

*As adopted by Fort Collins City Council April 2020,
as referenced in Section 26-167(a) of the
Code of the City of Fort Collins*

Water Shortage Action Plan

April 2020

Contents

Glossary	4
Chapter 1 Water Restrictions	8
1.1 Guiding Principles.....	8
1.2 Action Summary Table	9
1.3 Declaring a Water Shortage	19
Moving Between Levels and Returning to Normal Conditions.....	19
1.4 Water Shortage Indicators	19
Water Supply Operations Model.....	22
1.5 Other Response Strategies.....	23
1.6 Responding to a Water Shortage.....	23
Implementation	23
Monitoring.....	24
Water Shortage Committees	24
Chapter 2 Permits.....	25
2.1 Types of Permits.....	25
New Seed or Sod Permit.....	26
Medical/Physical Hardship.....	26
Religious Objection Permit	26
Large (Four Acres or Greater) and City Parks Inactive Areas Permit	27
City and Community Active Areas Permit	27
Well or Raw Water Sources	27
2.2 Permit Application and Process	28
Permit Approval Process – New and Renewal Applications	28
Signage.....	29
Permits and Changing Action Levels	29
Chapter 3 Enforcement.....	29
3.1 Need for Additional Resources.....	29
3.2 Fines for Violations.....	29
3.3 Enforcement Guidelines	30
Business and Residential Violations	30
Methods of Enforcement	30

Educational Resources	30
Reporting Complaints	31
3.4 Turning Off Water	31
Chapter 4 WSAP Updates	31
4.1 WSAP Review	31
4.2 Public Review Process	31
4.3 Updates	33
Appendix A Communication and Engagement Plan	35
Appendix B Relation to Other Plans and Policies	43
Appendix C Historical Shortage Planning and Events	45
Appendix D Profile of Existing System	50
Appendix E Water Supply Vulnerability Assessment.....	55

Glossary

Action Summary Table shall mean the table included as part of this **WSAP** that summarizes the various action levels and associated water use restrictions that are associated with different projected water shortages. This table is a key aspect of **WSAP** and shall be used by the City and City Manager when implementing this the **WSAP** and when imposing any restrictions on the use of water by water utility customers pursuant to City Code 26-167(a).

Active area shall mean a property or portion of a property that is used for athletics or playing field by an organization for routine and frequent use, including a golf course's fairways.

Arterial street shall mean high capacity, urban road that moves traffic to collectors and other arterial streets.

Call shall mean when a water user with a senior water right, forces upstream water users with junior water rights to let sufficient water flow in the river to meet the requirements of the senior water right. Calls are administered by the Colorado Division of Water Resources.

CBT shall mean the Colorado-Big Thompson Project (managed by **Northern Water**). **Utilities** receives **CBT** water from Horsetooth Reservoir. The amount of water allotted to each **CBT** contractual unit is referred to as **CBT** quota.

Collector street shall mean low to medium capacity road that moves traffic to local and arterial streets.

Commercial shall mean business, industrial, or institutional premises, and shall include sprinkler-only taps that are used solely for irrigation on these premises, and homeowner associations' common areas.

Community outdoor swimming pool shall mean an outdoor structure that is filled with water and used for swimming and includes all in-ground pools, above-ground pools, and pools owned by an **HOA**, the City of Fort Collins, or any other entity; that are not for personal use and are accessible to the public or many people.

Dealership vehicle shall mean any unregistered vehicle on display or awaiting sale by a vehicle dealer or other person holding or selling vehicles in the normal course of business.

Drip system shall mean a low-pressure, low-volume irrigation system, above or below ground, that delivers water to the root zone of plant material through emitters or porous material at a low pressure. **Drip system** includes bubblers, drip emitters, in-line tubing, subsurface irrigation, or soaker hoses. **Drip system** excludes micro-sprays.

Dust control measures shall mean any actions or processes that are used to prevent or mitigate the emission of **fugitive dust** into the air, including, but not limited to, the best management practices identified in the *Dust Prevention and Control Manual (DPCM)*, as adopted under City Code Section 12-152. For the purposes of the **WSAP**, the dust control measures referenced shall be limited to those that require the use of water as defined in the **DPCM**, specifically on-tool wet suppression and wet suppression.

Dust generating activities or sources shall mean processes, operations, actions or land uses that create emissions of **fugitive dust** or cause off-property or off-vehicle transport, as described in more detail in the **DPCM**.

Essential power washing shall mean cleaning with high-pressure, low-volume water or steam in an outdoor location or in a manner that discharges flows to the outdoors, in accordance with any applicable stormwater regulations and City Code Section 26-498, for health and safety reasons, graffiti abatement, surface preparation for the application of architectural coatings, or painting or cleaning of heating, ventilation and air conditioning equipment.

Essential street sweeping shall mean cleaning of paved right-of-way surfaces by the City or others, with equipment that uses water in accordance with any applicable stormwater regulations, including City Code Section 26-498, and **DPCM** for health, safety and environmental cleanup reasons.

Food production shall mean the application of water to vegetables, fruits, or herbs to be used as a source of food. **Food production** shall not mean landscape or lawn watering, watering of **trees** not used for **food production**, or watering with **well or raw water**.

Fugitive dust shall mean solid particulate matter emitted into the air by mechanical processes or natural forces but is not emitted through a stack, chimney, or vent.

