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TOWN OF SEVERANCE

2017 MUNICIPAL WATER EFFICIENCY PLAN



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EXECUTIVE SUMMARY

The Town of Severance (Town or Severance) is a small but vibrant community that sits in an ideal location from many standpoints. The Town is approximately 50 miles north of the Denver Metropolitan area and is centrally located between the major Northern Colorado cities of Fort Collins, Loveland, and Greeley. The Town and its potable Water Service Area are located entirely within Weld County as shown in **Figure 1.1, Section 1.0**. The town limits of Severance cover an area of nearly 4,300 acres. The Water Service Area, however, covers a smaller, more centrally located area of approximately 3,000 acres or 4.7 square miles. In 2016, the Town provided potable water to approximately 2,954 people. Future resident population for the service area is estimated to grow to over 4,900 by the year 2026.

Severance has developed a Municipal Water Efficiency Plan (Plan) in accordance with the Water Conservation Act of 2004 and to meet the provisions of Colorado Revised Statute section 37-60-126. As part of CRS 37-60-126, a State-approved Plan will qualify Severance for funding from the Colorado Water Conservation Board (CWCBC) and the Colorado Water Resources and Power Development Authority for water supply and delivery projects.

The Town of Severance receives its treated water from a single water provider, North Weld County Water District (NWCWD). Severance is responsible for acquiring its own raw water supplies, which it transfers to NWCWD on an annual basis for treatment and delivery. NWCWD in turn receives its treated water from the Soldier Canyon Filter Plant, which is jointly owned by the Tri-Districts; NWCWD, Fort Collins-Loveland Water District, and East Larimer County Water District. For the water supplies that are transferred, the Town owns units of water of the Colorado-Big Thompson Project and shares in the North Poudre Irrigation Company. The treated water that Severance receives at the master meter from NWCWD is then distributed to the Town's customers through approximately 22 miles of pipelines. Severance also owns shares in the Loup Reservoir Company which the Town uses for non-potable irrigation of four of the Town parks. The irrigation system is separate from the treated water system.

In 2016, Severance's Water Service Area customers utilized approximately 456 acre-feet (AF) of treated water. The Town is expected to increase its annual water demand through new growth to approximately 884 AF of treated water over the planning period which extends to 2026. Water savings from this water efficiency planning effort is estimated to save a possible 807 AF over the 10 year planning period. The savings from this planning effort will make a considerable contribution toward the water supplies needed to serve the 2026 demand.

This report documents Town's water system, past and future water use, and the water efficiency planning process used in accordance with CWCB's Municipal Water Efficiency Plan Guidance Document.

Past and Current Water Efficiency Activities

Severance has implemented a variety of water efficiency activities since 2003. The water efficiency activities that have been historically implemented are shown in **Table ES-1**.

Table ES-1: Severance's Existing and On-going Water Efficiency Activities

Selected Water Efficiency Activities	Approximate Date of Implementation ⁽¹⁾
Foundational Activities	
<i>Frequency of Meter Reading</i>	2003
<i>Tracking Water Use by Customer Type</i>	2003
<i>Volumetric Billing</i>	2003
<i>Water Rate Adjustments</i>	2003
<i>Frequency of Billing (monthly)</i>	2003
<i>Inclining/Tiered Rates</i>	2003
<i>Master Plans/Water Supply Plans</i>	2011
Ordinances and Regulations	
<i>Water Waste Ordinance</i>	2003
<i>Time of Day Watering Restriction</i>	2003
Education Activities	
<i>Citizen Advisory Boards</i>	2011

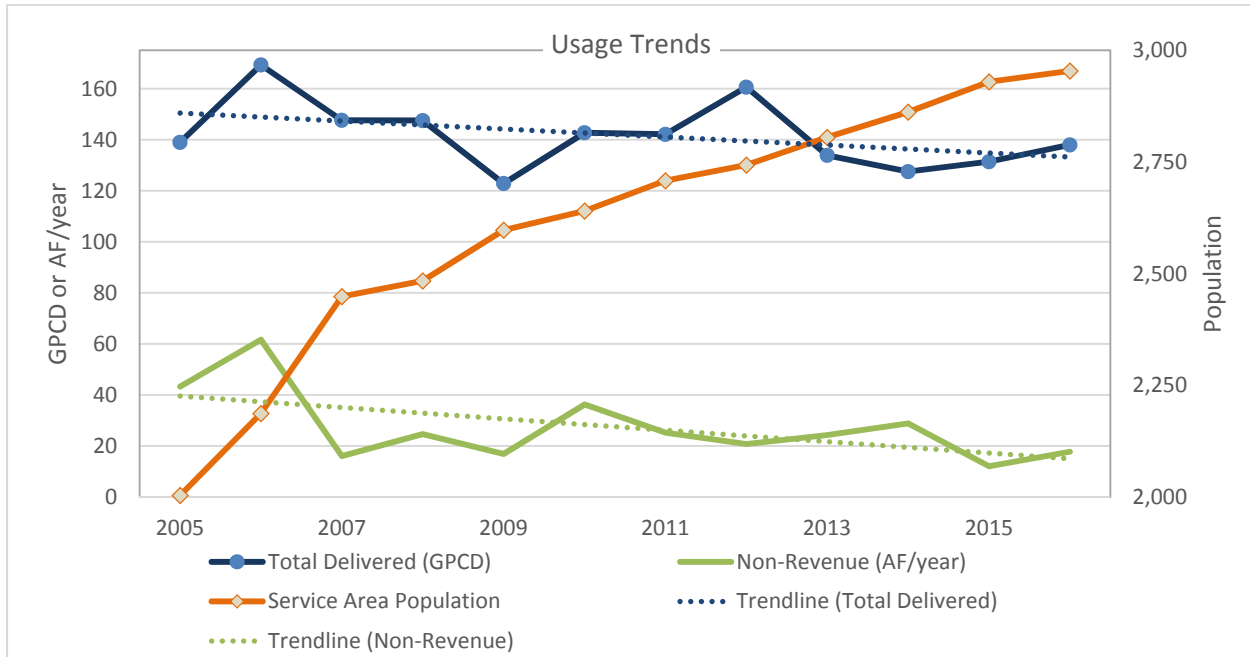
⁽¹⁾ Implemented activities have continued through the present day unless otherwise noted.

Despite the resources available to estimate water savings, the savings of some activities, such as those that are highly dependent on human behavior (e.g. public education programs) are much more difficult to quantify and, in many cases, cannot be estimated with reasonable accuracy. Additionally, specific data was not collected for water efficiency activities during the same time period in which water data was available. For the activities that we were unable to quantify, demand data was used to estimate savings.

Related to the activities listed in **Table ES-1**, **Figure ES-1** further illustrates an overall water efficiency trend. The population of Severance has had a steady and high increase over the past 20 years of over 19%. Although the gallons per capita per day (GPCD) water usage has varied considerably year to year, the per capita usage has had a downward trend. Much of the variability in the water usage can easily be linked to the yearly fluctuations in temperature and precipitation. The downward trend in usage, however, is a strong indication of the water savings that has likely occurred because of

the various water efficiency activities incorporated by the Town. The even steeper downward trend of Non-Revenue water is further evidence of the success of these efforts.

Figure ES-1: Per Capita Water Usage (GPCD) Compared with Population



A preliminary set of goals has been developed prior to the selection of the water efficiency activities to provide a means to screen and evaluate the selected activities. A meeting was initially held with Town Staff to discuss water efficiency goals appropriate for Severance. The following preliminary goals were established by Staff:

- The targeted water savings goal for this Plan will be to lower the total per capita water use by 10% over the 10 year planning period.
- The targeted 10 year water reduction goals for the following customer categories were as follows:
 - Residential: 11.0%
 - Commercial: 5.0%
 - Non-Revenue Water: 4.0%
- To develop a water efficiency program that can be implemented within Town staffing constraints and with Town Board approval.
- To implement water efficiency activities that are compatible with the community and their Town Board representatives.

The success of the stated goals will be measured through monitoring of billing data, screening and evaluating activities that are acceptable to Town Staff, and soliciting Town Board and community feedback on water efficiency activities.

Severance used a four-phase process for selecting and fully evaluating water efficiency activities. The four phases include: 1) assessment; 2) identification; 3) qualitative screening; and 4) evaluation and selection.

The initial screening of the water efficiency activities with Town Staff resulted in selecting 18 candidate activities for further evaluation. Some of the activities were combined within their SWSI Levels Framework to assist in evaluation and avoid double counting savings. The second screening was accomplished by evaluating each activity based on the following criteria: Applicability to Town of Severance, Moderate to high potential reduction of water use, and Town Board and Town resident support and acceptance. Of the 18 original activities evaluated, all 18 of those activities were chosen for implementation.

The final 18 activities chosen are as follows:

- System Wide Water Audits
- Automatic Water Meter Reading Installation and Operations
- Enhanced Automatic Water Meter Reading Installation and Operations
- Water Efficient Rate Structure with Regular Updates
- Tap Fees with Water Use Efficiency Incentives (Lot based water dedication)
- Leak Detection and Repair Program
- Master Plans/Water Supply Plans
- Slow the Flow Residential Irrigation Audits
- Indoor Residential Water Audits
- Residential and Commercial Ultra High-Efficiency Toilet Upgrade Service or High-Efficiency Toilet Rebate Program
- Giveaways: Residential Water Audit Kits
- Watering Restrictions
- Water Waste Ordinance
- Landscape Design Ordinances and Restrictions
- General Educational Activities
- Xeriscape Demonstration Garden
- Landscape Design (Xeriscape) and Maintenance Classes
- Garden in a Box

Table ES-2 compares the anticipated water savings from the selected activities with the original goals and then adjusts the water savings goals for this Plan update. Over the 10-year planning period, the selected activities could potentially provide an overall water savings of 807 AF. The adjusted goals reflect what is believed to be obtainable by the Town's Staff. After the goals were adjusted to reflect the expected water savings, the estimated water use reduction is 10.9%. Therefore, Severance will target an overall reduction from their forecasted water use by 10.9% over the planning period because of implementation of this Plan.

Table ES-2: Water Efficiency Goals Comparison

Water Use Categories:	Total Projected Water Use (2017 to 2026) (AF)	Reduction Goals for Planning Horizon		Adjusted Reduction Goals for Planning Horizon	
		(%)	(AF)	Total Water Savings from Activities (AF)	Resulting Reduction (%)
Residential	6,663	11.0%	733	763	11.4%
Commercial	420	5.0%	21	25	5.8%
Non-Revenue Water	350	4.0%	14	26	4.4%
Total Water Supply:	7,433				
Total Demand Reduction:			768	814	
Total Percent Reduction:			10.3%		10.9%

Implementation and Monitoring Plan

The implementation plan defines the process necessary to carry out the selected water efficiency activities. Monitoring types of demand data can be beneficial in tracking the savings generated from implementing a water efficiency plan. Severance monitors total treated water produced on a daily basis. Other categories of raw and treated water and customer accounts are monitored on a monthly and annual basis.

The demand data which will be collected during the monitoring period of the Plan is presented in **Table ES-3**. John Holdren (Town Administrator) and Nicholas Wharton (Assistant Town Administrator) will be chiefly responsible for coordinating and delegating to implement this Plan. The Town also realizes that the most successful Plan is one that involves a team effort from many staff, other key personnel, and often assistance outside of Town employees.

Table ES-3: Selection of Demand Data for Efficiency Plan Monitoring

Monitoring Data	HB 10-1051 Reporting Requirement				Selection			
	Annual	Monthly	Bi-Monthly	Daily	Annual	Monthly	Weekly	Daily
Total Water Use								
Total treated water produced (at NWCWD master meter)					X	X	X	X
Total treated water delivered (sum of customer meters)	√				X	X		
Raw non-potable deliveries to Soldier Canyon Filter Plant (by NWCWD)					X	X		
Reclaimed water produced (metered at WWTP discharge)								
Reclaimed water delivered (sum of customer meters)								

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Monitoring Data (cont.)	HB 10-1051 Reporting Requirement					Selection			
	Annual	Monthly	Bi-Monthly	Daily		Annual	Monthly	Weekly	Daily
Total Water Use									
Per capita water use						X			
Indoor and outdoor treated water deliveries						X	X		
Treated water peak day produced						X	X		
Reclaimed water peak day produced									
Raw water peak day produced/delivered									
Non-revenue water	√					X	X		
Water Use by Customer Type									
Treated water delivered		√				X	X		
Raw non-potable deliveries									
Reclaimed water delivered									
Residential per capita water use						X			
Unit water use (e.g. AF/account or AF/irrigated acre)									
Indoor and outdoor treated water deliveries						X			
Large users									
Other Demand Related Data									
Irrigated landscape (e.g. AF/acre or number of irrigated acres)									
Precipitation									
Temperature									
Evapotranspiration									
Drought index information									
Economic conditions						X			
Population						X			
New taps						X	X		

INTRODUCTION

The Town of Severance (Town *or* Severance) is a small but vibrant community that sits in an ideal location from many standpoints. The Town has easy access to three of Northern Colorado's largest cities: Fort Collins, Loveland, and Greeley. The Town is also less than five miles away from Windsor. Although Severance was officially incorporated in 1920, it has a rich heritage dating back well over 100 years. The Town's roots are in agriculture, but in the last decade, it has become a wonderful bedroom community for people to raise a family away from the hustle and bustle of the larger nearby cities and yet be close enough to enjoy those cities' amenities.

The town limits of Severance cover an area of nearly 4,300 acres. The footprint of the Severance Water Service Area (Water Service Area *or* Service Area), however, is more centrally located around the Town Core and is different area of approximately 3,000 acres. Both areas are shown in **Figure 1.1**. The Town of Severance receives its treated water from a single water provider, North Weld County Water District (NWCWD). Severance is responsible for acquiring its own raw water supplies, which it transfers to NWCWD on an annual basis for treatment and delivery. NWCWD in turn receives its treated water from the Soldier Canyon Filter Plant, which is jointly owned by the Tri-Districts; NWCWD, Fort Collins-Loveland Water District, and East Larimer County Water District.

Some of Severance's residents who reside within the current town boundary and/or future growth area are not served by the Town's water service. Typically these residents outside the Water Service Area either have their own wells or are served directly by NWCWD. Only Town residents within the Service Area are included in the water data, projections, and estimated water savings. Other residents, however, may experience some of the benefits because most of the water efficiency activities will not be exclusive to Service Area residents.

Severance is committed to optimizing its water supplies and system through practical water conservation practices. The benefits may include delaying the purchase of costly water supplies and infrastructure upgrades and reducing wastewater flows and treatment. The purpose of this Municipal Water Efficiency Plan (MWEPlan *or* Plan) is to guide Severance in the process of water efficiency planning and implementation. The planning horizon for this Plan is 10 years, from 2017 through 2026.

Severance has already made efforts in the 13 years prior to this Plan to improve their water use efficiency and have implemented a number of steps and programs during that time. Tiered water rates, watering restrictions, and a waste water ordinance were begun around 2003 and have continued ever since. In this Plan, the Town of Severance will perform the five steps of municipal water efficiency planning as outlined in the Municipal Water Efficiency Plan Guidance

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Document (Guidance Document); 1) profile of existing water supply system, 2) profile of water demands and historical demand management, 3) integrated planning and water efficiency benefits and goals, 4) selection of water efficiency activities, and 5) implementation and monitoring plan. The Town has made many proactive conservation efforts to date and will continue this commitment into the future.

Several documents and sources were reviewed and utilized to develop this Plan. The Colorado Water Conservation Board (CWCB) Municipal Water Efficiency Plan Guidance Document was used as a guide to develop this Plan. The Town's Water Restrictions and 2011 Town of Severance Comprehensive Plan were used for comparisons and other details. Severance's website and other web pages were also used for additional information to help in this planning effort. There are many acronyms, terms, and terminology that are commonly used in water efficiency and water planning, and some additional terms are common in this geographical area; a list of terms and their meanings is included in **Appendix A**.

SECTION 1.0 – PROFILE OF EXISTING WATER SUPPLY SYSTEM

1.1 Overview of Existing Water Supply System

Service Area

The Town of Severance is approximately 50 miles north of the Denver Metropolitan area and is centrally located between the major Northern Colorado cities of Fort Collins, Loveland, and Greeley. The Town and its potable Water Service Area are located entirely within Weld County as shown in **Figure 1.1**. The northernmost boundary of the Service Area is Weld County Road 76 ½; the westernmost boundary is the eastern edge of Windsor Reservoir; the southernmost boundary is Weld County Road 72; and the easternmost boundary is Weld County Road 25. The Service Area covers approximately 3,000 acres or 4.7 square miles. The boundaries of the Service Area are anticipated to grow as the Town continues to develop and experience growth; the growth of the Town and the Service Area are likely to occur at different rates.

The population that is served by the Town's water supply is estimated to be smaller than the Town's population. The Water Service Area population is estimated at 2,954 for 2016; the Town's overall population is estimated at 3,910 for the same year. The Town grew at a rapid rate in the mid-1990s, well over tripling its population. The growth rate continued a steep climb through 2007. In the past 20 years Severance experienced nearly a 20% average annual growth rate bringing the resident population to over 35 times what it was in the early 1990s. The historical population from 2012 through 2016 of the Town and its Service Area are presented in **Table 1.1**.

Table 1.1: Town and Water Service Population (2012 – 2016)

Year	Town Population	Change in Population	Population Growth	Water Service Area Population
2012	3,334	61	1.9%	2,743
2013	3,401	67	2.0%	2,805
2014	3,516	115	3.4%	2,862
2015	3,697	181	5.1%	2,930
2016 ^[1]	3,728	31	0.8%	2,954

[1] Estimates at the time of Plan research

Typically Town residents that are not served by the Severance Water Service Area receive their potable water supply from residential wells or directly from NWCWD. It is estimated that approximately 20% to 25% of the population of Severance receives their water supply directly from one of these other sources. As mentioned earlier, these residents are not included in any past or future water use presented in this Plan. The Town hopes to partner with NWCWD for potential water efficiency activities even though these partnerships would not directly affect Severance's water savings.

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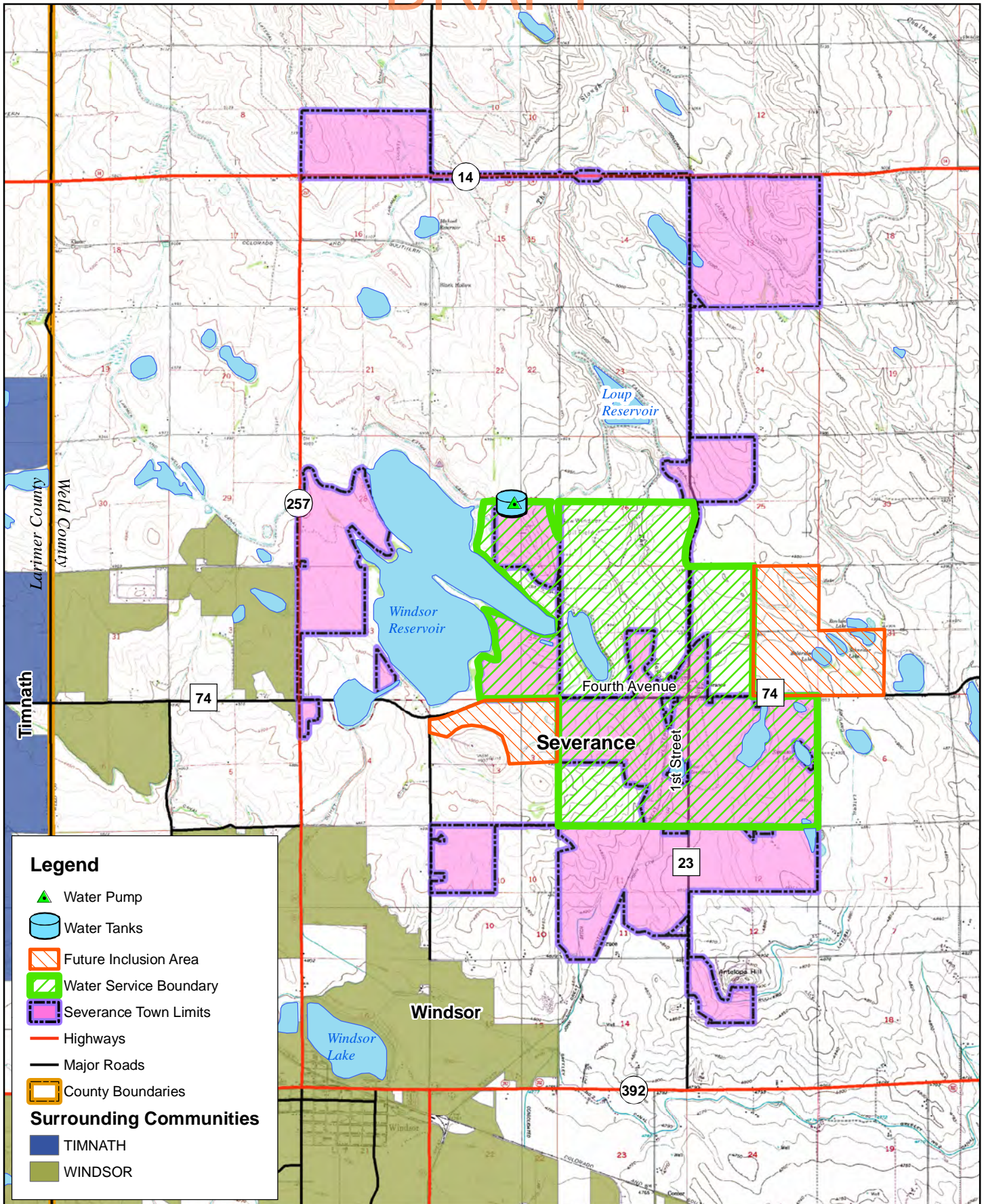


Figure 1.1
TOWN OF SEVERANCE
Municipal Water Efficiency Plan

0 0.25 0.5 1
Miles



Date: 05/24/2017
Drawn By: NEA
Scale: As Shown
Job No: 16-130

Water Supply

Severance currently does not operate a water treatment plant and is a wholesale purchaser of potable water. As mentioned previously, the Town's supply for potable water comes from NWCWD. Long-term contracts with NWCWD establish the terms of service including amount, duration, and payment. Severance owns its water rights for raw water (see **Table 1.2**) and turns needed water over to NWCWD each year for treatment and delivery. A surcharge of water (termed "shrinkage") is required in addition to the projected use for each year to cover losses from treatment and delivery to Severance.

