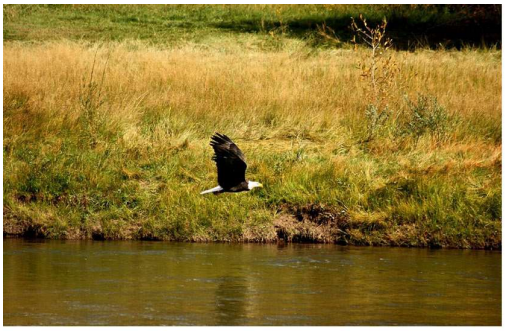
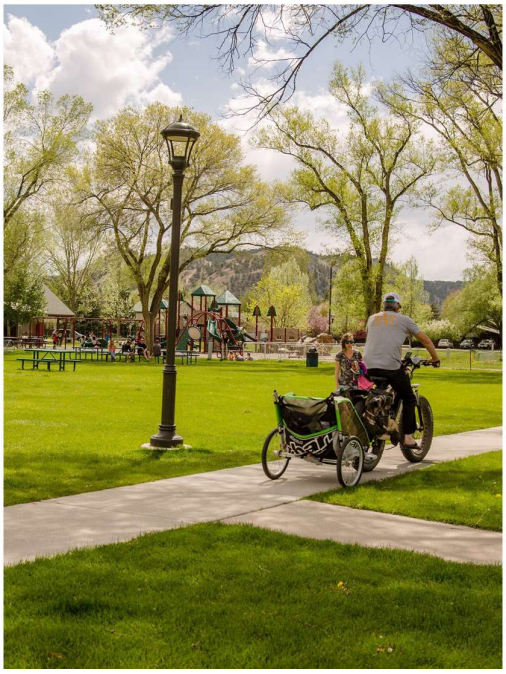




Town of Eagle
Water Efficiency & Conservation Plan

October 2020

Photos courtesy of the Town of Eagle Facebook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Developed in partnership with:

1. Executive Summary

Our vision is to provide a resilient and high-quality water supply to our residents and visitors as the community grows and as climate variability increases. Through good environmental stewardship, we will use water conservation and efficiency as tools to properly manage water as a precious, limited resource to meet our current and future needs and to help protect our surrounding habitat and wildlife.

This vision statement was crafted from stakeholder input to guide the Town's efforts in water conservation and efficiency. This plan builds on the Town of Eagle's Five-Year Water Efficiency Planning Strategy (SGM, 2017) by:

- Conforming to State of Colorado planning guidelines, making the Town eligible for State grant funding programs.
- Using a screening-level cost-benefit analysis to design efficiency programs that make financial sense for the Town and its customers.
- Including a public engagement process for transparency and to seek feedback on planned efficiency activities.

The result is a water efficiency and conservation plan that provides a roadmap for achieving the water vision while maintaining high quality and dependable water service.

1.1. Where We are Now

The Town's potable water system has reliably produced water that meets drinking water standards in sufficient quantity to serve system demands, even during times of drought. The potable water system has historically relied on a single intake structure and water treatment plant. To serve a growing population, with secondary benefits of system reliability and redundancy, the Town has been working to diversify water rights, increase capacity by building a second treatment plant, and improve the distribution infrastructure.

While water conservation efforts alone could not mitigate the need for a second treatment plant, the Town is committed to a conservation ethic that includes preserving the natural environment and making the best use of available water supplies. In 2005, the Town began conducting system audits twice a year along with a water main replacement program that has greatly reduced system losses. In 2018, the Town adopted an inclining block rate structure to incentivize conservation; developed a water irrigation conservation policy to prevent water waste; and promoted non-potable systems for irrigation. As a result of these efforts, water production has remained relatively stable since 2005 despite an increase of more than 40% in the service population. Stated another way, systemwide water use has become 40% more efficient since 2005.

1.2. Where We Want to Go

The Town has established two water efficiency goals (SGM, 2017):

- *Improved water use efficiency:* The first goal aims to continue improving systemwide water use efficiency by 10% between 2017 and 2023 using a metric of gallons produced per active account per day (gal/acct/d).
- *Reduced outdoor water use:* The second goal aims to reduce the percentage of water used outdoors from 70% to 60% during the peak summer months of June through August. Despite past

efficiency efforts, outdoor water use has remained at approximately 70% of summer demands since 2005.

1.3. How We Will Get There

This water efficiency plan looks out to 2027 and beyond. **Table 1** summarizes 11 efficiency programs that can be used to meet the Town's efficiency goals and save more than 100 ac-ft/yr of water. These activities were prioritized based on multiple factors, including a cost-benefit analysis, Town priorities, stakeholder input, and implementation resources. **Section 9.1.3: Funding** provides a summary of implementation funding needs from 2020-2029 across all recommended programs.

Table 1. Summary of Planned Water Efficiency Activities

Implementation Period	Water Efficiency Activity	Annual Implementation Costs ($/yr)	Projected Water Savings in 2027 (ac-ft/yr)
Now-2028	Landscaper certification and training	n/q	n/q
2020	Municipal efficiency improvements	$25,000	3
2020	Development code updates	-	n/q
2020-2040	Educational activities	$3,000	3
2020-2025	Irrigation system rebates	$7,000	4
2020-2025	Rain barrels	$4,000	1
2021-2026	Outdoor water audits and direct installs	$31,000	15
2022-2027	Turf replacement	$23,000	12
2024-2029	Toilet rebates	$18,000	13
2025-2030	Indoor audits with direct installs	$14,000	3
2025-2030	Metering upgrades to AMI	$258,000	50
Total Projected Water Savings in 2027			**103 ac-ft/yr**

**n/q = Not quantified*

1.4. How We Will Stay on Track

The Town's implementation strategy relies on internal staffing, regional partnerships, and funding. The Town intends to commit staff resources and annual operating funds for plan implementation, while also relying on regional partners and external funding sources to maximize implementation success.

The Town will track key water use metrics annually and will update this plan every seven years, as required by The Water Conservation Act of 2004 (Colorado General Assembly, 2004). If the Town finds that any of the water efficiency programs are not effective in achieving the expected water savings or are not cost effective, the programs may be discontinued.

2. Acknowledgements

The Town of Eagle would like to thank the following staff members and stakeholders for their contributions to this water efficiency and conservation plan:

Town of Eagle
Deron Dircksen
Dawn Koenig

Brendle Group
Melissa James
Amy Volckens

Eagle County
Colton Berck
Ray Merry
Adam Palmer
Julie Pranger
Doug Riggins
Peter Suneson

Other Stakeholders
Matt Andrews – Golden Eagle Senior Housing
Janet Bartnik – Mountain Recreation District
Spencer Blair – Red Mountain Ranch Developer
Randy Cohen – Greater Eagle Fire Protection District
Tegan Davis – Eagle Valley Library District
Michael Erion – Resource Engineering, Inc.
Mike Gibbs – Frost Creek
Torie Jarvis – Northwest Colorado Council of Governments
Merv Lapin – Vail Securities Investments Inc.
Holly Loff – Eagle River Watershed Council
Al Musser – Eagle Business Advocacy Council
Tony Powell – Precision Water
Willy Powell – Former Town Manager
Melanie Richmond – Town of Eagle Resident
Derek Rose – Eagle Ranch Golf Course
Kim Schlaepfer – Walking Mountain Science Center
Scott Schlosser – Real Estate Agent and Developer
Rosie Shearwood – Town of Eagle Resident
Bill Shrum – Town of Eagle Assistant to Town Manager
Chris Tennant – Sylvan Lake State Park
Erin Vega – Eagle Ranch Association

3. Introduction

The Town of Eagle (Town) has identified a vision to maintain and strengthen the community's sense of livability in the Eagle Area Community Plan (Town of Eagle and Eagle County, 2010). Livability is defined as finding the balance between modern urban growth and traditional rural identity in support of societal well-being and environmental health. Environmental health includes the protection of water resources - from promoting stewardship of natural, scenic, and environmentally sensitive areas to enhancing recreational opportunities such as fishing and whitewater rafting. Situated at the confluence of Brush Creek and Eagle River, the Town is highly attuned to the conditions and health of the natural river system (**Figure 1**).

The Town's 2017 strategic plan includes commitments to the natural system, delivering high quality services to residents and visitors, and earning the public's trust (Town of Eagle, 2017). Those commitments are articulated in the Town's business values laid out in the Strategic Plan:

- **Sound Planning:** Infrastructure planning must ensure that the Town's water system and wastewater facilities are proactively maintained and modernized when necessary.
- **Appropriate Investment:** Investments must strike a balance between creating value for the community and the cost burden placed on residents and businesses. The Town pursues public participation in the decision-making process, which includes building strong relationships with elected officials, community leaders, and the public.
- **Reliable and Cost-Effective Services:** A key responsibility for the Town is to provide essential services, including water and sewer services. The Town is committed to delivering potable water service that is highly reliable, is of high quality, meets all regulatory standards, and is responsive to customer-reported problems.
- **Protecting Public Health, Safety, and the Environment:** The Town is committed to protecting the well-being of its people and the community, including being good stewards of the environment. The land-use and development code lead the way to smart and safe development.
- **Sound Finances and Increasing Efficiency:** The Town's financial capabilities and standards ensure that it has the financial strength and resources to provide the reliable and high-quality services residents expect. Combined with grant funding and improved efficiency, the Town's financial practices help keep fees for service low while allowing for investments in services, human resources, and infrastructure.
- **Economic Development:** The Town's economy is the engine that powers a high quality of life. The Town attracts outdoor adventurers and tourists due to its proximity to world class ski resorts and access to outdoor activities including hiking, mountain biking, fishing, river rafting, kayaking, snowmobiling, and hunting.
- **Transparency and Community Engagement:** The Town creates an environment that fosters public trust and allows residents and business owners to understand the Town's values, priorities, and strategic plans.

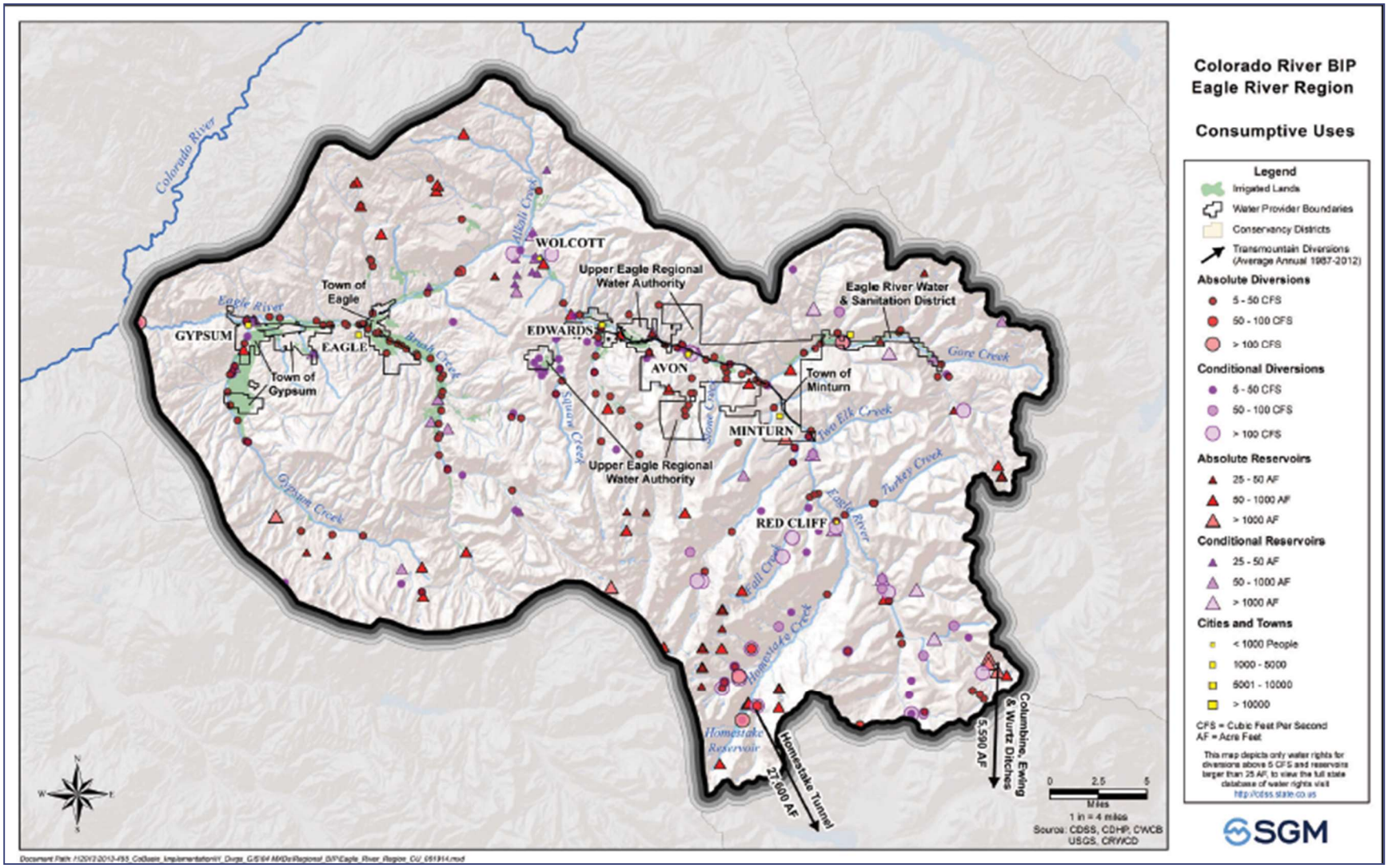

Figure 1. Eagle River Watershed (Colorado Basin Roundtable, 2015)

3.1. Why a water efficiency and conservation plan?

In 2018, the Town began construction of a second water treatment plant, to improve water system reliability and increase production capacity. The increased capacity is needed in the near term to meet peak irrigation demands in the summer months and will also help serve increasing demands from population growth. While water conservation efforts alone could not mitigate the need for a second treatment plant, the Town is committed to a conservation ethic that includes preserving the natural environment and making the best use of available water supplies.

The Town took first steps in developing the Five-Year Water Efficiency Planning Strategy in 2017 (SGM, 2017). This water efficiency and conservation plan builds on that initial effort by:

- Developing a plan that conforms to State of Colorado planning guidelines (Colorado Water Conservation Board, 2012; Colorado Water Conservation Board, 2019). Having a State-approved water efficiency plan makes the Town eligible for State grant funding programs (i.e., water efficiency program implementation grants, public education and outreach grants, and State Water Plan grants).
- Conducting a screening-level cost-benefit analysis to design efficiency programs that make financial sense for the Town.
- Including a public engagement process for transparency and to seek feedback on planned efficiency activities.

In addition to these local drivers for water efficiency, there are State and regional factors driving water efficiency. Colorado's State Water Plan established eight objectives, including goals to achieve 400,000 ac-ft of municipal and industrial water conservation by 2050 and to have 75% of Coloradoans living in communities that have incorporated water-saving actions into land-use planning by 2025 (Colorado's Water Plan Leadership Team, 2015).

Regionally, Brush Creek and Eagle River are tributary to the Colorado River, whose drainage area covers portions of seven US States and Mexico. In May 2019, the US Department of the Interior and seven States signed agreements to protect the Colorado River through drought contingency plans (Bureau of Reclamation, 2019). For the Upper Basin States (Colorado, Utah, Wyoming, New Mexico), the drought contingency plan includes drought response operations and a demand management storage agreement that allows water rights holders to participate in voluntary and compensated programs to reduce water demands and store conserved water in the Lake Powell storage reservoir (Herald Extra, 2019).

3.2. Related Planning Efforts

The Town is undertaking a number of planning efforts concurrently with the development of this water efficiency and conservation plan. Many of the concurrent planning efforts support a continued focus on water quality and water quantity as they relate to supply and demand, recreation, wildlife habitat, and land use practices (Resource Engineering Inc., 2011; Eagle County & The Eagle River Watershed Council, Inc., 2013).

- **Elevate Eagle** is an initiative to update the Town's comprehensive plan and land use and development code (Town of Eagle, 2019a).

- *How it relates to this plan:* The comprehensive plan is a long-range land use plan that majorly influences future water demands. Land use and development codes are tools to drive water efficiency in new developments through fixture, appliance, equipment, landscaping, and irrigation requirements.

- A **Source Water Protection Plan** is being developed for Brush Creek Watershed and is expected to be completed in 2020.
  - *How it relates to this plan:* Source water protection efforts affect the quality and quantity of water available to the Town. The planning process will identify risks and mitigation strategies to protect water sources and supply infrastructure.
- Beginning in 2019, a **Water Quality Action Plan** is being developed for Eagle River and Brush Creek.
  - *How it relates to this plan:* The plan will focus on water quality improvement and protection through the following goals:
    - Maintain existing high scores in metrics of benthic macroinvertebrate health.
    - Ensure water quality meets or exceeds regulatory standards.
    - Protect or improve riparian communities to a level that maintains water quality-enhancing functions, including streambank stabilization and pollutant attenuation.
- In June 2018, the Eagle River Watershed Council initiated a three-year project to develop the **Eagle River Community Water Plan** (Eagle River Watershed Council, 2018). The planning process will be used to "develop proactive water management recommendations that anticipate changes to population growth and increasing municipal demand for water in Eagle County, climate change, and projects related to the 1998 Eagle River Memorandum of Understanding (ERMOU) – an intergovernmental agreement for developing municipal water supplies in the upper Eagle River watershed."
  - *How it relates to this plan:* The plan will identify all consumptive and non-consumptive uses in Eagle River Watershed to ensure that existing and future water uses are considered, community interests are protected, and environmental and recreational needs are represented.