Hand watering shall mean the application of water to plant material while holding a hose in hand that has a positive shut-off nozzle. **Hand watering** shall not mean watering with a **sprinkler** on the end of a hose.

Health and safety reasons shall mean reasons reasonably necessary to remedy an unsanitary or dangerous condition that poses a health or safety risk or danger to the public or to the occupants of a particular property.

Horsetooth shall mean Horsetooth Reservoir, which is part of the **CBT** system.

HOA shall mean a homeowners' association, or similar organization.

Inactive area shall mean a property or portion of a property that is not used for athletics or other playing fields by an organization for routine and frequent use, including the rough area of a golf course.

Individual outdoor swimming pool shall mean an outdoor structure that is filled with water and used for swimming and includes all in-ground pools, above-ground pools, and pools owned by an individual for personal use and not accessible to the public or many people.

Landscape watering shall mean the use of treated or potable water obtained from **Utilities** to irrigate any **lawn, tree, food production**, flowers, shrubs, or other landscape plantings or plants. **Landscape watering** shall not mean watering with **well or raw water**.

Lawn shall mean the use of treated or potable water obtained from **Utilities** to irrigate or water any lawn, grass, or turf areas, including **regionally adapted species**. **Lawn watering** shall not mean **food production, non-lawn landscape, trees**, or watering with **well or raw water**.

Local street shall mean a low capacity road that is not a collector or arterial street. A **local street** can be a private or public right-of-way.

Medical hardship shall mean an exceptional hardship imposed upon an individual residential customer because of medical reasons by the restrictions set forth in the **WSAP**.

Misting device shall mean an evaporative cooling system, forcing water through small nozzles to create a fine mist or fog outdoors.

Multifamily shall mean residential premises that have more than two units and shall include sprinkler only taps that are used solely for irrigation on these premises.

Other landscape shall mean the use of treated or potable water obtained from **Utilities** to irrigate any flowers, shrubs, or other landscape plantings or plants. **Other landscape** shall not mean **food production**, **lawn** or **tree**, or watering with **well or raw water**.

Northern Water shall mean the Northern Colorado Water Conservancy District.

Platte River shall mean the Platte River Power Authority.

Poudre River shall mean Cache la Poudre River.

Recreation water toy shall mean an outdoor toy used on a private premise that requires water to operate and typically uses continuous water from a hose.

Regionally adapted species shall mean plants originally native to Colorado or other regions of the world that are acclimated to average temperatures and precipitation found in Fort Collins and are able to survive with little-to-no supplemental irrigation required following establishment.

Religious objection shall mean an objection to the specific application of the requirements of the **WSAP** due to a conflicting religious belief that precludes watering on an assigned day.

Residential shall mean a single-family or duplex residential premise.

Residential vehicle washing shall mean washing a vehicle on a residential premise in compliance with any applicable stormwater regulations and City Code Section 26-498.

Splash park shall mean an interactive water structure in a public space intended for public use and play and managed in accordance with applicable water quality requirements.

Spraying impervious surfaces shall mean rinsing, washing, or spraying with water or steam an impervious interior or exterior surface, including, but not limited to, surfaces such as garage floors, siding, windows, sidewalks, driveways, or patios, that will discharge flows outdoors in accordance with any applicable stormwater regulations and City Code Section 26-498.

Sprinkler shall mean an automated or manual system or a piece of equipment added to a hose that is used to spray water into the air so that droplets fall to the ground, including micro-sprays.

Sprinkler system maintenance shall mean the operation of a sprinkler system to the extent reasonably necessary for repair or maintenance, as long as a person is on site all times and testing is limited to verifying proper operation and identifying problems.

Tree shall mean a woody plant, typically having a single stem or trunk growing to a considerable height and bearing lateral branches elevated from the ground.

Utilities shall mean Fort Collins Utilities, which is owned and operated by the City of Fort Collins, a home rule municipality.

Water feature shall mean a device that creates a waterfall or fountain intended only for aesthetic purposes. **Water feature** shall not mean a **water feature** with a pond or basin

that performs a function essential to the support of fish life in that pond or basin or a **water feature** in a **swimming pool** or a **splash park**.

Windy Gap shall mean the Windy Gap Project, owned by **Northern Water**.

Well or raw water shall mean water from a well or other untreated (raw) water source, such as a well, ditch, or reservoir.

WSAP shall mean this *Water Shortage Action Plan* under City Code Section 26-167(a).

WEP shall mean *Water Efficiency Plan*, a plan adopted by the City Council to address long-term water conservation and efficiency planning, administered by **Utilities'** Water Conservation Division.

WRD shall mean **Utilities'** Water Resources Division.

Chapter 1 Water Restrictions

The *Water Shortage Action Plan* (WSAP), previously known as the *Water Supply Shortage Response Plan*, establishes conditions and restrictions to manage Utilities water supply in the event of projected shortages as established by City Code Section 26-167(a).

A water shortage occurs when the projected water supply is less than the anticipated water demand, with consideration of water reserves in storage or other criteria, as defined by the *Water Supply and Demand Management Policy*. The following events, or combination of events, are examples that could cause a water shortage:

- Drought
- Water quality issues, such as contamination or fire
- Infrastructure issues, such as pipeline or water treatment facility issues

Given the variability in water shortage causes and impacts, a water shortage action plan requires an analytical approach that allows for flexibility to address the given shortage, as well as projected shortages that may be anticipated. The WSAP establishes flexible options with guidance and transparency.