Table 1.2: Severance's Current Water Supply Firm Yield

Water Source	Shares or Units	Average Yield per Share (AF)	Firm Yield per Share (AF)	Total Average Supply (AF)	Total Firm Supply (AF)
Potable Sources					
Colorado-Big Thompson Project	793	0.7	0.5	555.1	396.5
North Poudre Irrigation Company (NPIC)	63	2.4	2	136.8	114.0
Total				691.9	510.5
Non-Potable Sources					
Agricultural component of NPIC	63	1.0		63.0	
Loup Reservoir Company	5				

Currently Severance does not supply reclaimed water, untreated ditch water, or groundwater to their customers. The dual systems within the Town obtain the non-potable water from a different water provider. Some additional detail will be included about non-potable water later in the report.

Key Existing Facilities

Severance has two 500,000 gallon treated-water storage tanks with a total capacity of one million gallons (MG). One of the storage tanks is approximately 12 years old; the second one was just completed in 2016. The existing water storage tanks provide water for fire protection, daily operating levels, and emergency water storage.

Severance also has a pump station that is located immediately adjacent to Severance's storage tanks. The Town currently has one master meter that connects their system to NWCWD. The Town also has an emergency meter connection for redundancy. Within the next year, the Town hopes to install a second master meter to better serve their customers and add yet another level of redundancy. The treated water flows by gravity or pump station from the master meter connection(s) or storage tanks through approximately 22 miles of pipelines ranging in diameter from two inches to 12 inches. The breakdowns of pipe diameters and mileage are shown in **Table 1.3**.

Table 1.3: Miles of Severance Distribution System Pipeline

Size (inches)	Length (miles)	Approximate year installed	Type
2	0.5	1991	PVC
6	1.5	2001	PVC
8	15.5	2008	PVC
8	1.5	2016	PVC
8	1	1981	AC
12	1	2006	PVC
12	1	2001	PVC
Total	22		

1.2 Water Supply Reliability

Water supply reliability is the ability of the Town's water supplies to meet the needs of its customers during times of stress. The Town of Severance is located in the South Platte River Basin where the Statewide Water Supply Initiative (SWSI) 2010 identified a 58% gap between water needs and water supplies in the Basin by 2050. Water efficiency is one method the SWSI report identified for meeting this gap. Similarly Colorado's Water Plan 2015 also identified water conservation as a key part of meeting the gap between supply and demand.

Colorado-Big Thompson Project

The Northern Colorado Water Conservancy District (Northern Water) manages the Colorado-Big Thompson (C-BT) Project which imports an average of 213,000 acre-feet (AF) of water from the Western Slope to the Eastern Slope of the Colorado portion of the Continental Divide. This water provides a supplementary source each year to several public and private water users along the northern Front Range and northeastern Colorado for agricultural, municipal, and industrial uses. Northern Water partitions the water it provides into 310,000 units. The C-BT system has approximately 740,000 AF of gross storage. There is approximately 2.3 times the storage than would be needed to deliver a 100% quota. This gives the C-BT system some drought reliability.

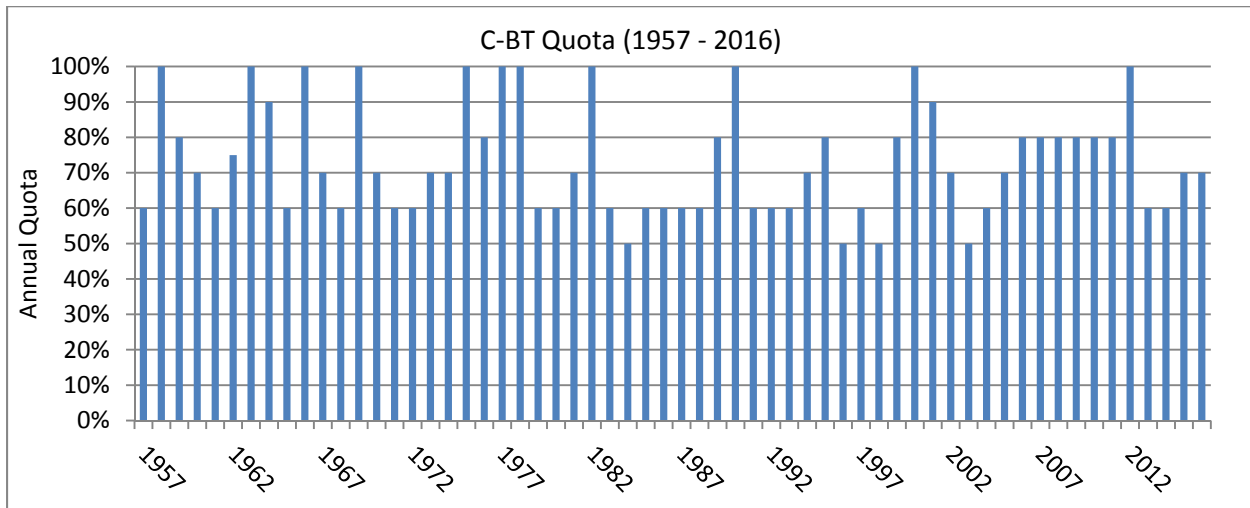
In over 50 years of C-BT project operation, the average yield has been 0.73 AF per unit and the commonly used average quota is 70%. The yield has never been less than 0.50 AF per unit (50% quota) or more than 1.0 AF per unit (100% quota). The historical annual quota established by the Northern Water Board is shown on the following **Figure 1.2**. **Table 1.2** shows Severance has a firm C-BT yield of 396.5 AF (not including North Poudre Irrigation Company (NPIC) shares).

Northern Water defines a C-BT annual carryover program (ACP) to C-BT Allottees, which allows C-BT owners to carry over unused C-BT units from the previous year to the following year. Per Northern Water Annual Carryover Program Procedures:

“As with past carryover programs, the District Board, staff, and counsel will review the advantages and consequences of the ACP on a continuing basis. And while the Board recognizes the Program’s benefit to many C-BT allottees, it may modify or discontinue the ACP at any time.” –NorthernWater.org, accessed January 2017

Considering this procedure, a 50% quota is what most water providers use as the firm yield for C-BT units.

Figure 1.2: Historical C-BT Quota



Non-Potable Supply

Loup Reservoir

The Town owns five shares of agricultural water rights in the Loup Reservoir Company; the water originates from the Cache la Poudre River through various nearby ditches and reservoirs including the Larimer County Ditch and the Larimer and Weld Canal. These water rights are decreed for agricultural uses only. If there is any excess above the Town’s non-potable water demands, the water rights may be rented for agricultural use.

North Poudre Irrigation Company

NPIC owns 40,000 C-BT units, so its shares include a C-BT portion and a native agricultural portion. The C-BT water is delivered equally among the 10,000 shares within the NPIC system for agricultural, municipal, and industrial use. Delivery of the C-BT portion can be taken anywhere that C-BT units can be delivered, so an entity outside of the NPIC service area can actually own NPIC shares and lease the native portion back to shareholders in the service area. Currently the NPIC native portion can only be physically delivered to two of Severance’s communities and is therefore usually rented back to shareholders within NPIC’s system. As shown in **Table 1.2**, Severance owns 63 shares of NPIC that equate to 136.8 AF able to be utilized for potable uses and 63 AF of non-potable.

Other Factors that Potentially Impact Water Supply

The C-BT supplies are stored in Lake Granby on the Western Slope of Colorado. Should a fire ever occur in that area, water quality would be a major issue for Severance and other C-BT Allottees. There is a tremendous amount of beetle kill to trees surrounding Lake Granby, Grand Lake, and other C-BT Reservoirs. This beetle kill poses a potential increase risk of fire. Severance would be vulnerable to the Soldier Canyon Filter Plant's ability to treat large quantities of water degraded from ash and soot runoff. This has been an ongoing issue for other water treatment facilities when fire has been present in a basin used for raw water supply. In addition, East Slope C-BT storage, once segregated from the system to avoid contamination, is not enough storage to meet demands, particularly in a drought.

Severance's water supplies would also be vulnerable in an extended drought. The Town currently maximizes its carryover each year through Northern Water, but a multi-year drought would likely decrease or eliminate Severance's carryover account. Over a decade ago, Colorado experienced one its severest water shortages on record during the Drought of 2002. Severance began several of its existing measures the year after the drought. More recently, Colorado experienced another drought that stretched from 2012 through August of 2013. Severance was able to deliver sufficient water for its residents during both of these periods of shortage.

1.3 Supply-Side Limitations and Future Needs

Increasing pressure on water from population growth along the Front Range has driven the price of water up significantly in the last twenty years. The primary water sources that Severance is considering for future supply are additional C-BT units, native Poudre River water, and an ongoing Northern Water project called the Northern Integrated Supply Project (NISP).

C-BT Units

In 1963, C-BT water could be purchased for \$35 per unit from farmers that felt they had more water than they could use. Since C-BT water is so versatile, the market value of its shares has increased and is a good indication of the price for municipal water. The market price in 2016 was approximately \$26,500 per unit or \$53,000 per AF assuming a 50% firm yield. **Figure 1.3** shows how the price of C-BT units has varied from 1957 to 2016.

A key limitation with C-BT water is the fact that it is in great demand and is converting from agricultural (AG) use to municipal and industrial (M&I) use rapidly. The transition is illustrated in **Figure 1.4**. At this current rate of acquisition, it is projected that few (if any) C-BT units will be available by the year 2045. In the previous decade, the oil and gas industry acquired a number of C-BT units when it went to the open market. The high demand and limited availability of C-BT water has driven up the price significantly. Another key limitation to C-BT water is the inability for the water to be reused due to current Northern Water policies. This second limitation curtails the possibility for

efficiency activities that might help stretch the existing water supplies by reusing C-BT water for irrigation or other non-potable uses.

Figure 1.3: Price of C-BT Units

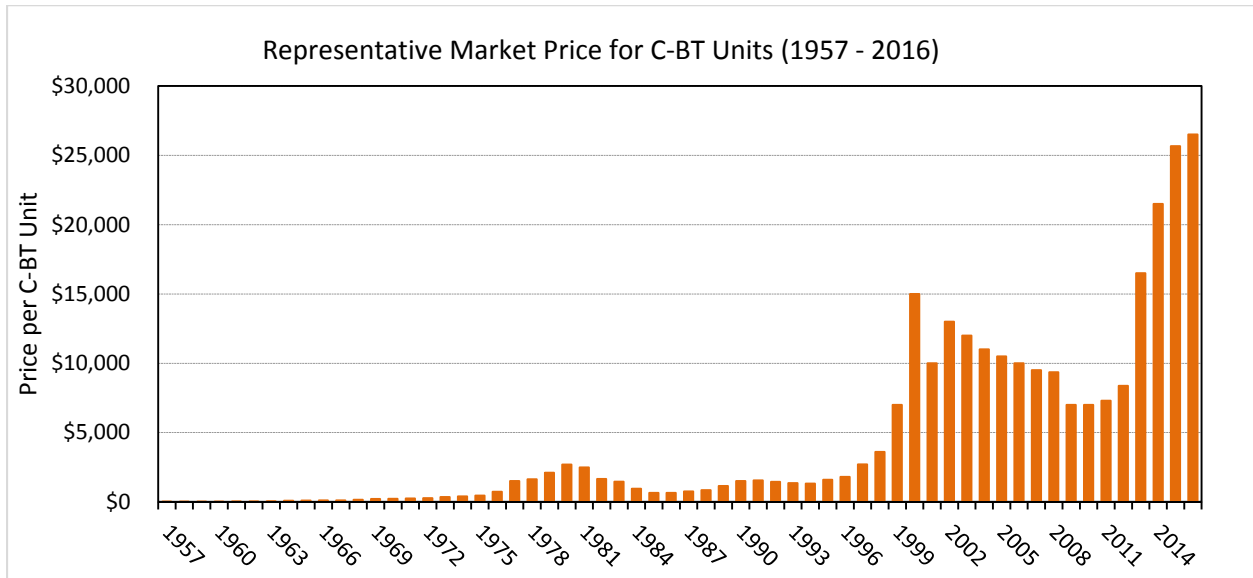
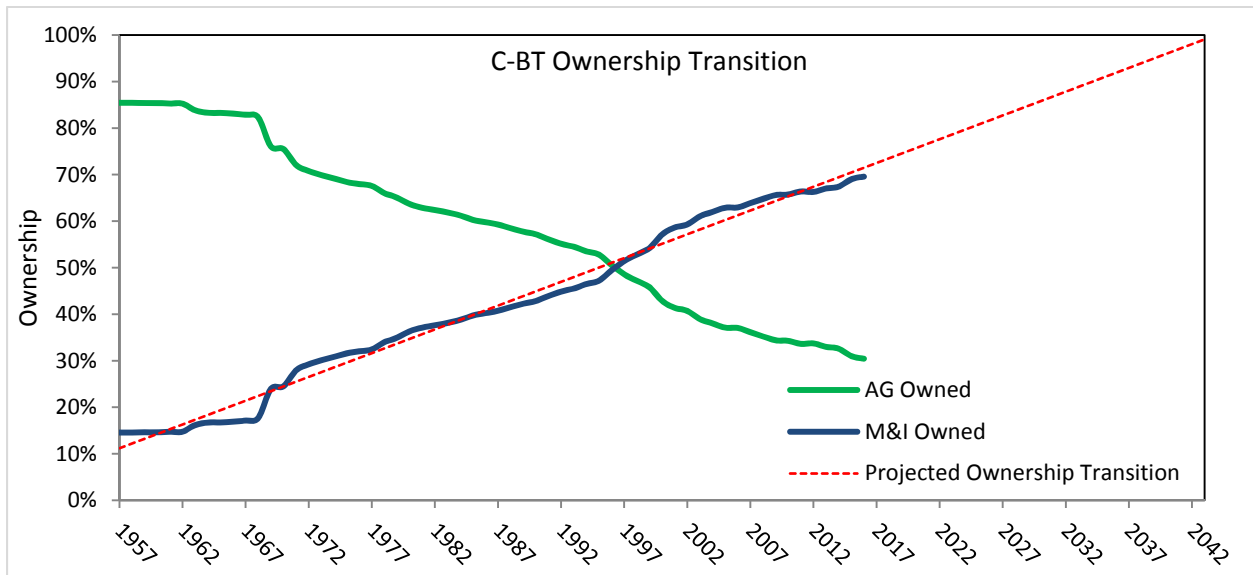


Figure 1.4: C-BT Ownership Transfer



Northern Integrated Supply Project

NISP is a regional project that is being financed and will be owned by fifteen municipalities and water districts in northern Colorado. It includes two reservoirs, water rights on the Poudre River, and an exchange with two local ditch companies. NISP is a good example of the kind of projects identified to fill the water need gap described in the SWSI report; Colorado's Water Plan 2015 also identified the need for storage to close the supply-demand gap. NISP is currently in the National Environmental Policy Act

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(NEPA) permitting process. Construction of this project will occur only if permits are obtained from the federal government and all NEPA requirements are satisfied. In June 2015, the Army Corps of Engineers released a Supplemental Draft Environmental Impact Statement for NISP. Northern Water is hoping for a final permit decision to be completed by 2017. Severance is currently participating in NISP with 1,300 AF of permitted yield, and if the project makes it through the permitting process, the Town will be obligated to pay for its share of the design and construction costs. According to the Northern Water's 2016 NISP Fact Sheet, current estimates project NISP to cost \$680,000,000 or approximately \$20,000 per AF. This will involve a large capital outlay from participating entities in the short term but will provide water supply well past 2026 for Severance.

SECTION 2.0 – PROFILE OF WATER DEMANDS AND HISTORICAL WATER EFFICIENCY ACTIVITIES

2.1 Demographics and Key Characteristics of the Water Service Area

Severance provides potable and fire protection water to a Water Service Area that encompasses approximately 3,000 acres. The Town provides service to approximately 1,100 taps for various end users. Over the past 20 years, the Town has seen a rapid growth rate that has averaged over 19% and has experienced several years above 30%. On the outer boundaries of Severance, there continues to be the steady shift from a rural setting to a more urban-style development.

The Town breaks its billing system into two main categories: Residential and Commercial. Each of the categories will be discussed in more detail in Section 2.2.

2.2 Historical Water Demands

Annual Treated Water

NWCWD delivers treated water to Severance's master meter. After the master meter, the Town is responsible for operating and maintaining its distribution system to its customers. Severance then delivers the water to its end users through the system taps. **Table 2.1** shows the annual treated water deliveries made by Severance for the years 2012 – 2016.

Table 2.1: Severance Annual Treated Water Delivery

Year	Annual Treated Water Deliveries (AF)
2012	493.4
2013	420.6
2014	408.7
2015	431.2
2016	456.5
Average	442.1

Annual Treated Water Use by Customer Category

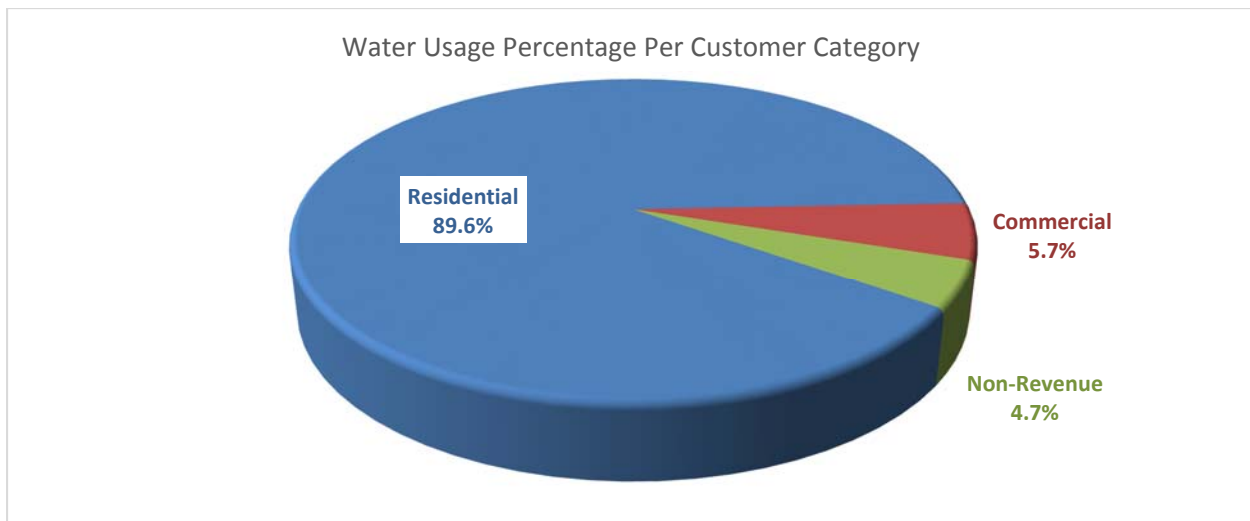
The Town's average annual water demand for years 2012 - 2016 for each customer category is shown in **Table 2.2**. Each customer category will be described in more detail following the table and chart. The total annual potable water usage from 2012 – 2016 ranged from 382.0 to 471.2 AF and averaged 419.6 AF. Also shown in **Table 2.2** is the residential and total per capita water use expressed as gallons per capita per day (GPCD). Residential GPCD is calculated as the residential water use divided by the Water Service Area

population, and Total Billed GPCD is calculated as the total water use (all categories) divided by the Water Service Area population. **Figure 2.1** illustrates the water usage per customer category as well as Non-Revenue water as an average percentage of the total raw water use for 2012 – 2016.

Table 2.2: Severance Annual Treated Water Delivery by Customer Category

Customer Category	2012	2013	2014	2015	2016	Average
Residential (AF)	441.5	374.7	360.2	397.2	399.7	394.7
Commercial (AF)	29.7	22.2	21.8	22.1	28.7	24.9
Total Billed (AF)	471.2	396.9	382.0	419.3	428.4	419.6
Non-Revenue (AF)	20.7	24.2	28.9	12.0	17.7	20.7
Total Population	3,334	3,401	3,516	3,697	3,728	
Water Service Area Pop	2,743	2,805	2,862	2,930	2,954	
Residential GPCD	143.7	119.3	112.4	121.1	120.8	123.4
Total Billed GPCD	153.3	126.3	119.2	127.8	129.5	131.2

Figure 2.1: Water Usage Category Percentages



Residential

Residential water use includes both indoor and outdoor use. This customer category consists mostly of single-family homes. The Residential category constitutes the largest water use in the Town at 89.6% of all potable water supplied. Residential water use in the Town averaged 394.7 AF per year (2012 – 2016).

Commercial

Business water users in the Town include office buildings, retail stores, grocery stores, restaurants, a car wash, and Range View Elementary School, and Brownell Park. In Town Businesses averaged 24.9 AF per year (2012 – 2016) in the Town which represents 5.7% of the potable water supplied.

