MayFest as the public outreach opportunity to support the development of this plan. The primary public outreach goal for this effort was to use the data collected to assist in developing a method to change how City residents view and use their potable water resources. Supporting this, the TAC developed a Water Survey. The Water Survey was introduced at the MayFest Event and subsequently distributed to all City residents via a standard monthly City utility bill mailing.

3.2.1 MayFest Event

Representatives from the TAC and the Consultant team attended MayFest on May 11, 2019. MayFest is an annual community event held in downtown Cheney which includes street vendors, live entertainment, art in the alley and free family activities. A booth was staffed by members of the TAC and the Consultant Team for the event. Individuals from the community had the opportunity to learn about the effects of summer irrigation use on the City's existing sources of supply, and to better understand how to reduce indoor and outdoor water uses.

During the event, members of the TAC and the Consultant team met one-on-one with numerous community members to discuss how residents view the water supply issue. Many of the individuals who visited the booth were familiar with the summer water restrictions imposed by the City during the summers of 2015, 2017, and 2018. Feedback and initial impressions from MayFest discussions were that community members often perceive the water restrictions as a product of not having enough pumping capacity and are generally unaware of the water mining issues occurring within the underlying aquifer.

Informational materials offered to community members at MayFest included:

- CheneyScape informational brochure (**Appendix C**);
- Examples of artificial turf;

- Irrigation / Rain gauges;
- Water bottles affixed with "Cheney – Water for Tomorrow" logo; and,
- Drawing to win Smart Irrigation Controller and Low Flow Showerhead with Bluetooth Speaker.

3.2.2 Water Survey

The TAC developed a survey intended to better understand how Cheney residents view the existing water rate structure and how receptive they are to different water conservation motivators. The Cheney Water Survey (**Appendix C**) was made available to community members on Day 2 of Cheney MayFest, May 11, 2019, as a part of the City's June water utility bill mailer, and on the City's website. The survey contained six brief multiple choice questions and participation was voluntary. A prize drawing was offered for survey completion at the Mayfest event. **Table 3-3** summarizes the results to the Cheney Water Survey. Sample size was 335 participants. While a single response to the questions was encouraged, those questions that had multiple choices selected were included and totaled. Therefore, it is possible for each question to yield a result total greater than or less than 335. Write-in comments were captured for the questions they pertained to. General comments to the Water Survey are provided in **Appendix C**.

Table 3-3 Water Survey Results

Question	Response [1] a)	b)	c)	d)	Comments
1. How do you view the City of Cheney's water rates?	too low	just right	too high		• It's what it is • As long as there isn't water restriction • Not good • A little high but not terrible • I don't know – are you able to keep it maintained? • They could be increased • Landlord pays for water • Often have brown water • When the base charge is 10x higher than actual amount of water used – too high
Response Summary	17	163	65	-	
2. Regarding the City of Cheney's water supply, which of the following has the most value to you as an individual?	having un-restricted equitable access to water	knowing that the Community has enough water to maintain fire flows			• Want to support enough water (fire flows was circled) but also conservation • Balance of all needs • Decent drinking water • No fluoride • Find an adequate water supply for future growth • Can't we have both • I don't want to have to choose • How do you know how much and would you separate these flows? • Better wells. Stop building if we do not have better wells. Stop building. New builds should pay for new wells • Seriously – access to water of fire are both important • I feel it is important to be able to maintain lawns. The parks and lawns in Cheney look horrible compared to a few years ago. Such a turn off for the City • This is not either/or address the issue. Pass a bond if necessary • Worst question ever
Response Summary	135	119	-	-	
3. Should significant water users pay higher rates for the excess water being used for irrigation?	yes	no			• In town, not agriculture • Depends on definition • Not sure • How much is excessive? Concerns with City water – 1) make developers (new apts) etc responsible for well development and additional water costs. 2) enforce water restricted days violators
Response Summary	156	86	-	-	