1.1 Guiding Principles

An effective response to water shortage requires a suite of strategies and tactics – no single water restriction will provide the response needed for most water shortages. The following guiding principles, not listed in order of priority or importance, will be followed as possible during a shortage.

Restrict less-essential uses first and avoid restrictions on more essential uses.

- Minimize restrictions on indoor water use for commercial and residential customers and uses that preserve health and safety.

Minimize adverse economic impacts.

- Minimize impacts to water-based businesses.
- Work with stakeholder businesses, such as those in the landscape industry.

Protect public and community activities.

- Minimize impacts to resources such as City parks, heavily used landscapes, and other public and community resources.
- Preserve public and community pools and splash parks during less severe water shortages.

Implement extensive public information and media relations program.

- Inform customers and stakeholders early and update regularly.
- Maintain transparency and trust through accurate and consistent messaging and communication.
- Leverage community partnerships for information dissemination.

Avoid irretrievable loss of natural vegetation.

- Minimize impacts to food production, such as vegetable gardens and trees, and perennial landscapes.
- Promote alternative, water-efficient irrigation methods, such as drip or hand-watering.

Explore alternative water supply options.

- Evaluate options to potentially increase water supplies and pursue when necessary and/or cost-effective relative to demand measures.

Collaborate regionally and with other water service providers.

- Involve adjacent water districts in water shortage action planning and implementation, where applicable.
- Communicate with adjacent water districts early and throughout water shortage.
- Engage in regional water shortage discussions, seeking regional collaboration and solutions when practical.

1.2 Action Summary Table

Pursuant to City Code Section 26-167(a) and this WSAP, the City Manager determines whether water use restrictions are necessary to manage the availability of water for use in the immediate future or within the planning horizon for managing the water utility's water supply. If the City Manager makes this determination, then a water supply shortage action level and the associated water use restrictions as applicable, is declared, as set forth in the WSAP.

The following Action Summary Table summarizes the action levels and associated water use restrictions. In a declared water shortage, the table shall be used by the City and the City Manager when implementing this WSAP and when imposing restrictions on the use of water by water utility customers pursuant to City Code 26-167(a).

There are three types of demand reduction strategies in the Action Summary Table on page 11.

Voluntary indoor water use strategies encourage optional and additional water use reductions based on water-efficient best practices and will be promoted concurrently during any mandatory outdoor water use restrictions. In addition, the Water Shortage Watch Action Level involves voluntary restrictions, which are based on Level I mandatory actions or best practices and will promote awareness while staff is continuing to monitor the given situation. These actions may provide for water shortage mitigation and avoid or defer mandatory restrictions.

Mandatory outdoor water use restrictions are required water use reduction strategies that are subject to monitoring and enforcement.

Alternative demand reduction actions may include a unique combination of mandatory restrictions and/or voluntary water use reductions. This level should be enacted when other Action Levels outlined in the WSAP are not adequate or appropriate to address a

unique or extreme water shortage scenario. The declaration of Action Level IV, includes, but is not limited to, the following water shortage scenarios:

- Non-irrigation season water shortages
- Extreme water shortages projected in excess of 35%

Action Level IV includes the ability to select restrictions and exceptions by permit, as outlined in the other Action Level's outlined in the Action Summary Table and may require indoor rationing or other restrictions to address given water shortage projections when outdoor or other non-essential restrictions alone will not suffice or meet the needs of the situation.

Temporary Rate Increase

Rate increases apply to the rate schedule in place at that time of Action Levels II and III. Rate increase for Level IV, or otherwise undefined in the Action Summary Table, may require approval from Council. The WSAP is effective on the date specified in the published declaration; however, rate increase may go into effect later, depending on a customer's bill cycle to avoid applying rate increase to water consumed prior to the water shortage's effective date. The following rates would be increased in accordance with the Action Summary Table:

- City Code Section 26-127. Schedule B, metered rates:
 - Commercial and residential (single-family, duplex, and multifamily) volumetric rates (excludes base and unit rates and participants of the Income Qualified Assistance Program receiving a discount for base and Tier 1 volumetric charges).
- City Code Section 26-129. (b)(4) Schedule D, miscellaneous fees and charges:
 - Fire hydrant and water filling station volumetric rates.

ACTION SUMMARY TABLE
Fort Collins Utilities Water Shortage Action Plan

Action Level			Water Shortage Watch - Voluntary	I - Low	II - Medium	III - High	IV - Alternative
% Projected Water Shortage			Potential shortage	1-15%	16-25%	26-35%	Unique and extreme water shortages not adequately or appropriately addressed by Water Shortage Watch or Levels I-III
Indoor Use Reductions			Voluntary				Indoor rationing to address extreme water shortages (> 35%) and select restriction(s) listed in Action Levels I-III to address other unique scenarios
Outdoor Use Reductions	Landscape Water Use	Lawn Watering	Target: 0.62 gallons/sq. ft. or 1" per week	Target: 0.62 gallons/sq. ft. or 1" per week	Target: 0.47 gallons/sq. ft. or 0.75" per week	Requirement: 0 gallons/sq. ft. per week	
		Non-Watering Hours	No watering between 10 a.m. and 6 p.m.	No watering between 10 a.m. and 6 p.m.	No watering between 10 a.m. and 6 p.m.	N/A	
		Number of Watering Days per Week (even and odd refers to the last digit of a street address)	Limit to two days per week	Residential (even) - Th & Sun Residential (odd) - Wed & Sat Multifamily & Commercial - Tue & Fri.	Residential (even) - Sun Residential (odd) - Sat Multifamily & Commercial - Fri.	Not allowed	