Annual Non-Revenue Water

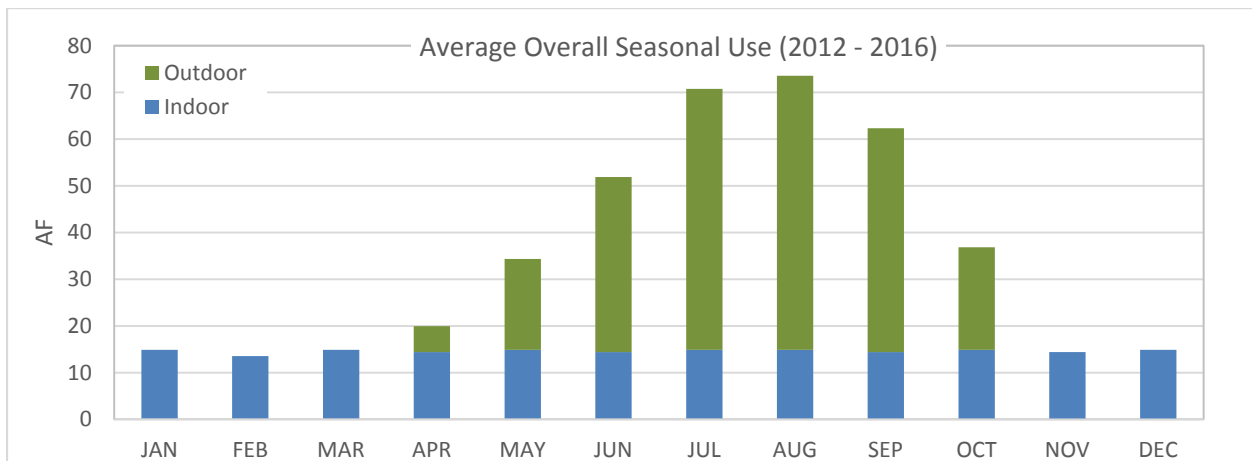
Annual Non-Revenue Water, or unaccounted for water, consists of unbilled authorized uses (e.g. hydrant flushing and fire protection), apparent losses, and real losses. Apparent losses consist of unauthorized consumption, customer metering inaccuracies, and data handling errors. Real losses consist of leaks in the water distribution system that does not reach the end user.

To estimate Severance's Non-Revenue treated water we examined the difference in the annual treated water delivery from NWCWD and what was metered at the water taps throughout the Town from 2012 through 2016. The data shows the Non-Revenue treated water for Severance averaged less than 5% during that period, which is considered good by industry standards.

Indoor and Outdoor Demands

The indoor and outdoor use was estimated utilizing total monthly use for five years (2012 – 2016) of data. The total monthly water use during the months from November through March was assumed to be only associated with indoor use. The basis for this assumption was determined from analyzing monthly use patterns over the previous five years as well as years prior to the period. A daily average for indoor use was calculated by dividing the total winter water use (November through March) by the number of days during the same five month period. The indoor use for the other months of the year (April through October) was calculated as the average indoor use per day multiplied by the days per month. The outdoor monthly use was assumed to be the difference between the total monthly use and the indoor monthly use. **Figure 2.2** is a chart breaking-out the estimated average monthly indoor and outdoor water use. During the course of an average year (2012 – 2016), outdoor use constituted an estimated 58.5% of the total billed usage.

Figure 2.2: Average Monthly Indoor and Outdoor Water Use



Parks and Open Space Irrigation

Currently the Town irrigates its four largest parks with non-potable well water. Currently the parks on the non-potable system are not metered, but the wells themselves are

metered. The Town may look into metering the individual parks in the future. The fifth and smallest park, Brownell Park, is metered and irrigated through the Town's potable system; this park is included in the Commercial water use customer category. **Table 2.3** shows the parks and their approximate acreage.

Table 2.3: Severance Parks and Approximate Acres

Park	Acres
Summit View Park	4.8
Blue Spruce Park	3.8
Lakeview Park	3.6
Karen Suman Park	1.9
<i>Brownell Park ⁽¹⁾</i>	<i>0.3</i>
Total	14.5

⁽¹⁾ Not Irrigated with well water

2.3 Past and Current Water Efficient Activities and Impact to Demands

Current Water Efficiency Measures

Table 2.4 shows the existing and on-going water efficiency activities for the Town. As can be seen from the Water Efficiency Activities list, the Town is continuously making efforts to improve its own foundational activities such as its Tracking Water Use by Customer Type and Tiered Rate Structure activities. Severance strives to encourage its customers to be water conscious through Watering Restrictions and other efforts.

Table 2.4: Severance's Previous and On-going Water Efficiency Activities

Selected Water Efficiency Activities	Approximate Date of Implementation ⁽¹⁾
Foundational Activities	
<i>Frequency of Meter Reading</i>	<i>2003</i>
<i>Tracking Water Use by Customer Type</i>	<i>2003</i>
<i>Volumetric Billing</i>	<i>2003</i>
<i>Water Rate Adjustments</i>	<i>2003</i>
<i>Frequency of Billing (monthly)</i>	<i>2003</i>
<i>Inclining/Tiered Rates</i>	<i>2003</i>
<i>Master Plans/Water Supply Plans</i>	<i>2011</i>
Ordinances and Regulations	
<i>Water Waste Ordinance</i>	<i>2003</i>
<i>Time of Day Watering Restriction</i>	<i>2003</i>
Education Activities	
<i>Citizen Advisory Boards</i>	<i>2011</i>

⁽¹⁾ Implemented activities have continued through the present day unless otherwise noted.

Water conservation occurs from both passive savings and active programs. Passive savings are those correlated with changes made by customers without any utility incentive; examples of these could be replacing old inefficient fixtures with newer more efficient models. Active programs, on the other hand, are like the ones listed in **Table 2.4** that have been initiated by the utility, in this case Severance. Overall between passive and active savings, Severance continues to see a general downward trend of per capita usage. This trend will be discussed in more detail later in this section.

Numerous factors can contribute to overall water usage, so it is difficult to pinpoint what is the greatest contributor to increases and decreases in usage. Drought and drought restrictions (i.e. the Drought of 2002) may reduce water use considerably. On the other hand, until restrictions are in place, water usage may increase while customers are trying to compensate for lack of natural moisture. An improving economy after a recent recession will often include additional construction and overall increase in total water use; this has been the case with Severance and the surrounding area after housing market collapse that was experienced from 2008 through 2012. Some other factors may include tourism, floods (September 2013), and other significant events.

Water Savings Estimates Using Demand Data

Despite the resources available to estimate water savings, the savings of some activities, such as those that are highly dependent on human behavior (e.g. public education programs) are much more difficult to quantify and, in many cases, cannot be estimated with reasonable accuracy. Additionally, no data has formally been collected for the other activities. For these various activities that we were unable to quantify, demand data was used to estimate savings.

Related to the activities listed in **Table 2.4**, **Figure 2.3** illustrates an overall water efficiency trend. The population of Severance has had a steady and rapid increase over the past 20 years of over 19% per year. The growth rate has slowed down to around 7% in the last 10 years, but the Town is still experiencing a higher rate than nearby communities. Both the Total Billed GPCD and the Total Delivered GPCD are shown. Although the GPCD water usage has varied considerably year to year, the per capita usage appears to have a downward trend. Of the two, the Total Delivered GPCD has the steeper downward trend.

Much of the variability in the water usage can easily be linked to the yearly fluctuations in the climate. As a comparison, both the average yearly temperature and total annual precipitation are shown for the same years in **Figure 2.4**. The downward trend in usage, however, is a possible indication of the water savings that has likely occurred because of the various water efficiency activities already incorporated by the Town. Another trend that is illustrated in **Figure 2.3** that is even more impressive is the downward trend of the Non-Revenue water even with the increase in population. That trend coupled with the Total Delivered downward trend gives a strong indication that the efforts the Town has made in the last decade have already seen some benefits.

Figure 2.3: Per Capita Water Usage (GPCD) Compared with Population

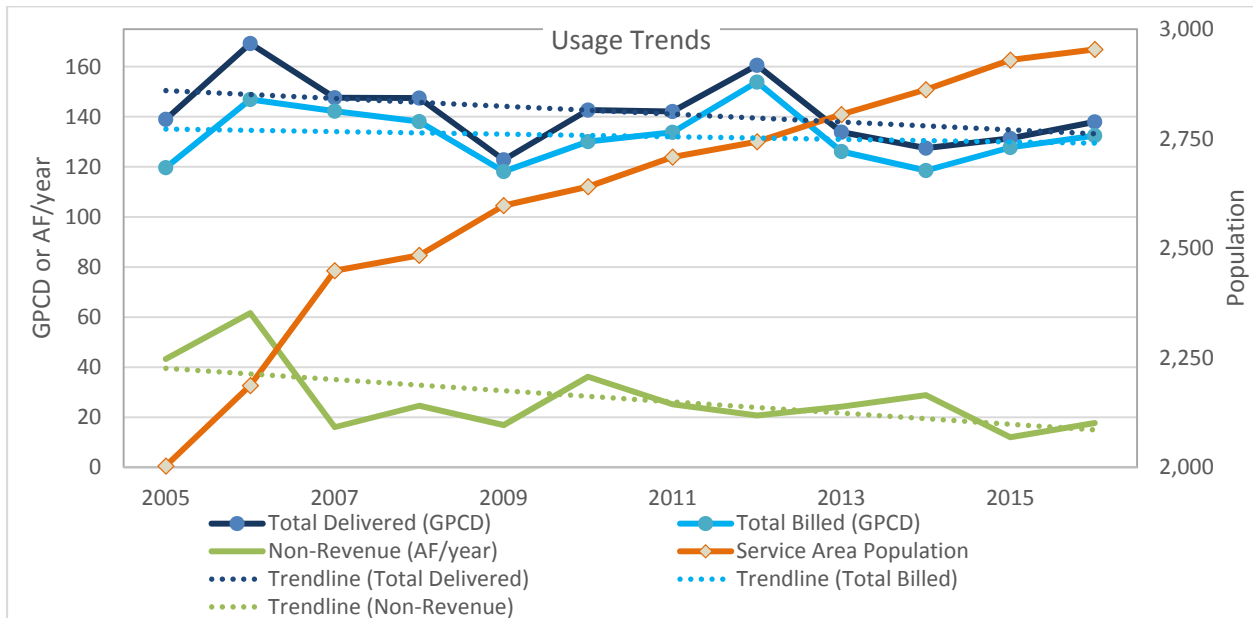
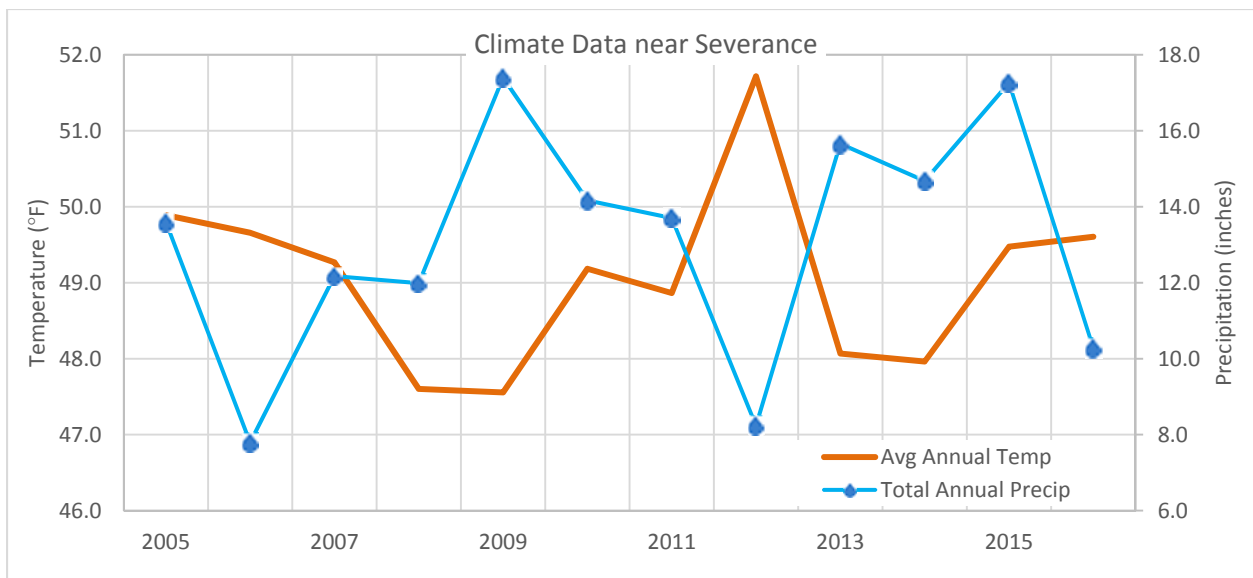


Figure 2.4: Climate Data to Compare with Water Usage



2.4 Demand Forecasts

As part of the preparation of this Plan, we prepared an “unmodified” baseline demand forecast that does not include any impacts from water efficiency. This forecast shows demand starting in 2017 and going through the planning horizon of 2026 (10 years). The baseline forecast is based on a combination of anticipated demographics and land use in Severance. In the baseline forecast, demands increase proportionally with the population at the current rate of usage. Population estimates shown in five year

increments for the previous 25 years and projected population for the next 15 years or so are presented in **Table 2.5** and illustrated in **Figure 2.5**. A conservative future estimate was developed by the Town Staff (Staff) based on the general growth trend of the Town following the recent recession and economic recovery.

Table 2.5: Severance Population Growth in Five Year Increments

Year	Population	Average Yearly Growth Rate
1990	95	-
1995	132	7.1%
2000	671	40.2%
2005	1,896	23.4%
2010	3,201	11.5%
2015	3,697	2.9%
2020	4,763	5.2%
2025	5,830	4.1%
2030	6,896	3.4%

Figure 2.5: Severance Population Growth

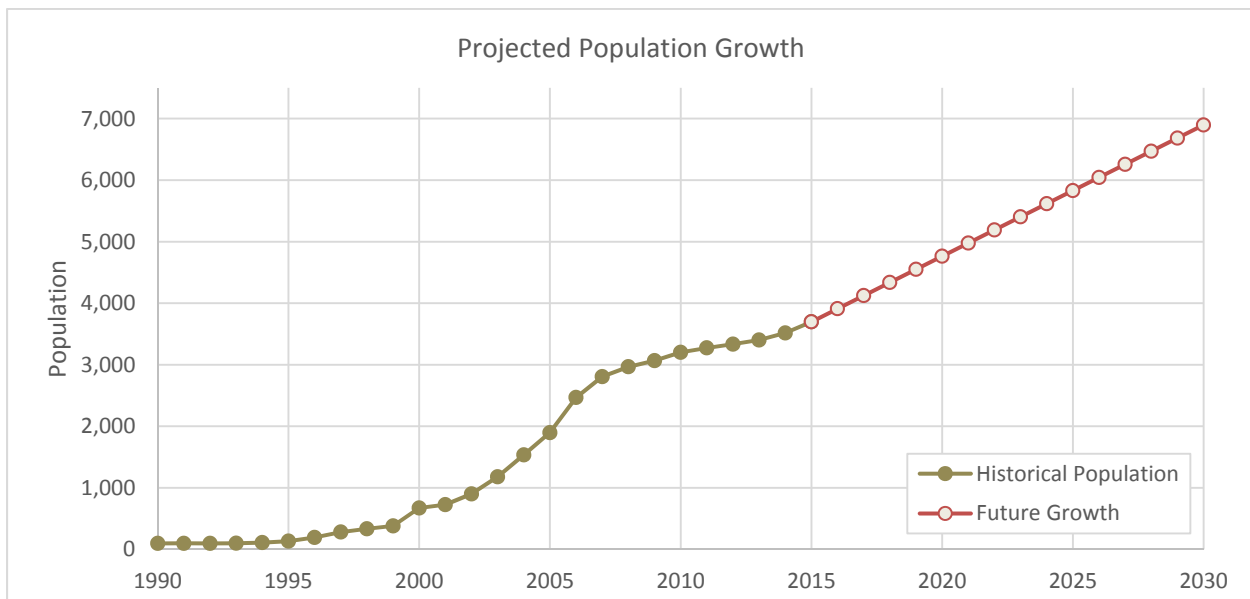


Table 2.6 shows the population growth (both Total Town Population and Water Service Area Population) for the planning period. This table also shows the Total Taps anticipated and the Total Treated Water Demand over the planning period. As is shown in **Table 2.6** and **2.7**, the majority of the treated water is anticipated to continue to be used by the Residential category. Steady growth and therefore demand is anticipated in the Commercial category with similar percentages representing each customer category. Build-out is not anticipated during the next 10 years, and therefore the steady increase in demand is not predicted to taper off.

Table 2.6: Demand Projections

Year	Total Town Population	Water Service Area Population	Total Taps	Total Treated Water Demand (AF)
2017	3,932	3,347	1,154	602
2018	4,137	3,521	1,214	634
2019	4,341	3,695	1,274	665
2020	4,545	3,869	1,334	696
2021	4,750	4,043	1,394	728
2022	4,954	4,217	1,454	759
2023	5,159	4,391	1,514	790
2024	5,363	4,565	1,574	822
2025	5,568	4,739	1,634	853
2026	5,772	4,913	1,694	884

Table 2.7: Demand Projections for Water Use Categories

Year	Total Treated Water Demand (AF)	Total Billed (AF)	Residential (AF)	Commercial (AF)	Non-Revenue (AF)
2017	602	574	540	34	28
2018	634	604	568	36	30
2019	665	634	596	38	31
2020	696	664	624	39	33
2021	728	693	652	41	34
2022	759	723	680	43	36
2023	790	753	708	45	37
2024	822	783	737	46	39
2025	853	813	765	48	40
2026	884	843	793	50	42

SECTION 3.0 – INTEGRATED PLANNING AND WATER EFFICIENCY BENEFITS AND GOALS

3.1 Water Efficiency and Water Supply Planning

Forecasted Modified Water Demands

A modified demand forecast that includes the impacts of the proposed water efficiency activities is illustrated in **Figure 3.1** and summarized in **Table 3.1**. Under the revised forecast, it is estimated that total demands for Severance in 2026 will be about 282 AF greater than they are in 2017. By the end of the planning period, it is estimated that the Town could see a savings of 96 AF annually. This represents 96 AF of savings over not continuing current activities or implementing any new activities. The Town plans to accomplish this level of water efficiency by continuing programs already implemented (e.g., *Automatic Water Meter Reading Installation and Operations, Master Plans/Water Supply Plans, and Watering Restrictions*) and implement new programs (e.g., offering *Slow the Flow Irrigation Audits* and other incentives to their customers like rebates, giveaways, and various educational programs and materials). Projected water savings is expected to be seen by a steady reduction of per capita use. Overall raw water demand, however, will naturally continue to increase due to the anticipated continued population growth of the Town.

Figure 3.1: Demand Projections with Modified Demands

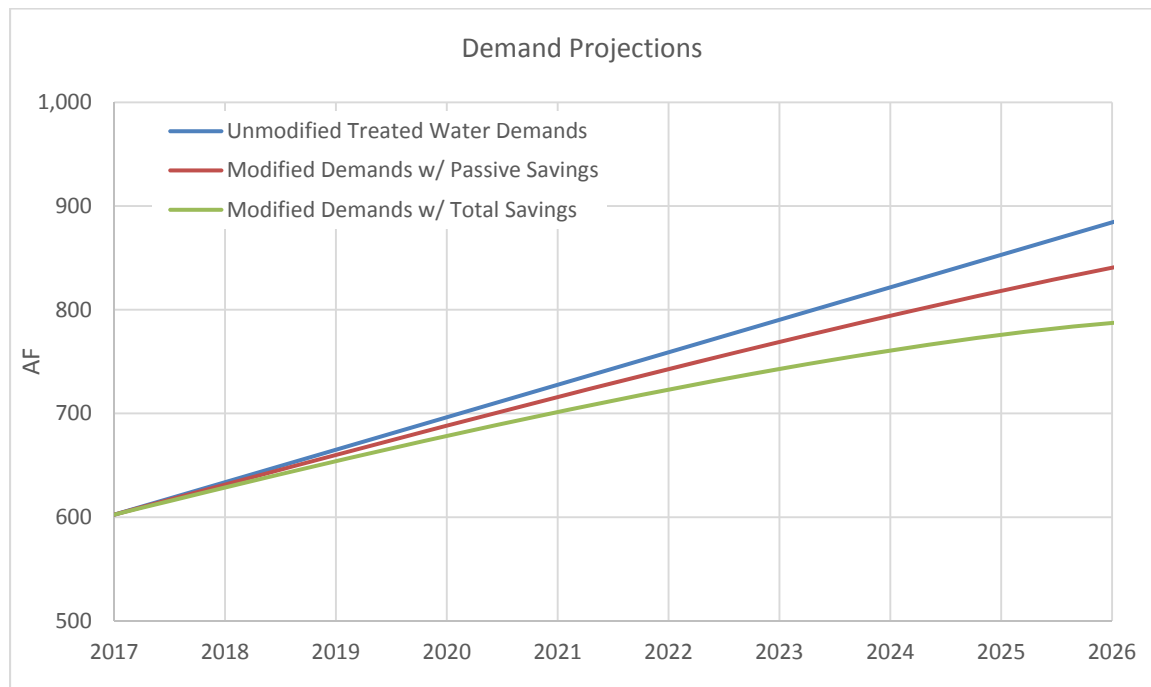


Table 3.1: Demand Projections – Unmodified and Modified

Year	Unmodified Treated Water Demand (AF)	Modified Treated Water Demand with Passive Savings (AF)	Modified Treated Water Demands with Combination Savings (AF)
2017	602	602	602
2018	634	631	629
2019	665	660	654
2020	696	688	678
2021	728	716	702
2022	759	743	723
2023	790	769	743
2024	822	794	761
2025	853	818	776
2026	884	841	788
Savings		4.95	10.9%
Increase Use from 2017	282	239	186
Difference from Unmodified		43	96

Impacts to Future Water Facilities and Supply Acquisitions

Water efficiency planning is very important to Severance. The benefits of this water efficiency planning effort may include:

- Freeing up water supplies for increased growth and development
- Additional water to cover shortages in droughts or other emergency situations
- Delaying the purchase of additional water supplies

3.2 Water Efficiency Goals

Water efficiency goals are intended to lay out a set of targeted objectives that if accomplished will result in the identified benefits. A preliminary set of goals has been developed prior to the selection of the water efficiency activities to provide a means to screen and evaluate the selected activities.