In addition to current planning efforts, this water efficiency and conservation plan builds on past planning efforts for the Town of Eagle, Eagle County, and the Colorado River Basin. A short description of each plan follows:

- The **Brush Creek Watershed Management Plan** documents a regional water management approach to protecting and enhancing the Brush Creek watershed (Resource Engineering Inc., 2011). The plan is a model for regional collaboration to maintain environmental flows. Minimum streamflows have been maintained in Brush Creek, in accordance with instream flow rights since the management plan was developed.
  - *How it relates to this plan:* Historically, Brush Creek has been the Town's sole water supply; therefore, the Town is heavily dependent on the watershed health and the quantity and quality of available flows.
- The Town's **20-yr Capital Improvement Plan** includes the schedule and costs for planned infrastructure improvements in the water system (Town of Eagle, 2019b).

- *How it relates to this plan:* Maintenance of existing infrastructure and the addition of new infrastructure are fundamental to maintaining high quality and reliable water services.

- The **Eagle County Climate Action Plan** identifies climate trends, sets goals for greenhouse gas emission reductions, and identifies opportunities for achieving the reduction goals (Langmaid, Maloney, Read, & Robinson, 2016).
  - *How it relates to this plan:* Climate trends are resulting in shorter winters, hotter summers, and changing ecosystems. Shorter winters mean less snowpack for spring runoff. Hotter summers mean earlier runoff, higher evapotranspiration demands, and higher summer water use. Changing ecosystems mean increased risk factors such as wildfires and landslides. These factors directly affect water supply, water quality, and water reliability.
- The **Colorado Basin Implementation Plan** evaluates water supplies and demands in the Colorado Basin as well as how water management affects ecosystem health, agriculture, safe drinking water, conservation, land use, and water administration (Colorado Basin Roundtable, 2015).
  - *How it relates to this plan:* The plan concludes that water providers in the Colorado Basin are vulnerable to extended droughts, a lower basin compact call, forest fires, the uncertainties of climate change, unpredictable future land use, and additional trans-mountain diversions.
- The **Eagle River Watershed Plan** details a watershed management plan for the Eagle River that considers water quantity, quality, land use, wildlife, and recreation (Eagle County & The Eagle River Watershed Council, Inc., 2013).
  - *How it relates to this plan:* The Town understands the importance of working with regional partners to protect Eagle River and to support communities, wildlife habitat, tourism and recreation economies, and land use. Historically, the Town has not diverted water from Eagle River but has discharged treated wastewater effluent into the river. The Town has the right to divert from Eagle River in case of an emergency such as water quality contamination in Brush Creek.

3.3. The Planning Process

The Water Conservation Act of 2004 requires all covered entities, defined as retail water providers that sell more than 2,000 ac-ft per year, to have a State-approved water efficiency plan (Colorado General Assembly, 2004). Although the Town of Eagle has remained well below that threshold, developing this water efficiency and conservation plan in accordance with the State of Colorado's Municipal Water Efficiency Planning Guidance documents makes the Town eligible for State grant funding resources as

previously described (Colorado Water Conservation Board, 2019; Colorado Water Conservation Board, 2012).

The Town convened this project in 2018. Plan development was supported through a combination of grant funding from the Colorado Water Conservation Board (CWCB) under the Water Conservation Planning grant program, and cash and in-kind contributions from the Town.

The project management team included staff members from Public Works, Building, and Planning Departments, as well as the consulting team.

Additionally, a stakeholder group was formed to provide input on water savings goals, water efficiency activities, and implementation priorities. More than 25 stakeholders participated in two planning workshops held in May and August 2019.

Upon completion, the plan underwent a series of reviews by Town staff, the stakeholder group, the Town Board, the public, and CWCB staff. Finally, the plan was submitted to the Town Board for adoption.

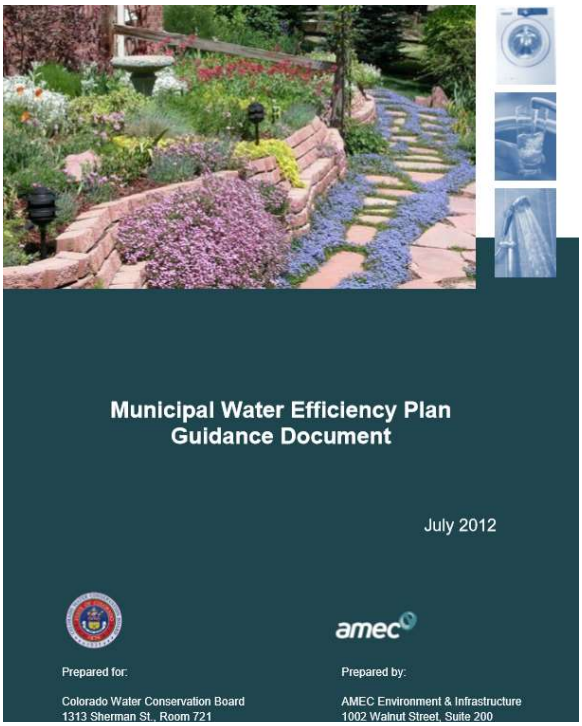

Figure 2. State of Colorado Guidance Document (Colorado Water Conservation Board, 2012)

3.4. Our Water Vision

The stakeholder group developed the following vision statement to guide the Town's efforts in water conservation and efficiency.

VISION STATEMENT

Our vision is to provide a **resilient and high-quality water supply** to our residents and visitors **as the community grows and as climate variability increases**. Through **good environmental stewardship**, we will use water conservation and efficiency as tools to properly manage water as a **precious, limited resource** to meet **our current and future needs** and to help protect **our surrounding habitat and wildlife**.

4. Service Area Characteristics

The Town was incorporated in 1905 and became the County seat in 1921 (Town of Eagle, 2017). The Town sits at an average elevation of 6,600 ft on the western slope of the continental divide along the I-70 corridor, halfway between Denver and Grand Junction. The climate includes more than 290 days of sunshine per year, warm and dry summers with average temperature of 85 °F in July, and moderate winters with average temperature of 35 °F in January. Between December and April, the Town receives, on average, 10-12 inches of snowfall per month (Town of Eagle, 2017; SGM, 2017).

4.1. Boundaries

The Town provides water service within the incorporated area plus adjacent unincorporated areas. The incorporated area encompasses the Haymeadow annexation, a 660-ac property that will include both multi-family developments and single-family homes, from 2012 (**Figure 3**).

In addition to infill and redevelopment within current boundaries, the Town anticipates future boundary expansions through two additional large annexations: Reserve at Hockett Gulch (also known as the JHY Parcel) and Red Mountain Ranch. The Reserve at Hockett Gulch annexation, which was approved by the Town Board in October 2019, will incorporate 29.65 ac, and has the potential to add 500 residential dwelling units. The Red Mountain Ranch annexation will incorporate 106 ac for a mixture of residential, commercial, and public uses (Town of Eagle, 2019c).

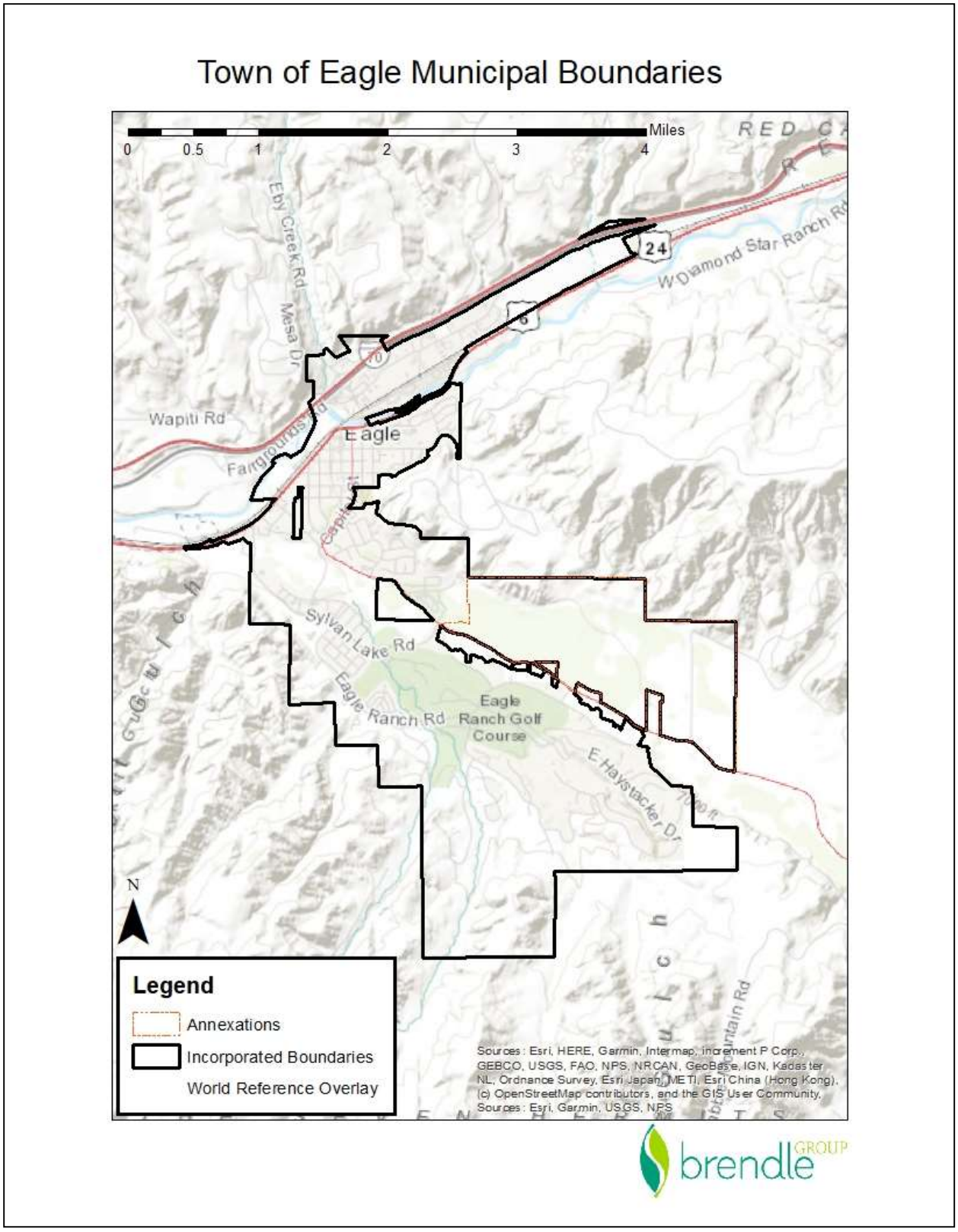

Figure 3. Town of Eagle Municipal Boundaries

4.2. Service Population

The water service population is estimated in two parts, based on the service area:

- Within Town boundaries, the Town's permanent resident population is based on census data from the Colorado Department of Local Affairs (DOLA, 2019). From 2005-2017, the Town experienced a growth rate of 4.4% year-over-year on average. Looking forward, the Town is planning for a growth rate of 1.9% year-over-year on average.
- Outside of Town boundaries, the number of customers served is calculated based on the number of customer accounts multiplied by an estimate of customers served per account.

Figure 4 presents a breakdown of the 2017 water service population in the two population pools. 2017 was the most recent year with population data available from DOLA at the time of plan development but also serves as the baseline year for the Town's water efficiency and conservation planning efforts (SGM, 2017).

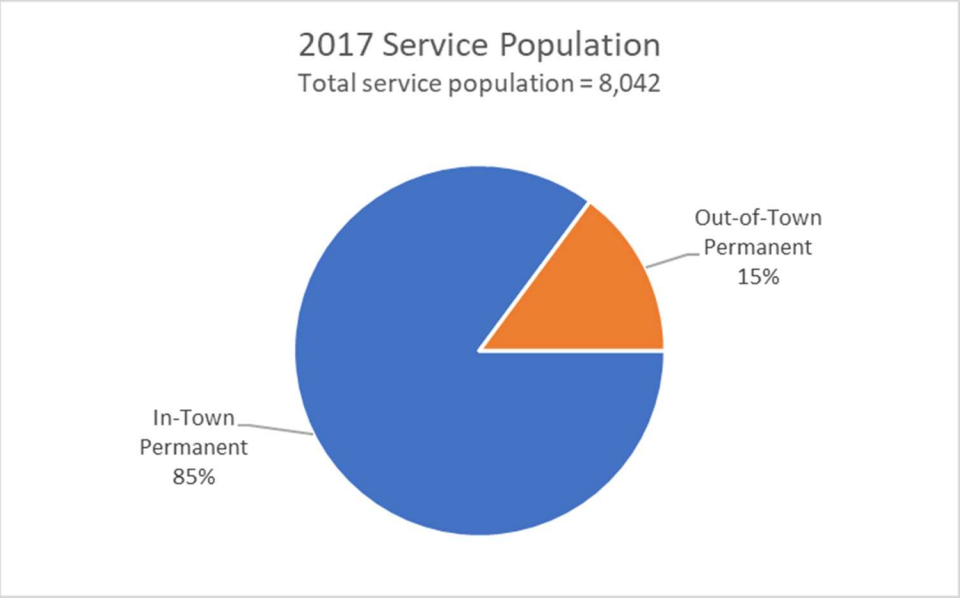

Figure 4. 2017 Service Population Breakdown

Figure 5 shows historical service population estimates (from 2005-2017) as well as projected service population estimates (from 2018-2028). Previous work has estimated that the Town's population will grow to as many as 19,000 residents by 2040 (Resource Engineering Inc., 2011).

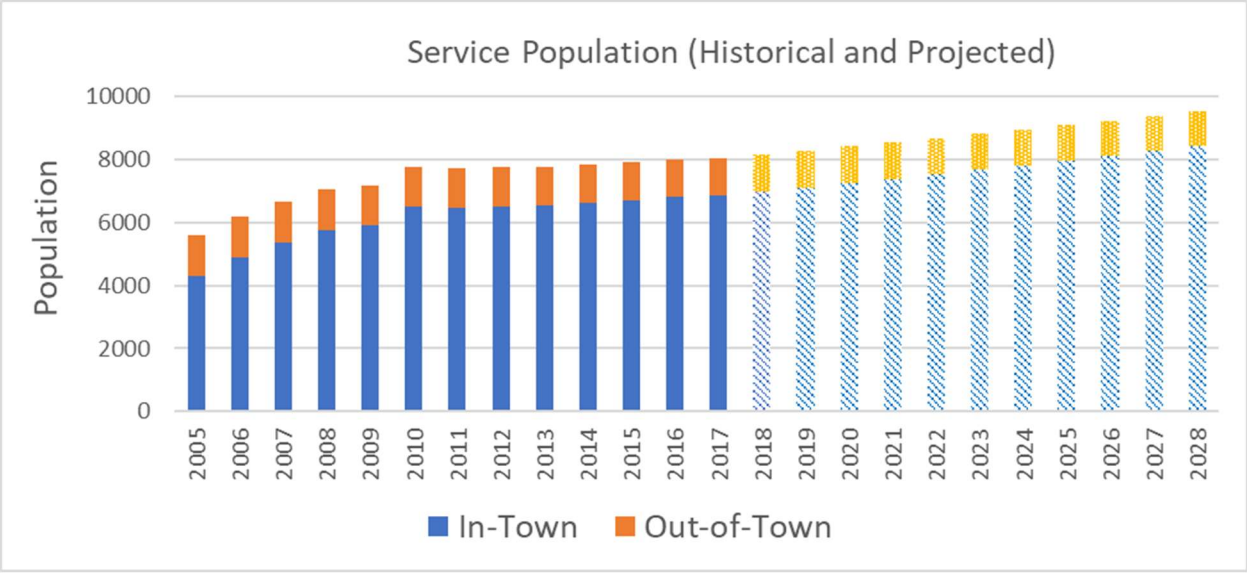

Figure 5. Service Population (Historical and Projected)

The Town uses the number of customer accounts to analyze normalized system-wide water use. **Figure 6** presents the number of active customer accounts over the period 2004-2018. Between 2004 and 2009, the Town experienced rapid expansion of 18% growth in new accounts year-over-year. Since 2009, the Town has experienced more moderate growth of 0.3% growth in new accounts year-over-year.

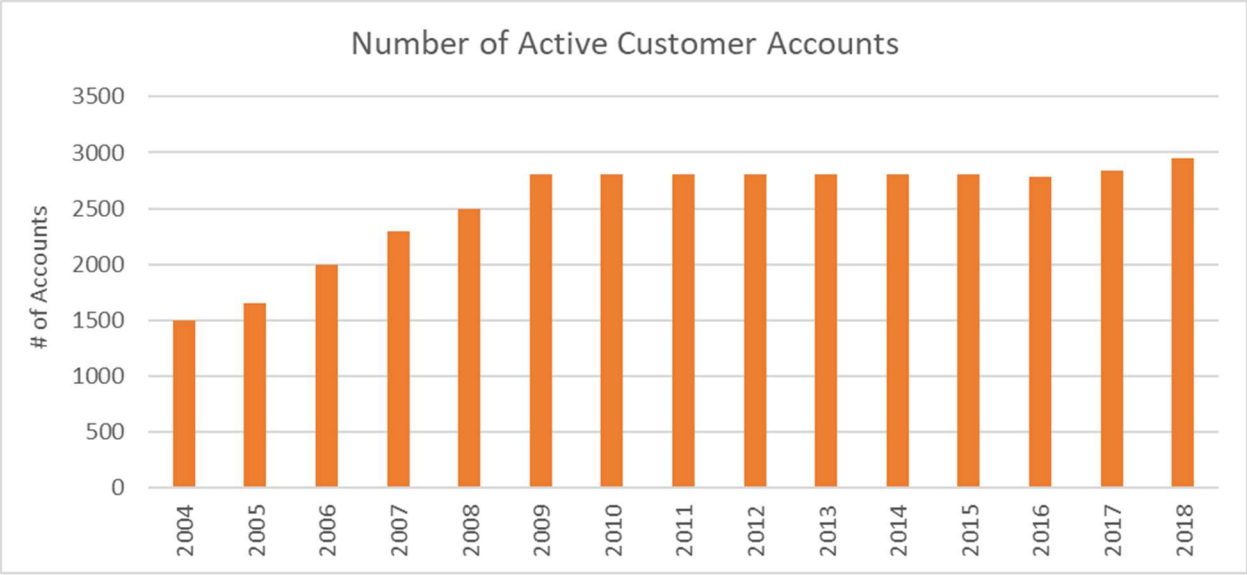

Figure 6. Number of Active Customer Accounts (2004-2018)

At the time of plan development, the Town's billing system stored only three years of data; the number of active customer accounts prior to 2016 was estimated from a previous study (SGM, 2017). The Town has since worked with the software provider to begin storing up to 10 years of historical data starting in 2019.