		Sprinkler System Maintenance	Minimize test run times per zone	Minimize test run times per zone	Minimize test run times per zone	Not allowed	
		Trees	Limit watering to two days per week and not between 10 a.m. and 6 p.m., and by hand, drip system or deep root fork or needle at any time	May be watered by sprinkler on Residential (even) - Th & Sun Residential (odd) - Wed & Sat Multifamily & Commercial - Tue & Fri. any day, other than between 10 a.m. and 6 p.m., and by hand, drip system or deep root fork or needle at anytime	May be watered by sprinkler on Residential (even) - Sun Residential (odd) - Sat Multifamily & Commercial – Fri., other than between 10 a.m. and 6 p.m. May be watered only by hand, drip system or deep root fork or needle at anytime	May be watered only by hand, drip system or deep root fork or needle at any time	Indoor rationing to address extreme water shortages (> 35%) and select restriction(s) listed in Action Levels I-III to address other unique scenarios
		Food Production	Limit watering to two days per week and not between 10 a.m. and 6 p.m., and by hand or by drip system at any time	May be watered by sprinkler on Residential (even) - Th & Sun Residential (odd) - Wed & Sat multifamily & Commercial - Tue & Fri., other than between 10 a.m. and 6 p.m., and by hand or by drip system at anytime	May be watered by sprinkler on Residential (even) - Sun Residential (odd) - Sat multifamily & Commercial – Fri., other than between 10 a.m. and 6 p.m. May be watered only by hand, or drip system at anytime	May be watered only by hand, or drip system at any time	

		Other Landscapes	Limit watering to two days per week and not between 10 a.m. and 6 p.m., and by hand or by drip system at any time	May be watered by sprinkler on Residential (even) - Th & Sun Residential (odd) - Wed & Sat multifamily & Commercial - Tue & Fri. any day, other than between 10 a.m. and 6 p.m., and by hand or by drip system at anytime	May be watered by sprinkler on Residential (even) - Sun Residential (odd) - Sat multifamily & Commercial – Fri., other than between 10 a.m. and 6 p.m. May be watered only by hand, or drip system at anytime	Not allowed	
	Non- Landscape Water Use	Residential Vehicle Washing	Must use shutoff nozzle	Must use shutoff nozzle	Not allowed from May-August. Must use shutoff nozzle	Not allowed	
		City of Fort Collins Fleet Vehicle Washing	As needed	Once per week or as approved by the City Manager for health or safety reasons	Not allowed unless approved by the City Manager for health or safety reasons	Not allowed unless approved by the City Manager for health or safety reasons	
		Dealership Vehicle Washing	As needed	Once per week	Upon Sale	Upon Sale	
		Spraying Impervious Surfaces	Whenever possible deploy dry methods first	Not allowed, except for essential power washing. Whenever possible, dry	Not allowed, except for essential power washing. Whenever possible, dry methods must be deployed first.	Not allowed, except for essential power washing. Whenever possible, dry methods must be deployed first.	

			methods must be deployed first			
	Dust Control Measures for Dust Generating Activities	Whenever possible use alternative (non-water) dust control measures, as defined by the City's <i>Dust Prevention and Control Manual</i>	Unrestricted - consider water shortage watch measure	Unrestricted - consider water shortage watch measure	Not allowed, except if no alternative (non-water) dust control measures exist, as defined by the City's <i>Dust Prevention and Control Manual</i>	
	Street Sweeping	No more than normal operating schedule and essential street sweeping. Whenever possible, deploy dry methods first	Unrestricted - consider water shortage watch measure	Local Street sweeping shall be limited to essential street sweeping only. Whenever possible, dry methods must be deployed first	Arterial and Collector Street Sweeping will be reduced to 1x a month and all other sweeping restricted to essential street sweeping. Whenever possible, dry methods must be deployed first	
	Hydrant Flushing and Testing	No more than normal operating schedule and critical situations	Limited to critical situations as approved by Utilities' Executive Director	Limited to critical situations as approved by Utilities' Executive Director	Limited to critical situations as approved by Utilities' Executive Director	Indoor rationing to address extreme water shortages (> 35%) and select restriction(s) listed in Action Levels I-III to address other unique scenarios

		Water Features	Turn off water feature	Unrestricted - consider water shortage watch measure	Not allowed	Not allowed	
		Splash Parks	Operate system to maximize water reuse while maintaining water quality	Unrestricted - consider water shortage watch measure	Unrestricted - consider water shortage watch measure	Not allowed	
		Community Outdoor Swimming Pools	Use pool cover and backwash system if exists	Unrestricted - consider water shortage watch measure	Unrestricted - consider water shortage watch measure	Unrestricted, if filled before date restrictions were implemented. No filling of empty pools	
		Individual Outdoor Swimming Pools and Recreational Water Toys	Limit use by setting a spigot timer on the hose	Unrestricted - consider water shortage watch measure	Toys not allowed. Pools are unrestricted, if filled before date restrictions were implemented. No filling of empty pools	Toys not allowed. Pools are unrestricted, if filled before date restrictions were implemented. No filling of empty pools	
		Misting Devices	Limit use to only when temperatures are extreme and misted areas are occupied	Unrestricted - consider water shortage watch measure	Not allowed	Not allowed	