A meeting was initially held with Town Staff to discuss water efficiency goals appropriate for Severance. The following preliminary goals were established by Staff:

- The targeted water savings goal for this Plan will be to lower the total per capita water use by 10% over the 10 year planning period.
- The targeted 10 year water reduction goals for the following customer categories were as follows:

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- Residential: 11.0%
 - Commercial: 5.0%
 - Non-Revenue Water: 4.0%
- To develop a water efficiency program that can be implemented within Town staffing constraints and with Town Board approval.
- To implement water efficiency activities that are compatible with the community and their Town Board representatives.

The success of the stated goals will be measured through monitoring of billing data, screening and evaluating activities that are acceptable to Town Staff, and soliciting Town Board and community feedback on water efficiency activities.

SECTION 4.0 – SELECTION OF WATER EFFICIENCY ACTIVITIES

4.1 Summary of Selection Process

Severance used a four-phase process for selecting and fully evaluating water efficiency activities. The four phases include: 1) assessment; 2) identification; 3) qualitative screening; and 4) evaluation and selection.

Assessment, Identification, and Qualitative Screening

Using the analysis performed and presented in Section 2.3, the Town identified areas where water efficiency could be enhanced. With the apparent water saving success of the Water Efficient Rate Structure Updates and Watering Restrictions the Town would like to continue these activities as well as a number of others. In addition to these activities, the Town generally wants to focus on activities that assist with meeting their water efficiency goals.

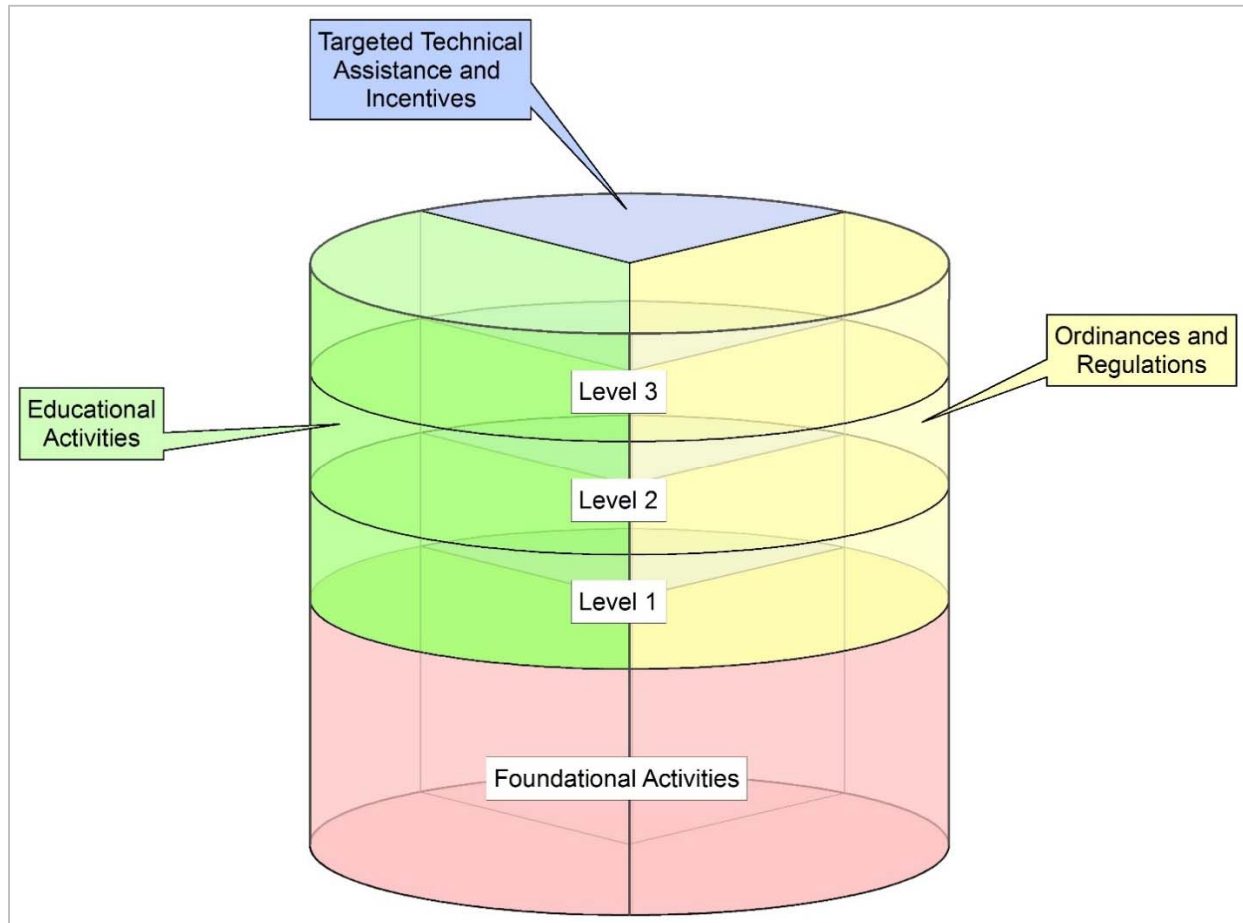
We utilized Worksheets A, and D-G from the *MWEP Guidance Document* to identify a list of water efficiency activities that are generally compatible with the Town's needs. A copy of these Worksheets can be found in **Appendix B** of this report.

The list of activities evaluated are organized according to the SWSI Levels Framework. The SWSI Levels Framework was developed as a component of the 2010 SWSI update to organize water efficiency activities into a model that assists municipalities in prioritizing and selecting activities. The framework may be represented as a cylinder consisting of the following four categories in **Figure 4.1**.

SWSI Levels Framework includes the following levels of water efficiency activities:

- **Foundational Activities** – These activities focus on system operations and water efficiencies that are under Severance's direct control and can improve the effectiveness of the planning efforts by ensuring sufficient metering and data tracking.
- **Targeted Technical Assistance and Incentives** – These measures cover activities that Severance and its Water Service Area customers can do to improve existing water efficiency.
- **Ordinances and Regulations** – These measures include regulatory activities designed to encourage water efficiency.
- **Education Activities** – These efforts educate the public on the benefits of water efficiency, inform customers on how they can reduce their water usage, and publicize water efficiency activities that Severance is implementing.

Figure 4.1: SWSI Levels Framework



Further discussion regarding the SWSI Levels Framework are provided in subsequent sections.

Town Staff developed qualitative screening criteria used to evaluate the preliminary list of activities. The screening criteria include: 1) Financial implications; 2) Staff availability; 3) Partnership possibilities; 4) Staff and Board approval; 5) Existing or planned Town projects. Activities not meeting the screening criteria were eliminated. The specific reason for elimination of activities can be found in Worksheets D-G, located in **Appendix B**.

Evaluation and Selection

The evaluation and selection phase of the selection process involved development of evaluation criteria, evaluation of the activities, and selection of the final activities for implementation. Some of the general evaluation criteria included:

- Applicability to the Town of Severance
- Moderate to high potential reduction of water use
- Town Board and Town resident support and acceptance

4.2 Water Efficiency Activities

The initial screening of the water efficiency activities with Town Staff resulted in selecting 18 candidate activities for further evaluation. Some of the activities were combined within their SWSI Levels Framework to assist in evaluation and avoid double counting savings. The preliminary analyses of costs and benefits of the selected measures and programs are shown in **Table C1, Appendix C**. Details about the cost/benefit evaluation and information about each measure can be found in the following section with further detail available in **Appendix D**.

4.3 Selection of Activities for Implementation

The second screening was accomplished by evaluating each activity based on the criteria discussed in Section 4.1 (Applicability to Town of Severance, moderate to high potential reduction of water use, and Town Board and Town resident support and acceptance). Of the 18 original activities evaluated, all 18 of those activities were chosen for implementation. Details about the final 18 activities chosen can be found in the following descriptions.

Foundational Activities

- **System Wide Water Audits**
By implementing System Wide Water Audits, the Town could identify unmetered and unbilled treated water uses in order to assess where losses are occurring and how losses can be addressed. These losses are considered Non-Revenue water. The Town may utilize the IWA/AWWA Water Audit Method published in the AWWA Manual of Practice M36 to conduct a "top down approach." If training on AWWA's M36 is again made available through CWCB or other organizations, this would be a further incentive for Severance and other small communities to increase their knowledge of water use monitoring and audits.
- **Automatic Water Meter Reading Installation and Operations**
All of the Town Water Service Area customers are currently outfitted with Neptune Automatic Meter Reading (AMR) meters. AMR meters allow for data to be processed quicker and with less sources of error.
- **Enhanced Automatic Water Meter Reading Installation and Operations**
The Town would like to investigate enhancing their AMR system by offering a customer interactive portal where customers could get usage alerts and be able to view billing and metering data. This process may involve various steps of upgrading meters or adding registers to existing meters that would transmit usage information to the Town's metering system. Once fully integrated, the current system would become more of an Automatic Meter Infrastructure (AMI) system. One large benefit to an AMI system is the availability of real-time water tracking data to track losses and other issues not easily identified through other sources.
- **Water Efficient Rate Structure with Regular Updates**
Based on many studies, water rates (e.g., inclining and/or tiered) are one of the most effective ways to encourage efficient water use. A rate study is necessary to ensure maximum water conservation savings. Severance completed a rate

study approximately two years ago. The Town typically does an internal evaluation of their rates. Because they are very interrelated, this measure also includes Volumetric Billing and Tiered Rates within it. Severance's current rate structure as of January 2017 for all customers is as follows:

- \$28.00 for the first 5,000 gallons
- \$3.00 per 1000 gallons for 5,000-15,000 gallons
- \$3.25 per 1000 gallons for usage over 15,000 gallons
- Please Note: Additional water surcharges and plant investment fees will be accessed for accounts that exceed usage classification.

Other fees are listed in **Appendix E**.

As can be seen by the rates above, Severance currently has a base rate that includes the first 5,000 gallons. Upon further investigation, the Town Staff has realized that it may be beneficial and encourage more water savings if they charge a slightly lower base rate but then not include any water in the base rate. Customers would then be charged for the amount of water they use therefore translating into reduction in use.

- **Tap Fees with Water Use Efficiency Incentives (Lot based water dedication)**
Severance would encourage smaller lots designated by developers by charging reduced fees for smaller lot sizes. For example this might include allowance for lawn irrigation of up to 3,000 square feet. An additional fee may be charged for larger irrigation areas.
- **Leak Detection and Repair Program**
Although Severance's water system currently has relative low losses, the Town is interested in investigating the cost of an outside consultant (e.g., American Leak Detection) who could evaluate their system for leaks that may not be apparent through other means.
- **Master Plans/Water Supply Plans**
The Town has seen many benefits in developing and evaluating Master Plans and Water Efficiency Plans. These plans have increased the Town's awareness of activities and programs they can incorporate to help play their part in this region's overall need for water efficiency. Severance plans to continue committing resources for such plans that will improve its overall water efficiency and help plan for future use.

Targeted Technical Assistance and Incentives

Severance is hoping to potentially partner with Windsor, NWCWD, or other nearby communities in a group collaborative effort with the Center for ReSource Conservation (CReSC) for several of its *Targeted Technical Assistance and Incentive Programs*. CReSC offers multiple programs including "Garden in a Box", "Slow the Flow", "Toilet Upgrades", and more. CReSC is a non-profit organization that offers many programs that can assist communities with conservation efforts. The benefit for a provider like Severance who is small in size is that CReSC helps to greatly reduce the planning efforts, startup costs, and labor that can be associated with getting efficiency activities up and running. CReSC has the programs already set up and in place, so Severance will know

exactly what the upfront costs will be. CReSC hires and trains local technicians to provide the various services they offer, another value added component of CReSC programs.

- **Slow the Flow Residential Irrigation Audits**

Sometime within the planning period, the Town would like to potentially partner for this activity with the Town of Windsor and/or other communities and water districts nearby. CReSC would offer Slow the Flow sprinkler consultations for the Town's residential customers.

"The service usually takes 90 minutes and involves a visual inspection, data collection, and in-depth evaluation. The consultant will deliver a clear and actionable list of suggestions to reduce water use and runoff at each property, while keeping landscapes and lawns healthy." –CReSC.

This program will also help educate the Town's participants on how to water more effectively and efficiently.

- **Indoor Residential Water Audits**

This would be another activity that Severance is hoping to eventually partner with Windsor and/or other communities or districts. CReSC also offers indoor water audits (w/ low-flow shower-heads and faucet aerators)

"Slow the Flow offers consultations on residential water use and suggests simple measures to increase water use efficiency in the home. During the session the consultant will measure outputs from faucets, toilets, and shower-heads, and perform a cost/benefit analysis on fixture replacement options. He/She may also install low-flow shower-heads and faucet aerators at no cost. The consultation will leave the home owner with a customized list of recommendations for increasing efficient water use." – CReSC

- **Residential and Commercial Ultra High-Efficiency Toilet Upgrade Service or High-Efficiency Toilet Rebate Program**

Severance hopes to potentially partner with Windsor and participate in the Ultra High-Efficiency Toilet Upgrade Service offered by CReSC where participants can *"Save thousands of gallons of water per year with the breakthrough technology of the Niagara Stealth Toilet."* -CReSC. If Severance does not participate in the CReSC program, then the Town may partner with Windsor or offer toilet rebates on their own instead of offering the high efficiency toilet replacements. The number of participants is estimated to be approximately the same.

- **Giveaways: Residential Water Audit Kits**

Self-guided residential water audit kits can be designed and customized for the Town with various water saving items. Examples of these items include the following: water saving hose nozzles, water efficient shower heads, faucet aerators, dish squeegees, toilet volume reducers, leak detection tablets, and outdoor moisture meters. Instructions for conducting the audit and evaluating the results can give residential customers insight and direction on how they can save water and money. The guidance offered in the instructions could also lead the customer to take part in other conservation programs offered, including rebates, Garden in a Box, or Outdoor Water Audits.

Ordinances and Regulations

- **Watering Restrictions**

Severance has several watering restrictions. Their ordinance allows watering only from April through November. Watering is not allowed from 11 a.m. to 5 p.m. (with some exceptions). Within the Water Restrictions, the Town also includes suggested monthly watering guidelines as well as an explanation of the cycle and soak watering method. The Water Restrictions is included in **Appendix E**.

- **Water Waste Ordinance**

Within the Watering Restrictions, Severance also includes several other restrictions including not allowing water to "flow down the gutters" and limited car washing. The ordinance and guidelines are also included in **Appendix E**.

- **Landscape Design Ordinances and Restrictions**

Severance is interested in investigating some or all of the following landscape design ordinances: Rules and Regulations for Landscape Design/Installation, Soil Amendment Requirements, Turf Restrictions, and Irrigation Equipment Requirements. This activity would mostly address new construction, so the measurable benefits would depend on the growth the Town experiences within the Water Service Area. Other new developments outside of the Service Area but within the Town boundaries would also likely have the same restrictions, so there would be additional potential water savings, but that savings would not be measurable by the Town.

Although Severance does not currently have any landscape design ordinances, the Town does have a few new developments that have voluntarily reduced the turf area within each lot. One observation Town Staff has made, however, is that many of the customers within these areas actually use the same amount or more water than customers with larger turf areas. One theory for this is that customers with smaller turf area developments may feel more freedom to water more since they have less turf.

Educational Activities

- **General Educational Activities**

The Town plans to make strong efforts to expand the knowledge its citizens with many educational activities. These activities may include Bill Stuffers, Newsletters, Newspaper Articles, Mass Mailings, a Water Efficiency Page and links on Severance's Website, and Social Networking (e.g., Facebook and Twitter). Severance would also like to be more active in the community with other outreach efforts like Water Fairs and K-12 Teacher and Classroom Education. Severance may also utilize available programs like Colorado WaterWise's Live Like You Love It campaign to assist the Town Staff to create attractive brochures and other materials that will help get the water conservation message to the Town customers.

Other nearby communities like Windsor have interactive materials and equipment like Windsor's "Water Wagon". This is an educational 32-foot trailer used to travel to schools as well as community and civic events. The trailer helps to raise the awareness of water and its conservation by demonstrating the sources, importance, function, and uses of the water that so many take for granted. The Water Wagon is often paired with additional outside activities to enhance the students' experiences. Severance may have another partnering opportunity in sharing in these types of resources.

- **Xeriscape Demonstration Garden**

Maintaining a xeriscape demonstration garden is an excellent way to educate the public to the water savings and beauty available from xeriscaping. The Town is considering partnering with Boy Scouts or another organization to design and maintain a xeriscape demonstration garden at their main office. The Town also plans to post links and pictures to other nearby xeriscape gardens; for example since 2008 Windsor has volunteers that maintain the Treasure Island Xeriscape Garden that can be seen along the Poudre River Trail Corridor multiuse trail. Treasure Island is just seven miles away from Severance's Town Hall. **Figure 4.2** shows one view of the efforts that have been made. Treasure Island continues to expand each year and remains a beautiful example for Severance residents to admire low-watering landscape options and get ideas for their own landscaping and gardening adventures.

Treasure Island also serves other purposes. The Demonstration Gardening Group (DiGGers as the call themselves) have often offered xeriscape and gardening classes during the summer months. During its growing seasons, the garden has also provided thousands of pounds of fresh vegetables to the Windsor Food Pantry. It is estimated that over 500 visitors ride by the gardens each summer.

Figure 4.2: Windsor's Nearby Treasure Island Demonstration Garden



- **Landscape Design (Xeriscape) and Maintenance Classes**

Some Landscape Design and Xeriscape classes have been traditionally conducted at Windsor's Treasure Island Xeriscape Demonstration Garden. The classes provide a number of venues in which participants can learn more about xeriscaping as well as other gardening techniques. Severance could advertise the classes and post the times and dates when the events will be taking place. Windsor is also planning on providing classes through CReSC that Severance could potentially participate in.

- **Garden in a Box**

This is another activity in which Severance would hope to partner with the Town of Windsor. Each year CReSC offers an array of do it yourself xeric garden kits, created by professional landscape designers for sun, shade, and everything in between. These plant by number gardens can have a significant conservation impact and are perfect for anyone who wants to beautify their yard while using less water than standard turf. Garden in a Box is also a great complimentary activity to other programs like the demonstration garden at Treasure Island and the Landscape Classes.

Comparison of Costs and Benefits

As shown in **Table C1, Appendix C**, the cost for the evaluated activities varied from \$0.05 per 1,000 gallons for the *Water Efficient Rate Structure with Regular Updates* to \$309.78 per 1,000 gallons for the *Garden in a Box*. The 18 selected water efficiency activities and associated water savings were arranged within the targeted customer categories to more easily compare the anticipated savings to the original goals. Some of the measures contribute savings to more than one category. **Table 4.1** shows the water savings for the selected activities, sub-totaled for each category.

Table 4.1: Combined Water Savings of Selected Water Efficiency Activities

Conservation Measures and Programs	Estimated Annual Water Savings (MG)	Estimated Total Water Savings over Planning Period (MG)
Non-Revenue Water		
System Wide Water Audits	0.1	0.6
Automatic Water Meter Reading Installation and Operations	0.1	0.6
Enhanced Automatic Water Meter Reading Installation and Operations	0.11	1.1
Leak Detection and Repair Program	0.6	5.7
Master Plans/Water Supply Plans	0.1	0.6
System Wide Water Audits	0.1	0.6
Automatic Water Meter Reading Installation and Operations	0.1	0.6
Subtotal - MG	0.9	9
Acre-Feet	2.6	26

Conservation Measures and Programs <i>(cont.)</i>	Estimated Annual Water Savings (MG)	Estimated Total Water Savings over Planning Period (MG)
Residential		
Automatic Water Meter Reading Installation and Operations	1.1	10.9
Enhanced Automatic Water Meter Reading Installation and Operations	2.9	30.2
Water Efficient Rate Structure with Regular Updates	10.9	108.6
Tap Fees with Water Use Efficiency Incentives (Lot based water dedication)	0.6	5.9
Master Plans/Water Supply Plans	1.1	10.9
Slow the Flow Residential Irrigation Audits	0.05	2.6
Indoor Residential Water Audits	0.02	0.9
Residential and Commercial Ultra High-Efficiency Toilet Upgrade Service or High-Efficiency Toilet Rebate Program	0.03	1.6
Giveaways: Water Audit Kits	0.01	0.4
Watering Restrictions	0.3	2.5
Water Waste Ordinance	0.2	2.2
Landscape Design Ordinances and Restrictions	1.4	14.7
Education Activities (Combined areas)	5.5	54.7
Xeriscape Demonstration Garden	0.006	0.4
Landscape Design (Xeriscape) and Maintenance Classes	0.001	0.1
Garden in a Box	0.003	0.2
Subtotal - MG	23.9	246.5
Acre-Feet	73.4	757
Commercial		
Automatic Water Meter Reading Installation and Operations	0.07	0.7
Enhanced Automatic Water Meter Reading Installation and Operations	0.09	1.0
Water Efficient Rate Structure with Regular Updates	0.27	2.7
Tap Fees with Water Use Efficiency Incentives (Lot based water dedication)	0.04	0.4
Master Plans/Water Supply Plans	0.07	0.7
Residential and Commercial Ultra High-Efficiency Toilet Upgrade Service or High-Efficiency Toilet Rebate Program	0.003	0.2
Giveaways: Water Audit Kits	0.0003	0.02
Watering Restrictions	0.02	0.2
Water Waste Ordinance	0.01	0.1
Landscape Design Ordinances and Restrictions	0.09	1.0

Conservation Measures and Programs (cont.)	Estimated Annual Water Savings (MG)	Estimated Total Water Savings over Planning Period (MG)
Commercial (cont.)		
Education Activities (Combined areas)	0.10	1.0
Xeriscape Demonstration Garden	0.0007	0.04
Landscape Design (Xeriscape) and Maintenance Classes	0.0002	0.01
Garden in a Box	0.0004	0.02
Subtotal - MG	0.8	8.2
Acre-Feet	2.4	25
Grand Total - (MG)	26	263
Acre-Feet	78	807

These savings were compared to the original goals set in Section 3. **Table 4.2** compares the anticipated water savings from the selected activities with the original goals and then adjusts the water saving goals for this Plan.