Question	Response [1] a)	b)	c)	d)	Comments
					especially apartment complexes. 3) Upgrade City pipes and water leaks wasting millions of gallons at times • Water users pay higher rates for irrigation – for home Yes for farm No • Define significant • Can't answer • How is excess water use determined? Winter vs Summer? • Do we have a way to separate household from irrigation? • If they can't hook up to reclaimed water then yes • Yes- assuming irrigation is not water of small garden and lawn • Yes – based on per acre usage • Yes – also commercial properties • Define excess (2x) • Yes – within reason • Developers should pay
4. How much would your monthly water bill have to increase to decrease your usage?	$4/mo ($48/yr)	$8/mo ($96/yr)	>$10/mo (>$120/yr)		• I already try to conserve • ???
Response Summary	78	58	91	-	• N/A we're already as low as we can get it • What genius wrote this question? • I think I'd keep paying bill • I have already decreased my usage • Are you trying to make a profit on selling City water? Or provide a service we all pay for? • Already conserve as much as possible • I don't understand why this is a question • Really! Pay to use less, that's crazy • No increase • I'd consider moving if it kept getting raised • We try to conserve w/o incentives or penalties • What? I do that now w/o increase? Self conservation! • None – we already use very little • Should $4 for residential and greater that $10 for businesses • Stop raising $ • We have restricted ourselves enough our property looks terrible • How much water is used per lot? • I'm not voting to tax myself

Question	Response [1] a)	b)	c)	d)	Comments
5. If the City of Cheney had a water conservation-based rebate program, which program would most interest you?	replacing existing washing machines, toilets and showerheads with low-flow fixtures	reducing lawn area and installing xeriscaping	installation of drip and/or rain sensor systems	free leak repair for low income residences	• a – already done; c – already done • Charge new developers a multiyear assessment in order to improve and expand the Cheney water systems. For example $1000 per lot for each year for 10 years. Be sure to require a payment bond • Answers are ranked with 1 being reducing lawn area and installing xeriscaping, 2 being replacing existing water devices with low flow, 3 being free leak repair for low income • We have them – low flow • I do all of these already • What about pipe in old homes? • Not interested – already have • Stop development until we have resources • Free and only if I receive the results
Response Summary	69	91	53	64	
6. Would you utilize a water audit if offered? A water audit is an evaluation of your water usage including leak detection, irrigation efficiency evaluation, etc.	Yes, if it were free	Yes, if it was free for low-income residents	Yes, for a nominal charge	No, I would not utilize a water audit	• Highest point in Avalon Pl since 2001 – super low pressure 3rd floor • I rent – I would want the landlord to though • City pay for costs of making changes • If it's voluntary and results are not automatically submitted to the City
Response Summary	140	25	36	63	

(1) *Cheney Water Survey Results based on voluntary responses to the Cheney Water Survey at MayFest, May 11, 2019 (32 respondents); the June water utility bill mailer (259 respondents); and, an online publication on the City's website (44 respondents)*

3.3 Regional Outreach

3.3.1 River Forum

Representatives from the Consultant team attended the Spokane River Forum Conference on April 16 and 17, 2019 to better understand how regional agencies are approaching complex water resource issues in Eastern Washington and Northern Idaho. The Spokane River Forum's mission is to create materials, events, and activities that promote regional dialogues for sustaining a healthy river system while meeting the needs of a growing population. The following session was attended by the Consultant Team to directly inform this Water Conservation Plan. Regional water conservation programs presented at the River Forum are described in the following sections.

3.3.1.1 Idaho Washington Aquifer Collaborative Model Irrigation Design Standards

Purveyors from Idaho and Washington teamed up to develop efficient irrigation and landscape design standards. The River Forum session, led by members of the Idaho Washington Aquifer Collaborative (IWAC), summarized design standard options available to local jurisdictions and water purveyors. By incorporating measures discussed in the IWAC Model Efficient Irrigation and Landscape Design Standards, communities can significantly reduce their outdoor water uses during peak demand irrigation months.

A copy of the IWAC Model Efficient Irrigation and Landscape Design Standards are provided in **Appendix D**.