Exceptions by Permit	New Lawn Installation (sod and seed)	Not applicable	Water any time of day and any day of the week for a period of time, as defined by the approved permit. Multifamily and Commercial can request a temporary certificate of occupancy	September-April installation, water any time of day and any day of the week for a period of time, as defined by approved permit. Multifamily and Commercial can request a temporary certificate of occupancy	No exceptions. Multifamily and Commercial - temporary certificate of occupancy will be allowed	
	Medical Hardship		Water on two selected days per week. No watering on Monday and between the hours of 10 a.m. and 6 p.m.	Water on one selected day per week. No watering on Monday thru Thursday and between the hours of 10 a.m. and 6 p.m.	No exceptions	
	Religious Objection		Water on two selected days. No watering on Monday and between the hours of 10 a.m. and 6 p.m.	Water on one selected day. No watering Monday thru Thursday and between the hours of 10 a.m. and 6 p.m.	No exceptions	

	Inactive Areas with Turf Areas of Four Acres or More and City Parks		Max of 1.00" or 0.62 gallons per sq. ft per week. Water 3 days/week. No watering between the hours of 10 a.m. and 6 p.m.	Max of 0.75" or 0.47 gallons per sq. ft. per week. Water 3 days/week. No watering between the hours of 10 a.m. and 6 p.m.	No exceptions	
	Active Area City and Community Athletic/Playing Fields		Max of 1.25" or 0.78 gallons per sq. ft. per week. May water any day, according to permit; no watering between the hours of 10 a.m. and 6 p.m.	Max of 1.0" or 0.47 gallons per sq. ft. per week. May water any day, according to permit; no watering between the hours of 10 a.m. and 6 p.m.	No exceptions	
	Well or Raw Water		Registration and sign provided by Utilities required	Registration and sign provided by Utilities required	Registration and sign provided by Utilities required	
Enforcement	Residential Fines per Violation	Not applicable	\$50-1,000	\$100-1,000	\$100-1,000	\$50-1,000
	Non-Residential Fines per Violation		\$250-1,000	\$500-1,000	\$500-1,000	\$250-1,000
Water Rate	Adjust Water Rates	Not applicable	No adjustment	20% increase to volumetric charges only, excluding IQAP tier 1	30% increase to volumetric charges only, excluding IQAP tier 1	Rate increases will be requested by City Ordinance, as necessary

Additional requirements during Action Levels I-IV:

- Watering within 48 hours of a rain event is prohibited.
- Hand watering requires use of a shut off nozzle.
- Drip or deep fork/needle irrigation requires use of a spigot or other automatic irrigation system timer.
- Permits must be displayed so they are visible from the street or sidewalk.

Recommendation: Utilize cycle soak watering methods by breaking up watering in each irrigation zone into 2 cycles, with at least 60 min. in between to allow water to soak into the ground.

1.3 Declaring a Water Shortage

Prior to declaring a water shortage, the following steps should occur:

1. [Water Shortage Indicators](#) (Section 1.4) and other necessary information is analyzed by Utilities and presented to the [Action Committee](#) (Section 1.6).
2. The Action Committee develops a recommendation with supporting data, description of the evaluation, and the proposed response.
 - a. If Action Level IV is recommended, additional information should be provided to the City Manager that includes a description of which restriction(s) are recommended from the [Action Summary Table](#) (Section 1.2) and why; or in the case of an extreme water shortage, which types of indoor water uses will be rationed and to what degree or extent.
3. The recommendation is presented to the City Manager.
4. The City Manager considers the Action Committee's recommendation to determine whether to declare a water shortage and, if so, which action level to select.
 - a. If Action Level IV is selected, the City Manager must include a description in the declaration of which restriction(s) are selected from the Action Summary Table; or in the case of an extreme water shortage, which types of indoor water uses will be rationed and to what degree or extent.

When possible, City Council will be informed in advance of the water shortage declaration. A water shortage declaration may need to be made quickly, in order to minimize the severity of the shortage. In these instances, City Council will be notified as quickly as possible following the water shortage declaration.

After the declaration of a water shortage, the City Manager shall issue a declaration and order pursuant to City Code 26-167(a), in conjunction with the City Attorney's Office and City Clerk.

Moving Between Levels and Returning to Normal Conditions

The [Water Shortage Indicators](#) will continue to be monitored throughout the given water shortage. It may be necessary to increase the action level to either achieve greater demand reduction or reduce the action level, but not yet return to normal conditions. Moving between action levels or returning to normal conditions requires a declaration by the City Manager, using the process defined above, pursuant to City Code 26-167(a).

1.4 Water Shortage Indicators

Several indicators are used to monitor water supplies and demands, evaluate the severity of a potential water shortage, including length and projected duration, and ultimately guide the appropriate response. The indicator list below is not comprehensive nor representative of all possible scenarios; additional relevant information will be utilized if available.