Over the 10 year planning period, the selected activities provide an overall estimated water savings of 807 AF if all activities could be implemented for the entire period. Most of the preliminary goals were fairly close (within 1% difference) to the final adjustments. The adjusted goals reflect the goals believed to be obtainable by Town Staff. After the goals were adjusted to reflect the expected water savings, the estimated water use reduction is 10.9%. Therefore, Severance will target an overall reduction in its projected water use by 10.9% over the planning period because of implementation of this Plan.

Table 4.2: Water Efficiency Goals Comparison

Water Use Categories:	Total Projected Water Use (2017 to 2026) (AF)	Reduction Goals for Planning Horizon (%) (AF)		Adjusted Reduction Goals for Planning Horizon	
				Total Water Savings from Activities (AF)	Resulting Reduction (%)
Residential	6,663	11.0%	733	757	11.4%
Commercial	420	5.0%	21	24	5.8%
Non-Revenue Water	350	4.0%	14	26	4.4%
Total Water Supply:	7,433				
Total Demand Reduction:			768	807	
Total Percent Reduction:			10.3%		10.9%

SECTION 5.0 – IMPLEMENTATION AND MONITORING PLAN

5.1 Implementation Plan

The implementation plan defines the process necessary to carry out the selected water efficiency activities. John Holdren (Town Administrator) and Nicholas Wharton (Assistant Town Administrator) will be chiefly responsible for coordinating and delegating to implement this Plan. Some of the details Severance will use to implement the water efficiency plan are presented in Worksheet J, **Appendix B**. Severance will continue to work to budget money and pursue CWCB water efficiency implementation grants to meet its water efficiency goals.

5.2 Monitoring Plan

Monitoring types of demand data can be beneficial in tracking the savings generated from implementing a water efficiency plan. Severance monitors total treated water produced on a daily basis. Other categories of raw and treated water and customer accounts are monitored on a monthly and annual basis. The demand data which will be collected during the monitoring period of the Plan is presented in Worksheets K, **Appendix B**. An abbreviated table of Worksheet K is presented in the following, **Table 5.1**.

Table 5.1: Selection of Demand Data for Efficiency Plan Monitoring

Monitoring Data	HB 10-1051 Reporting Requirement				Selection			
	Annual	Monthly	Bi-Monthly	Daily	Annual	Monthly	Weekly	Daily
Total Water Use								
Total treated water produced (at NWCWD master meter)					X	X	X	X
Total treated water delivered (sum of customer meters)	√				X	X		
Raw non-potable deliveries to Soldier Canyon Filter Plant (by NWCWD)					X	X		
Reclaimed water produced (metered at WWTP discharge)								
Reclaimed water delivered (sum of customer meters)								
Per capita water use					X			
Indoor and outdoor treated water deliveries					X	X		
Treated water peak day produced					X	X		
Reclaimed water peak day produced								
Raw water peak day produced/delivered								
Non-revenue water	√				X	X		

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Monitoring Data (cont.)	HB 10-1051 Reporting Requirement					Selection			
	Annual	Monthly	Bi-Monthly	Daily		Annual	Monthly	Weekly	Daily
Water Use by Customer Type									
Treated water delivered		√				X	X		
Raw non-potable deliveries									
Reclaimed water delivered									
Residential per capita water use						X			
Unit water use (e.g. AF/account or AF/irrigated acre)									
Indoor and outdoor treated water deliveries						X			
Large users									
Other Demand Related Data									
Irrigated landscape (e.g. AF/acre or number of irrigated acres)									
Precipitation									
Temperature									
Evapotranspiration									
Drought index information									
Economic conditions						X			
Population						X			
New taps						X	X		

SECTION 6.0 – ADOPTION OF NEW POLICY, PUBLIC REVIEW, AND FORMAL APPROVAL

6.1 Public Review Process

A public review process is required for all State approved plans. For this water efficiency planning process, the public was notified of the 60-day comment period from June 20, 2017 to August 19, 2017 and how to submit comments. The Plan was available for download on Severance's website on the Water Conservation webpage and at the Town Hall for review. One set of public comments was received during the 60 day comment period. Not all comments were directly related to water efficiency. To the extent possible, comments were addressed in the revised Plan. Copies of public notice announcements, and a summary of the public comments, and the official Plan adoption resolution are provided in Appendix F.

6.2 Local Adoption and State Approval Process

After the public comment period, the comments were incorporated into the planning document as well as any additional revisions. The Severance Town Board adopted the Plan at the Board Meeting on September 18, 2017, and the Plan was submitted to CWCB following the Board Meeting.

CWCB provided written notification of approval with minor additions on October 5, 2017. Conditions for approval were addressed, and the official approval was received on October 10, 2017. Research and set up of programs can begin upon approval and implementation of the selected measures will likely begin in the fall of 2017. The cover letter prepared for CWCB, CWCB's Approval Checklist, and CWCB's formal approval letter are included in Appendix G.

6.3 Periodic Review and Update

The Town plans to review and update this Plan every seven years. The first update is scheduled to be completed in 2026.

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DEFINITION OF TERMS & TERMINOLOGY

This section provides an overview of many acronyms, terms, and terminology that are commonly used in water efficiency and water planning. Some additional terms are included that are common in this geographical area. Please note that this is not a comprehensive list of all terms and definitions. Other important terminology is reserved for discussion within the document. Not all of the following terms are used within the main body of this document.

<i>AF:</i>	Acre-foot: The amount of water it would take to cover one acre of land to a depth of one foot; approximately 325,851 gallons.
<i>AMI</i>	AMI stands for Advanced Metering Infrastructure. AMI meters, also known as Smart meters are updated, digital versions of the traditional electrical meter attached to the outside of a home or business. These new meters not only measure how much water (electrical and other meters are also common) is used, but also at what times during the day. More advanced Smart meters are also designed to transmit pricing and water information from the utility company to the consumer (two-way communication). Utility companies who provide their customers with Smart meters are able to implement a variety of water reduction and saving programs, helping reduce the cost of providing water to a community.
<i>AMR</i>	AMR stands for Automatic Meter Reading. It is an older technology that only collects electrical energy consumption and transfers that data from the electric meter on the home to the utility (one-way communication). Typically AMR meters are a “drive-by” type that require the utility to be in close proximity in order to read the meter. (also see AMI)
<i>Average Day Demand:</i>	Average daily treatment plant production divided by the total tap equivalents served
<i>BMP:</i>	Best Management Practice
<i>Build-out:</i>	Theoretical maximum development of city, town, district, or service area
<i>C-BT:</i>	Colorado Big Thompson (see Northern Water)

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<i>C-BT Quota:</i>	The percentage set by the NCWCD Board of Directors each water year which determines the amount of ac-ft per unit of C-BT, i.e. 70% quota equals 0.7 ac-ft per C-BT unit.
<i>CReSC:</i>	Center for Resource Conservation: CReSC offers multiple programs including “Garden in a Box”, “Slow the Flow”, “Toilet Upgrades”, and more. CReSC is a non-profit organization that offers many programs that can assist communities with conservation efforts. The benefit for a provider like Severance who is relatively small in size is that CReSC helps to greatly reduce the planning efforts, startup costs, and labor that can be associated with getting efficiency activities up and running. CReSC has the programs already set up and in place, so the Town will know exactly what the upfront costs will be. Additionally, CReSC hires and trains local technicians to provide the various services they offer, another value added component of CReSC programs.
<i>CWCB:</i>	Colorado Water Conservation Board
<i>Demand management:</i>	The implementation of water efficiency activities to reduce water deliveries (demands) and or improve efficiencies within the distribution system. For purposes of this document, demand management refers to both system and customer water demands. Demand management is used interchangeably with water efficiency.
<i>Demand-side:</i>	The distribution and consumption of treated water supplies for domestic purposes or the delivery and use of reclaimed water or untreated raw (i.e. ditch water, groundwater) for non-potable purposes such as irrigation or industrial processes.
<i>Dual water supply systems:</i>	Water supply systems that use a combination of treated water to meet potable water needs and reclaimed water and/or non-treated water (i.e. untreated ditch water and groundwater) to meet non-potable water needs.
<i>ELCO:</i>	East Larimer County Water District
<i>ET:</i>	Evapotranspiration: The rate at which water is removed from the soil by evaporation and from plant surfaces by transpiration.
<i>ET Controllers:</i>	Evapotranspiration controllers adjust the amount of water applied from sprinkler systems based on soil moisture and weather conditions.

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<i>FCLWD:</i>	Fort Collins-Loveland Water District
<i>GMA:</i>	Growth Management Area
<i>GPCD:</i>	Gallons per capita per day: A measure of efficiency to determine the approximate amount of water that each resident within an area utilizes each day.
<i>Maximum Day:</i>	The largest amount of water used in a single day.
<i>MG:</i>	Million gallons
<i>MGD:</i>	Million gallons per day
<i>MWEP:</i>	Municipal Water Efficiency Plan
<i>NCWCD:</i>	Northern Colorado Water Conservancy District. More often referred to as Northern Water (see Northern Water)
<i>NEPA:</i>	National Environmental Policy Act
<i>NISP:</i>	Northern Integrated Supply Project (see Northern Water) and additional information within the document.
<i>Non-Potable Use:</i>	Water that is not treated and used for irrigation or other uses than potable. The Town currently does not have a non-potable water supply except for the parks mentioned. Some developments have non-potable systems separate from the Town's water system.
<i>Non-revenue water:</i>	Annual non-revenue water (previously referred to as unaccounted for water) consists of unbilled authorized uses (i.e. hydrant flushing), apparent losses, and real losses. Real losses consist of leaks in the water distribution system that does not reach the end user. Apparent losses consist of unauthorized consumption, customer metering inaccuracies, and data handling errors.
<i>Northern Water</i>	Northern Colorado Water Conservancy District. Supplies the C-BT water for the SCFP which in turn supplies NWCWD with water for its customers including Severance.
<i>NPIC:</i>	North Poudre Irrigation Company
<i>NWCWD:</i>	North Weld County Water District
<i>Peak Hour:</i>	The largest amount of water used in a single hour – typically occurs on the Maximum Day.

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<i>Phreatophytes:</i>	Species of plants and trees that consume groundwater through their root zones below the water table such as Cottonwood and Russian Olive trees.
<i>PIF:</i>	Plant Investment Fee, fee charged to developers for on-going maintenance cost of infrastructure replacement and repair.
<i>Potable Use:</i>	Water that is treated to drinking water standards for municipal use, including residential and commercial use. Once treated, the Town's C-BT water is used for potable use.
<i>SCFP:</i>	Soldier Canyon Filter Plant
<i>SFE:</i>	Single Family Equivalent, unit of measure used in planning to adjust water use for multi-family dwellings, such as townhomes or condominiums, to a single residential equivalent.
<i>Supply-side:</i>	Water supply operations and facilities that include the diversion, extraction, storage, and transmission of untreated water.
<i>SWSI:</i>	State Wide Supply Initiative
<i>System water demand:</i>	Volume of water necessary to meet customer water needs within a certain period of time. System water demand is typically measured at the point of discharge from the water treatment plant and includes non-revenue water. In dual water supply systems, system water demand may also include the distribution and delivery of non-potable water (i.e.: reclaimed water and untreated ditch and groundwater) to meet irrigation needs.
<i>TE:</i>	Tap Equivalent, unit of measure often used by providers to adjust water use for larger taps such as multi-family or commercial, to a single residential tap equivalent. A typical single residential tap is either $\frac{5}{8}$ " or $\frac{3}{4}$ ".
<i>Water efficiency:</i>	<p>Water efficiency includes the practices, techniques, and technologies that extend water supplies either directly through water savings or through substituting alternative supplies such as reuse. For purposes of this document, water efficiency is inclusive of water conservation and is used instead of "water conservation." The term water efficiency captures the essential objective of a local plan which is to improve the efficiency of a municipal demand and water supply system. Water efficiency includes both system demands and customer water demands.</p> <p><i>Note: CWCB's former 2005 Water Conservation Plan Development Guidance Document and other literature on conservation and water use efficiency distinguish supply-side and demand-side water use efficiency.</i></p>

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	<i>These resources generally characterize demand-side as technical efficiencies (e.g. water efficient toilets) and behaviors (e.g. taking shorter showers) that save water at the end use/water user level. Supply-side refers to water efficiency at the system level such as the repair of pipeline leaks and water reuse. For purposes of this Plan, the distinction between these water efficiency encompasses both supply and demand side efficiencies.</i>
<i>Water efficiency activities:</i>	Traditionally water efficiency activities have been referred to as water conservation measures and or water conservation programs. For purposes of this document, measures and programs are replaced with water efficiency activities. Water efficiency activities encompass all efforts to either save water or improve efficiencies within a water supply system.
<i>WCP:</i>	Water Conservation Plan. CWCB's previous designation for (Municipal) Water Efficiency Plans
<i>Wind and Rain Sensor:</i>	A device that is connected to the irrigation system controller that will temporarily shut off irrigation when a pre-determined amount of rain or wind is detected.
<i>WSSC:</i>	Water Supply and Storage Company
<i>WTP:</i>	Water treatment plant
<i>WWTP:</i>	Wastewater treatment plant

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APPENDIX B

Municipal Water Efficiency Plan Guidance Document Worksheets

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WORKSHEET A - WATER SUPPLY LIMITATIONS AND FUTURE NEEDS

Limitation and/or Future Need [1]	[2]		Comments on Limitation or Future Need [3]	How is Limitation or Future Need Being Addressed [4]
	Yes	No		
System is in a designated critical water supply shortage area	X		As per SWSI 2010 report	Water Efficiency Plan is being created, and activities are being investigated and planned.
System experiences frequent water supply shortages and/or emergencies		X	No	
System has substantial non-revenue water		X	Averaged only 4.7% Non-Revenue Water (2012 - 2016)	
Experiencing high rates of population and demand growth		X	Very high growth in past 20 years. Currently leveling off. Still higher than surrounding communities. May experience higher growth again in the future depending on developments coming in.	Being proactively looking for additional water supplies. Looking at policy changes for developers bringing water vs. CIL or some combination.
Planning substantial improvements or additions		X	Only as development occurs and warrants it.	
Increases to wastewater system capacity anticipated		X	Only as development occurs and warrants it.	
Need additional drought reserves		X	None needed at this time.	
Drinking water quality issues		X	None	
Aging infrastructure in need of repair		X	Severance's system is relatively new. Most of the system is less than 20 years old. Other portions are nearly all replaced.	
Issues with water pressure in portions of distribution system		X	Occasionally areas of high pressure but nothing significant.	

Instructions:

[1] This column provides a list of limitations/future needs related to planning and operating the water supply system.

[2] Enter an "X" to show whether or not the system exhibits the limitations/future needs.

[3] Include any comments regarding the limitations/future needs that may be useful to consider in the planning process.

[4] If applicable, include how the limitation/future need is being addressed.

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WORKSHEET D - IDENTIFICATION AND SCREENING OF FOUNDATIONAL ACTIVITIES

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification		Notes on Additional Pros/Cons to Consider	Carry to Evaluation [6]	Reason for elimination or other comments [7]
		Existing/ Potential Activity [3]	Targeted Customer Category [4]			
Metering (BP1)						
Automatic Meter Reading (AMR) Installation and Operations	V, VII	E	All Categories		X	
Submetering for Large Users (Indoor and Outdoor)	V					System too small to warrant submetering
Meter Testing and Replacement	V					Meters relatively new
Meter Upgrades	V	E	Non-Revenue		X	Looking into AMI or hybrid system
Identify Unmetered/Unbilled Treated Water Uses	V	E	Non-Revenue			Very small percentage of non-revenue water
Data Collection - Monitoring and Verification (BP2)						
Frequency of Meter Reading	VII	E	All Categories [a]			Read monthly with AMR system
Tracking Water Use by Customer Type	VII	E	All Categories [a]			Part of existing billing system
Upgrade Billing System to Track Use by Sufficient Customer Types	VII	E	All Categories [a]			Part of existing billing system
Tracking Water Use for Large Customers	VII		All Categories [a]			No customers really fit into this category
Water Use Efficiency Oriented Rates and Tap Fees (BP1)						
Volumetric Billing	VII, VIII	E	All Categories [a]			Already in place
Water Rate Adjustments	VII, VIII	E	All Categories [a]		X	
Frequency of Billing	VII	E	All Categories [a]			Billing is done monthly
Inclining/Tiered Rates	VII, VIII	E	All Categories [a]			Evaluating eliminating the base water volume allowed
Rate Study with Regular Updates	VII, VIII	E/P	All Categories [a]		X	See above
Water Budgets	VII, VIII					Not interested in further evaluation.
System Water Loss Management and Control (BP3)						
System Wide Water Audits	V	P	Non-Revenue		X	
Control of Apparent Losses (with Metering)	V					Losses already low. No additional meters warranted.
Leak Detection and Repair	V	P	Non-Revenue		X	Looking into outside consultant
Water Line Replacement Program	V	E				Waterlines are fairly new. Only older lines are scheduled to be replaced.
Planning (BP2)						
Integrated Water Resources Plans		E	All Categories		X	The Town will evaluate the costs and benefits of all these planning efforts combined
Master Plans/Water Supply Plans		E	All Categories			
Capital Improvement Plans		E	All Categories			
Feasibility Studies			All Categories			
Staff (BP4)						
Water Conservation Coordinator						Resources are not available for this activity

Customer Category Abbreviations: Res = Residential, Comm = Commercial

Instructions:

- [1] This column provides a list of possible activities & identifies the Best Practice activity as defined in the Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado. List additional activities identified through the planning process.
- [2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
- [3] Specify whether the activity is "Existing" or a "Potential" activity to carry through screening by entering an "E" or "P", respectively.
- [4] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
- [5] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.
- [6] Based on the screening process, indicate which activities will be carried onto the evaluation phase with an "X".
- [7] If eliminated via screening, comment on why.

Notes:

[a] All categories except Non-Revenue

WORKSHEET E - IDENTIFICATION AND SCREENING OF TARGETED TECHNICAL ASSISTANCE INCENTIVES

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Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Existing/ Potential Activity [3]	Identification			Targeted Customer Category [5]	Carry to Evaluation [7]	Reason for Elimination [8]
			SWSI Framework Levels [4]					
			Level 1 Municipal Uses	Level 2 Customers with the Largest Water Use	Level 3 Customer Type(s) In Service Area			
Installation of Water Efficient Fixtures and Appliances								
Indoor Residential Water Audits	I	P	X	X	X	Res	X	
Faucet and Showerhead Retrofits (e.g. aerator installation)	I	P	X	X	X	Res	X	Combined with Residential Water Audits
Water Efficient Washing Machines	I		X	X	X			
Water Efficient Dishwashers	I		X	X	X			Limited benefit and resources
Efficient Swamp Cooler and Air Conditioning Use	I		X	X	X			
Low Water Use Landscapes								
Removal of Phreatophytes	II		X	X	X			Few if any are located near existing water supply or identified in irrigated areas
Residential Irrigation Audits	II	P	X	X	X	Res	X	
Outdoor Irrigation Controllers	II		X	X	X			
Rain Sensors	II		X	X	X			Not interested in further evaluation at this time
Water- Efficient Industrial and Commercial Water-Using Processes								
Commercial Indoor Fixture and Appliance Rebates/Retrofits	III				?			Very limited Commercial customers
Commercial and Industrial Water Audits	III				?			
Pre-Rinse Spray Valve (PRSV) Upgrades	III				?			Very few restaurants in service area. Most already have upgrades.
Incentives								
Toilet Rebates	X	P	X	X	X	Res	X	
Urinal Rebates					?			Limited benefit
Showerhead Rebates	X	P	X	X	X	Res	X	
Water Efficient Faucet or Aerator Rebates	X	P	X	X	X	Res	X	Incorporated into Residential Water Audits
Water Efficient Washing Machine Rebates	X		X	X	X			Limited benefit and resources
Water Efficient Dishwasher Rebates	X		X	X	X			Limited benefit
Efficient Irrigation Equipment Rebates	X		X	X	X			Limited resources
Xeriscape Incentives		P	X	X	X			Resources are not available for this activity. May be partially incorporated with Landscape requirements.
Giveaways	X	P	X	X	X	Res, Comm	X	

Customer Category Abbreviations: Res = Residential, Comm = Commercial

Instructions:

[1] This column provides a list of activities & if applicable, identifies the Best Practice activity as defined under *Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado*. List additional activities identified through the planning process.

[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.

[3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.

[4] Specify which level the historical/potential activities fall under by entering an "X" in the appropriate column.

[5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.

[6] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.

[7] Based on the screening process, indicate which activities will be carried on the evaluation phase with an "X".

[8] If eliminated via screening, comment on why.