3.3.2 SpokaneScape

Representatives from the Consultant team met with representatives of the City of Spokane's SpokaneScape rebate program. The SpokaneScape Guidebook is published and provided by the City of Spokane Water Department to help people make smart, water-efficient landscape decisions and choose plants that are appropriate to the Inland Northwest's arid summer climate. SpokaneScape focuses on the replacement of traditional lawn with low-volume irrigation and drought tolerant plant material.

SpokaneScape currently offers a $0.50 rebate up to 1,000 square feet (or $500) per City of Spokane resident for the conversion of traditional lawn to xeriscape with front curb appeal.

A copy of the SpokaneScape Guidebook is provided in **Appendix E**.

4.0 FINDINGS AND RECOMMENDATIONS

This section provides the TAC findings, short-term recommendations, and long-term recommendations for implementing the Water Conservation Goal and reuse component. Findings and recommendations are based on previous water supply planning efforts, current understanding of the City's water supply deficiencies, TAC meeting discussions, and the public education and outreach effort.

4.1 Findings

- Groundwater mining is occurring in the City's underlying aquifer. The current rate of aquifer decline due to groundwater mining is approximately 6 inches per year. The groundwater mining issue is documented in the 2007 Cheney Groundwater Modeling Report.
- The City acknowledges that water is a limited resource and must be protected through sound planning, operation and implementation practices. The 2017 Comprehensive Plan provides direction for the City in promoting water conservation for the longevity and preservation of its natural resources.
- A peak hour demand was estimated in the City of Cheney 2019 Water System Plan of approximately 3,700 gpm.
- The City's existing wells make up the City's existing potable water supply capacity. Total existing pumping supply capacity is 2,620 gpm (not including the City's largest producing well). This pumping capacity drops to approximately 1,700 gpm when all wells are in operation during peak irrigation demand months. Decrease in pumping capacity is due to well drawdown between existing City wells.
- Irrigation water use makes up approximately two-thirds (~66%) of total water use during peak demand months (July – August); thus, increasing demand on the source by 3 times.
- The City analyzed its ability to utilize reclaimed water as a potential irrigation source in the 2016 Reclaimed Water Engineering Report. This report considers a 12 hour reclaimed irrigation schedule to Phase 1 areas (Hagelin Park, Cheney High School, Crunks Sports Complex, and Cheney Middle School), resulting in a peak reclaimed water flow rate of 1,250 gpm. Refer to **Appendix F** for a schematic layout of Phase 1 improvements.
- Based on current peak demand during irrigation months (3,700 gpm), peak demand supply capacity of existing wells (1,700 gpm), and future reuse capacity of Phase 1 properties (1,250 gpm), the City has a deficiency of approximately 750 gpm (~20% of total peak demand).

4.2 Short-term Recommendations: Changing the Culture of Water Conservation

Based on the findings in **Section 4.1**, the TAC developed a list of short-term recommendations for the City Council, School Board, EWU, and the HOAs. These short-term recommendations are intended to provide stakeholder options that can be enacted immediately or within a reasonable timeframe and are aimed at producing measurable results with community participation. The desired goal is to change how residents view and use their potable water resource and to meet the Water Conservation Goal.