4.3. Residential Sector

As shown in the customer account data, the Town experienced a growth boom in the 2000s. This growth period consisted mostly of retirees and second homeowners (Town of Eagle and Eagle County, 2010). As a result of this growth period, the Town's housing is predominantly new single-family housing built between 2000 and 2009. Approximately 72% of the Town's housing units are designated as single-family detached, 15% of housing units are designated as single-family attached, and the remaining 13% of housing units are designated as multifamily (United States Census Bureau, 2017).

The influx also created a distinct economic separation between new residents and local workers as well as a shortage of affordable real estate (Town of Eagle and Eagle County, 2010). In 2002, the Town adopted a housing program for local employees, the Local Employee Residency Program (LERP), which was intended to increase the availability of permanently affordable housing for residents who live or work in the Town (Town of Eagle and Eagle County, 2010).

In 2000, the Town also changed zoning standards to allow for the inclusion of accessory dwelling units (ADUs) in all residential zones in an attempt to increase the number of rental units available to the local workforce (Town of Eagle and Eagle County, 2010). An ADU is defined as an apartment attached to a single-family dwelling unit, with the following characteristics (Town of Eagle, 2019g):

- Design and size conform to applicable standards and requirements
- Does not exceed 700 sq ft
- Is isolated from the original unit
- Has a separate outside entry
- Appearance remains that of a single-family residence, meaning new entrances are located on the side or rear of the building
- Lot coverage and floor area ratios may not exceed maximum established values
- Off-street parking spaces follow parking code
- Residence owner occupies at least one of the dwelling units

Understanding housing characteristics is important to understanding the types of water efficiency programs that can achieve impactful water savings. Older housing units in the Town represent opportunities for indoor water savings through the replacement of indoor fixtures and appliances, while newer housing units are likely to contain WaterSense-certified indoor fixtures and appliances. Single-family detached homes often have large, irrigated turf areas that present opportunities for reducing outdoor water use through irrigation improvements or landscape conversions. Where new development and infill occur, the largest water savings can be achieved through design standards that require water efficiency measures from the start.

4.4. Commercial, Institutional, and Industrial Sector

Water use patterns and water savings opportunities in the commercial, institutional, and industrial (CII) sector are much more variable than opportunities in the residential sector, simply due to the wide range in business types and water end uses. Water efficiency programs can target specific business types (e.g., hotels) or can be developed to focus on common end uses (e.g., irrigation) across businesses.

The Town does not serve large industrial users but does have a number of commercial and institutional customers. Census data show that the largest commercial sectors in Town are (United States Census Bureau, 2017):

- Management, business, science, and arts (43% of local jobs)
- Sales and office occupations (21%)
- Service and hospitality (15%)
- Natural resources, construction, and maintenance (11%)
- Production, transportation, and material moving (10%)

5. Existing Water and Wastewater System

5.1. Water Rights

The Town owns water rights for potable water production and raw water irrigation, including direct flow, groundwater, and storage rights. The water rights operate under their own priorities or pursuant to several decreed plans for augmentation utilizing senior irrigation water rights, storage rights, and water allotment contracts. The Town does not currently have the rights to reuse water. Unless otherwise cited, all information in this section comes from a water rights summary prepared for the Town (Resource Engineering, Inc., 2014).

5.1.1. Potable Water System

The Town has historically operated a single point of diversion, known as the Upper Basin Water Treatment Plant (UBWTP), off Brush Creek. Water is diverted from Brush Creek approximately eight miles upstream from the Eagle River confluence and flows through a gravity system to the UBWTP. The Gravity Water System is decreed for 5.24 cfs absolute and 4.76 cfs conditional for future development. To serve a growing population, and for secondary benefits of system reliability and redundancy, the Town began:

- **Developing additional diversion points:** The Town's treated water supply system now consists of eight decreed diversion points, including the Gravity Water System Intake that feeds the UBWTP.
- **Enhancing the water rights portfolio:** The Town now has the potential to develop 32.5 cfs additional rights between Brush Creek and the Eagle River and 1.1 cfs from groundwater sources. This total includes the 10.0 cfs described above for the Gravity Water System intake. The Town has systematically acquired senior irrigation water rights through the annexation process and adjudicated several plans for augmentation to allow the Town's municipal water rights to divert during times when senior downstream water rights are calling for water.
- **Constructing a second water treatment plant:** The Lower Basin Water Treatment Plant (LBWTP) is under construction and is expected to begin operations in 2020. The LBWTP will divert water from Brush Creek and from the Eagle River below the confluence if needed. It will also have the option of diverting from the Eagle River above the confluence with Brush Creek if needed, for example in the event of contamination in Brush Creek.

5.1.2. Raw Water Systems

Raw water can currently be diverted at three points: (1) the Squire and Hammond Ditch, (2) the Mrs. Paye Ditch, and (3) the Warm Springs Ditch. The Town holds 11.659 cfs in water rights through these ditches with 10.159 cfs decreed as absolute and 1.5 cfs decreed as conditional. In addition, the Town acquired senior irrigation water rights associated with the Haymeadow Eagle River Station, and Reserve at Hockett Gulch projects. The Town will lease back portions of the water rights for raw water irrigation when these projects are developed. The raw water systems serve irrigation demands at selected golf courses, parks, recreational fields, and schools associated with the Town of Eagle and Eagle Ranch. New raw water systems will be developed for the Haymeadow, Eagle River Station, and Reserve at Hockett Gulch projects.

5.1.3. Augmentation Water

Many of the Town's water rights have a priority date in the 1970s or later, making them relatively junior water rights subject to curtailment under the prior appropriation doctrine. When streamflows are low and cannot serve all water rights, an administrative call is placed on the river to curtail junior water rights. The Town has decreed a number of augmentation plans that allow the Town to continue diverting water out of priority at the UBWTP intake while replacing those diversions with augmentation water from consumptive use credits associated with senior irrigation water rights, releases from storage, and/or contract storage water from Eagle River basin and Colorado River basin supplies.

5.1.4. Storage

The Town owns 460 ac-ft of storage water rights, of which 10 ac-ft have been constructed. The Town currently has several water allotment contracts totaling 214.8 ac-ft, which provide a flexible replacement supply. The Town also has the right for release of up to 125 ac-ft of water from Sylvan Lake as a last option emergency augmentation source. The Town owns supplies in two reservoirs (Yeoman Park Reservoir and Brush Creek Augmentation Pond) and leases supplies through water allotment contracts with the Bureau of Reclamation (Green Mountain Reservoir) and the Colorado River Water Conservation District (Eagle Park Reservoir, Wolford Mountain Reservoir, and Ruedi Reservoir).

5.1.5. Instream Flows

The Town of Eagle is committed to maintaining environmentally beneficial streamflows and lake levels. **Figure 7** shows a map of instream flow rights in the Eagle watershed.

The primary instream flow requirement with the potential to affect Town operations is the 12.0 cfs required to be maintained in Brush Creek downstream of the UBWTP intake. During the 1977 and 2002 droughts, minimum streamflows were not maintained in that stretch of Brush Creek. In 1999, the Town initiated the development of a watershed management plan that included contractual agreements with other water right holders on Brush Creek (Resource Engineering Inc., 2011). The benefits of regional water management manifested during the 2012 and 2018 droughts when minimum streamflows in Brush Creek were maintained.

The CWCB also holds an instream flow right on Eagle River between the confluence with Brush Creek and the Town's wastewater treatment plant (WWTP) outfall that protects flow levels at 130 cfs from May-Sep and 50 cfs from Oct-Apr.

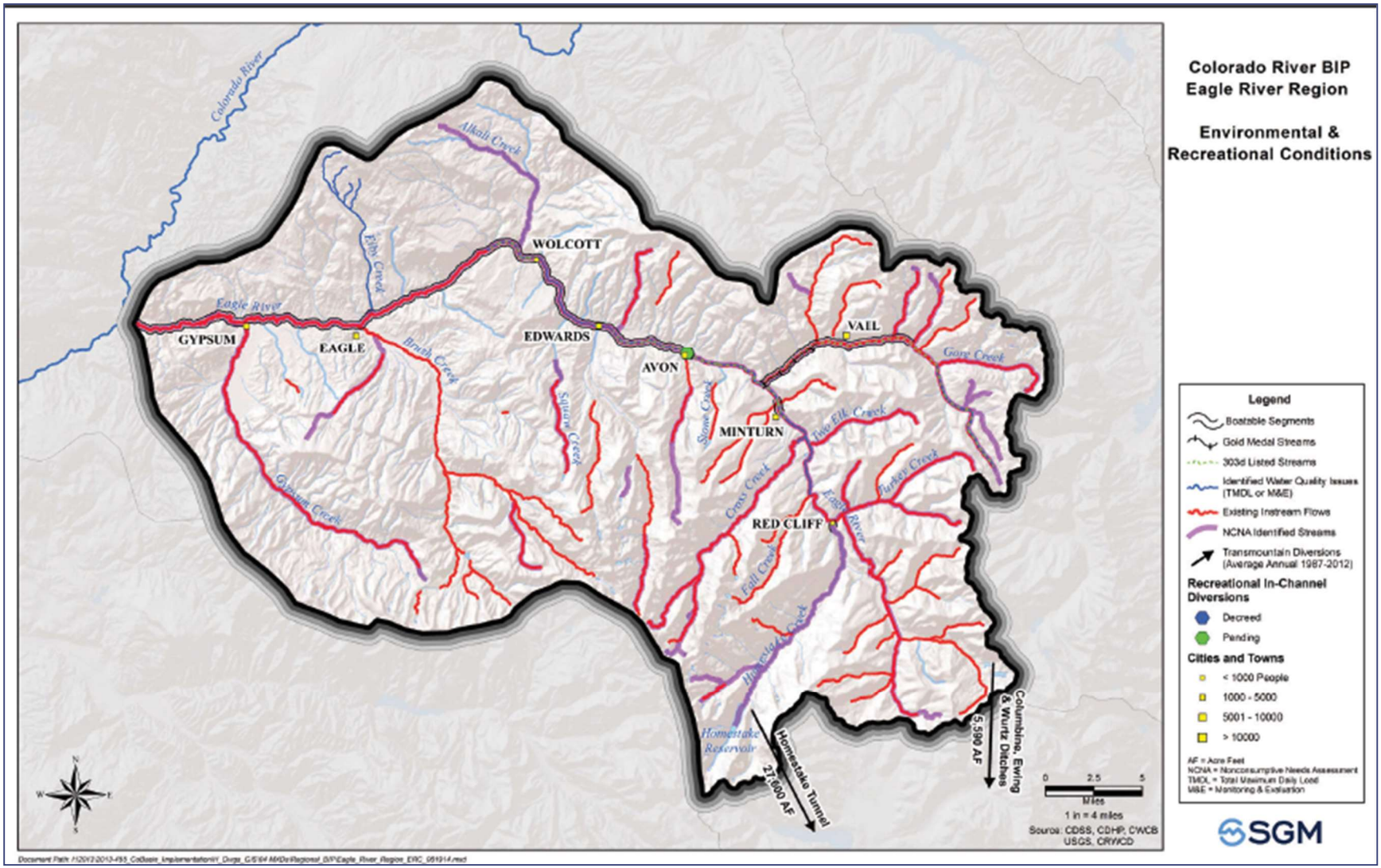

Figure 7. Instream Flow Protections in the Eagle River Watershed (Colorado Basin Roundtable, 2015)

5.2. Treatment and Distribution

5.2.1. Potable Water

The UBWTP, originally built in 1982, has a production capacity of 4.3 MGD. A pretreatment facility was built in 2006 to add coagulation, sedimentation, and flocculation processes to the direct filtration and disinfection processes, which collectively result in the Town meeting or exceeding drinking water standards.

The LBWTP is currently under construction and will begin operations in 2020. The plant is being constructed in Phase 1 with a production capacity of 2.5 MGD. This capacity is expected to serve demands through 2040. The LBWTP can be expanded in future phases to a production capacity of 5.0 MGD. Drinking water treatment will include conventional processes as well as membrane filtration.

The distribution system consists of 68 miles of water mains, 10 pressure zones, five pump stations, and nine storage tanks. The tanks store 6.4 MG of treated water, inclusive of fire and emergency reserves, which can serve system demands for 1-4 days under regular (non-emergency) conditions. Pressure reducing values are required.

5.2.2. Non-Potable Water

Raw water is diverted off Brush Creek at multiple locations as well as off multiple ditches that serve irrigation demands. The Town is responsible for the Warm Springs non-potable system which diverts off the Warm Springs ditch and into a vault for pumping and delivery to the pool and ice rink property, private developments, and a future school site. This non-potable system has the potential to serve additional demands.

5.2.3. Wastewater

The Town's 1.63 MGD WWTP is located on the Eagle River, downstream of the confluence with Brush Creek. Treated effluent is discharged into the Eagle River, which means that Brush Creek is dewatered downstream of the UBWTP intake due to the municipal diversions (Resource Engineering Inc., 2011).

The Town is evaluating treatment alternatives and costs associated with retrofitting the WWTP to meet new nutrient discharge requirements under Regulation 85: Nutrients Management Control Regulation (Colorado Department of Public Health and Environment, 2012).

5.3. Connection Fees

The Town charges a Plant Investment Fee (PIF) to connect properties to the water distribution and wastewater collection systems. The PIF comprises water and wastewater system fees that are calculated by multiplying base fees by the number of equivalent units for the property. In 2019, the base water fee was $9,258 for in-town customers and $13,886 for out-of-town customers, while the base wastewater fee was $10,000 for all customers (Town of Eagle, 2019d). The base fees are evaluated each year and adjusted as needed.

One equivalent residential unit (EQR) is defined as a typical single-family residential unit that houses a statistical average of 3.5 persons and has not more than 2,500 square feet of irrigated lawn or garden. EQRs for different property types and features are defined in the Town's municipal code and summarized in **Table 2** (Town of Eagle, 2019e; Town of Eagle, 2019f).

Table 2. Equivalent Units by Property Type and Feature (Town of Eagle, 2019e; Town of Eagle, 2019f)

Property Type	Property Features	EQR per unit
Single-Family Residential	Lot size up to 8,000 sq ft	1.0
	Lot size 8,001 to 10,000 sq ft	1.2
	Lot size 10,001 to 12,000 sq ft	1.3
	Lot size over 12,000 sq ft	1.4
	Lot size 8,001 to 10,000 sq ft	1.2
	Lot size 10,001 to 12,000 sq ft	1.3
	Lot size over 12,000 sq ft	1.4
Multi-Family Residential (Duplex)	Up to 3 bedrooms, 2 bathrooms, and 1,250 sq ft of irrigated landscaping	0.9
Multi-Family Residential (Townhouses, condominiums, and apartments)	Studio apartments	0.4
	Up to 2 bedrooms and 1.5 baths	0.6
	Up to 2 bedrooms and 2 baths	0.8
	Each additional bedroom	0.15
	Each additional kitchen (wet bar)	0.10
	Each additional 1,000 sq. ft. of irrigated landscaping	0.25
Non-potable Irrigation Credit	Per 2,500 sq ft (not to exceed 25% of total EQR)	0.25
Motel, Hotel, and Transient Rental Units	First unit or manager headquarters	1.0
	Each additional rental room without cooking facilities	0.4
	Each additional rental room with cooking facilities	0.5
Other Common Facilities	Washing machines less than 12-pound capacity	0.5
Bars & Restaurants	Less than 25 seating capacity	1.0
	Each additional 25 seating capacity or part thereof	0.6
Service Stations	Full service with service or lubrication bay and/or wash bay	2.0
	Self-service, no wash, or lubrication bay and/or service bay	1.0
	Each additional wash bay or rack	1.0
Commercial, Industrial Warehouse, or Public Buildings	Up to 2 men's and 2 women's manual flush toilets/urinals	0.5
	Each additional toilet/urinal with manual flush	0.5
	Each lavatory	0.2
	Each shower, tub, or combination thereof	0.3
	Each laundry, mop, or bar sink	0.2
	Each other water-using fixture/appliance	0.3
Churches and Nonprofit Organization Halls	All	0.1
Schools	Up to 50 students	2.0
	Each additional 50 students or fraction thereof	1.0
	Gymnasium with showers	1.2
Swimming Pool	Each 25,000 gallons or fraction thereof capacity	1.0

Property Type	Property Features	EQR per unit
Laundromat or Landry Basic	Base fee	1.0
	Each top loading machine with less than 12-pound capacity	0.5
	Each top loading machine with 12.1 to 21-pound capacity	0.7
	Each top loading machine with 21.1 to 31-pound capacity	1.0
	Each top loading machine with 31.1 to 41-pound capacity	1.3
	Each top loading machine with 41.1 to 51-pound capacity	1.6
	Each top loading machine with 51.1 to 75-pound capacity	2.0
	Each front-loading machine with less than 20-pound capacity	0.3
	Each front-loading machine with 20.1 to 30-pound capacity	0.7
	Each front-loading machine with 30.1 to 40-pound capacity	1.1
	Each front-loading machine with 40.1 to 60-pound capacity	1.4

All properties connected to the water system are assessed a one-time water meter fee based on the size of the meter required to serve the needs of the property.