Notes:

[a] All categories except Non-Revenue

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WORKSHEET F - IDENTIFICATION AND SCREENING OF ORDINANCES AND REGULATIONS

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Existing/ Potential Activity [3]	Identification			Targeted Customer Category [5]	Carry to Evaluation [7]	Reason for Elimination [8]
			SWSI Framework Levels [4]					
			Level 1 Customer Type(s) within the Existing Service Area	Level 2 New Development	Level 3 Point of Sales on Existing Building Stock			
General Water Use Regulations								
Water Waste Ordinance (BP 5)	IX	E	X			All Categories [a]	X	
Time of Day Watering Restriction	IX	E	X				X	
Day of Week Watering Restriction	IX	E	X				X	
Water Overspray Limitations	IX	E	X				X	
Landscape Design/Installation Rules and Regulations								
Rules and Regulations for Landscape Design/Installation	IX	P		X		All Categories [a]	X	May be incorporated to some degree in the "Landscape Design Ordinances and Restrictions"
Restrictive Covenants Ordinance	IX	P		X			X	
Irrigation System Installer Training and Certification (BP 8)	IX			X		All Categories [a]		Limited resources
Soil Amendment Requirements (BP 9)	IX	P		X		All Categories [a]	X	The rules and regulations may all be incorporated to some degree in the Landscape Design Ordinances and Restrictions
Turf Restrictions (BP 9)	IX	P	X	X			X	
Irrigation Equipment Requirements	IX	P	X	X			X	
Outdoor Water Audits/Irrigation Efficiency Regulations (BP 10)	IX		X	X		All Categories [a]		Limited resources
Outdoor Green Building Construction (BP 8,9)	IX			X		All Categories [a]		Limited benefit and resources
Indoor and Commercial Regulations								
Requiring Wind and/or Rain Sensors for Commercial and Open Space Irrigation	IX		X	X		Comm		Commercial customers and water use is very limited in the service area.
Commercial Cooling and Process Water Requirements (BP 14)	IX		X	X				
Green Building Construction (BP 12)	IX		X	X				
Indoor Plumbing Requirements (BP 12)	IX		X	X		All Categories [a]		Indoor plumbing requirements follow current protocols for new houses and buildings.
City Facility Requirements (BP 12)	IX		X			Comm		City Facilities are new, so appliances are also new and low water use.
Required Indoor Residential Audits (BP 13)	IX		X	X		Res		Not supported by customers or Board
Required Indoor Commercial Audits (BP 14)	IX		X	X		Comm		Commercial customers and water use is very limited in the service area.
Commercial Water Wise Use Regulations (Car Washes, Restaurants, etc.)	IX		X	X				

Customer Category Abbreviations: Res = Residential, Comm = Commercial

Instructions:

- [1] This column provides a list of possible activities & if applicable identifies the Best Practice activity as defined under Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado. List additional activities identified through the planning process.
- [2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
- [3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.
- [4] For current/historical activities, specify which level the activities fall under by entering an "X" in the appropriate column.
- [5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
- [6] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.
- [7] Based on the screening process, indicate which activities will be carried on the evaluation phase with an "X".
- [8] If eliminated via screening, comment on why.

Notes:

[a] All categories except Non-Revenue

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WORKSHEET G - IDENTIFICATION AND SCREENING OF EDUCATION ACTIVITIES

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification				Targeted Customer Category [5]	Carry to Evaluation [7]	Reason for Elimination [8]
		Existing/ Potential Activity [3]	SWSI Framework Levels [4]					
			Level 1 One-Way	Level 2 One-Way with Feedback	Level 3 Two-way communication			
Customer Education (BP6)								
Bill Stuffers	VI	P	X			All Categories [a]	X	The Town would like to look into various ways of reaching out and educating their customers. Some of these may also be a partnering possibility with other communities and water providers. The Town will try and evaluated what elements of the Educational Activities will likely have the greatest impact.
Newsletter	VI	P	X				X	
Newspaper Articles	VI	P	X				X	
Mass Mailings	VI	P	X				X	
Web Pages	VI	P	X				X	
Water Fairs	VI	P	X				X	
K-12 Teacher and Classroom Education Programs	VI	P		X			X	
Send ET irrigation scheduling information in water bill	VI	P	X				X	
Interactive Websites	VI	P		X			X	
Social Networking (e.g. Facebook)	VI	P		X	X		X	
Customer Surveys	VI	P		X	X	X		
Focus Groups	VI				X	All Categories [a]		Limited resources
Citizen Advisory Boards	VI				X	All Categories [a]		Already in place
Technical Assistance								
Customer Water Use Workshops	VI	P		X		All Categories [a]	X	The Town hopes to partner with Windsor and/or other communities or providers for these activities.
Landscape Design and Maintenance Workshops	VI	P		X		All Categories [a]		
Xeriscape Demonstration Garden	VI	P		X		All Categories [a]		
Water Conservation Expert Available	VI				X	All Categories [a]		Resources are not available for this activity

Customer Category Abbreviations: Res = Residential, Comm = Commercial

Instructions:

- [1] This column provides a list of possible activities & if applicable identifies the Best Practice activity as defined under Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado. List additional activities identified through the planning process.
- [2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
- [3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.
- [4] For current/historical activities, specify which level the activities fall under by entering an "X" in the appropriate column.
- [5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
- [6] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.
- [7] Based on the screening process, indicate which activities will be carried on the evaluation phase with an "X".
- [8] If eliminated via screening, comment on why.

Notes:

[a] All categories except Non-Revenue

WORKSHEET J - IMPLEMENTATION PLAN DRAFT

Selected Water Efficiency Activities [1]	Period of Implementation [2]	Implementation Actions [3]	Milestone Deadlines [4]	Entity/Staff Responsible for Implementation [6]	Coordination and Public Involvement [7]
Foundational Activities					
<i>System Wide Water Audits</i>	<i>ongoing</i>	Look into AWWA or other software	none specified	Administration	
<i>Automatic Water Meter Reading Installation and Operations</i>	<i>ongoing</i>	Continue present plan	none specified	Administration	
<i>Enhanced Automatic Water Meter Reading Installation and Operations</i>	<i>ongoing</i>	Look into options of either adding registers to existing meters or upgrading meters as replacement is needed	none specified	Administration	
<i>Water Efficient Rate Structure with Regular Updates</i>	<i>ongoing</i>	Investigate eliminating the base rate amount.	2017	Administration	
<i>Tap Fees with Water Use Efficiency Incentives (Lot based water dedication)</i>	<i>ongoing</i>	Present potential ordinance wording to Town Board	2017/2018	Administration	
<i>Leak Detection and Repair Program</i>	<i>ongoing</i>	Get quote from American Leak Detection (or other consultant). Budget money for leak detection.	2018	Administration	
<i>Master Plans/Water Supply Plans</i>	<i>ongoing</i>	Continue present plan	2018/2019	Town Engineer	
Targeted Technical Assistance and Incentives					
<i>Slow the Flow Residential Irrigation Audits</i>	<i>ongoing</i>	Contact Patti from Windsor	none specified	Administration	Once in place, advertise availability to residents
<i>Indoor Residential Water Audits</i>	<i>ongoing</i>	Contact Patti from Windsor	none specified	Administration	
<i>Residential and Commercial Ultra High-Efficiency Toilet Upgrade Service or High-Efficiency Toilet Rebate Program</i>	<i>ongoing</i>	Contact Patti from Windsor	none specified	Administration	
<i>Giveaways: Water Audit Kits</i>	<i>ongoing</i>	Contact AM Conservation Group or other kit provider	2018/2019	Administration	Find Partnership
Ordinances and Regulations					
<i>Watering Restrictions</i>	<i>ongoing</i>		Already in place	Administration	
<i>Water Waste Ordinance</i>	<i>ongoing</i>		Already in place	Administration	
<i>Landscape Design Ordinances and Restrictions</i>	<i>ongoing</i>	Town Board Approval and Implementation	2017/2018	Town Planner	
Education Activities					
<i>Bill Stuffers</i>	<i>ongoing</i>	Continue present plan with additional efforts made	none specified	Communications Staff	Potentially partner with Colorado WaterWise Live Like You Love It Campaign
<i>Newsletters</i>					
<i>Newspaper Articles</i>					
<i>Mass Mailings</i>					

WORKSHEET J - IMPLEMENTATION PLAN **DRAFT**

<i>Interactive webpages and website updates</i>	<i>ongoing</i>	Internal Coordination	none specified	Communications Staff	
<i>Water Fairs</i>	<i>ongoing</i>	Contact Patti from Windsor	none specified	Administration	Town of Windsor Co-op
<i>K-12 Teacher and Classroom Education Programs</i>	<i>ongoing</i>	Contact Patti from Windsor	none specified	Administration	Weld RE-4 District Co-op
<i>Social Networking (Facebook & Twitter)</i>	<i>ongoing</i>	Internal Coordination	none specified	Communications Staff	
<i>Xeriscape Demonstration Garden</i>	<i>ongoing</i>	Update links; contact Boy Scouts or other volunteer organizations.	2020	Town Planner	Work w/ Developers to set aside land
<i>Landscape Design (Xeriscape) and Maintenance Classes</i>	<i>ongoing</i>	Contact Patti from Windsor	none specified	Town Planner	Public classes at Town Hall or partnership with other community
<i>Garden in a Box</i>	<i>ongoing</i>	Contact Patti from Windsor	none specified	Town Planner	Find Partnership

Instructions:

- [1] Provide the list of water efficiency activities selected for implementation during Step 4.
- [2] Provide period in which activity is going to be implemented.
- [3] Include information on specific actions necessary to implement the activities (e.g. advertise rebates to public).
- [4] Indicate timing of when the action are scheduled to be implemented (e.g. when leaks will be repaired, when rebate program will start, etc.).
- [5] Insert anticipated annual costs.
- [6] Specify which entity/staff responsible for implementing the activities.
- [7] If applicable, comment on necessary coordination among staff/other entities and how the public will be involved. This includes educational campaigns, feedback, direct participation in certain actions, etc.
- [8] Add any additional comments.

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WORKSHEET K - SELECTION OF MONITORING DEMAND DATA FOR MONITORING PLAN

Monitoring Data [1]	HB 10-1051 Reporting Requirement [2]				Selection [3]				Entity/Staff Responsible for Data Collection and Evaluation [4]	Comments [6]
	Annual	Monthly	Bi-Monthly	Daily	Annual	Monthly	Bi-Monthly	Daily		
Total Water Use										
Total treated water produced (metered at NWCWD master meter)					X	X		X	NWCWD, Town Engineer, Public Works	
Total treated water delivered (sum of customer meters)	√				X	X			Public Works	
Raw non-potable deliveries to Soldier Canyon Filter Plant (by NWCWD)					X	X			NWCWD	
Reclaimed water produced (metered at WWTP discharge)										
Reclaimed water delivered (sum of customer meters)										
Per capita water use					X				Town Administrator	Explained in main body of Plan
Indoor and outdoor treated water deliveries					X	X			Town Administrator	Explained in main body of Plan
Treated water peak day produced					X	X			Public Works	
Reclaimed water peak day produced										
Raw water peak day produced/delivered										
Non-revenue water	√				X	X			Town Administrator	
Water Use by Customer Type										
Treated water delivered		√			X	X			Public Works	
Raw non-potable deliveries										
Reclaimed water delivered										
Residential per capita water use					X				Town Administrator	Explained in main body of Plan
Unit water use (e.g. AF/account or AF/irrigated acre)										
Indoor and outdoor treated water deliveries					X				Town Administrator	Explained in main body of Plan
Large users					X					No specific format. Mostly observational
Other Demand Related Data										
Irrigated landscape (e.g. AF/acre or number of irrigated acres)										Five parks: approximately 14.5 acres. Non-potable water not currently metered.
Precipitation										
Temperature										
Evapotranspiration										
Drought index information										
Economic conditions					X				Town Administrator, Town Planner	
Population					X				Town Administrator, Town Planner	
New taps					X	X			Town Engineer, Public Works, Town Administrator	

Instructions:

[1] This worksheets provides a list of possible demand data. Add additional demand data provider would like to monitor.

[2] Specifies annual reporting requirements per HB 10-1051.

[3] Select demand data provider plans to use to monitor effectiveness of water efficiency activities by inserting an "X" in appropriate boxes.

[4] Specify staff/entity responsible for data collection and evaluation.

[5] Specify the timing and/or set schedule in which data will be collected and evaluated.

[6] Add any additional comments.

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Table C1: Water Efficiency Activity Evaluation

Water Efficiency Activities for Evaluation	Existing/ Potential Activity	Targeted Customer Category	Review of Qualitative Screening			Evaluation					
			Qualitative Goals			Projected Water Savings					Projected Implementation Costs over Planning Period Including Lost Revenue
			Benefit in Water Savings	Staff Approval and Availability	Board and Public Approval	Total Water Savings over the Planning Period (MG)	Total Water Savings over the Planning Period (AF)	Average Annual Water Savings (MG/yr)	Average Annual Water Savings (AF/yr)	Cost per 1,000 gal saved	
Foundational Activities											
System Wide Water Audits	P	Non-Revenue	X	X	X	0.6	1.75	0.06	0.17	\$14.06	\$8,016
Automatic Water Meter Reading Installation and Operations	E	All Categories	X	X	X	12.1	37.17	1.21	3.72	\$13.53	\$163,867
Enhanced Automatic Water Meter Reading Installation and Operations	P	All Categories	X	X	X	32.3	99.07	3.07	9.43	\$10.62	\$342,685
Water Efficient Rate Structure with Regular Updates	E/P	Residential, Commercial	X	X	X	111.3	341.56	11.13	34.16	\$0.05	\$6,012
Tap Fees with Water Use Efficiency Incentives (Lot based water dedication)	P	Residential, Commercial	X	X	X	6.2	19.13	0.62	1.91	\$5.17	\$32,211
Leak Detection and Repair Program	P	Non-Revenue	X	X	X	5.7	17.50	0.57	1.75	\$3.51	\$20,021
Master Plans/Water Supply Plans	E	All Categories	X	X	X	12.1	37.17	1.21	3.72	\$18.54	\$224,589
Targeted Technical Assistance and Incentives											
Slow the Flow Residential Irrigation Audits	P	Residential	X	X	X	2.6	7.98	0.05	0.15	\$8.85	\$23,011
Indoor Residential Water Audits	P	Residential	X			0.9	2.85	0.02	0.05	\$10.77	\$10,002
Residential and Commercial Ultra High-Efficiency Toilet Upgrade Service or High-Efficiency Toilet Rebate Program	P	Residential, Commercial				1.8	5.49	0.03	0.10	\$17.84	\$31,912
Giveaways: Water Audit Kits	P	Residential, Commercial				0.4	1.14	0.01	0.02	\$27.57	\$10,212
Ordinances and Regulations											
Watering Restrictions	E	Residential, Commercial	X			2.7	8.28	0.27	0.83	\$5.79	\$15,636
Water Waste Ordinance	E	Residential, Commercial	X			2.3	7.08	0.23	0.71	\$5.94	\$13,712
Landscape Design Ordinances and Restrictions	P	Residential, Commercial	X			15.6	47.99	1.48	4.56	\$5.33	\$83,401

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Education Activities											
<i>Bill Stuffers</i>	P	Residential, Commercial	X			55.7	171.06	5.57	17.11	\$4.71	\$262,700
<i>Newsletters</i>	P		X								
<i>Newspaper Articles</i>	P		X								
<i>Mass Mailings</i>	P		X								
<i>Interactive webpages and website updates</i>	P										
<i>Water Fairs</i>	P										
<i>K-12 Teacher and Classroom Education Programs</i>	P										
<i>Social Networking (Facebook & Twitter)</i>	P										
<i>Xeriscape Demonstration Garden</i>	P	Residential, Commercial	X			0.4	1.20	0.01	0.02	\$55.43	\$21,703
<i>Landscape Design (Xeriscape) and Maintenance Classes</i>	P	Residential, Commercial				0.1	0.24	0.00	0.00	\$42.55	\$3,340
<i>Garden in a Box</i>	P	Residential, Commercial	X			0.2	0.63	0.00	0.01	\$309.78	\$63,725

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System Wide Water Audits

By implementing System Wide Water Audits, the Town could identify unmetered and unbilled treated water uses in order to assess where losses are occurring and how losses can be addressed. These losses are considered non-revenue water. The Town may utilize the IWA/AWWA Water Audit Method published in the AWWA Manual of Practice M36 to conduct a "top down approach."

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Annual Estimated Savings Rate	0.5%
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Category	Avg. Annual Water Use over Planning Period (MG)	Estimated Annual Water Savings (gal/yr)
Non-Revenue Water	11.40	57,010

Notes:

By specifically identifying these losses, additional actions can be taken to reduce the water lost. This measure has the potential to improve all categories, but Non-Revenue is the main category assumed. A conservative reduction of 0.5% of projected annual water use was assumed.

Estimated Annual Water Savings	0.06	MG/yr
Estimated Savings over Planning Period	0.6	MG

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	20	/year
Hourly Cost	\$40.08	/hour
Annual Staff Costs	\$801.60	
Third Party Costs	\$0.00	/year
Evaluation and Follow-up Costs	\$0.00	/year
Annual Labor	\$801.60	/year

Notes:

Estimated staff costs for Staff to spend approximately 20 hours per year at \$40.08/hour to continue to develop within Severance.

The 20 hours is based on other water providers and their estimations of time to do audits. Although some revenue may be lost on the demand side, more revenue will likely be realized on the supply side.

Estimated Annual Cost	\$802	/year
Estimated Total Cost over Planning Period	\$8,016	
Cost per 1000 Gallons Saved	\$14.06	

Automatic Water Meter Reading Installation and Operations

All of the Town customer meters are currently Neptune AMR meters. AMR meters allow for data to be processed quicker and with less sources of error.

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Customer Category	Avg. Annual Water Use over Planning Period (MG)	Estimated Annual Savings Rate	Estimated Annual Water Savings (gal/yr)
Non-Revenue	11.40	0.5%	57,010
Residential	217.12	0.5%	1,085,613
Commercial	13.69	0.5%	68,448

Estimated Annual Water Savings	1.21	MG/yr
Estimated Savings over Planning Period	12.1	MG

Notes:

Because there is not customer interaction with an online webpage, savings is estimated to be relatively small. AMR meters are still an improvement over the older manual read meters because data can be processed quicker, and there are less sources for error.

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	285	/year
Hourly Cost	\$40.08	/hour
Annual Labor	\$11,415.41	/year

Notes:

Annual Staff Costs for this savings measure include data processing. Other costs, such as fuel and vehicle maintenance are not included since some costs would be associated with reading the meters no matter what the scenario.

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Non-Revenue	N/A
Residential	\$4.31
Commercial	\$4.31

Water rates are based on a weighted average for each customer category and incorporate seasonal usage.

Estimated Revenue assumes that the current rates will not change significantly over the planning period.

Estimated Average Annual Revenue without Water Savings	\$994,253 /year
Estimated Average Annual Revenue with Water Savings	\$989,282 /year
Estimated Annual Revenue Loss Related to Water Savings	\$4,971 /year

Estimated Annual Cost	\$16,387 /year
Estimated Cost over Planning Period not including Lost Revenue	\$114,154
Estimated Total Cost over Planning Period Including Lost Revenue	\$163,867
Cost per 1000 Gallons Saved	\$13.53

Enhanced Automatic Water Meter Reading Installation and Operations

The Town is currently investigating enhancing their AMR system by offering a customer interactive portal where customers would get usage alerts and be able to view billing and metering data. This process may involve various steps of upgrading meters or adding registers to existing meters that would transmit usage information to the Town's metering system.

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Customer Category	Avg. Annual Water Use over Planning Period (MG)	Estimated Average Annual Savings Rate	Estimated Annual Water Savings (gal/yr)
Non-Revenue	11.40	1.0%	114,020
Residential	217.12	1.3%	2,868,458
Commercial	13.69	0.7%	90,429

Estimated Annual Water Savings	3.07	MG/yr
Estimated Savings over Planning Period	32.3	MG

Notes:

As more new meters are installed, the savings rate increases over the projected planning period. There are several influencing factors to the amount of savings realized including customer feedback and response, ease of incorporating new meters into the current system, etc.

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	71	/year
Hourly Cost	\$40.08	/hour
Annual Labor	\$2,853.85	/year

Material Costs

Meter Cost (per unit)	\$300.00
Number of Meters/Year	60
Annual Cost	\$18,000.00 /year

Notes:

Annual Staff Costs for this savings measure include data processing. Other costs, such as fuel and vehicle maintenance are not included since some costs would be associated with reading the meters no matter what the scenario.

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Non-Revenue	N/A
Residential	\$4.31
Commercial	\$4.31

Notes:

Water rates are based on a weighted average for each customer category and incorporate seasonal usage. Estimated Revenue assumes that the current rates will not change significantly over the planning period.

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Estimated Average Annual Revenue without Water Savings	<u>\$994,253 /year</u>
Estimated Average Annual Revenue with Water Savings	<u>\$980,838 /year</u>
Estimated Annual Revenue Loss Related to Water Savings	<u>\$13,415 /year</u>

Estimated Annual Cost	<u>\$34,268 /year</u>
Estimated Cost over Planning Period not including Lost Revenue	<u>\$208,539</u>
Estimated Total Cost over Planning Period Including Lost Revenue	<u>\$342,685</u>
Cost per 1000 Gallons Saved	<u>\$10.62</u>

Water Efficient Rate Structure with Regular Updates

Based on many studies, water rates (e.g., inclining and/or tiered) are one of the most effective ways to encourage efficient water use. A rate study is necessary to ensure maximum water conservation savings. Severance completed a rate study approximately two years ago. The Town does an internal evaluation of their rates. Because they are very interrelated, this measure also includes Volumetric Billing and Tiered Rates within it.

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Customer Category	Avg. Annual Water Use over Planning Period (MG)	Annual Estimated Savings Rate	Estimated Annual Water Savings (gal/yr)
Residential	217.12	5.00%	10,856,128
Commercial	13.69	2.00%	273,793

Notes:

Assumed a conservative reduction of per customer category of projected total billed water. Rate change studies have often shown an even greater savings (e.g., Southwest Florida Water Management District study indicated a 13% savings). Conservative savings rates were applied to each category.

Estimated Annual Water Savings	11.13	MG/yr
Estimated Savings over Planning Period	111.3	MG

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	15	/year
Hourly Cost	\$40.08	/hour
Annual Staff Costs	\$601.23	
Third Party Costs (Rate study)		/year
Evaluation and Follow-up Costs (Labor/Consultant)		/year
Annual Labor	\$601.23	/year

Notes:

Annual staff costs includes initial webinar and training on rate study software or other similar training.

Annual Revenue Lost due to water savings is not incorporated into the Total Cost to Water Provider because these costs are absorbed and included in the rate adjustments to the customers.

Total Cost to Water Provider

Estimated Annual Cost	\$601 /year
Estimated Total Cost over Planning Period	\$6,012
Cost per 1000 Gallons Saved	\$0.05

Tap Fees with Water Use Efficiency Incentives (Lot based water dedication)

Severance would encourage smaller lots designated by developers by charging reduced fees for smaller lot sizes. For example, this might include a discount on tap fees for turf areas of less than 3,000 square feet or a discount for a smaller percentage of irrigated areas. Typically an irrigated area of less than 30% is considered conservative in nature. On the opposite end, an additional fee may be charged for larger irrigation areas.