4.2.1 City Council

- Adoption of the Water Conservation Goal: TAC recommends 20% reduction in peak summer demands.
- Adoption of a Water Schedule; for example, watering every other day during high demand months: odd/even day of the week schedule with no Friday watering to ensure adequate fire storage in the City reservoirs going into the weekend.
- Complete a Water Rate Study to analyze the City's existing rate structure and provide guidance for adjusting water rates. Increases in water rates could assist in the funding of an annual budget afforded to "Water Conservation Measures and Programs" and provide incentive to decreasing water use.
- Develop and adopt Stormwater / Irrigation / Landscape design standards which promote water conservation and water savings for new development. Design standards should be consistent with CheneyScape materials and informational materials to promote continuity between City water conservation policies and programs.
- Adopt a City ordinance requiring all new development install purple pipe (non-potable) water mains for future connection to the non-potable irrigation system.
- Implement CheneyScape rebate program including incentives of up to 50% of xeriscaping costs. CheneyScape is a program which provides incentive to City residents for reduction of traditional lawns through implementation of xeriscaping practices. Xeriscaping includes replacing or converting existing landscape to incorporate water saving plants, technology, and irrigation systems to reduce water demand.
- Convert existing City landscapes to xeriscape, beginning with the 904 entrance to the City. City properties which employ xeriscaping will promote the CheneyScape program, act as examples of xeriscaping in the community, and reduce irrigation demands on the potable water system.
- Perform irrigation water audits at existing City parks and facilities to determine whether existing City-owned irrigation systems meet the adopted irrigation design standards and are compatible with the proposed purple pipe distribution system. Water efficient irrigation improvements should be prioritized with consideration to the non-potable distribution system development phasing outlined in the 2016 Reclaimed Water Engineering Report. Phase 1 improvements identified in the 2016 Report includes extension of a non-potable distribution system to Hagelin Park, Cheney High School, Crunks Sports Complex, and Cheney Middle School.
- Work with EWU on joining water systems in a more active manner: potable and non-potable.
- Work with the Cheney School District to promote place-based educational tools which instruct students about the challenges facing Cheney's water supply and the benefits of water conservation and efficient irrigation practices. Examples of activities include partnering on soil testing moisture sensors in City parks.
- Implement a Residential Water Survey Program – City provided water efficiency evaluations on a case-by-case basis to interested residential and commercial users. Surveys include irrigation system efficiency analysis and leak detection. In an effort to promote the Residential Water Survey, water system customers who are within the top 10% of City-wide water users will receive mailers in their utility bill informing of City sponsored programs.

- Fix a Leak Week – Annual event which includes free leak detection kits, plumbers replacing leaking fixtures and toilets with WaterSense models for free for disadvantaged residents, leak repair workshops, and free leak inspections of your home.
- Obtain legal counsel on how to promote water conservation within HOA's, reductions in lawns, and determine enforcement options during irrigation restrictions.

4.2.2 City Staff

- Develop an annual water conservation work plan for council approval and funding. Water conservation programs such as the landscape transformation rebate program (CheneyScape), residential water survey program, and Fix a Leak Week will require ongoing City funding. Initial thoughts of the TAC are that water conservation programs may be funded through revenue accrued by the City via the new rate structure.
- Oversee the short-term water conservation programs recommended in this Water Conservation Plan.
- Promote City water Conservation Programs through ongoing education programs through media outlets such as social media and the newspaper.

4.2.3 School Board

- Integrate a water conservation element into the K-12 curriculum using Cheney as a demonstrative subject.
- Perform irrigation water audits at existing school facilities within City limits and athletic fields to determine whether existing school-owned irrigation systems meet the City adopted irrigation design standards and are compatible with the future purple pipe distribution system. Upgrade existing irrigation systems based on water audit results.
- Install an artificial turf fields for football and soccer – may require moving the javelin and discus.
- Identify academic leaders to work with the City and/or School District on water conservation measures and xeriscape design or other.

4.2.4 Eastern Washington University

- Work with the City to utilize interties more actively to use the potable water resource more efficiently.
- Consider allowing use of non-potable water from the City – either from a non-conforming well or from the future water reuse facility.
- Identify academic leaders to work with the City and/or School District on water conservation measures and xeriscape design for City and EWU lawns.

4.2.5 Homeowner Associations

- Promote reductions of traditional lawns.

- Endorse City of Cheney water restrictions.

4.3 Long-term Recommendations: Securing Future Supply Resiliency

The long-term recommendations are meant to provide a road map for implementing new Class A reuse irrigation and potable water sources of supply to reduce the impacts of water mining on the City's underlying aquifer. Long-term solutions should be pursued after implementation of the short-term recommendations discussed in **Section 4.2** as the long-term recommendations take extensive planning, research, and funding.

The following are two potential long-term solutions aimed at preventing further declines in aquifer levels: 1) development of a non-potable irrigation treatment and distribution system (water reuse); and, 2) development of an aquifer storage and recovery (ASR) program.