The current connection fee structure incentivizes water conservation by resulting in lower connection fees for smaller lot sizes, less irrigated area, and multi-family residential developments. Properties that have non-potable irrigation systems are offered up to a 25% discount on the EQR calculation, which results in less potable water used for outdoor watering. Additional incentives could be incorporated into the fee structure for additional water efficiency measures covering efficient indoor equipment and appliances, efficient irrigation equipment, or low water-using landscapes in irrigated areas.

5.4. Water Rates and Billing

5.4.1. Potable Water Usage

Billing charges assessed to water customers comprise three components: a surcharge, a base fee, and variable charges based on usage. Customers are billed monthly. Rates are adjusted annually as needed.

The surcharge component was introduced in 2017 to help fund Phase 1 construction of the LBWTP. The fee structure uses an inclining block rate structure to encourage water efficiency. Customers are assessed a monthly surcharge based on their average monthly use over the past two years. The analysis is repeated each year so that customers benefit from decreasing water use. **Table 3** shows a summary of the surcharge fee structure for residential and commercial customers.

Table 3. Surcharge Fee Structure (Town of Eagle, 2019h)

Usage Category	Residential Average Use (gal/mo)	Commercial Average Use (gal/mo)	Monthly Surcharge
Low	0 - 4,000	0 - 2,000	$8.15
Average	4,001 - 14,000	2,001 - 46,000	$12.50
High	>14,001	>46,001	$17.00

The base fee component varies by rate type, rate class, and customer location (i.e., in or out of town). The variable use charges are based on an inclining block rate structure to incentivize water efficiency. Customers that reside outside of Town limits pay higher base fees and usage rates than customers within Town limits. Similarly, customers with ADUs pay higher base fees than customers without ADUs. **Table 4** and **Table 5** present the base fees and usage rates for in-town and out-of-town customers, respectively. These rates went into effect January 21, 2019.

Table 4. 2019 In-Town Base Fees and Usage Rates (Town of Eagle, 2019h)

Rate Type	Rate Class	Monthly Base Fee	Usage Block (gal/mo)	Charge per 1,000 gal
Residential In-Town	Without ADU	$35.29	0-6,000	$3.00
			6,001-17,000	$6.62
			17,001-28,000	$9.92
			28,000+	$14.88
	With ADU	$44.27	0-8,000	$3.00
			8,001-17,000	$6.62
			17,001-28,000	$9.92
			28,000+	$14.88
Non-Residential In-Town	Commercial & Mixed Use	$35.29	0-6,000	$3.00
			6,000+	$6.62
	Government, Schools, & Churches	$35.29	0-6,000	$3.00
			6,000+	$6.62
Residential / Non-Residential In-Town	Compound Meter - High Side	$0.00	All Usage	$6.62

Table 5. 2019 Out-of-Town Base Fees and Usage Rates (Town of Eagle, 2019h)

Rate Type	Rate Class	Monthly Base Fee	Usage Block (gal)	Charge per 1,000 gal
Residential Out-of-Town	Without ADU	$52.94	0-6,000	$4.50
			6,001-17,000	$9.89
			17,001-28,000	$14.84
			28,000+	$22.25
	With ADU	$66.45	0-8,000	$4.50
			8,001-17,000	$9.89
			17,001-28,000	$14.84
			28,000+	$22.25
Non-Residential Out-of-Town	Commercial & Mixed Use	$52.94	0-6,000	$4.50
			6,000+	$9.89
	Government, Schools, & Churches	$52.94	0-6,000	$4.50
			6,000+	$9.89
Residential / Non-Residential Out-of-Town	Compound Meter - High Side	$0.00	All Usage	$9.89

5.4.2. Non-Potable Water Usage

Non-potable water service is contracted through agreements that specify the area to be irrigated rather than the volume of water to be delivered, which allows for flexibility during drought conditions. For example, the Town distributes raw water to irrigate 39.13 ac at Brush Creek Meadows (Town of Eagle, 2008). Each agreement establishes the price for non-potable water delivery.

5.5. Non-Revenue Water

Non-revenue water refers to the difference in volume between potable water production and customer billing. Non-revenue water uses in the Town include system leaks, fire hydrant flushes, and other unbilled uses.

5.6. System Reliability, Vulnerabilities, and Future Needs

5.6.1. Reliability

The Town's water supply has reliably served historical system demands, even during the recent droughts in 2002, 2012, and 2018 (Eagle County & The Eagle River Watershed Council, Inc., 2013). However, the Town has been working methodically to improve reliability throughout the water system from water rights to treatment capacity to distribution infrastructure. The Town is also currently working to improve backflow prevention and interconnection standards; is adding backup generators to the existing UBWTP buildings in 2019; and is budgeting for one mobile generator in 2020. The Town is planning for several redundancy projects, including adding second water lines under Eagle River and I-70.

5.6.2. Vulnerabilities

Four areas of vulnerability, that underscore the importance of conservation and efficiency programs in delivering reliable water services, have been identified.

Administrative Calls

All water rights, but especially those that are relatively junior in priority, are at risk of curtailment under the water rights administration system when an administrative call is placed on the river. Four call scenarios have been identified that jeopardize the Town's ability to divert water (Resource Engineering, Inc., 2014). **Table 6** summarizes the four call scenarios, along with the management strategies the Town has put in place. The management strategies include using augmentation supplies (which allow the Town to divert water out of priority) and emergency storage supplies (which allow the Town to supplement direct diversions). To the extent that conservation and efficiency programs are successful in managing demands, they will help the Town continue to meet system demands during these call scenarios.

Table 6. Call Scenarios and Management Strategies (Resource Engineering, Inc., 2014)

Call Scenario (Upstream to Downstream)	Management Strategies
CWCB's instream flow right on Brush Creek (12.0 cfs below Gravity Water System intake)	Augmentation supplies are 10.099 cfs Emergency storage of 125 ac-ft
Senior agricultural water right in Lower Brush Creek	Augmentation supplies are 10.099 cfs Emergency storage of 125 ac-ft
CWCB's instream flow right on Eagle River (130 cfs May-Sep or 50 cfs Oct-Apr between confluence and WWTP outfall)	Augmentation supplies are 5.840 cfs Emergency storage of 130 ac-ft
Colorado Compact call at Cameo (1,900 cfs at the USGS stream gage)	Augmentation supplies are 7.340 cfs Emergency storage of 334.8 ac-ft

Droughts

The driest years on record for Brush Creek are 1954, 1955, 1977, and 2002 (Resource Engineering Inc., 2011). In 2002, historically low snowpack left many watersheds in Colorado short on surface water supplies (Eagle County & The Eagle River Watershed Council, Inc., 2013). Less severe droughts occurred in 2012 and 2018.

In 1999, the Town initiated development of a regional watershed management plan for Brush Creek (Resource Engineering Inc., 2011). The Town now has agreements in place with other large water rights holders to reduce irrigation diversions that serve Eagle Ranch Golf Course, Frost Creek Golf Course, the Haymeadow project, and the open space property formerly known as Hardscrabble Ranch (now referred to as Eagle County Hardscrabble Open Space) based on streamflows in Brush Creek. Stakeholders in the Brush Creek watershed were able to work together and maintain minimum streamflows during the 2012 and 2018 droughts.

Wildfires and Landslides

The correlation among drought, wildfire, and landslides was made evident during the 2002 drought, which resulted in one of the most devastating wildfire seasons in Colorado's recorded history, followed by landslides (Eagle County & The Eagle River Watershed Council, Inc., 2013). Wildfires burn vegetation that would normally stabilize hillsides and intercept rainfall. Consequently, storm events that occur after wildfires lead to increased runoff and landslides that degrade water quality with high turbidity and pollutant loads. By diversifying intake locations and water supply sources, the Town has worked to mitigate these risks.

5.6.3. Future Needs

The Town's 2011 Capital Improvement Plan includes the following projects for the water system (Town of Eagle, 2019b):

- **LBWTP Construction:** Described previously.
- **Violet Lane Water Line:** To connect the LBWTP to the existing distribution system (completed in October 2019).
- **UBWTP Generators:** As backup power supply for the pretreatment facility and main plant.

- **Cemetery Tank:** To replace an existing undersized water tank with a new 1 MG tank.
- **Filter Train Electric Valves:** Valves for the 3-Filter trains described below.
- **UBTWP 3-Filter Trains:** To replace existing filters at the UBWTP.
- **Fencing for Water Properties:** For increased security of existing facilities.
- **Fairgrounds Water Main Loop:** To connect the LBWTP distribution to the north across Eagle River.
- **Brooks Lane Water Main:** To replace an existing water main.
- **Water Fill Station:** To add water fill stations at the LBWTP and WWTP.
- **Downtown Distribution: Capitol Street: 2nd to 6th Street:** To replace the existing water main on Capitol Street between 2nd and 6th Street over a five-year timeframe. The project will start in 2020 focusing on the segment between 5th and 6th Street.
- **Howard Street Water Main: 2nd Street to 6th Street:** To replace the existing water main on four blocks along Howard Street between 2nd Street and 6th Street.
- **Water Transmission Main: Hardscrabble Road to Headquarters:** To replace the existing water transmission main starting near the Adam's Rib (now referred to as Frost Creek) headquarters and continuing south to Hardscrabble Mountain Road (now referred to as Eagle County Hardscrabble Open Space).

6. Historical Water Demands and Demand Management

6.1. Historical Water Demands

The Town tracks historical data and water use metrics to answer the following questions:

- How much water is being used?
- Is water use going up or down?
- Is water use getting more or less efficient?
- What are the opportunities to save additional water?

The following sections present information that describes historical potable water use. There are no historical data available to comprehensively evaluate non-potable water demands. All available information is presented, though the period of available data varies between metrics. **Appendix A** contains all baseline data presented in this plan, including streamflows, diversions, production volumes, delivery volumes, Town usage, and population values. The Town continues to refine its data management and analysis capabilities.

6.1.1. Annual Water Use

The Town tracks three measures of annual water use:

- **Diversions:** Diversions represent the volume of water diverted from Brush Creek and sent to the UBWTP. Reliable diversion records, starting in 1990, are available from Colorado's Decision Support System (State of Colorado, 2019).
- **Production:** Production represents the volume of potable water produced at the UBWTP and sent to the distribution system. Historical data from the Town's internal tracking processes are available going back to 2002.
- **Deliveries:** Deliveries represent the volume of potable water billed to customers. Historical data are available, from the Town's billing system, going back to 2016, as the billing system had been set up to retain only three years of data. Since developing this plan, the Town has worked with the software provider to configure the billing system so it will retain ten years of data moving forward.

Figure 8 shows the available diversion, production, and delivery data. The water system experienced rapid growth during the early 2000s, but annual water use has remained relatively constant since 2006, with an average annual production of 1,416 ac-ft. Previous work has estimated that the Town may need to divert up to 4,100 ac-ft/yr of water to satisfy the potable water demands of a growing population through 2040 (Resource Engineering Inc., 2011).

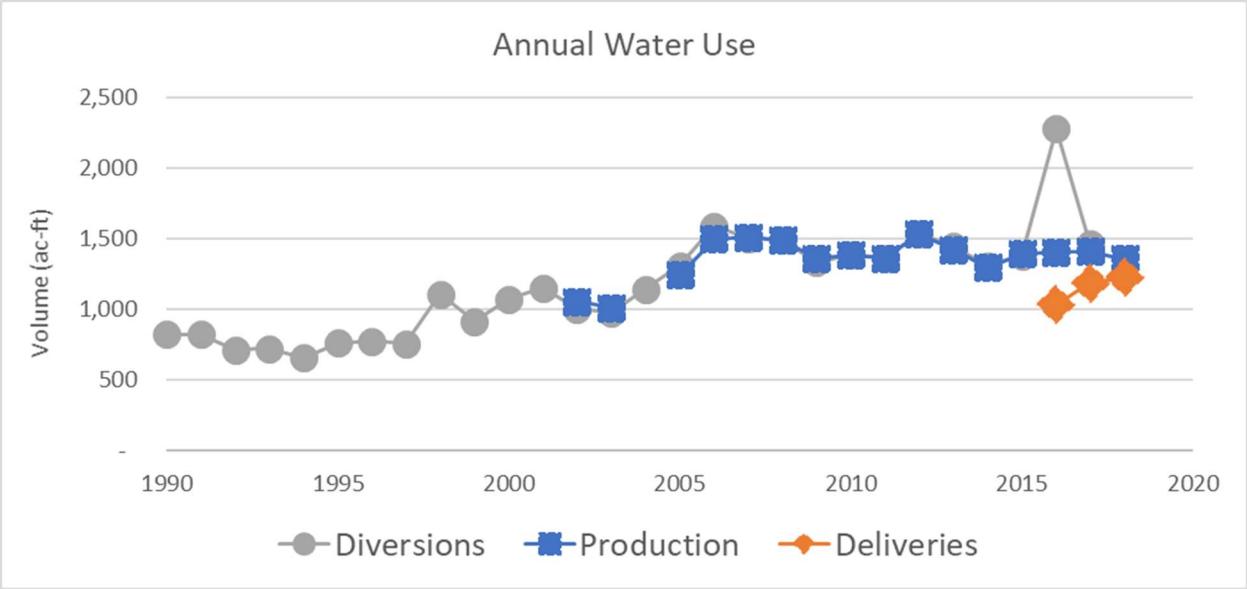

Figure 8. Annual Diversions, Production, and Deliveries (1990-2018)

The Town's billing software tracks water use for 10 customer types:

- Churches
- Commercial
- Government
- Multi-Family
- Residential (In Town)
- Residential (Out of Town)
- School
- Single-Family
- Sprinkler System
- Town Property

Figure 9 shows the breakdown of water deliveries by customer type over the period 2016-2018. Unsurprisingly, given the characteristics of the Town's housing and service area, almost half of the water delivered served residential properties in Town. The commercial sector, the second largest category, received 18% of annual deliveries.

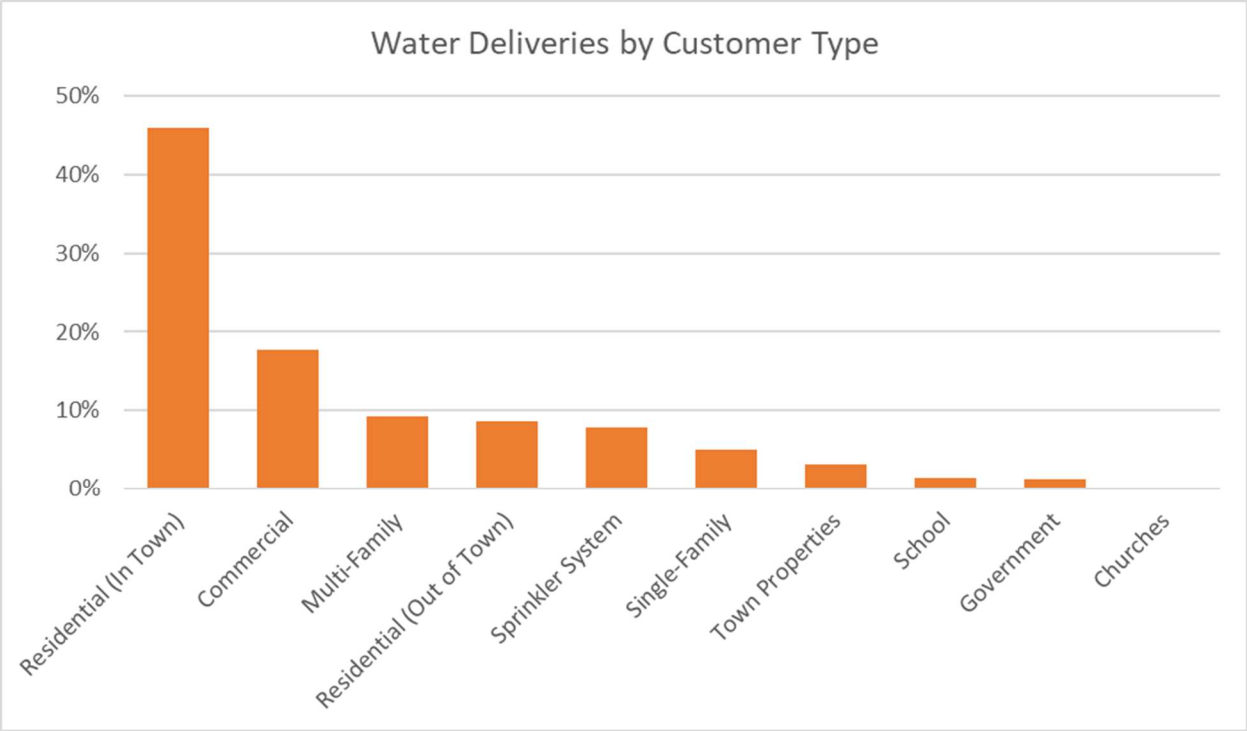

Figure 9. Water Deliveries by Customer Type (2016-2018)

Based on an analysis of historical water use, the largest individual water users in the residential sector are multi-family developments and homeowners' associations (HOAs). The largest individual water users in the CII sector are government-owned facilities, hotels, irrigation-only accounts, and schools.

Table 7 summarizes the annual diversions, production volumes, and deliveries by major customer sector since 2013. **Appendix A** contains all available baseline data.