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Annual Estimated Savings Rate	0.27%
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Notes:

A conservative reduction of 0.27% of projected annual water use was assumed. 0.27% was calculated by a 5.3% growth rate multiplied by 5% savings (based on participation and overall savings).

Category	Avg. Annual Water Use over Planning Period (MG)	Estimated Annual Water Savings gallons/yr
Residential	217.12	586,231
Commercial	13.69	36,962

This measure mostly impacts future Residential developments.

Estimated Annual Water Savings	0.62	MG/yr
Estimated Savings over Planning Period	6.2	MG

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	15	/year
Hourly Cost	\$40.08	/hour
Annual Staff Costs	\$601.20	
Third Party Costs		/year
Evaluation and Follow-up Costs		/year
Annual Labor	\$601.20	/year

Notes:

Estimated costs for Staff to spend approximately 15 hours per year at 40.08/hour to help coordinate within the service area.

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Residential	\$4.31
Commercial	\$4.31

Notes:

The annual revenue loss was estimated based on current rates for all District customers.

Estimated Revenue assumes that the current rates will not change significantly over the planning period.

Estimated Average Annual Revenue without Water Savings	\$970,333 /year
Estimated Average Annual Revenue with Water Savings	\$967,713 /year
Estimated Annual Revenue Loss Related to Water Savings	\$2,620 /year

Estimated Annual Cost	\$3,221 /year
Estimated Cost over Planning Period not including Lost Revenue	\$6,012
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	\$32,211
Cost per 1000 Gallons Saved	\$5.17

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Leak Detection and Repair Program

The Town is interested in investigating whether an outside consultant (e.g., American Leak Detection) would offer enough benefit to offset the costs.

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Annual Estimated Savings Rate	5.0%
Annual Estimated Non-Revenue Water without Savings	11.40 MG/yr
Estimated Annual Water Savings	0.57 MG/yr
Estimated Savings over Planning Period	5.7 MG

Notes:

2011 - 2016 average system unaccounted leakage/loss rate was 4.7%.

Savings equals the current projected water usage of Non-Revenue water multiplied by the estimated savings rate.

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	25 /year
Hourly Cost	\$40.08 /hour
Annual Staff Costs	\$1,002.06
Third Party Costs (Leak Detection Consult)	\$1,000.00 /year
Evaluation and Follow-up Costs (Labor/Consultant)	/year
Annual Labor	\$2,002.06 /year

Notes:

Third Party Costs include leak survey performed annually by a consultant.

Annual staff costs include coordination with consultants.

Estimated Annual Cost	\$2,002 /year
Estimated Total Cost over Planning Period	\$20,021
Cost per 1000 Gallons Saved	\$3.51

Master Plans/Water Supply Plans

Severance plans to continue developing, updating, and evaluating plans (i.e. Master Plans, Water Efficiency Plans, etc.) that will improve its overall water efficiency and help plan for future use.

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Annual Estimated Savings Rate	0.50%
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Notes:

This measure has the potential to improve all categories. A conservative reduction of 0.5% of projected annual water use was assumed.

Category	Avg. Annual Water Use over Planning Period (MG)	Estimated Annual Water Savings (gal/yr)
Non-Revenue	11.40	57,010
Residential	217.12	1,085,613
Commercial	13.69	68,448

Estimated Annual Water Savings	1.21	MG/yr
Estimated Savings over Planning Period	12.1	MG

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	90	/year
Hourly Cost	\$40.08	/hour
Annual Staff Costs	\$3,607.20	
Third Party Costs	\$14,000.00	/year
Evaluation and Follow-up Costs		/year
Annual Labor	\$17,607.20	/year

Notes:

Estimated staff costs for Staff to spend an average of 90 hours per year at \$40.08/hour to help develop the various Plans for the Town.

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Weighted average of customer rates	\$4.31

Notes:

The annual revenue loss was estimated based on a weighted average of current rates for all Severance customers.

Estimated Revenue assumes that the current rates will not change significantly over the planning period.

Estimated Average Annual Revenue without Water Savings	\$970,333 /year
Estimated Average Annual Revenue with Water Savings	\$965,481 /year
Estimated Annual Revenue Loss Related to Water Savings	\$4,852 /year

Estimated Annual Cost	\$22,459 /year
Estimated Cost over Planning Period not including Lost Revenue	\$176,072
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	\$224,589
Cost per 1000 Gallons Saved	\$18.54

Slow the Flow Residential Irrigation Audits

Sometime within the Planning Period, the Town would like to potentially partner for this activity with the Town of Windsor and/or other communities and water districts nearby. CReSC offers multiple programs including Slow the Flow sprinkler consultations for the Town's residential customers. "The service usually takes 90 minutes and involves a visual inspection, data collection, and in-depth evaluation. The consultant will deliver a clear and actionable list of suggestions to reduce water use and runoff at each property, while keeping landscapes and lawns healthy." -CReSC

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Participant Annual Estimated Savings Rate	5%
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Customer Category	Avg. Annual Outdoor Water Use Over the Planning Period (gal/tap)	Estimated Annual Water Savings (gal/tap/yr)	Annual Program Participants (taps)
Residential	94,578	4,729	10

Estimated Annual Water Savings	0.047	MG/yr
Estimated Savings over Planning Period	2.6	MG

Notes:

The outdoor use estimates are based on the following approximations for each customer category: Residential = 58%
Assumed a conservative estimate of 5% savings of projected outdoor water usage. Customers have to put Auditor's advice and suggestions into practice.
Program Participants based on other water providers' participation rates for similar numbers of people.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	18.75	/year
Hourly Cost	\$40	/hour
Annual Labor	\$752	/year
Third Party Costs		
Audit Cost	\$114	
Number of Participants	10	/year
Annual Cost	\$1,140	/year

Notes:

Costs include staff time for implementing (approximately 45 min. per participant). Program is largely organized by CReSC.

Third Party Costs include CReSC's time. Residential audits = \$114/audit

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Water Rates

Rate Category	Current Rates (per 1,000 gals)
Residential	4.31

Note:

The annual revenue loss was estimated based on current rates for the Residential customer category.

Estimated Average Annual Revenue without Water Savings \$8,192 /year

Estimated Average Annual Revenue with Water Savings \$7,782 /year

Annual Revenue Loss Related to Water Savings **\$410 /year**

Notes:

Estimated Revenue assumes that the current rates will not change significantly over the planning period.

Estimated Annual Cost	<u>\$2,301 /year</u>
Estimated Cost over Planning Period not including Lost Revenue	<u>\$18,915</u>
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	<u>\$23,011</u>
Cost per 1000 Gallons Saved	<u>\$8.85</u>

Indoor Residential Water Audits

This would be another activity that Severance is hoping to eventually partner with Windsor and/or other communities or districts. CReSC also offers indoor water audits (w/ low-flow shower-heads and faucet aerators). "Slow the Flow offers consultations on residential water use and suggests simple measures to increase water use efficiency in the home. During the session the consultant will measure outputs from faucets, toilets, and shower-heads, and perform a cost/benefit analysis on fixture replacement options. He/She may also install low-flow shower-heads and faucet aerators at no cost. The consultation will leave the home owner with a customized list of recommendations for increasing efficient water use." -CReSC

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Participant Annual Estimated Savings Rate	5%
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Customer Category	Avg. Annual Indoor Water Use Over the Planning Period (gal/tap)	Estimated Annual Water Savings (gal/tap/yr)	Annual Program Participants (taps)
Residential	67,510	3,375	5

Estimated Annual Water Savings	0.017	MG/yr
Estimated Savings over Planning Period	0.93	MG

Notes:

The indoor use estimates are based on the following approximations for each customer category: Residential = 41%
Assumed a conservative estimate of 5% savings of projected indoor water usage. Customers have to put Auditor's advice and suggestions into practice. Shower heads and aerators will be installed by CReSC.
Program Participants based on other water providers' participation rates for similar numbers of people. Indoor audits tend to be less popular than outdoor audits.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	3.75	/year
Hourly Cost	\$40	/hour
Annual Staff Costs	\$150	
Third Party Costs		/year
Evaluation and Follow-up Costs		/year
Annual Labor	\$150	/year
Third Party Costs		
Audit Costs	\$90	
Number of Participants	5	/year
Annual Third Party Cost	\$450	/year

Notes:

Costs include staff time for implementing (approximately 45 min. per participant).
Program is largely organized by CReSC
Third Party Costs are incorporated into audit costs charged by CReSC.

Residential audits = \$90/audit

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Water Rates

Rate Category	Current Rates (per 1,000 gals)
Residential	4.31

Note:

The annual revenue loss was estimated based on current rates for the Residential customer category.

Estimated Revenue assumes that the current rates will not change significantly over the planning period.

Estimated Average Annual Revenue without Water Savings	<u>\$7,997</u> /year
Estimated Average Annual Revenue with Water Savings	<u>\$7,597</u> /year
Annual Revenue Loss Related to Water Savings	<u>\$400</u> /year

Estimated Annual Cost	<u>\$1,000</u> /year
Estimated Cost over Planning Period not including Lost Revenue	<u>\$6,003</u>
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	<u>\$10,002</u>
Cost per 1000 Gallons Saved	<u>\$10.77</u>

Residential and Commercial Ultra High-Efficiency Toilet Upgrade Service or High-Efficiency Toilet Rebate Program

Severance hopes to potentially partner with Windsor and participate in the Ultra High-Efficiency Toilet Upgrade Service offered by CReSC where participants can "Save thousands of gallons of water per year with the breakthrough technology of the Niagara Stealth Toilet." -CReSC. If Severance does not participate in the CReSC program, then the Town may partner with Windsor or go on their own to offer rebates instead of the high efficiency toilet replacements. Number of participants is estimated to be approximately the same.

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Participant Annual Estimated Savings Rate	4%
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Annual Estimated Water Use Per Tap without Savings

Customer Category	Avg. Annual Indoor Water Use Over the Planning Period (gal/tap)	Estimated Annual Water Savings (gal/tap/yr)	Annual Program Participants (taps)
Residential	67,510	2,970	10
Commercial	64,048	2,818	1

Estimated Annual Water Savings	0.03	MG/yr
Estimated Savings over Planning Period	1.79	MG

Notes:

The indoor use estimates are based on the following approximations for each customer category: Residential = 41%, Commercial = 39%.

Upgrade service available through CReSC.

Savings based on Toilet Rebate program data provided by other water providers. Number of participants were adjusted to fit the population and demographics. CReSC has a minimum number of 30 toilets. After the data was filtered, calculated savings came to 10% for the Cost/Benefit analysis.

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of participants for each given year. As more participants utilize the replacements or rebates, more savings is realized.

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	8.25	/year
Hourly Cost	\$40.08	/hour
Annual Labor	\$330.68	/year

Notes:

Annual staff time is estimated at approximately 45 min. per participant. This time includes water savings tracking.

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Rebates

Rebate Cost	\$190.00
Number of Participants	11 /year
Annual Rebate Cost	\$2,090.00

Minimum participation is 30 toilets at \$5,700. Additional toilets are \$190 a piece. Costs for a rebate program may be lower, but savings is also likely to be lower.

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Residential	4.31
Commercial	4.31

Notes:

The annual revenue loss was estimated based on current rates for the listed Town customer categories.

Estimated Revenue assumes that the current rates will not change significantly over the planning period.

Estimated Average Annual Revenue without Water Savings	\$17,512 /year
Estimated Average Annual Revenue with Water Savings	\$16,741 /year
Annual Revenue Loss Related to Water Savings	\$771 /year

Estimated Annual Cost	\$3,191 /year
Estimated Cost over Planning Period not including Lost Revenue	\$24,207
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	\$31,912
Cost per 1000 Gallons Saved	\$17.84

Giveaways: Water Audit Kits

Self-guided residential water audit kits can be designed and customized for the Town with various water saving items. Examples of these items include the following: water saving hose nozzles, water efficient shower heads, faucet aerators, dish squeegees, toilet volume reducers, leak detection tablets, and outdoor moisture meters. Instructions for conducting the audit and evaluating the results can give residential customers insight and direction on how they can save water and money. The guidance offered in the instructions could also lead the customer to take part in other conservation programs offered, including rebates, Garden in a Box, or Outdoor Water Audits.

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Participant Annual Estimated Savings Rate	0.25%
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	Avg. Annual Indoor Water Use Over the Planning Period (gal/tap)	Estimated Annual Water Savings (gal/tap/yr)	Annual Program Participants (taps)
Residential	67,510	169	38
Commercial	64,048	160	2

Estimated Annual Water Savings	0.01	MG/yr
Estimated Savings over Planning Period	0.37	MG

Notes:

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of participants for each given year. Estimated Water Use is based on the forecasted annual indoor water use since most of the audit kit contents are related to indoor savings efforts.

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours (Website updates, etc.)	10	/year
Hourly Cost	\$40.08	/hour
Annual Labor	\$400.82	/year

Give Aways per Year

Give Away Kits per Year	40	/year
Materials Cost	\$460.80	/year

Notes:

Staff Hours are estimated at 15 minutes per kit or participant. Residential water conservation kits are available at wholesalers like AM Conservation Group, Inc. (www.amconservationgroup.com) for varying costs. One example that would include several pieces is \$17.29 per kit. Another kit focused more on outdoor savings would be more economical at \$11.52 per kit.

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Water Rates

Rate Category	Current Rates (per 1,000 gals)
<i>Residential</i>	<i>4.31</i>
<i>Commercial</i>	<i>4.31</i>

Notes:

The annual revenue loss was estimated based on current rates for listed Town customers.

Estimated revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings \$63,813 /year

Estimated Average Annual Revenue with Water Savings \$63,654 /year

Annual Revenue Loss Related to Water Savings **\$160 /year**

Estimated Annual Cost	<u>\$1,021 /year</u>
Estimated Cost over Planning Period not including Lost Revenue	<u>\$8,616</u>
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	<u>\$10,212</u>
Cost per 1000 Gallons Saved	\$27.57

Watering Restrictions

Severance has several watering restrictions. Their ordinance allows watering only from April through November. Watering is not allowed from 11 a.m. to 5 p.m. (with some exceptions). Within the Water Restrictions, the Town also includes suggested monthly watering guidelines as well as the cycle and soak watering method.

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Annual Estimated Savings Rate	0.20%
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Notes:

Outdoor use is estimated at a weighted average of approximately 58% for the listed categories.

Customer Category	Avg. Annual Outdoor Water Use Over the Planning Period (MG)	Estimated Annual Water Savings (gal/yr)
Residential	126.69	253,381
Commercial	8.28	16,561

A conservative estimate of 0.2% savings of projected outdoor water usage was assumed.

Estimated Annual Water Savings	0.3	MG/yr
Estimated Savings over Planning Period	2.7	MG

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	10	/year
Hourly Cost	\$40.08	/hour
Annual Staff Costs	\$400.82	
Annual Labor	\$400.82	/year

Notes:

Costs include staff time for enforcing water restrictions for existing measure.

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Residential	4.31
Commercial	4.31

Notes:

The annual revenue loss was estimated based on current weighted rates for listed customer categories

Estimated Revenue assumes that the current rates will not change significantly over the planning period.

Estimated Average Annual Revenue without Water Savings	\$581,404 /year
Estimated Average Annual Revenue with Water Savings	\$580,241 /year
Annual Revenue Loss Related to Water Savings	\$1,163 /year

Estimated Annual Cost	\$1,564 /year
Estimated Cost over Planning Period not including Lost Revenue	\$4,008
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	\$15,636
Cost per 1000 Gallons Saved	\$5.79

Water Waste Ordinance

Within the Watering Restrictions, Severance also includes several other restrictions including not allowing water to "flow down the gutters" and limited car washing.

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Annual Estimated Savings Rate	0.10%
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Notes:

This measure potentially affects all customer categories. A very conservative estimate of 0.10% savings is used for calculations.

Customer Category	Avg. Annual Water Use over Planning Period (MG)	Estimated Annual Water Savings (gal/yr)
Residential	217.12	217,123
Commercial	13.69	13,690

Estimated Annual Water Savings	0.23	MG/yr
Estimated Savings over Planning Period	2.3	MG

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	10	/year
Hourly Cost	\$40.08	/hour
Annual Labor	\$400.82	/year

Notes:

Costs include staff time for enforcing water restrictions for existing measure.

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Weighted average of customer rates	\$4.31

Notes:

The annual revenue loss was estimated based on a weighted average rate for all Town customer categories.

Estimated Revenue assumes that the current rates will not change significantly over the planning period.

Estimated Average Annual Revenue without Water Savings	\$935,283 /year
Estimated Average Annual Revenue with Water Savings	\$934,289 /year
Estimated Annual Revenue Loss Related to Water Savings	\$970 /year

Estimated Annual Cost	\$1,371 /year
Estimated Cost over Planning Period not including Lost Revenue	\$4,008
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	\$13,711.55
Cost per 1000 Gallons Saved	\$5.94

Landscape Design Ordinances and Restrictions

Severance is interested in investigating some or all of the following landscape design ordinances: Rules and Regulations for Landscape Design/Installation, Soil Amendment Requirements, Turf Restrictions, and Irrigation Equipment Requirements

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Average Annual Estimated Savings Rate 1.10%

Notes:

Outdoor use is estimated at a weighted average of approximately 58% for the listed categories.
A conservative estimate of an average 1.1% savings of projected outdoor water usage was assumed. Most of these ordinances and restrictions would only be applied to new construction.

Customer Category	Avg. Annual Outdoor Water Use Over the Planning Period (MG)	Estimated Annual Water Savings (gal/yr)
Residential	126.69	1,393,596
Commercial	8.28	91,083

Estimated Average Annual Water Savings 1.5 MG/yr
Estimated Savings over Planning Period 15.6 MG

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	40 /year
Hourly Cost	\$40.08 /hour
Annual Staff Costs	\$1,603.29
Third Party Costs	\$0.00 /year
Evaluation and Follow-up Costs	\$0.00 /year
Annual Labor	\$1,603.29 /year

Notes:

Costs include staff time for setting up rules and ordinances and for enforcing rules and restrictions for measure.

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Residential	4.31
Commercial	4.31

Notes:

The annual revenue loss was estimated based on current weighted rates for listed customer categories

Estimated Revenue assumes that the current rates will not change significantly over the planning period.

Estimated Average Annual Revenue without Water Savings \$581,404 /year
Estimated Average Annual Revenue with Water Savings \$574,667 /year
Annual Revenue Loss Related to Water Savings \$6,737 /year

Estimated Annual Cost	\$8,340 /year
Estimated Cost over Planning Period not including Lost Revenue	\$16,033
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	\$83,401
Cost per 1000 Gallons Saved	\$5.33

Educational Activities

Analysis of costs and benefits for educational activities are combined as shown below. Activities include Bill Stuffers, Newsletter, Newspaper Articles, Mass Mailings, Water Efficiency Page on Severance's website, and Social Media (e.g., Facebook, Twitter, etc.). Severance is also hoping to be active in the community with outreach efforts like Water Fairs and Classroom Education.

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Customer Category	Avg. Annual Water Use over Planning Period (MG)	Estimated Annual Savings Rate	Estimated Annual Water Savings (gal/yr)
Residential	217.12	2.5%	5,471,489
Commercial	13.69	0.75%	102,672

Estimated Annual Water Savings	5.6	MG/yr
Estimated Savings over Planning Period	56	MG

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	47	/year
Hourly Cost	\$40.08	/hour
Annual Labor	\$1,902.57	/year

Materials Costs

Unit Cost (cost of Bill Stuffers)	\$0.25	/participant
Avg. Number of Participants (receiving bill stuffers) over Planning Period	1,424	/year
Annual Materials	\$356.00	/year

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Residential	\$4.31
Commercial	\$4.31

Notes:

Staff hours include time spent preparing newsletter, updating website, and preparing bill stuffers.

In 2016 there were 1094 active tap accounts. The average affected number of taps during the planning period is projected to be 1424.

Notes:

The annual revenue loss was estimated based on current rates for all District customers and assumes rates will not change significantly over the planning period.

Estimated Average Annual Revenue without Water Savings	\$994,253 /year
Estimated Average Annual Revenue with Water Savings	\$970,242 /year
Estimated Annual Revenue Loss Related to Water Savings	\$24,011 /year

Estimated Annual Cost	\$26,270 /year
Estimated Cost over Planning Period not including Lost Revenue	\$22,586
Estimated Total Cost over Planning Period Including Lost Revenue	\$262,699.79
Cost per 1000 Gallons Saved	\$4.71

Xeriscape Demonstration Garden

Maintaining a xeriscape demonstration garden is an excellent way to educate the public to the water savings and beauty available from xeriscaping. The Town is considering partnering with Boy Scouts or another organization to design and maintain a xeriscape demonstration garden at their main office. The Town also plans to post links and pictures to other nearby xeriscape gardens; for example since 2008 Windsor has volunteers that maintain the Treasure Island Xeriscape Garden that can be seen along the Poudre River Trail Corridor multiuse trail just 7 miles away from the Town Hall.

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Participant Annual Estimated Savings Rate	0.15%
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Customer Category	Avg. Annual Outdoor Water Use Over the Planning Period (gal/tap)	Estimated Annual Water Savings (gal/tap/yr)	Annual Program Participants (taps)
Residential	94,578	142	45
Commercial	98,039	147	5

Estimated Annual Water Savings	0.01	MG/yr
Estimated Savings over Planning Period	0.4	MG

Notes:

This measure affects projected outdoor water usage for the listed Customer Categories.
It is estimated that approximately 58% of total customer use is outdoor use.

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	20	/year
Hourly Cost	\$40.08	/hour
Annual Staff Costs	\$801.64	
Third Party Costs	\$1,000.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	\$0.00	/year
Annual Labor	\$1,801.64	/year

Materials Costs

Annual Materials Budget	\$200	/year
Annual Materials	\$200.00	/year

Notes:

Some staff time is associated with communication and coordination of volunteer efforts for the local Xeriscape Garden. Some costs associated with setting up the links, etc. Much of the Windsor Treasure Island garden is run through volunteer efforts and donations.