4.3.1 Water Reuse Treatment and Distribution System

The City completed the Reclaimed Water Engineering Report in 2016 in order to analyze the City's potential for the City to produce and use Class A reclaimed water from the WTRP for use in a new non-potable irrigation distribution system. Improvements needed to implement the new non-potable irrigation system include treatment of effluent to from the WTRP Class A reclaimed water and construction of four phases of distribution system improvements to serve, at a minimum, the City's largest current and anticipated irrigation users. A complete description of the proposed treatment and distribution system improvements may be found under separate cover in the 2016 Report.

This Water Conservation Plan considers only improvements required to meet the treatment improvements and Phase 1 of the proposed distribution system improvements and includes providing Class A reclaimed treatment and distribution improvements needed to serve Hagelin Park, Cheney High School, Crunks Sports Complex, and Cheney Middle School.

4.3.1.1 Cost Estimate

The following tables are based on cost estimates from the 2016 Report. These planning level estimates are utilized in later sections to help determine phasing, funding, and an implementation schedule for the water reuse treatment and distribution system improvements.

Table 4-1 Estimated Cost of Reuse Water Treatment System (Phase I) [1]

Description	Est. Quan.	Units	Unit Price	Amount
General Requirements [2]	1	LS	$4,000	$4,000
Install Launder Covers on Secondary Clarifier	1	LS	$105,000	$105,000
Construct Filter Pump Wet Well [3]	1	LS	$304,824	$305,000
Construct Filter Pump Station Valve Vault	1	LS	$67,167	$67,000
Construct Filter Building [4]	1	LS	$1,984,087	$1,984,000
Construct Reclaimed Water Storage Lagoon	1	LS	$350,456	$350,000
Monitoring Wells for Phase I [5]	1	LS	$24,379	$24,000
			Subtotal	$2,839,000
			Overhead and Profit (10%)	$284,000
			Mobilization / Demobilization / Closeout (10%)	$284,000
			Sales Tax (8.7%)	$296,000
			Estimated Construction Cost	$3,703,000
			Assumed Annual Inflation Rate (2%) [6]	$225,000
			Contingency (35%)	$1,296,000
			Estimated Construction Cost (w/Contingencies)	$5,224,000
			Design Engineering (10%)	$522,000
			Construction Engineering (12%)	$627,000
			ESTIMATED PROJECT COST	$6,373,000

(1) *Cost estimate based on Table 49 of 2016 Reclaimed Water Engineering Report (Esvelt Environmental Engineering, LLC)*

(2) *Includes stormwater pollution and prevention (SWPP) plan and erosion & sediment control*

(3) *Includes complete underground pump station cast-in-place (CIP) concrete pump station chamber, (3) 700 gpm pumps with rails & piping, electrical and controls, site work)*

(4) *Includes concrete masonry unit (CMU) filter building, filter system (strainers, deep bed filters), coagulant feed system, chlorine disinfection residual, backwash system, ultraviolet (UV) disinfection system, electrical and controls*

(5) *Cost estimate reflects total for two installed wells*

(6) *Assumes 2% inflation over 3 years*

Table 4-2 Estimated Cost of Reuse Water Distribution System (Phase I) [1]

Description	Est. Quan.	Units	Unit Price	Amount
Construct Reclaimed Water Pump Station	1	LS	$1,791,600	$1,791,600
Construct Reservoir #0 Irrigation Pump Station	1	LS	$1,336,200	$1,336,200
Construction Irrigation and Transmission Main	1	LS	$2,558,700	$2,558,700
Mobilization	1	LS	$568,700	$568,700
			Subtotal	$6,255,000
			Sales Tax (8.7%)	$544,000
			Estimated Construction Cost	$6,799,000
			Assumed Annual Inflation Rate (2%) [2]	$413,000
			Contingency (35%)	$2,380,000
			Estimated Construction Cost (w/Contingencies)	$9,592,000
			Design Engineering (10%)	$959,000
			Construction Engineering (12%)	$1,151,000
			ESTIMATED PROJECT COST	$11,702,000

(1) *Cost estimate based on Table 49 of 2016 Reclaimed Water Engineering Report (Esvelt Environmental Engineering, LLC)*

(2) *Assumes 2% inflation over 3 years*

4.3.1.2 Funding Sources

A comprehensive list of potential funding sources is provided in the 2016 Reclaimed Water Engineering Report. This Water Conservation Plan considers the potential funding sources provided in the 2016 Reclaimed Water Engineering Report in addition to the Office of Columbia River (OCR) Program. Description of the OCR Program is provided below.