Table 7. Annual Diversions, Production, and Deliveries by Sector (ac-ft)

Year	Diversions	Production	Deliveries	Residential Deliveries	CII Deliveries	Irrigation-Only Deliveries
2013	1,402	1,424	n/a	n/a	n/a	n/a
2014	1,345	1,295	n/a	n/a	n/a	n/a
2015	1,364	1,391	n/a	n/a	n/a	n/a
2016	2,301	1,403	1,034	713	238	83
2017	1,459	1,411	1,184	817	272	95
2018	1,418	1,358	1,225	845	282	98

**n/a = data not available*

6.1.2. Seasonal Water Use Patterns

Streamflows in Brush Creek measured at the municipal intake peak in June (**Figure 10**). The Town diverts 5-10% of available flows on an annual basis to serve municipal water demands.

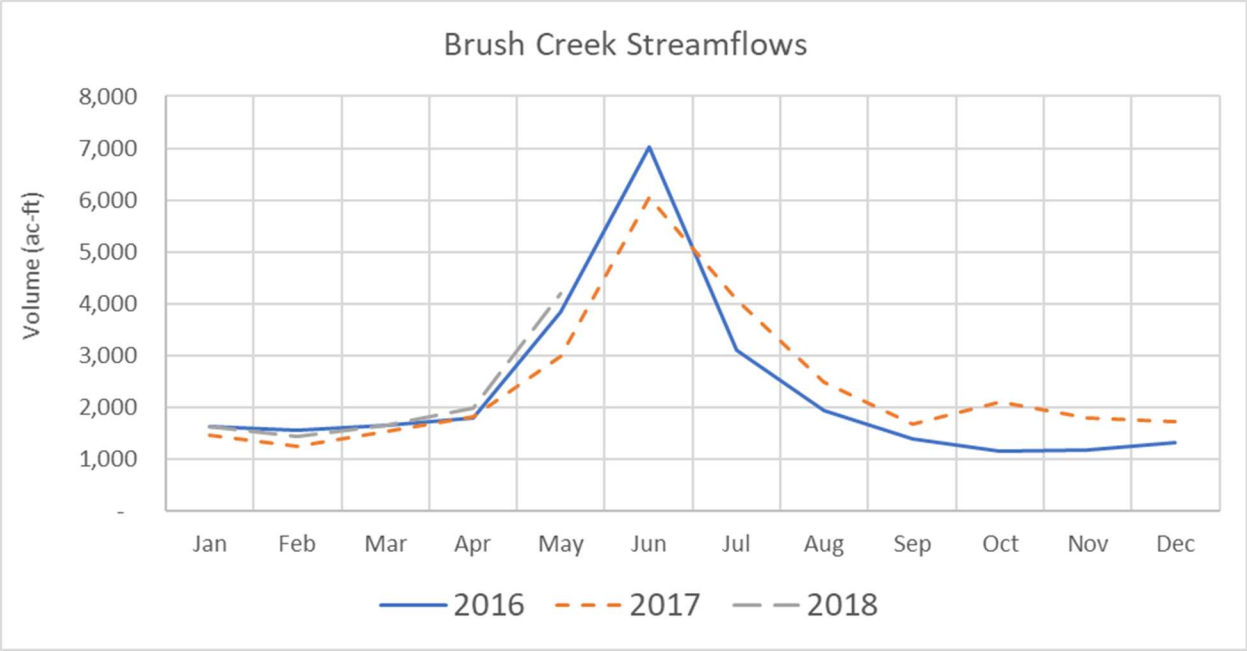

Figure 10. Monthly Water Availability in Brush Creek at the Municipal Intake (2016-2018)

Water use within the Town's service area follows a seasonal pattern that is typical of other Colorado communities: relatively low and constant use during winter months (October through April) and higher use during the summer months (May through September). Higher summer use is attributed to outdoor irrigation.

Figure 11 shows monthly water deliveries for the period 2016-2018. Over these three years, the irrigation season has shifted earlier, to start in April instead of May. The Town will continue to monitor this trend and its impacts on total outdoor water use.

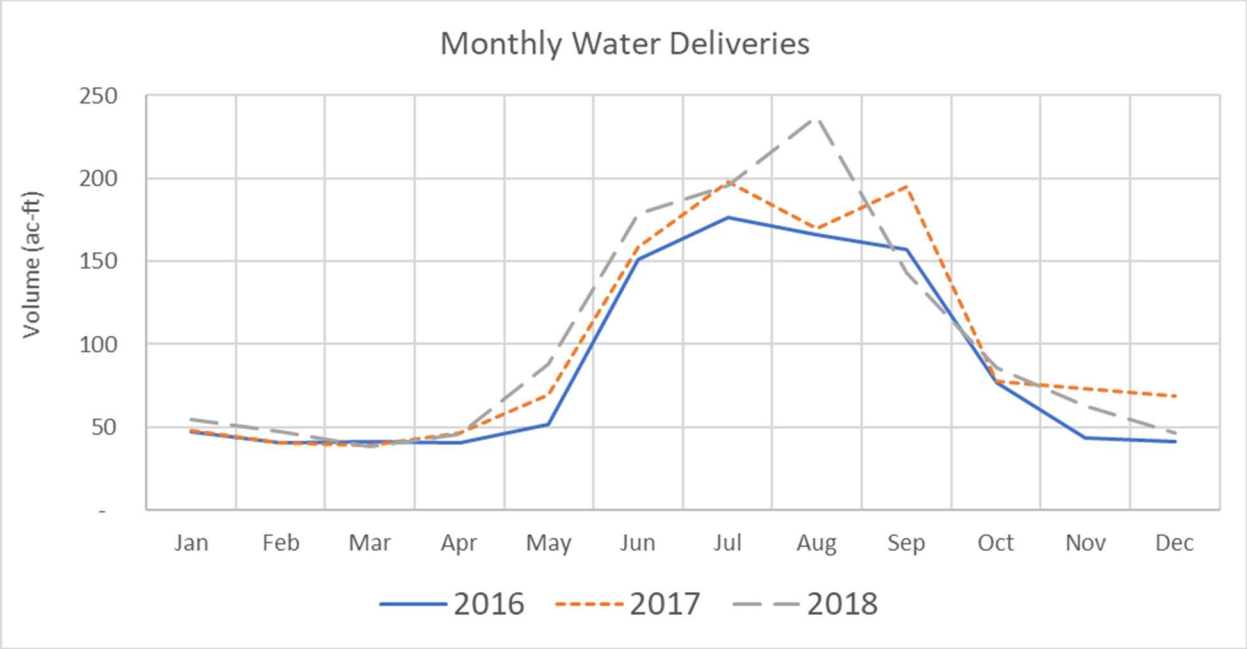

Figure 11. Monthly Water Deliveries (2016-2018)

The Town tracks several metrics to assess how outdoor water use is changing over time. From 2016-2018, outdoor water use is estimated to:

- Represent 50% of annual water use
- Represent 75% of total water use during the peak irrigation months of June through August
- Increase water use by a factor of almost 4 during peak irrigation months compared to winter months

6.1.3. Non-Revenue Water

The Town has worked diligently since 2005 to identify and repair system leaks and meter all water uses. These efforts have resulted in a significant reduction in non-revenue water: from 26% in 2016, to 16% in 2017, to 10% in 2018. While values of 10% or lower have historically been considered acceptable in the water industry, new guidance recommends moving away from volumetric percentage performance indicators, which can be influenced by factors unrelated to water loss control, in favor of a new combination of performance indicators (AWWA Water Loss Control Committee Report, 2019). The Town continues to look for opportunities to reduce system losses.

6.1.4. Systemwide Water Use Metrics

In addition to total water use, the Town also evaluates normalized water use (defined as water use per population served) to evaluate whether use is getting more or less efficient over time. For systemwide water use, the Town uses a normalized metric of gallons of water produced per active customer account per day (gal/acct/d). **Figure 12** shows the normalized systemwide water use values for the period 2005-2018. From 2005 to 2009, systemwide water use became much more efficient, dropping from 673 gal/acct/d to 441 gal/acct/d. That drop is largely attributable to the Town introducing a water main replacement program that greatly reduced system leaks. Since 2009, systemwide efficiency improvements have continued with a more moderate year-over-year decline of 1% on average. Interannual variability (the annual fluctuations in normalized systemwide water use) due to weather and other variables that influence water use ranges from -18% to +13%, which means that in any given year systemwide water use may fluctuate more than the long-term declining trend. In the baseline year of 2017, normalized systemwide water use was 444 gal/acct/d.

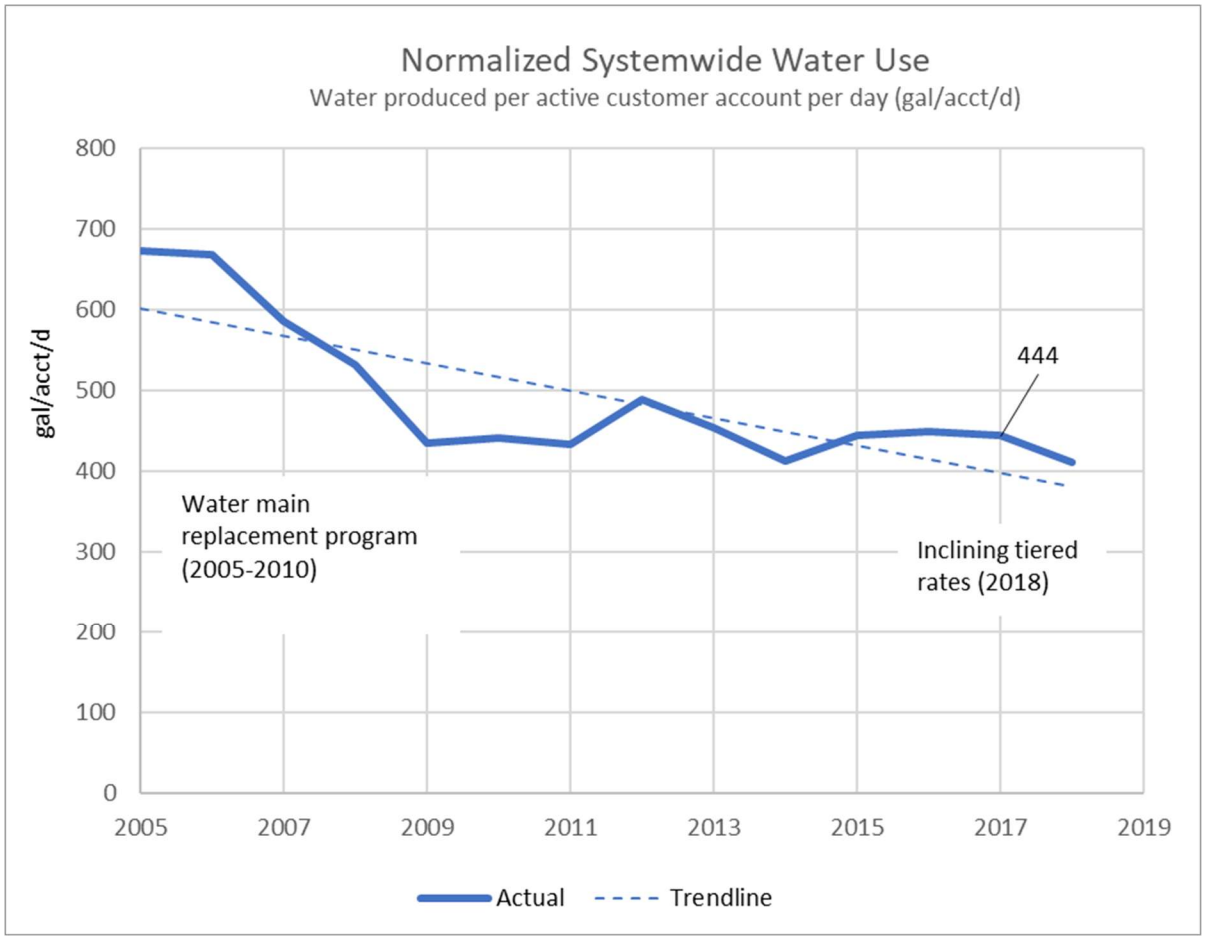

Figure 12. Normalized Systemwide Water Use (2005-2018)

6.1.5. Residential Water Use Metrics

The Town evaluates residential water use by calculating a normalized metric of gallons of water delivered per population served per day (gallons per capita per day, or gpcd). Due to the limited historical billing data, normalized residential water use could only be calculated for three years (**Figure 13**). In the baseline year of 2017, normalized residential water use was 98 gpcd. This result is higher than Colorado's statewide average value of 86 gpcd for residential water use (State of Colorado, 2019b).

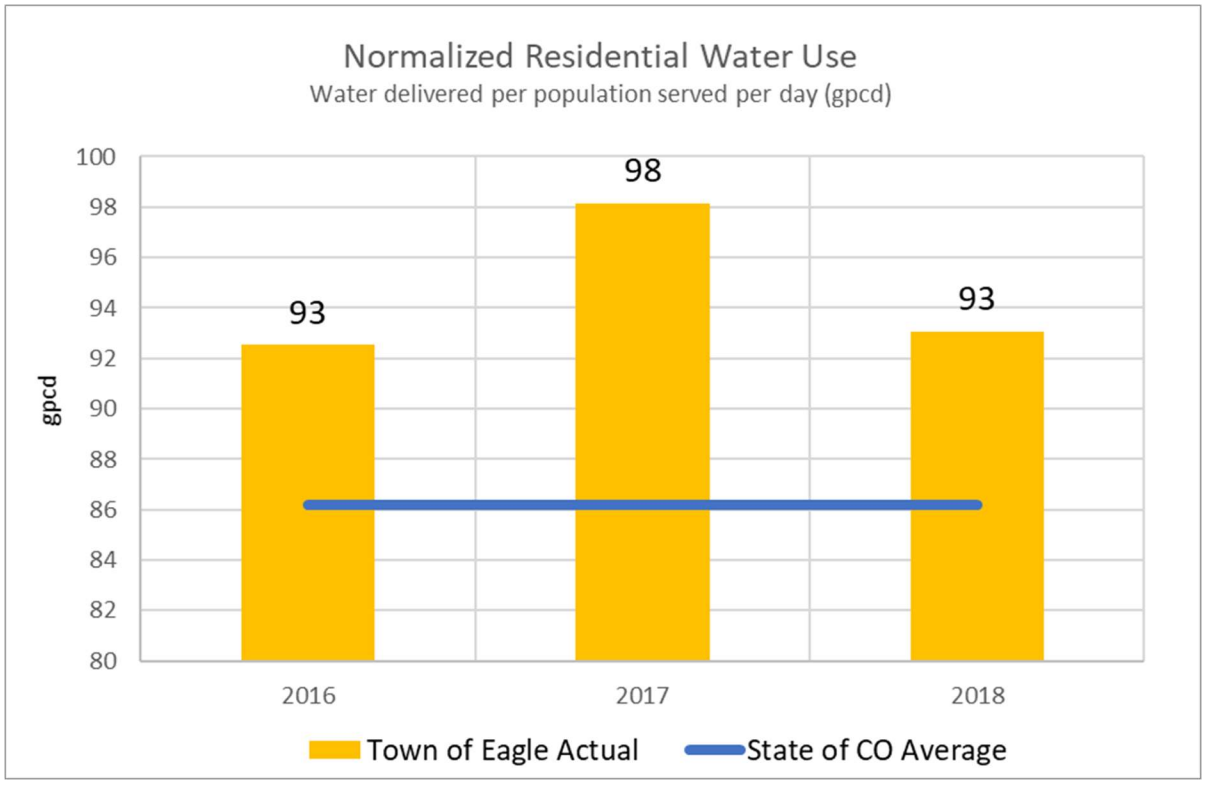

Figure 13. Normalized Residential Water Use (2016-2018)

6.2. Past and Current Demand Management Activities

The Town has a number of past and ongoing efforts to improve water efficiency and conservation. The efforts range from foundational activities to collect water use data, to traditional conservation programs that reduce system losses, to innovative approaches to integrating water into land use planning. Some of the ongoing activities such as integrated planning, data collection, and water efficiency-oriented rates and tap fees that have been described previously are not repeated here. The following sections describe the remaining efforts, organized in accordance with the State of Colorado's guidance (Colorado Water Conservation Board, 2012).

6.2.1. Foundational Activities

Metering

The Town has an automatic meter reading (AMR) system installed. The meters are read monthly to align with the billing cycle.

The Town encourages multi-family developments and HOAs to install separate meters for indoor and outdoor water use to better monitor irrigation demands, but only a small number of properties currently have separate meters installed. The Town has been leading by example, by installing submeters in Town-owned parks and buildings.

Over the past several years, the Town has made a concerted effort to meter all water uses, including water used for construction, hydrant flushing, fire department training, and the community pool. These data are helpful for the Town to better differentiate between system losses, water use that is unbilled but authorized, and water use that is temporary but billed.

Billing Upgrades
In 2019, the Town upgraded the billing system to show customers their historic water use alongside current water use on monthly bills. This information allows customers to evaluate their use compared to previous years and see the direct impacts of conservation and efficiency efforts. The Town saw success with this program and will continue it into the future.

System Water Loss Management and Control
As mentioned previously, the Town initiated a leak detection and water main replacement program, in 2005, that resulted in significantly reduced system losses. The Town conducts biannual audits of the water system to identify lines that need repair or replacement (SGM, 2017). Half of the system is tested during spring months while the other half is tested during fall months. Identified issues are addressed through regular maintenance schedules, the long-range capital planning process, or through emergency repairs (depending on the severity of the identified issue).