- CBT water supply availability. Utilities owns units in the Colorado-Big Thompson (CBT) project, which are subject to a variable annual quota that determines how much water each unit will yield. Northern Water operates the CBT project. Often, a low quota is first declared in November, with an updated, additional quota provided in early April. There are rare times when additional quota is provided in mid-summer,

but typically the total annual quota ranges between 50 and 100% (e.g., 100% quota = 1 acre-foot per unit).

The CBT project provides supplemental water supplies for the region. The quota is set high when other regional water supplies are expected to be below normal and the quota is set low when regional water supplies are plentiful. However, when storage in the CBT system is low, the quota may become what is known as “supply-limited”. A supply-limited quota is a strong indicator to anticipate a reduced CBT supply in the current or following season, especially if the snowpack is below average. A predictor of a supply-limited quota is the volume of unallocated project reserves in the CBT project.

- Windy Gap water availability. Through an agreement between Utilities and multiple parties called the “Reuse Plan,” Utilities usually receives Windy Gap water each year through the CBT system. The presence or lack of Windy Gap water supplies in the CBT system, or the ability to create Windy Gap in-lieu of water from CBT supplies, can make a significant difference in the volume of supplies available via Horsetooth Reservoir, therefore staff monitors these levels closely.
- Poudre River water availability. Poudre River water supplies are estimated based on either:
 - A projected date when each of Utilities’ Poudre River water rights will fall out of priority.
 - The volume that is expected to be diverted by Utilities given water quality and infrastructure constraints.Estimates are informed by regional streamflow projections that consider snowpack, weather forecasts and other factors.
- Joe Wright Reservoir storage levels and Michigan Ditch flows. Another source of Utilities’ supply is the Joe Wright Reservoir-Michigan Ditch system. The amount of water diverted by the Michigan Ditch is dependent on the water supplies in the Michigan River, which is not a tributary of the Poudre River. A reduction of Michigan Ditch diversions and/or Joe Wright Reservoir not filling would be strong indicators or a need to monitor the supply and demand balance closely and to anticipate reduced supplies in the given or following year.
- Snowpack surveys and streamflow estimates for the Poudre River and Colorado River basins. Both the Poudre River and the CBT system rely on snowpack to fill reservoirs and rivers, which ultimately deliver water to our community when the snow melts. The spring runoff (timing and volume of melting snowpack), in conjunction with available storage, influences how much water will be available to treat each year. Data on snowpack and streamflow comes from:
 - National Resources Conservation Services Snotel program readings for Joe Wright and Deadman Hill sites provide information about winter snowpack in the Poudre River basin.¹

¹ This information can be accessed here: wcc.sc.egov.usda.gov/nwcc/site?sitenum=551; wcc.sc.egov.usda.gov/nwcc/site?sitenum=438

- The State of Colorado Division of Water Resources provides monthly snow course data in the Poudre River basin, which includes information about snow conditions at a variety of elevations.²
 - Northern Water provides snowpack and streamflow projections for the Colorado River and Poudre River basins.³
- Weather Forecasts and Drought Monitors. Short- and long-term national and regional weather predictors and drought condition monitoring information are used to anticipate if we may expect lower than average supplies and/or higher than average demands. Several governmental and educational online resources are monitored to assess these conditions, including drought monitors, seasonal drought outlooks and monthly and seasonal climate outlooks.
- Water quality issues. Water quality can impact the ability to treat and therefore make use of Utilities' water supplies. These include short-term issues like vehicle crashes in the Poudre River and longer-term issues like algal blooms in Horsetooth. Utilities monitors both water sources for any potential impacts.
- Natural disasters. Wildfires or floods in the Poudre River basins, other source watersheds (e.g., Colorado or Michigan River basins), or within the service area can impact water quantity, water quality and/or water infrastructure, potentially for multiple years.
- Infrastructure failures. The presence of an infrastructure failure event can suddenly cause a supply shortage if it impacts Utilities' ability to divert raw water supplies to the water treatment plant or impacts the distribution system and the ability to deliver water to customers.
- Infrastructure maintenance. Planned maintenance that affects various infrastructure that stores and delivers raw or treated water, like maintenance of the Horsetooth outlet or the Poudre River pipelines, can cause temporary shortages of supplies.
- Administrative and governmental changes. There may be changes in water rights administration, legislation passed by the State of Colorado, policies from Northern Water, emergency declarations by the governor, federal Colorado River issues, or other changes that could adversely impact Utilities' supplies in both the Poudre River and/or Horsetooth.
- Regional impacts and messaging. Although Utilities may have adequate water supplies that do not warrant mandatory restrictions, other adjacent and local water providers (e.g., other treated water providers in the Growth Management Area) might require them. Consideration should be given to potentially aligning restriction levels and messaging with these water providers.

² This information is developed using hand-measured snow course reading to provide a local condition. It can be obtained from the State of Colorado Division of Water Resources.

³ This information can be accessed here: northernwater.org/WaterProjects/WaterData.aspx

Water Supply Operations Model

WRD staff maintain a water supply operations model that uses many of the above data sources to estimate water supplies and demands. The model provides estimates for a spectrum of scenarios from worst case (high demand and low supply) to best case (low demand and high supply). The following figure summarizes some of the information from the operations model.