Washington State Department of Ecology, Office of Columbia River (OCR)

The OCR Program seeks to meet current and future water needs along the Columbia River and its tributaries, and is charged with aggressively pursuing water solutions that concurrently meet water needs for families, industry, farms (out-of-stream), ecosystems, and fish (instream).

When an OCR funding opportunity is open, applications are submitted online through the ECY website. A City contribution or match for the projected is expected by OCR; this typically includes the cost associated with City staff time on the project and potentially other non-OCR grant funds for source water treatment. It is known that another municipality in eastern Washington received $200K in funding from OCR in 2015. These funds were used to complete an ASR Feasibility Study as a part of the community's overall reclaimed water project, which has similar elements to Cheney's proposed reclaimed water treatment and distribution improvements and proposed ASR improvements.

Current Funding

In 2017, the City received funding to design and begin construction of the reuse water treatment system improvements in the form of a Washington State Water Pollution Control Revolving (CWSRF) grant and loan package for $1.4M and a legislative appropriation grant for $2.0M.

4.3.1.3 Funding Schedule

The following funding schedule is meant to provide one possible solution to funding the water reuse treatment and Phase I distribution system improvements. Recommendations for implementation of the funding schedule is provided in later sections.

Table 4-3 Funding Schedule – Reuse Water Treatment Improvements

Year	Description	Treatment Design	Treatment Construction	Distribution Design	Distribution Construction	Comments
Funding to Date	ECY CWSRF Grant / Loan	$0.46M	-	$0.94M	-	Awarded in 2017. May be used on treatment and Phase 1 distribution design
	Legislative Appropriation	-	$2.00M	-	-	Awarded in 2017. May be used on reclaimed water treatment improvements
2019	PWB Loan	-	$3.85M (2)	-	-	First round applications due 7/2019 Second round applications due 12/2019
	City Funds (or other)	$0.06M (2)	-	-	-	Modify 2016 Reclaimed Water Engineering Report to meet USBR Feasibility Study requirements
2020	USBR Grant (1)	-	-	-	$1.83M	Applications due 6/2020. Includes funding for Reclaimed Water Pump Station, Transmission Main to Reservoir #0, and rehabilitation of Reservoir #0
	Legislative Appropriation	-	-	-	$1.60M	Applications due 9/2020. Includes funding for Reclaimed Water Pump Station, Transmission Main to Reservoir #0, and rehabilitation of Reservoir #0
	ECY CWSRF Grant / Loan	-	-	-	$1.80M	Applications due 10/2020. Includes funding for Reclaimed Water Pump Station, Transmission Main to Reservoir #0, and rehabilitation of Reservoir #0
2021	USBR Grant (1)	-	-	-	$1.79M	Applications due 6/2021. Includes Reservoir #0 irrigation pump station and transmission main to Phase I irrigation zone
	Legislative Appropriation	-	-	-	$1.85M	Applications due 9/2021. Includes Reservoir #0 irrigation pump station and transmission main to Phase I irrigation zone
	ECY CWSRF Grant / Loan	-	-	-	$1.90M	Applications due 10/2021. Includes Reservoir #0 irrigation pump station and transmission main to Phase I irrigation zone
	Total	$0.52M	$5.85M	$0.94M	$10.77M	= $18.08M Total Project Cost

(1) *USBR grant match up to 25% of total project cost. In order to qualify for USBR grant funding, applicant must complete a Feasibility Report per USBR guidelines*

(2) *This is the proposed treatment system construction funding gap*

4.3.2 Aquifer Storage and Recovery (ASR)

ASR utilizes a supplemental source of supply (i.e. flows from the WTRP) to recharge the underlying aquifer via direct injection methods. Feasibility of the ASR alternative is contingent upon the hydrogeologic properties of the aquifer and must be studied further to determine applicability.