Staffing
The Town does not have a dedicated water conservation coordinator, though staff from the Public Works & Maintenance Department lead water conservation and efficiency activities for the Town in addition to other job responsibilities. Staff from the Building and Planning Departments also support Town efforts, especially around integrating water into long-range planning and development review processes and incorporating water efficiency into new development guidelines and standards.

Integration of Water and Land Use Planning
In April 2019, a multidisciplinary team from the Town participated in the Growing Water Smart workshops offered by the Lincoln Institute for Land Policy and the Sonoran Institute (Resilient Communities and Watersheds, 2018). The three-day workshop was an opportunity to collaborate, discuss the importance of water-efficient development, and develop an action plan for continued integration and communication.

Progress in this integration is evident in the coordination that is happening in the Town's comprehensive plan update, known as Elevate Eagle, and development review processes (Town of Eagle, 2019a). Town staff from the Public Works & Maintenance, Building, and Planning Departments work together closely to discuss new development applications and to coordinate on code requirements and approval standards.

6.2.2. Targeted Technical Assistance and Incentives

Irrigation Equipment Retrofits and Efficient Parks
In 2018, the Town completed an effort to upgrade irrigation equipment at parks irrigated with potable water. In 2019, the Town began retrofitting irrigation systems at parks irrigated with raw water. This effort is expected to be completed in 2020.

Water-Efficient Land Development and Landscaping Plans
Through the Growing Water Smart workshop, the Town reviewed landscape ordinances that encourage water conservation measures. This information will be referenced as the Town completes updates to its development code.

6.2.3. Ordinances and Regulations

Outdoor Water Use

In 2018, the Town amended Section 12.07 of the municipal code to authorize the Public Works Director to establish water conservation policies and regulations concerning the use of all water delivered through the Town's municipal water supply system or diverted under the Town's water rights (Town of Eagle, 2018).

The current water irrigation conservation policy prohibits water waste and limits the use of either potable or non-potable water for irrigation under normal circumstances as well as under drought restrictions. Violations are penalized with fines and/or imprisonment, depending on the severity and number of violations.

Base requirements include the following:

- Irrigation is only permitted from April 15 through October 15.
- Irrigation is only permitted between the hours of 5 pm and 10 am.
- Ponding and runoff from irrigated areas are prohibited.
- Runoff from private property into public rights-of-way or storm drain systems is prohibited.
- Leaks are prohibited and must be repaired within one week of discovery.
- Irrigation systems should be designed and operated for optimum efficiency and should use a smart controller.

Stage 1 water use restrictions are in effect at all times, regardless of drought conditions. Hand watering restrictions and irrigation day restrictions are introduced in addition to the base requirements outlined above, except where watering is required to establish new turf.

Stage 2 (water shortage warning) applies when snowpack levels on April 1 are lower than average and indicate a high likelihood of low summer flows in Brush Creek. The Town alerts customers, through public notice, that additional water restrictions are likely to be enacted. When Stage 2 water use restrictions are enacted, they include Stage 1 restrictions plus additional restrictions for specific end uses (e.g., pools and spas) and customer types (e.g., car washes).

Stage 3 (critical dry year conditions) applies when snowpack levels on April 1 are well below average and indicate a high likelihood of critically low summer flows in Brush Creek. The Town alerts customers, through public notice, that additional water restrictions are likely to be enacted. When Stage 3 water use restrictions are enacted, they include Stage 2 restrictions plus additional irrigation day restrictions, reducing from three to two watering days per week.

Stage 4 (emergency restrictions) applies when water demands exceed the water system capacity on a recurring basis, creating credible risks for supply shortages or system failures. When Stage 4 water use restrictions are enacted, they include Stage 3 restrictions but additionally prohibit all irrigation, filling of pools or spas, car or other vehicle washing, fountains, and pavement washing.

Indoor Water Use

The Town encourages indoor water use efficiency through local and State regulations:

- The Town's building code is currently based on the 2015 editions of the International Building Code, International Residential Code, and International Plumbing Code (Town of Eagle, 2019i).

- In 2016, the State of Colorado passed SB14-103, also known as Colorado's Indoor WaterSense Fixture Requirement, requiring that only certified WaterSense fixtures be sold in the State of Colorado (Colorado General Assembly, 2014).
- In 2019, the State of Colorado passed HB19-1231, also known as Colorado's New Appliance Energy and Water Efficiency Standards (Colorado General Assembly, 2019). The bill expands requirements for new appliances and equipment sold and installed in Colorado, and for the first time covers sprinkler heads in irrigation systems.

Identifying Barriers to Water Conservation in Existing Land Use Regulations

The Town of Eagle is located within the jurisdiction of the Northwest Colorado Council of Governments (NWCCOG). Since 2017, the NWCCOG water quality and quantity (QQ) committee has been spearheading efforts to improve land use planning as well as codes for improved water conservation and water quality outcomes. The NWCCOG QQ conducted a high-level code and policy scan for each community in their jurisdiction to identify gaps, opportunities, and recommendations for improvements. A final report from this effort is forthcoming.

6.2.4. Education

Online Information

The Town Utilities website includes information about water services and rates, reporting leaks and water waste, current water restrictions, and tips for proper irrigation and lawn maintenance (Town of Eagle, n.d.).

Educational Workshops

The Colorado State University Western Region Extension Office offers a Master Gardener Program as well as tips for lawn maintenance (Colorado State University, n.d.). Eagle Ranch Association offers educational workshops and trainings to landscape developers.

Xeriscape Demonstration Gardens

The Eagle County administration building has a xeriscape demonstration garden.

6.2.5. Historical Water Savings

As a result of past water conservation and efficiency efforts, normalized systemwide water use has declined by almost 40% since 2005. The Town has steadily grown over this period, with population and active accounts increasing by more than 4% year-over-year on average. These findings demonstrate a marked improvement in water use efficiency.

7. Water Efficiency Goals and Demand Forecasts

The Town has established two water efficiency goals (SGM, 2017). The first goal aims to improve water use efficiency by reducing normalized systemwide water use by 10%, from 2017 to 2023. The second goal aims to reduce the percentage of water used outdoors from 70% to 60% during the peak summer months of June through August.

7.1. Goal to Improve Water Use Efficiency

In the 2017 baseline year, normalized systemwide water use was 444 gal/acct/d. To achieve the water use efficiency goal, the Town would need to reduce normalized systemwide water use to 400 gal/acct/d by 2023.

Figure 14 presents two forecasts of normalized systemwide water use. The business-as-usual forecast indicates the Town is on track to achieve 425 gal/acct/d in 2023. The Town needs to implement additional water efficiency measures to achieve the goal forecast of 400 gal/acct/d by 2023.

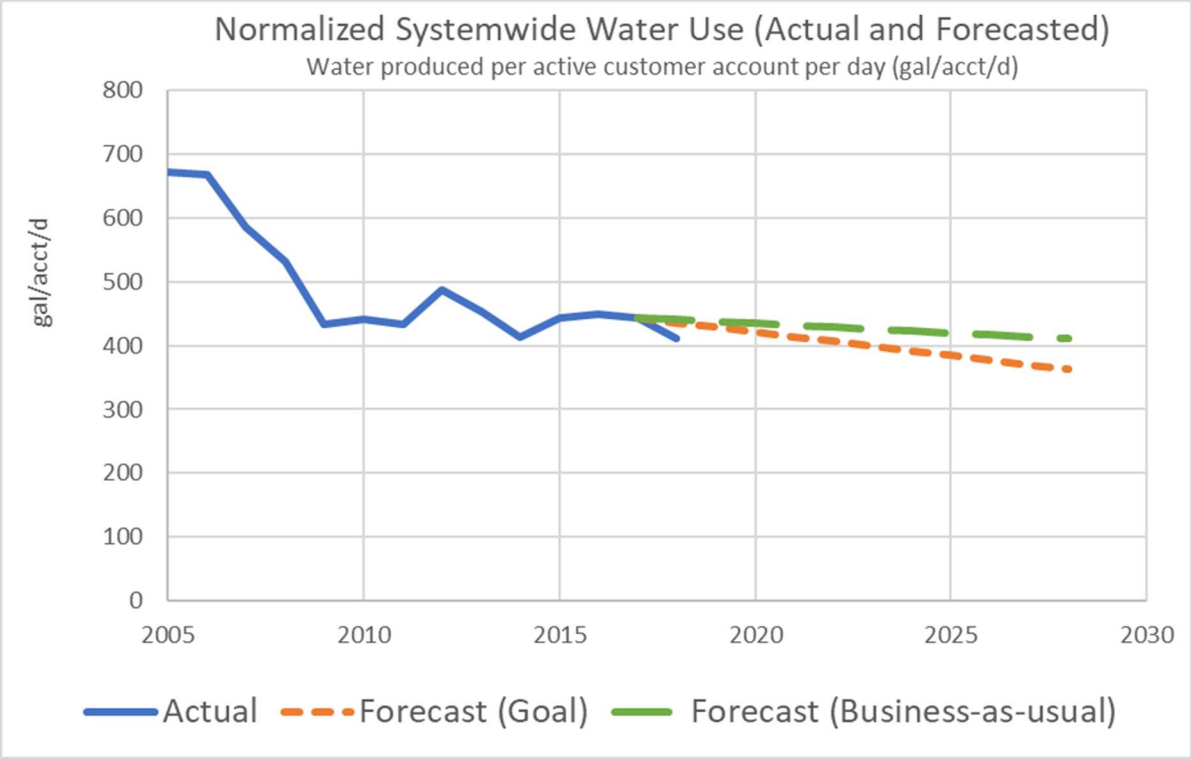

Figure 14. Forecasts of Normalized Systemwide Water Use

Although both forecasts indicate that systemwide water use will continue getting more efficient, the volume of water needed to serve a growing population may increase or decrease depending on the magnitude of growth. **Figure 15** presents a range of possible forecasts for production volumes. Under a low-growth scenario (deemed the least likely to occur), production volumes could decline. The Town is planning for production volumes that remain steady (as indicated by the business-as-usual forecast) or that increase (as indicated by the high-growth forecast).

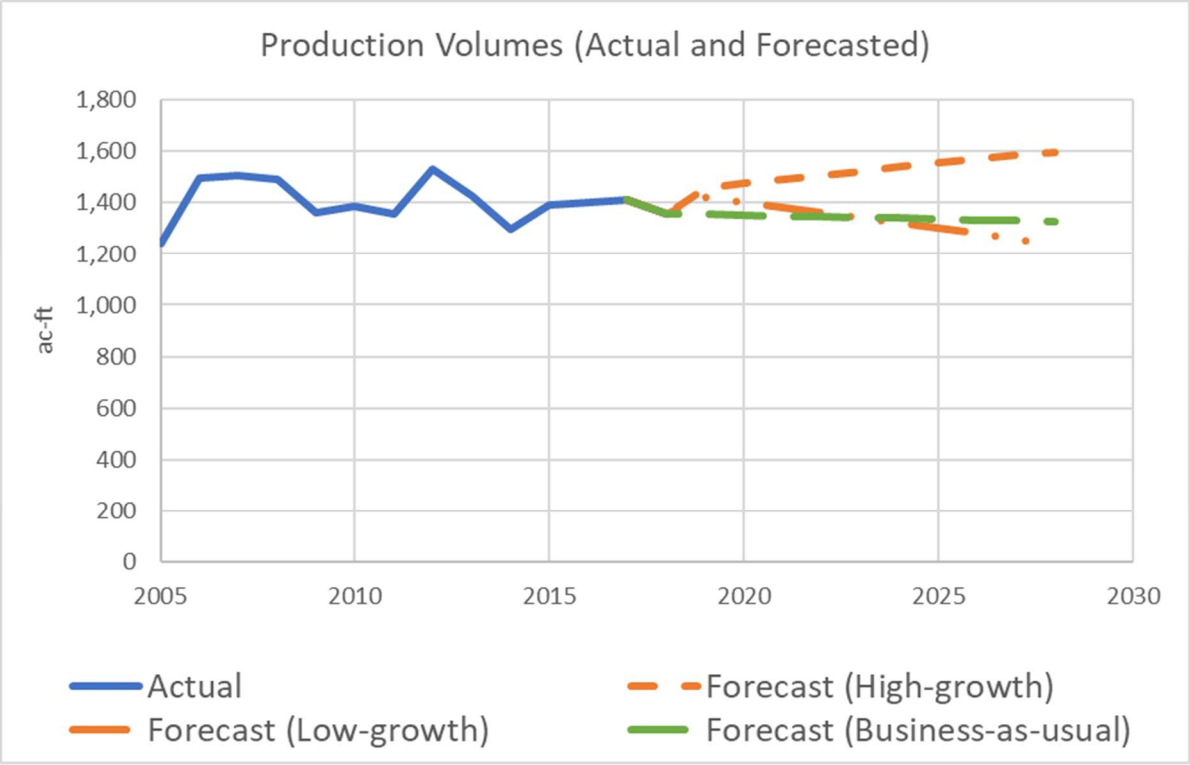

Figure 15. Forecasts of Production Volumes

7.2. Goal to Reduce Outdoor Water Use

In the 2017 baseline year, the percentage of water estimated to be used outdoors during the peak irrigation months of June through August was 70% based on delivery volumes. From 2016-2018, the percentage varied from 70-76% with no discernible trend. These results are based on a preferred calculation using water delivery volumes rather than production volumes to remove a confounding effect from system losses, which often increase seasonally. The metric was also calculated using production volumes to analyze a longer historical record of 2005-2018. The results from both analyses show no discernible trends and indicate that the Town needs to introduce efficiency programs targeted at reducing outdoor water use to achieve this goal (**Figure 16**). It is also interesting to note that total water deliveries during the months of June through August represent about 4% of total available streamflows during those months in Brush Creek at the municipal intake.

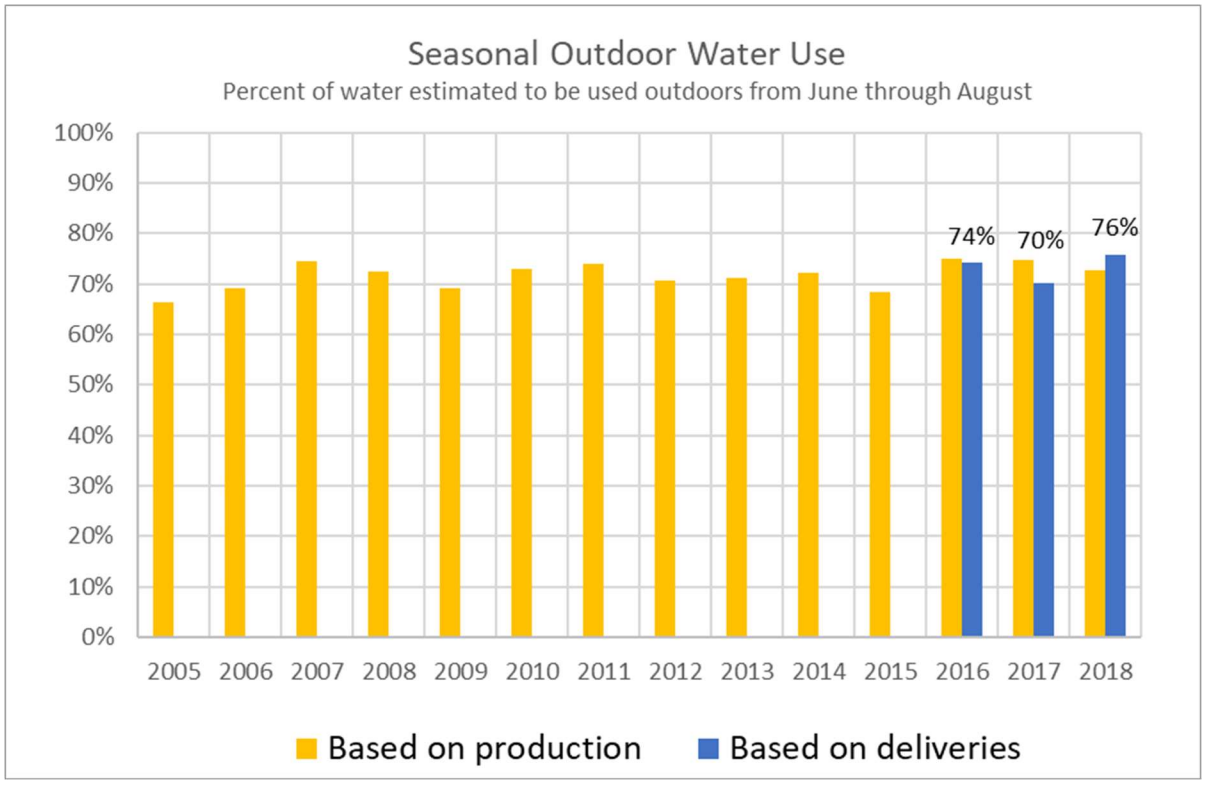

Figure 16. Seasonal Outdoor Water Use Percentage (2005-2018)

8. Selection of Additional Water Efficiency Activities

The Town identified additional water efficiency activities using the following approach:

- Start with commitments previously made in the Town's Five-Year Water Efficiency Planning Strategy and approved by the Town Board (SGM, 2017).
- Add new programs based on current Town priorities, stakeholder input, programs that are common in other Colorado communities, and/or have high potential for water savings.
- Conduct a screening-level cost-benefit analysis based on participation rates, water savings potential, and implementation duration and costs. Outputs from this analysis included:
    - **Cost-benefit ratio for the Town:** Values larger than one indicate that the lifetime benefit of the program outweighs the lifetime program costs.
    - **Simple payback period for the Town:** the number of years it will take for the Town to recoup implementation costs through avoided treatment and other costs.
    - **Simple payback period for the customer:** the number of years it will take for the customer to recoup implementation costs through reduced water use and billing charges.
- Where cost-benefit ratios are not favorable (i.e., <1), adjust discretionary program parameters (e.g., rebate value) to achieve a favorable cost-benefit ratio (i.e., >1).
- Prioritize programs for implementation based on analysis results, stakeholder input, and an understanding of the staff and financial resources that are likely to be available from the Town.