- Water supply estimates are based on projected yields available to Utilities from the Poudre River (including Michigan Ditch/Joe Wright Reservoir system), CBT and Windy Gap water supplies, as described above.
- Utilities' service area estimates average water demand (based on a 10-year rolling average of past daily demands), which are adjusted as needed for expected population growth. Also based on previous years water use data, potential high (dry-year) and low (wet-year) demands are estimated.
- The model also reflects obligations to other entities (e.g., East Larimer County Water District, Fort Collins-Loveland Water District, West Fort Collins Water District, etc.).
- Short- and long-term weather and climate factors influence the estimates of both supplies and demands.

City of Fort Collins Utilities

ASSUMPTIONS

- Values look at remaining demands and supplies through the end of the Water Year (Oct 31)

DEMANDS

- Average demand is projected demand
- Low demand is projected average demand reduced by 10%
- High demand applies a monthly worse case factor to projected average demand

SUPPLIES

Poudre

- Poudre supplies are typically limited by preferred water quality blending and not by water rights availability
- Assumes 5 MGD at PVP (Jun 1 - Aug 31) and 10 MGD at Poudre Pipeline 90% of the time

Horsetooth Reservoir

- Horsetooth Supplies include CBT, NPIC MU & Windy Gap
- Low CBT supply: 60% quota, 2.4 NPIC MU allocation/share
- Avg. CBT supply: 70% quota, 2.7 NPIC MU allocation/share
- High CBT supply: 80% quota, 3.0 NPIC MU allocation/share
- A O AF Joe Wright-CBT exchange with NPIC is included
- All remaining Horsetooth raw water obligations have been deducted

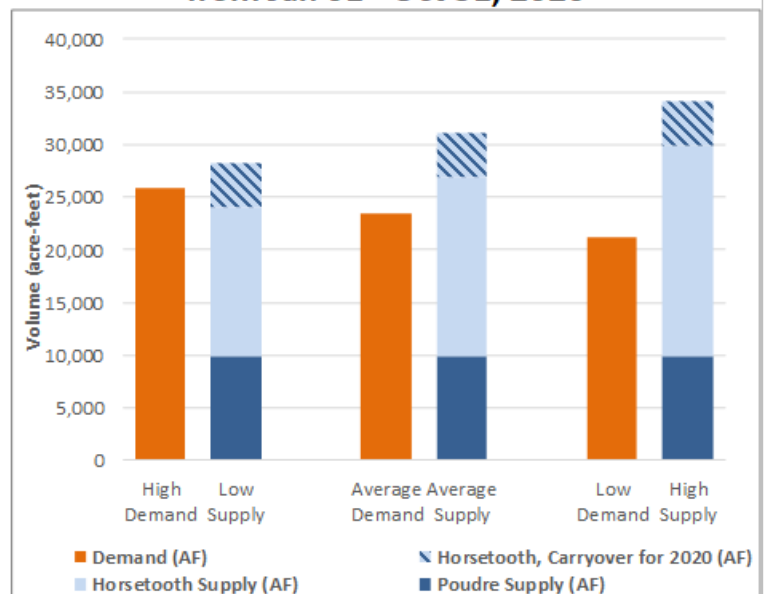
Horsetooth Carryover Objective

- Amount from this years Horsetooth supplies to carryover for next year
- Max amount allowable is 4,190 AF before 10% shrink

NOTES:

MGD = million gallons per day; PVP = Pleasant Valley Pipeline; CBT = Colorado-Big Thompson Project; NPIC = North Poudre Irrigation Company; MU = Multiple Use (NPIC allocation of CBT water, measured in acre-feet per share); AF = acre-feet

Remaining Water Demand and Supply from Jan 01 - Oct 31, 2020



Scenario	Demand (AF)	Poudre Supply (AF)	Horsetooth Supply (AF)	Horsetooth, Carryover for 2020 (AF)
High Demand Low Supply	25,899	9,837	14,174	4,190
Average Demand Average Supply	23,362	9,837	17,125	4,190
Low Demand High Supply	21,124	9,837	20,077	4,190

1.5 Other Response Strategies

The following are potential actions that can be considered, if available and cost-effective, to improve existing supplies for the current water year and improve storage reserves for the next water year. The actions implemented will depend upon the nature and severity of the supply shortage and should be considered complementary to a demand reduction response. The cost-effectiveness of each short-term supply strategy should be evaluated prior to implementing, as acquiring additional supplies can have significant costs.

- Seek and implement potential rentals, trades or other ways to increase supplies from others (particularly CBT supplies).
- Cease all non-binding rentals on types of water that can be used by Utilities.
- Manage Utilities' Poudre River water rights portfolio so that maximum benefit can be attained from each water right.
- Communicate with Utilities' Water Treatment Facility staff regarding the availability of the Horsetooth and Poudre River sources so that operational adjustments can be made to treat less than optimal blends.
- Request that Utilities' Water Treatment Facility staff use its UV treatment system to increase supply efficiencies.
- Work with other City departments (e.g., Parks) to maximize available treated water supplies.
- Consider any potential changes to water delivery agreements that could minimize Utilities' obligations under drought conditions.

1.6 Responding to a Water Shortage

Implementation

The following table outlines roles and responsibilities during a shortage. Additional roles and responsibilities will be specified by the Water Shortage [Action Committee](#) for each water shortage, in order to accurately address the given situation and appropriately address implementation needs.