ASR would require treatment of the Class A product source to drinking water standards for ground water injection. To maximize excess treatment capacity to supply source water, ASR programs typically align recharge cycles to low-demand periods (e.g., non-irrigation months), when excess source water and treatment capacity are available. Stored water is then recovered when demand is high (e.g., irrigation months). By recharging the target aquifer and implementation of the non-potable irrigation and distribution system the City may be able to stabilize long-term declines in water levels and production.

Source supply from the WTRP is available year-round. Operation of a perspective non-potable irrigation treatment and distribution system described in **Section 4.3.1** would occur during summer months when irrigation demands are highest. Operation of a perspective drinking water treatment and ASR facility would occur during the winter months when irrigation demands are lowest. This would allow continued operation of the proposed treatment facility year round.

4.3.2.1 Funding

Cost estimates for ASR were not prepared for this Water Conservation Plan. Costs associated with the ASR component consist of tertiary treatment improvements such as reverse osmosis, construction of an injection well, pump station, and transmission main. Tertiary treatment would occur as a polishing phase at the reuse treatment facility.

This Water Conservation Plan assumes that total cost of a new ASR treatment and injection program will be approximately $10M.

4.3.2.2 Funding Schedule

The following funding schedule is meant to provide one possible solution to funding the ASR improvements. Recommendations for implementation of the funding schedule is provided in later sections.

Table 4-4 Funding Schedule – ASR Improvements

Year	Description	ASR Design [1]	ASR Construction	Comments
2019	ECY CWSRF Grant / Loan	$0.20		Applications due 10/2019. Includes funding for ASR feasibility study to meet USBR Feasibility Study Requirements
2020	OCR Grant / Loan	$0.50		Applications due 4/2020. Includes funding for ASR pilot study.
2021	PWB Loan	$0.30	$3.50	First round applications due 7/2021 Second round applications due 12/2021
2022	Legislative Appropriation		$2.00	Applications 9/2022.
	ECY CWSRF Grant / Loan		$1.50	Applications due 10/2022
2023	USBR Grant [2]		$2.00	Applications due 6/2023
	Total	$1.00	$9.00	= $10.00M Total Project Cost

(1) *Assumed 10% of total project cost. Total project cost contingent upon method of tertiary treatment and final injection well location.*

(2) *USBR grant match up to 25% of total project cost. In order to qualify for USBR grant funding, applicant must complete a Feasibility Report per USBR guidelines.*

4.3.3 Recommendations

- Attend 2019 Infrastructure Assistance Coordinating Council (IACC) and participate in technical team meetings to discuss future funding of the reuse and ASR components.
- Meet with USBR and OCR to present the water reuse treatment / distribution system and ASR project and determine next steps toward funding.
- Update 2016 Reclaimed Water Engineering Report to meet USBR Feasibility Study requirements prior to applying for USBR Title XVI WaterSmart program.
- Consider immediate PWB application for remaining treatment construction costs (approx. $3.85M) during 2019 funding cycle.
- Apply for distribution construction funding pursuant to the Reuse Water Treatment Improvements Funding Schedule (**Table 4-3).**
- Apply for ECY CWSRF funding for ASR Feasibility Study to determine ASR feasibility, method of tertiary treatment, and pilot well location and allow for future USBR funding.

5.0 IMPLEMENTATION PLAN

5.1 Summary

Declining aquifer levels, summer irrigation demands exceeding potable water supply, imminent development pressures across the West Plains and climate change are prompting the City and other community partners to take action and implement programs and policies aimed at improving water conservation and water use efficiency. This Water Conservation Plan recommends possible steps the City and other agencies could take to achieve a 20% conservation goal of peak summer demands (or approx. 750 gpm). Programs and actions outlined in **Table 5-1** are specific steps which could be implemented in order to reach the conservation goal. The conservation goal was determined based on existing summer demands and short-comings in the City's existing water supply. By meeting the water conservation goal, situations in which the City must enact irrigation restrictions should be minimized.