A summary of water efficiency and conservation activities that the Town aims to implement is shown in **Table 8** with additional program information included in the following sections. Projected water savings in the year 2027 are shown in accordance with State guidance recommending a seven-year planning horizon for water efficiency plans (Colorado Water Conservation Board, 2012). However, projected water savings may be higher in later years where the implementation period extends beyond 2027.

Table 8. Summary of Planned Water Efficiency Activities

Implementation Period	Water Efficiency Activity	Annual Implementation Costs ($)	Projected Water Savings in 2027 (ac-ft/yr)	Cost-Benefit Ratio as Modeled
Now-2028	Landscaper certification and training	n/q	n/q	n/q
2020	Municipal efficiency improvements	$25,000	3	n/q
2020	Development code updates	-	n/q	*
2020-2040	Educational activities	$3,000	3	1.1
2020-2025	Irrigation system rebates	$7,000	4	2.3
2020-2025	Rain barrels	$4,000	1	1.3
2021-2026	Outdoor water audits and direct installs	$31,000	15	2.5
2022-2027	Turf replacement	$23,000	12	1.7
2024-2029	Toilet rebates	$18,000	13	4.1
2025-2030	Indoor audits with direct installs	$14,000	3	1.4
2025-2030	Metering upgrades to AMI	$258,000	50	1.0
Total Projected Water Savings in 2027			**103 ac-ft/yr**	

**A cost-benefit ratio could not be calculated, as this item is not expected to have implementation costs.*
***n/q = Not quantified*

8.1. Foundational Activities

8.1.1. Metering Upgrades

The Town is interested in upgrading the current AMR system to Advanced Metering Infrastructure (AMI). AMI systems are fully networked and provide a wide range of benefits, including remote meter reads, real-time water use information and leak detection, high use notifications, and customer dashboards.

However, the upgrade is capital intensive. Upgrading all meters plus the network infrastructure is estimated to cost $1.3-2.2 million. This program makes financial sense (with a cost-benefit ratio minimally greater than one) if the Town can upgrade the system at a cost of approximately $450/customer. As described in **Section 5.3**, the Town currently charges meter fees to new customers and could incorporate the upgrade costs into future fee structures. Customers would immediately benefit from the upgrade through real-time water use information and leak detection.

Given the high implementation costs, the Town intends to delay this activity until after the LBWTP is operational. For planning purposes, the upgrade is slated for 2025-2030. The upgrade is expected to lead to 7% water savings, with 5% coming from improved leak detection and 2% coming from enhanced customer engagement. Once the upgrade is complete in 2030, the Town expects to realize 82.5 ac-ft/yr in water savings.

8.2. Targeted Technical Assistance and Incentives

8.2.1. Outdoor Water Efficiency

Over the next five years, the Town's top priority is reducing outdoor water use. The Town has identified five programs of interest.

Outdoor water audits with direct installs
This program would provide on-site irrigation system audits in which the technician also programs a customized watering schedule, makes minor sprinkler head adjustments, and potentially replaces broken sprinkler heads. Customers would receive a customized audit report with additional efficiency recommendations. The audit report may also include a customized landscape water budget.

The Town intends to actively recruit schools, HOAs, and the top irrigation users across all sectors for program participation. With 120 participants per year, the Town would realize water savings of 15 ac-ft/yr. Program costs would include time to schedule the audit, time to conduct the audit, program marketing, and the cost of equipment offered as direct installs. Annual program costs are expected to be approximately $31,000.

Irrigation rebate program
This program would offer customers financial incentives for installing water-efficient sprinklers, smart controllers, or rain sensors. Equipment purchase, installation, and on-going maintenance would be the responsibility of the customer. Program costs to the Town would include staff time to process the rebate plus the rebates themselves (currently priced at $150 per participant). With 30 participants per year, the Town would realize water savings of 4 ac-ft/yr. Annual program costs are expected to be approximately $7,000.

Turf replacement program

This program would offer customers financial incentives for converting traditional turf landscaping to low-water using landscapes (e.g., native vegetation or xeriscaping) or no-water using landscapes (e.g., zero-scaping). The upfront customer investment for landscape conversion can be significant and upwards of $1,500. To incentivize program participation, the Town would need to provide a sizable rebate, suggested to be $750. In addition, staff time is required to evaluate the project site before and after landscape conversion occurs.

With 25 participants per year, the Town would realize 12 ac-ft/yr of water savings. Annual program costs are expected to be $23,000.

Rain barrel program

Rainwater harvesting has been legal in Colorado since 2016 (Colorado General Assembly, 2016). Households are allowed two 55-gal drums. Water that is collected can be used to hand water flower beds or other areas not served by an irrigation system. Purchasing two rain barrels costs about $200, though numerous online videos and educational workshops help homeowners build their own.

This program would include the promotion of rain barrels through the Town's website and bill stuffers, hosting workshops to construct rain barrels, and offering rebates up to $75 for commercially bought rain barrels. With 50 participants per year, the Town expects to realize 1.3 ac-ft/yr of water savings. Annual program costs are estimated to be $4,000.

Landscaper training and certification

Many Colorado communities are exploring training and certification programs for irrigation and landscaping companies to promote waterwise irrigation and landscaping practices. A number of training programs are available:

- The Associated Landscape Contractors of Colorado (ALCC) is licensed by the National Association of Landscape Professionals to offer the testing for the Landscape Industry Certified Technician designation (Associated Landscape Contractors of Colorado, n.d.).
- The Irrigation Association offers nine different certification programs (Irrigation Association, n.d.). Annual trainings are offered at Northern Water among other locations.
- The QWEL (Qualified Water Efficient Landscaper) program is an EPA WaterSense labeled certification program in irrigation system audits (Qualified Water Efficient Landscaper, n.d.). South Metro Water Authority recently held a regional training for all member communities.
- G3's Watershed Wise Landscape Professional certification is an EPA WaterSense labeled Professional Certification Program for irrigation system audits (Green Gardens Group, n.d.). Upon certification, professionals are listed on EPA's WaterSense website and on G3's Pro Search website.
- The Green Industries of Colorado (GreenCO) has developed landscape water conservation and efficiency best management practices. GreenCO conducts training and testing on the best management practices at the ProGreen Expo event and at other times throughout the year (GreenCO, 2019).

Each program differs in rigor, curriculum, and testing requirements. Colorado communities are promoting landscaper certification and training in a variety of ways, from hosting voluntary training workshops, to

promoting certified companies on websites, to requiring companies to be certified to do business within town limits. For the Town of Eagle, water savings and program costs have not been quantified, pending the Town's further evaluation of programs and enforcement approaches.

8.2.2. Indoor Water Efficiency

The Town has identified two indoor programs of interest. However, given the Town's relatively new housing stock, indoor programs for existing buildings will be implemented further in the future (2025-2030).

Indoor audits with direct installs
This program would provide on-site indoor audits in which the technician also installs a limited number of showerheads, faucet aerators, pipe insulation, and toilet bags. Customers would receive a customized audit report with additional efficiency recommendations.

With 50 participants per year, the Town would realize water savings of 5 ac-ft/yr by 2030. Program costs would include time to schedule the audit, time to conduct the audit, program marketing, and the cost of equipment offered as direct installs. Annual program costs are expected to be approximately $14,000. The Town may be able to partner with regional non-profits or other water providers for bulk equipment purchasing.

Toilet rebates
This program would incentivize customers to replace old toilets with higher efficiency models. The toilet purchase, installation, and on-going maintenance would be the responsibility of the customer. Program costs to the Town would include staff time to process the rebate plus the rebates themselves (currently priced at $100 per toilet).

With 100 toilets replaced per year, the Town would expect to realize 16 ac-ft/yr of water savings by 2029. Annual program costs are expected to be approximately $18,000. As part of the rebate qualifications, the Town could require residents to drop off old toilets with the rebate form to ensure the toilets are properly recycled.

8.2.3. Municipal Efficiency

The Town uses about 28 ac-ft/yr of water for Town operations, representing only about 2% of total systemwide water use. However, the Town looks to set an example of water efficient practices. Past efficiency efforts have resulted in a decline of 10% in Town water use over the period 2016-2018.

In 2020, the first year of implementation, the Town has budgeted $25,000 for additional water efficiency measures on Town properties. The Town aims to reduce water use by 3 ac-ft/yr through a combination of the following activities:

- Audits at Town facilities
- Hiring supplemental staff such as an intern dedicated to efficiency improvements
- Conducting internal training

8.3. Ordinances and Regulations

The Town is currently working with a consultant to update the long-range comprehensive plan as well as the Town's development standards. That work is expected to be completed in 2020. Water efficiency will be incorporated into both efforts, using recently developed best practices and guidance, with the objective to

codify water efficiency and mitigate growth in water demands from new developments (Nolon Blanchard, 2018; Colorado Water Conservation Board, 2019). Because the planning work is already underway, no additional implementation costs are expected. The Town does not currently have sufficient information available to predict the water savings potential of these efforts.

Much work has been done in the region to develop model ordinances. Materials are available from the following organizations to inform the Town's updates:

- The Climate Action Collaborative for the Eagle County Community building code standards for indoor and outdoor efficiency adapted from the International Green Construction Code
- NWCCOG QQ model code for water quality protection in land use codes
- City of Aspen Water Efficient Landscaping Ordinance and Standards

8.4. Educational Activities

The Town values working with regional partners to educate the public about the importance of water efficiency and conservation. The following types of educational activities will be considered:

- **Community events**
    - Flight Days: this is an existing event at which the Town could promote water efficiency through a booth and demonstration activities
    - Water festival: this would be a new event working with K-12 schools on water efficiency education
    - Xeriscaping workshops: these would be new events supplementing current educational workshops on irrigation efficiency and gardening
- **Bill stuffers:** The Town is interested in designing flier templates that can be adapted for monthly (or other recurring interval) information, highlighting the Town's current and past efficiency efforts
- **Website:** The Town has the opportunity to expand on the water conservation information currently available through a dedicated water conservation website that includes events and resources.
- **Social media:** The Town's Facebook and Instagram accounts can be used to disseminate information about water efficiency.
- **Water efficiency branding campaign:** The Town is interested in developing a marketing campaign to promote water efficiency. The Town could partner with Colorado WaterWise's Live Like You Love It campaign for marketing materials that can be co-branded, as one alternative to developing a custom campaign.

Potential water savings and implementation costs are difficult to quantify for educational activities. For planning purposes, the cost-benefit analysis assumed 40 hours of staff time will be devoted to educational events and workshops each year. For this effort, the Town expects to realize 3 ac-ft/yr of water savings.

9. Implementation and Monitoring Plans

9.1. Implementation

Implementation of additional water efficiency activities is dependent upon internal staffing resources, potential partnerships, and funding resources.

9.1.1. Internal Staffing

Staff members from the Public Works, Planning, and Building Departments will serve as key representatives with responsibilities to implement this plan.

9.1.2. Regional Partners

The Town is fortunate to be working with a number of organizations on related initiatives. **Table 9** includes a summary of regional partners and collaboration opportunities.

Table 9. Regional Partners and Collaboration Opportunities

Organization	Partnership Opportunities
Colorado Mountain College	Host educational workshops Host water fair
CSU Extension	Water conservation education Xeriscape demonstration gardens
Eagle County	Leverage sustainable community and environmental health programs Conduct regional education activities
Eagle Ranch	Landscaper education
Eagle Ranch Golf Course	Water management practices
Eagle River Water and Sanitation District	Share lessons learned on existing efficiency programs Assess interest and capacity to initiate regional efficiency programs Bulk purchasing
Eagle River Watershed Council	Host educational workshops
Eagle Valley Library District	Disseminate pamphlets Host educational workshops
NWCCOG	Code audits Technical assistance for adopting model codes
Walking Mountain Science Center	Expand climate and energy programs to include water Green Business program

9.1.3. Funding

Annual implementation costs for the water efficiency activities and implementation schedule presented in **Table 8** are shown in **Table 10**. Total implementation costs across all water efficiency programs are shown (with and without the AMI upgrade).

Table 10. Annual Implementation Costs Across Programs (2020-2029)

Implementation Year	Annual Implementation Costs (excluding AMI upgrade)	Annual Implementation Costs (including AMI upgrade)
2020	$40,000	$40,000
2021	$45,000	$45,000
2022	$67,000	$67,000
2023	$67,000	$67,000
2024	$85,000	$85,000
2025	$87,000	$345,000
2026	$56,000	$314,000
2027	$34,000	$292,000
2028	$34,000	$292,000
2029	$17,000	$275,000

The Town is committed to making an annual appropriation from the water enterprise fund for the implementation of additional water efficiency programs. This internal funding can be used directly or can be used as an in-kind match to secure additional external funding. **Table 11** contains a list of implementation resources identified during the planning process.

Table 11. Implementation Resources

Organization	Implementation Resource	Resource Type
American Water Works Association	M36 Water Loss Control	Audit tools
CWCB	Water Efficiency Implementation Grants	Grant funding
CWCB	Public Education and Outreach Grants	Grant funding
CWCB	Water Plan Grants	Grant funding
Colorado WaterWise	Live Like You Love It	Marketing campaign
EPA	WaterSense	Audit tools
Northwest Colorado Council of Governments Water Quality and Quantity Committee	Code resources (audit tool, model code standards, etc.)	Tools and references
Sonoran Institute	Growing Water Smart	Technical assistance
US Bureau of Reclamation	WaterSMART grants	Grant funding
WaterNow Alliance	Water Efficiency Integrated Water and Land Use	Project accelerator program Technical assistance
Western Resource Advocates	Integrated Water and Land Use	Technical assistance

9.2. Plan Review, Monitoring, and Updates

This water efficiency and conservation plan underwent a series of reviews by Town staff, the Town Board, the planning stakeholders, and the CWCB before being finalized. All review comments and responses to comments are included in **Appendix B: Responses to Review Comments**.

Additionally, the Water Conservation Act of 2004 (HB04-1365) requires that water efficiency plans be made publicly available, for review and comment, for a period of 60 days and that the plan be locally adopted by the appropriate governing entity (Colorado General Assembly, 2004). Adoption of additional policies is not necessary at this time to implement the plan, though future policies may be considered, such as updates to

the Town's land use and development code. The Town complied with these requirements by posting the water efficiency and conservation plan online and providing public notice of the plan through the Town's website and the Eagle Valley Enterprise newspaper (**Appendix C: Proof of Public Notice**). The public comment period lasted from June 12, 2020 through August 11, 2020. No public comments were received.

The plan was adopted by the Town Board on October 27, 2020 (**Appendix D: Resolution to Adopt Plan**).

The Town intends to monitor the success of the water efficiency programs using the metrics presented in **Section 6.1**. The Town continues to refine its data management and analysis capabilities and will use **Appendix A** to track the data and metrics annually. If the Town finds that any of the water efficiency programs are not effective in achieving the expected water savings or are not cost effective, the programs may be discontinued.

The Town will update this plan every seven years, as required by The Water Conservation Act of 2004 (Colorado General Assembly, 2004). Plan updates will incorporate the new data accumulated from the annual monitoring process and may include revisions to the Town's water efficiency goals and planned activities, as appropriate.

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Appendix A: Plan Data

The data are contained in a separate file.