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Water Rates

Rate Category	Current Rates (per 1,000 gals)
<i>Residential</i>	\$4.31
<i>Commercial</i>	\$4.31

Notes:

The annual revenue loss was estimated based on current rates for all Town customers and assumes rates will not change significantly over the planning period.

Estimated Average Annual Revenue without Water Savings	\$112,446 /year
Estimated Average Annual Revenue with Water Savings	\$112,278 /year
Annual Revenue Loss Related to Water Savings	\$169 /year

Estimated Annual Cost	\$2,170.31 /year
Estimated Cost over Planning Period not including Lost Revenue	\$20,016.44
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	\$21,703.14
Cost per 1000 Gallons Saved	\$55.43

Landscape Design (Xeriscape) and Maintenance Classes

Some Landscape Design and Xeriscape classes have been traditionally conducted at Windsor's Treasure Island Xeriscape Demonstration Garden. The classes provide a number of venues in which participants can learn more about xeriscaping as well as other gardening techniques. Severance could advertise the classes and post the times and dates when the events will be taking place. Windsor is also planning on providing classes through CResC that Severance could potentially participate in.

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Participant Annual Estimated Savings Rate	0.25%
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Customer Category	Avg. Annual Outdoor Water Use Over the Planning Period (gal/tap)	Estimated Annual Water Savings (gal/tap/yr)	Annual Program Participants (taps)
Residential	94,577.6	236	5
Commercial	98,039.2	245	1

Estimated Annual Water Savings	0.001	MG/yr
Estimated Savings over Planning Period	0.1	MG

Notes:

Similar to the Demonstration Garden itself, this measure affects projected outdoor water usage for the listed Customer Categories. It is estimated that approximately 58% of total customer use is outdoor use.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	2.5	/year
Hourly Cost	\$40.08	/hour
Annual Staff Costs	\$100.21	
Third Party Costs	\$100.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	\$0.00	/year
Annual Labor	\$200.21	/year
Materials Costs		
Annual Materials Budget	\$100	/year
Annual Materials	\$100.00	/year

Notes:

Staff time is estimated at approximately 1/4 hour per participant for scheduling and coordination. Much of the garden is run through volunteer efforts including the classes.

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Water Rates

Rate Category	Current Rates (per 1,000 gals)
<i>Residential</i>	\$4.31
<i>Commercial</i>	\$4.31

Notes:

The annual revenue loss was estimated based on current rates for all District customers and assumes rates will not change significantly over the planning period.

Estimated Average Annual Revenue without Water Savings	\$13,526 /year
Estimated Average Annual Revenue with Water Savings	\$13,493 /year
Annual Revenue Loss Related to Water Savings	\$34 /year

Estimated Annual Cost	\$334 /year
Estimated Cost over Planning Period not including Lost Revenue	\$3,002
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	\$3,340
Cost per 1000 Gallons Saved	\$42.55

Garden in a Box

This is another activity in which Severance would hope to partner with the Town of Windsor. Each year CReSC offers an array of do it yourself Xeric garden kits, created by professional landscape designers for sun, shade, and everything in between. These plant by number gardens can have a significant conservation impact and are perfect for anyone who wants to beautify their yard while using less water than standard turf.

Planning Period	2017 to 2026
Years in Planning Period	10
Program Length	10 years

Estimated Water Savings

Participant Annual Estimated Savings Rate 25%¹

Customer Category	Avg. Annual Outdoor Water Use Over the Planning Period (gal/tap)	Estimated Annual Water Savings (gal/tap/yr)	Annual Program Participants (taps)
Residential	94,577.6	374	9
Commercial	98,039.2	374	1

Estimated Annual Water Savings 0.00 MG/yr
 Estimated Savings over Planning Period 0.2 MG

Notes:

¹ The "Annual Estimated Saving Rate" represents a 25% savings of water for the turf area replaced with the Garden in the Box plants and not a 25% savings overall.

Similar to the Demonstration Gardens themselves, this measure affects projected outdoor water usage for the listed Customer Categories. Other customer categories may also benefit, but participation would be considerably less given the demographics or the very small percentage of customers within those categories.

It is estimated that approximately 40% of total customer use is outdoor use. Each garden is estimated to use up to 60% less water than the same area of turf, but irrigation systems need to be adjusted for benefit to be realized. A garden typically covers 100 sq ft. Assumption was made that same area of turf will be replaced with same area of xeriscaping. Irrigation requirements = approximately two AF/acre for turf = 748 gal/garden savings. This estimate was cut in half due to other potential problems.

Costs

Total Cost to Water Provider

Labor Costs	
Staff Hours	2.5 /year
Hourly Cost	\$40.08 /hour
Annual Staff Costs	\$100.21
Third Party Costs	/year
Evaluation and Follow-up Costs (Labor/Consultant)	\$0.00 /year
Annual Labor	\$100.21 /year

Notes:

Staff cost include approximately 1/4 hour per participant. CReSC offers end consumers a discount through the water provider.

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Materials Costs

Associated Costs	\$65.00	/garden
Number of Participants	10	/year
Annual Materials	\$650.00	/year

CRISC's price is \$4,370 for 80 gardens. An assumed 20% mark-up was made for smaller quantities.

Water Rates

Rate Category	Current Rates (per 1,000 gals)
<i>Residential</i>	\$4.31
<i>Commercial</i>	\$4.31

Notes:

The annual revenue loss was estimated based on current rates for all Town customers and assumes rates will not change significantly over the planning period.

Estimated Average Annual Revenue without Water Savings	\$22,489 /year
Estimated Average Annual Revenue with Water Savings	\$16,867 /year
Annual Revenue Loss Related to Water Savings	\$5,622 /year

Estimated Annual Cost	\$6,373 /year
Estimated Cost over Planning Period not including Lost Revenue	\$7,502
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	\$63,725
Cost per 1000 Gallons Saved	\$309.78

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APPENDIX E

Town of Severance Supplementary Documents

FEE SCHEDULE

GENERAL FEES			
RES./ORD./CODE	DESCRIPTION	FEE	INFORMATION
	WATER RATES		
	\$28.00 base minimum for the first 5000 gallons, \$3.00 per 1000 gallons for 5,000 -15,000 gallons, and \$3.25 per 1000 gallons for 15,000 gallons and above. Additional water surcharges and plant investment fees will be accessed for accounts that exceed usage classification. All commercial and industrial water rates will be accessed on an individual basis at the time of permit issuance. (Please reference water rates chart for specific details; Effective November 1, 2015)		
	Finance Charge		1.5% per month on amounts over 30 days
	Reconnect Fee	\$50.00	At time of shut off or by request to discontinue service temporarily
	Late Charge	\$10.00	60 days delinquent
	Hydrant Usage	\$14.00	Per 1000 gallons
	Hydrant Meter	\$2,500.00	Refundable Deposit
	SEWER RATES		
	Sewer User Fee	\$25.00	Monthly User Fee
	HOA/SERVICE GROUP/NON-PROFIT FACILITY RATES		
Resolution 2014-07R	Open & Close Fee	\$15.00	
Resolution 2014-07R	Meeting Room	\$25.00	Per 2 Hour Block
Resolution 2014-07R	Meeting Room w/Kitchen	\$75.00	Per 2 Hour Block
Resolution 2014-07R	Cleaning Deposit	\$150.00	Refundable Deposit
	RECEPTION/PARTY/EVENT FACILITY RATES		
Resolution 2014-07R	Open & Close Fee	\$15.00	
Resolution 2014-07R	Meeting Room	\$100.00	Per 2 Hour Block
Resolution 2014-07R	Meeting Room w/Kitchen	\$200.00	Per 2 Hour Block
Resolution 2014-07R	Cleaning Deposit	\$150.00	Refundable Deposit
	ADDITIONAL EQUIPMENT FOR FACILITY RATES		
Resolution 2014-07R	Audio/Video Staff Services	\$50.00	Per Hour
Resolution 2014-07R	Laptop Use for Presentations	Included w/Staff Service	\$500.00 Refundable Deposit
Resolution 2014-07R	Podium	Included	
Resolution 2014-07R	Tables & Chairs	Included	Fee accessed if damaged
	LICENSES AND PERMITS		
	Sales Tax License	\$10.00	Annual fee (January 1st)
	Business License	\$25.00	Annual fee (January 1st)
	Solicitors/Salespersons Registration	\$500.00	Annual fee (January 1st)
	STREET & ROW CONSTRUCTION PERMITS		
	ROW Permit (Temporary)	\$250.00	Review and process documents Deposit may be required
	ROW Permit (Permanent)	\$500.00	Review and process documents Deposit may be required
	OIL & GAS PERMIT		
	Oil/Gas Drilling (Horizontal Well)	\$10,000.00	Per Well
	Oil/Gas Drilling (Vertical/Directional Well)	\$3,500.00	Per Well

FEE SCHEDULE

GENERAL FEES			
RES./ORD./CODE	DESCRIPTION	FEE	INFORMATION
	DOG LICENSE		
	Altered (Spayed or Neutered)	\$9.00	Annual fee (January 1st)
	Un-Altered	\$13.00	Annual fee (January 1st)
	Tag Replacement	\$4.00	
	Postage Fee for Mailing Tags	\$2.00	
	Impound Fee		Actual Cost
	Quarantine Fee		Actual Cost
	CHICKEN LICENSE		
Ordinance 2014-02	Six (6) Hens	\$25.00	Annual fee (January 1st)
	MISCELLANEOUS FEES		
	Weed Mowing	Current Market Price	Per Hour with a 1 Hour Minimum for Employee Time & Equipment Rental
	Trash Cleaning		
	Street Sweeping		
Hard Surface Inspection Policy	Additional Hard Surface Inspections	\$25.00	Per Additional Inspection

OFFICE FEES			
RES./ORD./CODE	DESCRIPTION	FEE	INFORMATION
	COPIER CHARGES		
	8 1/2 x 11	\$0.50	Per Page
	11 x 14	\$0.75	Per Page
	11 x 17	\$1.00	Per Page
	Plat		Cost + 10% Administrative Fee
	Land Use Code	\$100.00	
	Comprehensive Plan	\$15.00	
	Municipal Code	\$175.00	
	Budget	\$25.00	
	CREDIT CARD PROCESSING FEES		
	Utility Bills		No Additional Charge
	Dog Tags		
	Court Fines	\$3.00	Per Transaction
	Development Deposit		2% Service Fee
	Building Permit Fees		
	Water Acquisition		
	EFT Return	\$30.00	Plus Credit Card Service Fees
	MISCELLANEOUS FEES		
	Research Fee	\$30.00	\$30.00 per hour (After the first hour)
	Digital Copies	\$5.00 Per every 5 MB	Cost + Research Fee (After the first hour & first 5 MB)
	Returned Checks	\$30.00	Plus Bank Service Fees
	Property Liens	\$250.00	For collection on water, sewer or any other miscellaneous unpaid bills

FEE SCHEDULE

PLANNING FEE			
RES./ORD./CODE	DESCRIPTION	FEE	INFORMATION
	DEVELOPMENTS		
	Major Development Deposit	\$10,000.00	Annex, subdivide, develop, or site plan review of residential, commercial or industrial tracts of 5 acres or more.
	Minor Development Deposit	\$2,500.00	Subdivide, develop, or site plan review of residential, commercial or industrial tracts of 5 acres or less.
	Administrative/Staff Review	\$500.00	Lot mergers, Lot adjustments, etc.. not requiring Planning Commission review or Public Hearings
	Applicant must sign Agreement for Payment of Land Use Application Fees. Applicant shall be billed at cost for all legal, engineering and planning fees. Upon depletion of funds below 10% of deposit the Applicant shall put forth another deposit.		
	Annexation	\$500.00	
	Annexation Amendment	\$250.00	
	Site Plan	\$250.00	
	Master Plan	\$250.00	
	Concept Plan	\$250.00	
	Preliminary Plat	\$350.00	
	Final Plat	\$500.00	
	CONDITIONAL USE REVIEW		
	Review for Oil and Gas	\$500.00	
	Site Plan/Final Administrative	\$250.00	
	Sign Permit	\$50.00	
	Request to Vacate	\$500.00	Vacation of easement, ROW, or other portion of public property.
	Board of Adjustments	\$250.00	Variance appeal
	Rezoning Application	\$250.00	
	Recording or Publication		Cost + 10% Administrative Fee
	Home Occupation Permit	\$150.00	
	Special Commission/Committee Meeting	\$325.00	\$250 to Commission/Committee; \$75 Administrative Fee
	Special Board Meeting	\$650.00	\$500 to Trustees; \$150 Administrative Fee

FEE SCHEDULE

TRAFFIC GENERATING TRANSPORTATION FEE			
RES./ORD./CODE	DESCRIPTION	FEE	INFORMATION
	RESIDENTIAL FEE		
	Single Family	\$1,000.00	Single Family Dwelling Unit
	Multi-Family	\$700.00	Multi-Family Dwelling Unit
	RETAIL/COMMERCIAL PERMIT FEE		
	General Retail	\$3.00	Per sq./ft.
	Convenience Store	\$4.00	Per sq./ft.
	Restaurant- Fast Food	\$5.00	Per sq./ft.
	Restaurant- Sit-Down	\$4.00	Per sq./ft.
	OFFICE/INSTITUTIONAL PERMIT FEE		
	General Office Building	\$2.00	Per sq./ft.
	General Institutional	\$1.00	Per sq./ft.
	INDUSTRIAL PERMIT FEE		
	General Light Industrial	\$2.00	Per sq./ft.
	General Heavy Industrial	\$3.00	Per sq./ft.

PARK, TRAIL AND RECREATION FEES			
RES./ORD./CODE	DESCRIPTION	FEE	INFORMATION
	Residential	\$1,400.00	
	Timber Ridge, First Filling	\$383.60	
	Timber Ridge, Second Filling	\$114.00	
	Soaring Eagle	\$500.00	

BUILDING PERMIT FEES			
RES./ORD./CODE	DESCRIPTION	FEE	INFORMATION
	Use Tax		60% of total value of improvement as determined by SafeBuilt times 3%
	Office Administration Fee		30% of the total of the inspection fees or \$30.00 (whichever is greater)
	Planning Administration Fee	\$300.00	

FEE SCHEDULE

UTILITY FEE			
RES./ORD./CODE	DESCRIPTION	FEE	INFORMATION
	SEWER		
	Plant Investment Fee	\$5,000.00	Finance, purchase, and install infrastructure
	Tap Fee	\$250.00	
	WATER		
	Local Plant Investment Fee	\$2,500.00	Finance, purchase, and install infrastructure
	Other Plant Investment Fee	\$7,500.00	“Water Acquisition & Capacity Fee”
	Water Infrastructure Surcharge	\$150.00	
	Meter Set (Residential)	Cost + 10%	Application at Town Hall, Materials to be picked up at Public Works
Resolution 2002-07	Raw Water Rights – Full Tap		C-BT or North Poudre Water (Additional water sources may be negotiated)
	Raw Water Acquisition Fee	Market Price	Cash in lieu of Water (Call for Price)
	DRAINAGE		
	Residential	\$500.00	Minimum fee. For lots with serious drainage requirements, remediation may be required, or fees may be increased up to 100%.
	Commercial	\$500.00	\$500.00 base, plus \$.02/sq. ft. for each sq. ft. of lot area exceeding 10,000 sf. No fee for open space or grass water detention areas
	Consult, Test & Inspection	Cost + 10%	

SCHOOL FEES			
RES./ORD./CODE	DESCRIPTION	FEE	INFORMATION
	WINDSOR		
	Single Family Unit	\$2,240.00	
	Multi-Family Unit	\$520.00	
	Mobile Home Unit	\$1,679.00	
	Soaring Eagle Subdivision Unit	\$607.00	
	EATON		
	Single Family Detached Unit	\$1,798.00	
	Single Family Attached Unit	\$641.00	
	Multi-Family Unit	\$309.00	
	AULT		
	Single Family Unit	\$759.00	

FEE SCHEDULE

LOCAL LIQUOR LICENSE FEES			
RES./ORD./CODE	DESCRIPTION	LOCAL FEE	STATE FEE
	NEW/TRANSFER LICENSE FEES		
	New License	\$1,000.00	\$1,025.00
	New License with Concurrent Review	\$1,000.00	\$1,125.00
	Transfer of Ownership	\$750.00	\$1,025.00
	Transfer of Location	\$750.00	\$1,025.00
	Art License	\$41.25	\$308.75
	Beer & Wine	\$48.75	\$351.25
	Brew Pub	\$75.00	\$750.00
	Club	\$41.25	\$308.75
	Hotel & Restaurant	\$75.00	\$500.00
	Liquor Licensed Drug Store	\$22.50	\$227.50
	Retail Liquor Store	\$22.50	\$227.50
	Tavern	\$75.00	\$500.00
	RELATED FEES AND PERMITS		
	Annual Renewal	\$100.00	\$0.00
	Bed & Breakfast	\$25.00	\$50.00
	Branch Warehouse	\$0.00	\$100.00
	Change of Location	\$750.00	\$150.00
	Change of Trade Name	\$0.00	\$50.00
	Corp/LLC Change (Per Person)	\$100.00	\$100.00
	Duplicate License	\$0.00	\$50.00
	Expansion to Hotel/Restaurant	\$0.00	\$100.00
	Hotel/Tavern Manager's Registration	\$75.00	\$75.00
	Late Renewal	\$500.00	\$0.00
	Mini Bar Permit	\$325.00	\$0.00
	Modification of Premises	\$0.00	\$150.00
	Retail Warehouse Storage	\$0.00	\$100.00
	Special Events Permit (Liquor)	\$100.00	\$25.00
	Special Events Permit (3.2%)	\$100.00	\$10.00
	Temporary Permit	\$100.00	\$0.00
	3.2% BEER LICENSE FEES		
	Retail 3.2% On Premises	\$3.75	\$96.25
	Retail 3.2% Off Premises	\$3.75	\$96.25
	Retail 3.2% On/Off Premises	\$3.75	\$96.25



SEVERANCE WATER RESTRICTIONS

Amended March 18, 2013

Supplies of potable water are essential to the health, welfare and safety of the community. The Town of Severance has a mandatory watering schedule. All Severance water users must follow the schedule and refrain from watering between the hours of 11:00 A.M. and 5:00 P.M. The Town allows 3 days for flexibility, although watering one or two days a week in the spring and fall, dependent on rainfall and temperature may be adequate and encouraged. During drought years the Town of Severance may institute more restrictions to maintain an adequate supply for the citizens of Severance. The Town of Severance first instituted watering restrictions in 2003.

The schedule below must be followed by all water users served by the Town of Severance.

- ✓ There shall be no lawn watering from December 1st thru March 31st of any year. Lawn watering will be allowed from April 1st thru November 30 of any year.
- ✓ Each residence with an even house number shall be allowed to water on Sunday, Tuesday and Thursdays
- ✓ Each residence with an odd house number shall be allowed to water on Monday, Wednesday and Saturdays.
- ✓ All others: Home owner Association common areas, multi-family residences, apartments, businesses, government, non-profit, churches, commercial, industries and institutions shall be allowed to water on Sunday, Wednesday and Fridays.
- ✓ A "house number" is defined by the last two digits in the number. (Ex. – 14, 22, 02 are even numbers; 15, 27, 19 are odd numbers)
- ✓ Watering shall occur only between the hours of 12:01 a.m. to 11:00 a.m. and 5:00 p.m. to midnight on allowed days ("permitted hours"); No watering shall be allowed between 11:00 a.m. and 5:00 p.m. on any day.
 - ✓ Hand watering of flowers, shrubs, and trees shall be allowed each day by hose during permitted hours, provided such hose has a shut off valve attached which terminates flow when not manually activated.
 - ✓ It shall be unlawful to waste water by allowing excess runoff from watering or other uses to flow down the gutters.

It shall be unlawful for any person to permit or do any of the following except on their allowed day during permitted hours:

- ✓ It is unlawful for any person to wash driveways, sidewalks, patios or water lawns or landscaping except as above.
- ✓ It is unlawful to use any outside water sources for recreational purposes between 11:a.m. and 5:00 p.m.



- ✓ It is unlawful for any person to wash vehicles except with a bucket, although vehicles may be rinsed during permitted hours for no more than five minutes by hose, provided such hose has a shut off valve attached which terminates flow when not manually activated.

Nothing herein shall apply to any approved non-potable water system used by any property owner. In addition, the Town Administrator may grant a variance to these restrictions for the establishment of new lawns or landscaping. Such variance permit shall expire no more than thirty days after issuance.

A copy of the Water Restriction Resolution No. 2013-07R or the variance permits for non-potable systems or newly seeded or sodded lawns can be requested at the Severance Town Hall, 3 S. Timber Ridge Parkway, 970-686-1218.

Building permits are required for the installation of all sprinkler systems.

Thank you,

The Town of Severance



How Much Should I Water?

Watering Suggestions		
Month	Watering Days per Week	Inches Required per Week
January	Water trees and shrubs when needed.	0
February	Water trees and shrubs when needed.	0
March	Water trees and shrubs when needed.	0
April	1 Day Per Week - After 4/15	0.5"
May	1 Day Per Week	1"
June	2 Days Per Week	1.25"
July	3 Days Per Week	1.5"
August	3 Days Per Week	1.25"
September	1 Day Per Week	1"
October	1 Day Per Week--Until 10-15 Blow-out Sprinklers/Disconnect Hoses	0.5"
November	Water trees and shrubs when needed.	0
December	Water trees and shrubs when needed.	0

Below is an example on how you can translate inches of water into minutes. It is May and you have spray heads in the front yard. The lawn needs an inch of water per week. You could water each zone for 30 minutes on one day. A better option is to water 15 minutes two days per week. The best option would be to use the cycle and soak method: water each zone 7 minutes and wait 30 minutes to let it soak in. While waiting, water other areas of the lawn. Then water the first area again for 7-8 minutes. You will need to follow this procedure two days per week.



DRAFT



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APPENDIX G

Colorado Water Conservation Board Cover Letter and Approval