As funding sources become available, organizational actions should be sought out in-line with the recommendations presented in **Table 5-1**. The City's underground aquifer water source is a limited resource which presents many challenges to forecasting future water system production and capacities. This Plan is aimed at presenting feasible and actionable short-term water conservation programs and policies that work toward reducing the peak demand while also changing the culture of how water is viewed and consumed in the community. Potential long-term water supply solutions are also discussed in **Table 5-1** and include implementing a reclaimed water treatment and distribution system and ASR program which, if implemented, could help to sustainably maintain aquifer levels while meeting future growth. It should be noted that this Water Conservation Plan should not be promoted as a complete solution to the City's water issues. This Plan, along with the Actions and Programs outlined in **Table 5-1**, should be revisited on an annual basis to monitor the effectiveness and updated and/or modified as needed to meet future water system needs.

The following table provides a schedule for implementation of the short-term and long-term recommendations discussed in **Section 4**.

Table 5-1 Water Conservation and Supplemental Source Development Implementation Table

Program/Action [1]	Implementation Schedule			Organization [2]
	0-2 Years	2-5 Years	5+ Years	
Memorialize a Water Conservation Goal of 20% of the total peak demand (estimated at 750 gpm)	●	●	●	CC, CS, CSD, EWU
Complete a Water Rate Study and adjust water rates to promote water conservation and fund an annual budget for "Water Conservation Measures and Programs"	●	●	●	CC
Adopt and implement Stormwater, Irrigation and Landscape design standards for new City development	●	●	●	CC, CS
Promote educational outreach and programs for water conservation	●	●	●	CC, CS, CSD, EWU, HOAs
Implement Cheneyscape rebate program that offers incentives for water efficient technologies, fixtures and outdoor landscaping (e.g., xeriscaping and AstroTurf)	●	●	●	CC, CS
Complete water audits on existing irrigation systems in order to determine reuse design criteria and replacement needs	●	●	●	CS
Explore options for superseding HOA CC&R's with City adopted stormwater, irrigation and landscape design standards in order to promote reductions in traditional lawns	●	●	●	CC, CS, HOAs
Adopt a water schedule for summer irrigation within the City limits (e.g., odd/even addresses and no water on Fridays)	●	●	●	CC, CS, CSD, EWU, HOAs
Implement fix a leak programs	●	●	●	CS, HOAs
Work with CSD and EWU to incorporate place-based educational curriculum which instructs students as to water supply issues facing the region and the benefits of water conservation practices	●	●	●	CS, CS, CSD, EWU
Work on joining City and EWU water systems		●	●	CC, CS, EWU
Install artificial turf playfields and turf open spaces at City, CSD, and EWU properties		●	●	CC, CS, CSD, EWU
Consider converting Well 4 to potable standards or develop a new groundwater potable supply source		●	●	CC, CS
Implement reclaimed Class A treatment and distribution system improvements		●	●	CC, CS, CSD, EWU
Design, permit and implement an ASR system using the reclaimed Class A water source and additional tertiary treatment as a supplemental potable water source			●	CC, CS

(1) *Implemented as funding sources available*

(2) *Organization abbreviations: CC = City Council; CS = City Staff; CSD = Cheney School District; EWU = Eastern Washington University; and, HOAs = Homeowner Associations*

APPENDIX A

Technical Advisory Committee Meeting Minutes

APPENDIX B

Water Conservation Measure Details

APPENDIX C

Water Conservation Brochures (CheneyScape & Discolored Water)
Water Conservation Public Virtual Open House Tour
Water Conservation Survey and Results

APPENDIX D

IWAC Model Efficient Irrigation and Landscape Design Standards

APPENDIX E

SpokaneScape Guidebook

APPENDIX F

2016 Reclaimed Water Engineering Report Phase I-IV Distribution System Improvements

APPENDIX G

2007 Cheney Groundwater Modeling Report