Appendix B: Responses to Review Comments

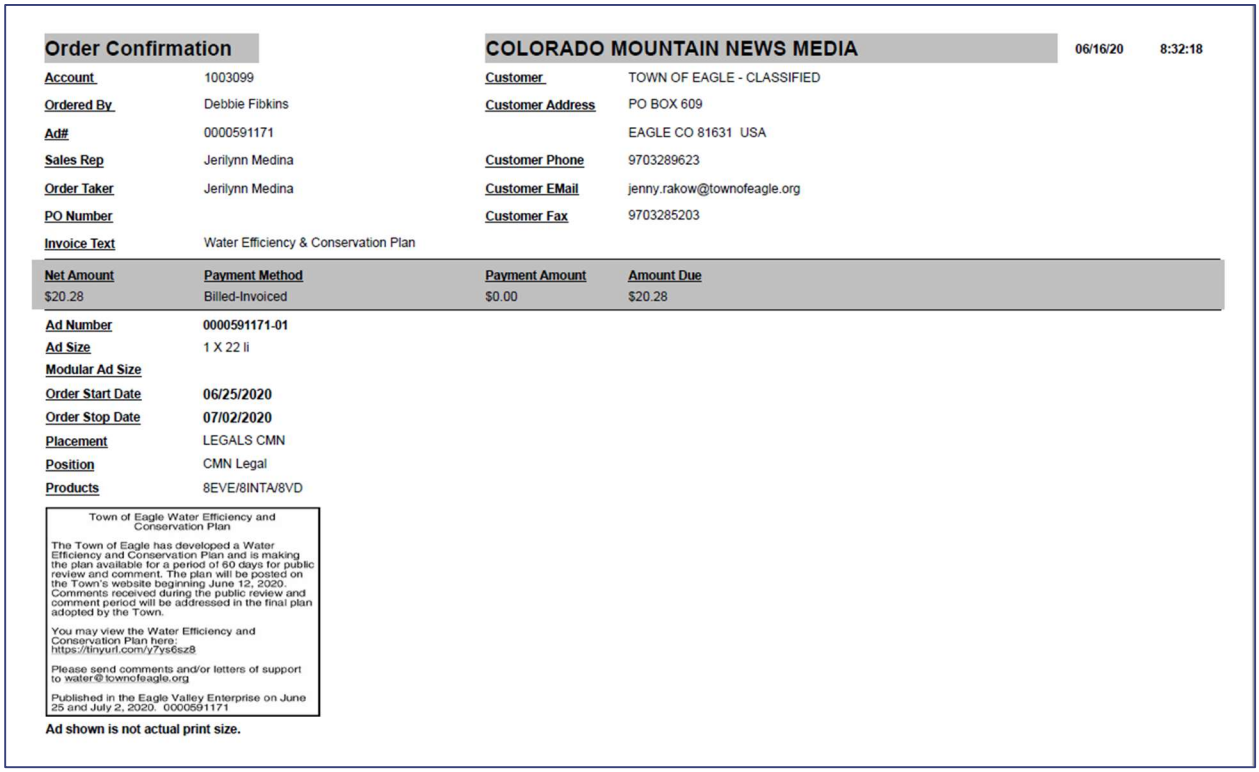
Table 12. Responses to Review Comments

Source of Comments	Review Comment	Response to Comment
Town Board Meeting (Nov 2019)	Please specify that annual funds for implementation would come from the water enterprise fund rather than the general fund.	Addressed in Section 9.1.3 Funding.
Planning Stakeholder Review (Nov 2019)	Figure 11. Monthly Water Deliveries (2016-2018): Would it be possible to overlay a hydrologic metric over this, something like the April Through July available natural flow in the Brush Creek and Eagle River Basins, these metrics may be available from the NRCS or the Colorado Basin River Forecast Center (CBRFC), This link will show you the ensemble forecast for the Eagle in Gypsum but you may be able to get them to create one for Eagle (link here). You can probably determine those values too but some sort of correlation between season type and water use and timing would help this plot out, could allow for seasonal forecasting and planning with regard to water rights too.	FYI - CBRFC and NRCS do not forecast water supply in Brush Creek watershed. The closest forecast location is downstream at Eagle at Gypsum. Addressed in Section 6.1.2 Seasonal Water Use Patterns by adding a new figure showing monthly water availability in Brush Creek at the municipal intake location.
Planning Stakeholder Review (Nov 2019)	Section 6.1.5 Residential Water Use Metrics: Reference the State of Colorado values and give some sort of metric on how good or bad Eagle is doing.	Addressed in Section 6.1.5 Residential Water Use Metrics by adding a sentence and reference to the State of Colorado Analysis and Technical Update to the Colorado Water Plan.
Planning Stakeholder Review (Nov 2019)	Figure 13. Normalized Residential Water Use (2016-2018): This plot should show some sort of relative metric that shows if 93 and 98 gpcd are acceptable, above the norm?	Addressed in Section 6.1.5 Residential Water Use Metrics by adding a line to the figure representing the State of CO average value.
Planning Stakeholder Review (Nov 2019)	Figure 16. Seasonal Outdoor Water Use Percentage (2005-2018): Again, correlating the use or production with hydrology would allow the town to develop forecasting tools determine what kind of production should be expected with a given forecast. Then the town could strategically use water rights. This plot would benefit from some sort of hydrologic component.	Addressed in Section 7.2 Goal to Reduce Outdoor Water Use by adding text that seasonal water deliveries from Jun-Aug represent 4% of total available streamflows.

Source of Comments	Review Comment	Response to Comment
Planning Stakeholder Review (Dec 2019)	Section 6.1 Historical Water Demands and Section 9.2 Plan Review, Monitoring, and Updates: I'm not aware of all the data that will be included in Appendix A but hope it will reveal the breadth of raw data that the Town collects as well as how they collect it from diversions to gallons per account to how the water bills are calculated, etc. For example, diversions are very simple knowing the quantity of water that flows through a size-specific flume over a finite period of time. Data that is less defensible is that which includes calculations and assumptions based on averages, such as an assumption that leads to a per capita per day water use number. My point and recommendation for the inclusion in the plan is to simply mention (probably at least in the monitoring section) that refinement of data and data sources is also a goal and continually improving.	Addressed in Sections 6.1 Historical Water Demands and 9.2 Plan Review, Monitoring, and Updates by listing the types of data included in Appendix A and by adding a statement that the Town continues to refine its data management capabilities.
Planning Stakeholder Review (Dec 2019)	Executive Summary, Table 1. Summary of Planned Water Efficiency Activities might benefit with additional text drawing the reader to Chapter 9 wherein it is clearer the annual amounts planned to be allocated for implementation over the duration of anticipated annual funding which also shows the ROI. Table 1 left alone resulted in questions for me asking if this was a one-time allocation or total cost allocation over the duration of annual funding cycles, especially when it came to the AMI retrofit cost.	Addressed in Executive Summary by modifying Table 1. Summary of Planned Water Efficiency Activities column headings to emphasize the units of $/yr and by adding text referring to Section 9.1.3 Funding.
Planning Stakeholder Review (Dec 2019)	Section 5 Existing Water and Wastewater System: Even though Section 5 relies heavily on a previous report, reference to the Adam's Rib development should probably be changed to Frost Creek or put "now referred to as Frost Creek" in parenthesis. Similarly, in the section that refers to replacing a water main from Adam's Rib Ranch Headquarters to Hardscrabble should have in parenthesis "now Eagle County Hardscrabble Open Space".	Addressed for all instances of Adam's Rib and Hardscrabble.
Planning Stakeholder Review (Dec 2019)	Section 8.3 Ordinances and Regulations: refers to the Eagle County Climate Action Collaborative. We were careful in having the word "Community" added to the Climate Action Plan to indicate it wasn't exclusively an Eagle County government effort. Hopefully the Collaborative name included the word "Community" but I don't know for sure. It may be properly referenced in the WEP - I'm not sure.	Thank you for pointing this nuance out. The terminology has been changed to "Climate Action Collaborative for the Eagle County Community" in Section 8.3 Ordinances and Regulations in accordance with the Walking Mountains Science Center website.
Planning Stakeholder Review (Dec 2019)	You might consider adding NWCCOG QQ to Table 11 as a technical resource for code development.	Added to Table 11.

Source of Comments	Review Comment	Response to Comment
Planning Stakeholder Review (Dec 2019)	It may be worthwhile to add a sentence to Section 9.2 why adoption of additional policy isn't necessary at this time for adoption of the WEP since other plans incorporate the Town's water quality and quantity protection policy. I mention that simply for clarity to whomever reviews the document at the CWCB, following step 6 of their plan preparation guidance document.	Addressed in Section 9.2 Plan Review, Monitoring, and Updates.
Planning Stakeholder Review (Dec 2019)	I also noticed an unnecessary comma on pg 5 in the last sentence of Source Water Protection plan section and adding the word "the" on pg 17 in section 5.2.3 before the word "Eagle". I also noticed that the document pagination goes from page 25 to page 2.	Thank you! These three errors have been corrected.
CWCB Draft Plan Review (May 26, 2020)	Administrative: Finish up public comment and put notice or some kind of proof in appendix, once resolution is approved put in appendix. Were you planning on putting the APP A plan data in Appendix A. That would be helpful.	Appendix A plan data were provided in a separate Excel workbook file.
CWCB Draft Plan Review (May 26, 2020)	Water Loss: "Values of 10% or lower are generally considered acceptable in the water industry, although the Town continues to look for opportunities to reduce system losses." FYI: A 10% threshold isn't an acceptable industry practice anymore and the newest guidance and Water Loss Methodology coming from AWWA doesn't use % anymore for a metric. Is Eagle conducting a M36 AWWA Water Loss audit at present time? Appendix A suggests that apparent and real losses have been quantified. If so, add that into the water loss section.	Section 6.1.3 has been edited to correct this statement and to add a reference to the new guidance (AWWA Water Loss Control Committee Report, 2019). Eagle's system audits are conducted using principles of the M36 methodology but not the tool. Reported values were calculated during plan development.
CWCB Draft Plan Review (May 26, 2020)	Water Reuse: There really isn't anything in the plan regarding this. I suspect you can't reuse water due to water rights and native sources but a statement regarding that somewhere in the supply section would be helpful.	Correct, the Town does not have the rights to reuse water. A statement was added to Section 5.1 to clarify.

Appendix C: Proof of Public Notice



Order Confirmation — **COLORADO MOUNTAIN NEWS MEDIA** — 06/16/20 — 8:32:18

Account	1003099	Customer	TOWN OF EAGLE - CLASSIFIED
Ordered By	Debbie Fibkins	Customer Address	PO BOX 609
Ad#	0000591171		EAGLE CO 81631 USA
Sales Rep	Jerilynn Medina	Customer Phone	9703289623
Order Taker	Jerilynn Medina	Customer EMail	jenny.rakow@townofeagle.org
PO Number		Customer Fax	9703285203
Invoice Text	Water Efficiency & Conservation Plan		

Net Amount	Payment Method	Payment Amount	Amount Due
$20.28	Billed-Invoiced	$0.00	$20.28

Ad Number	0000591171-01
Ad Size	1 X 22 li
Modular Ad Size	
Order Start Date	06/25/2020
Order Stop Date	07/02/2020
Placement	LEGALS CMN
Position	CMN Legal
Products	8EVE/8INTA/8VD

Town of Eagle Water Efficiency and Conservation Plan

The Town of Eagle has developed a Water Efficiency and Conservation Plan and is making the plan available for a period of 60 days for public review and comment. The plan will be posted on the Town's website beginning June 12, 2020. Comments received during the public review and comment period will be addressed in the final plan adopted by the Town.

You may view the Water Efficiency and Conservation Plan here: https://tinyurl.com/y7ys6sz8

Please send comments and/or letters of support to water@townofeagle.org

Published in the Eagle Valley Enterprise on June 25 and July 2, 2020. 0000591171

Ad shown is not actual print size.

Figure 17. Eagle Valley Enterprise Ad Purchase

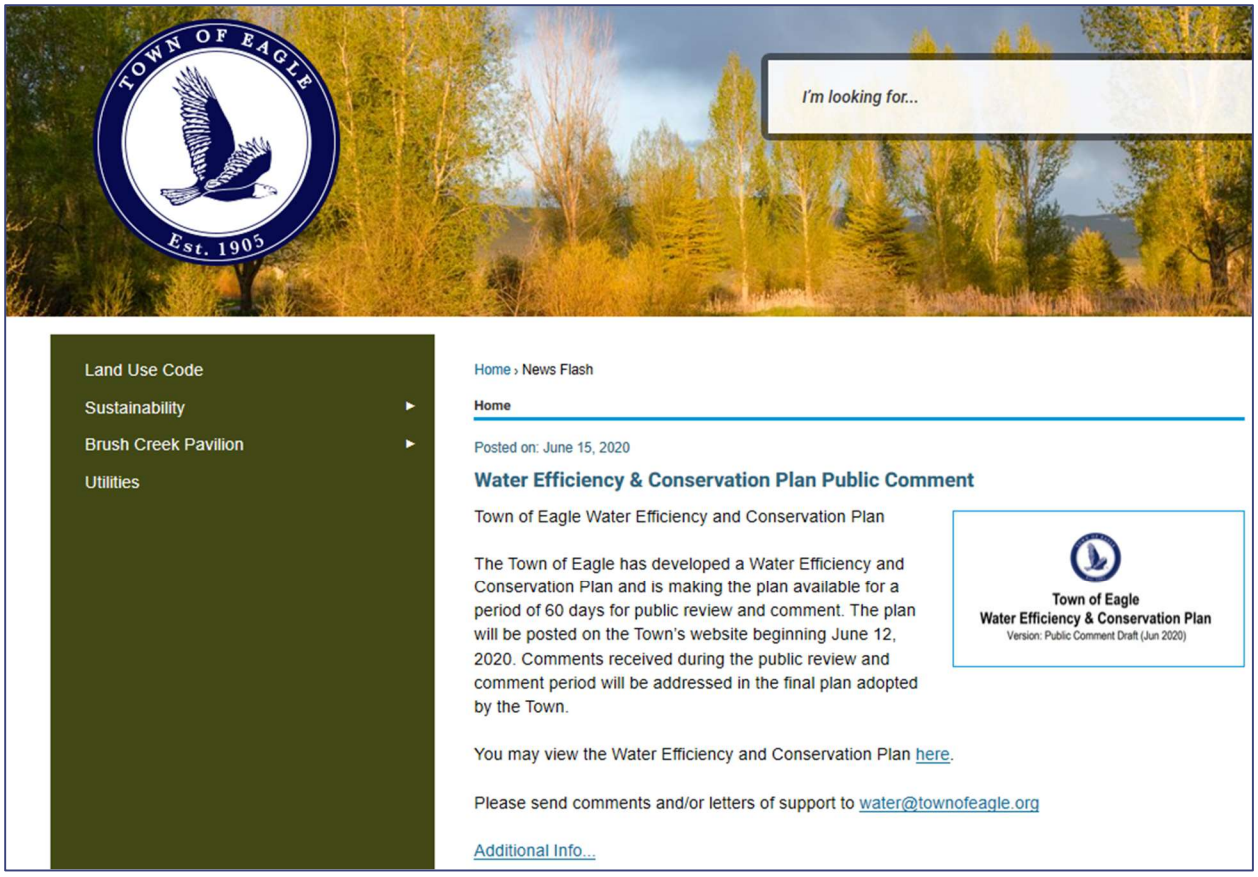


Figure 18. Screen Capture from Town of Eagle Website (June 15, 2020)

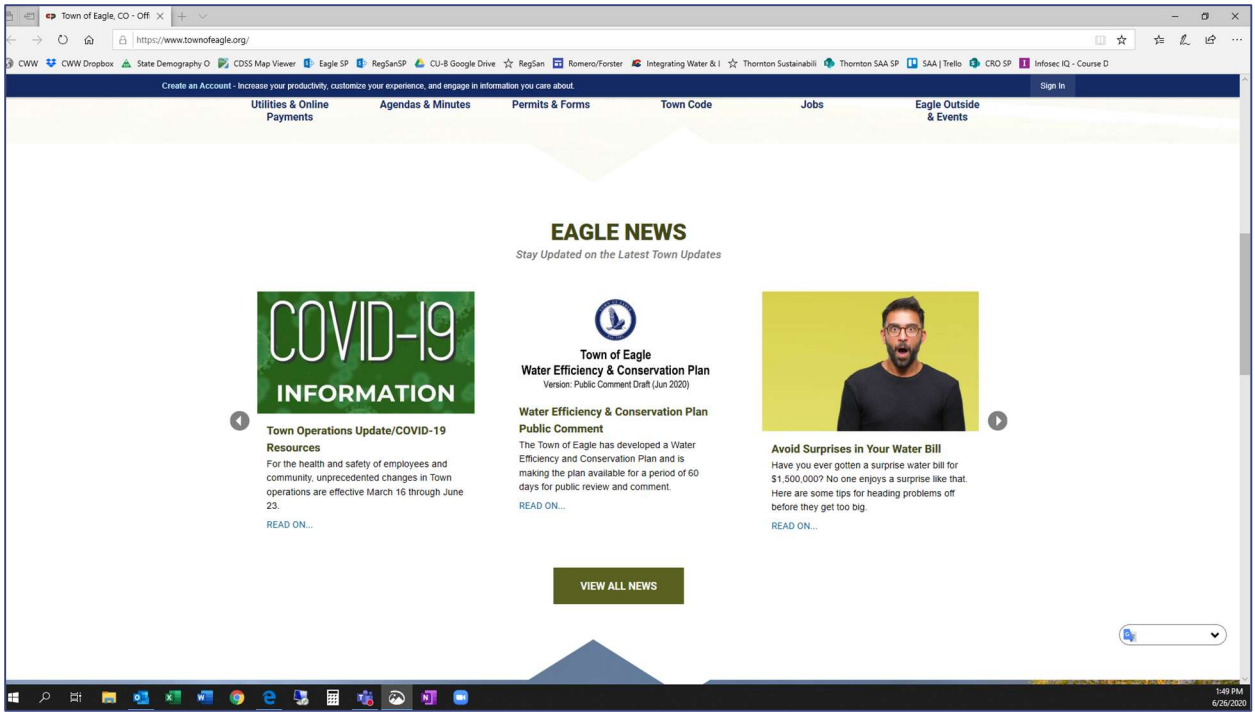


Figure 19. Screen Capture from Town of Eagle Website (June 26, 2020)

Appendix D: Resolution to Adopt Plan

TOWN OF EAGLE, COLORADO
RESOLUTION NO. 78
(Series of 2020)

A RESOLUTION OF THE TOWN COUNCIL OF THE TOWN OF EAGLE, COLORADO ADOPTING THE TOWN OF EAGLE WATER EFFICIENCY AND CONSERVATION PLAN

WHEREAS, the Town Council of the Town of Eagle ("Town") is authorized to adopt the Water Efficiency and Conservation Plan, dated May 2020, attached hereto as **Exhibit A**, and made a part hereof by this reference (the "Plan");

WHEREAS, the Water Efficiency and Conservation Plan was presented to the public for a 60-day period;

WHEREAS, pursuant to HB 04-1365, a state-approved water efficiency plan will qualify the Town for future funding opportunities offered by the Colorado Water Conservation Board, and the Colorado Water Resources and Power Development Authority for water and infrastructure projects;

WHEREAS, the adoption of the Plan does not obligate or commit the Town to financial or other support for plan implementation; and

WHEREAS, implementation of the Plan will be contingent on Town Council approval and shall be evaluated on a case-by-case basis.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF EAGLE, COLORADO, THAT:

Section 1. The Town Council hereby adopts the Plan to serve as the Town's primary guiding document for water efficiency and conservation.

INTRODUCED, READ, PASSED AND ADOPTED ON OCTOBER 27, 2020.

TOWN OF EAGLE, COLORADO

Scott Turnipseed, Mayor

ATTEST:

Jenny Rakow, Town Clerk

OFFICIAL SEAL

1

10/22/2020