Department	Roles and Responsibilities
Utilities – Water Conservation	Administers the WSAP, including but not limited to: • Updating staff and the public. • Being source of information on restrictions, action levels, enforcement and communication. • Organizing the Action Committee. • Evaluating demand trends in coordination with Water Resources.
Utilities – Water Resources	• Evaluates and monitors water supply and demand management efforts and the source of all information regarding the status of the shortage. • Coordinates closely with Water Conservation.
Neighborhood Services – Code Compliance	Assists with enforcement during mandatory water use restrictions.

Utilities – Finance	Monitors and reports on changes in revenue.
Utilities – Communications and Marketing	Develops, implements, and responds to water shortage communications, materials and messaging following guidance provided in Appendix A .
Utilities – Community Engagement	Assists with development of engagement planning and implementation.
Action Committee	- Meets annually, before and during a declared water shortage. - Evaluates water shortage indicators and other pertinent information necessary for determining a water shortage. - Develops a water shortage declaration recommendation to the City Manager, including the proposed action level.

Monitoring

It is important to measure the success of the WSAP in achieving the supply and demand goals for the given water shortage. WRD has the primary responsibility for monitoring the ongoing status of the water shortage and comparing demand scenarios described below. Water Conservation has the primary responsibility for monitoring public responses to restrictions, which can be implemented during public engagement activities (see [Appendix A](#) for more details). This monitoring may use both scientific analysis and anecdotal information and may include:

- Comparison to actual water use with target, average and expected use (without supply shortage awareness).
- Monitoring public response to water shortage restrictions (voluntary or mandatory) through informal feedback, focus groups, surveys or other appropriate methods.

Water Shortage Committees

Annually and when preparing for and during a water shortage, the Action Committee shall convene. Prior to and during a water shortage the Stakeholder Committee shall also meet, as needed. Representation on both committees shall include the following service areas and departments:

ACTION COMMITTEE	
Critical to annual evaluations, daily activities, and action plan management and leadership. The Action Committee should meet as needed, and at a minimum, annually (preferably directly after the April CBT quota is issued by Northern Water) to evaluate the raw water model and other indicators and determine the supply outlook for the remainder of the year. Prior to and during a water shortage, the primary group may meet more frequently. Depending on the water shortage scenario, representation on the Action Committee may vary from year to year and differ from the list below:	
Utilities	Executive Director

	Deputy Director – Customer Connections
	Deputy Director – Water Production
	Water Treatment
	Water Resources
	Water Conservation
	Customer Care and Technology
	Finance
	Community Engagement
	Communications and Marketing
	Customer Accounts
Emergency Preparedness and Security	
STAKEHOLDER COMMITTEE Key to ensuring Citywide cohesiveness and consistency in messaging, implementation and adherence to water restrictions. Representation from this group may change and meeting frequency will reflect need, depending on the water shortage scenario.	
Communication and Public Involvement Office	
Parks	Forestry
	Golf
Operation Services	
Natural Areas	
Recreation	
Planning, Development, Transportation	Development Review
	Neighborhood Services/Code Compliance
Environmental Services	
Transfort	
Adjacent water districts	
Utilities	Environmental Regulatory Affairs
	Distribution System
	Water Reclamation
	Water Quality Services

Chapter 2 Permits

Permits are available to allow for exceptions to assigned watering days and frequencies only, as described in this chapter.

2.1 Types of Permits

Permits may be issued for individuals or businesses unable to comply with watering restrictions for the following conditions:

- New seed and sod
- Medical/physical hardship
- Religious objection
- Large (four acres or greater) and City parks inactive areas
- City and Community active areas
- Raw or well water use

New Seed or Sod Permit

This permit is to allow additional watering for new seed and sod installations. A complete permit application is required, along with a receipt for seed or sod, seed or sod species type, and proof of soil amendment and amount in cubic yards. Regionally adaptive species may allow for longer or different watering exceptions compared to Kentucky Blue Grass. When appropriate, a permit will be issued as outlined below:

Action Level I: A permit will allow for watering any time of day and any day of the week for a period, defined by the approved permit, based on the species' establishment needs.

Action Level II: No seed or sod planting May to August. From September to April, a permit will allow for watering any time of day and any day of the week for a period, defined by the approved permit, based on the species' establishment needs.

Action Level III: No permits will be issued.

Multifamily and commercial developments can request a temporary certificate of occupancy to allow occupancy while delaying the installation of a landscape. The entire landscape cannot be watered unrestricted with this permit, only the areas with new seed or sod. Other areas must be watered according to the water restrictions specified by the action level in effect. Permit holders will be encouraged to water during the cooler times of day after the first week.

Medical/Physical Hardship

This permit is to establish an alternate watering schedule for customers with short-term or long-term medical or physical hardship to one or more days to which they are otherwise assigned. A complete permit application is required. Utilities reserves the right to verify the medical or physical hardship for which the permit is being issued.

Action Level I: Watering on two specified days per week. No watering Monday or between 10 a.m. and 6 p.m.

Action Level II: Watering on one specified day per week. No watering Monday through Thursday and between the hours of 10 a.m. and 6 p.m.

Action Level III: No permits will be issued.

Religious Objection Permit

This permit is to establish an alternate watering schedule for customers with religious objections to one or more days to which they are otherwise assigned. A complete permit application is required. Utilities reserves the right to verify the religious objection for which the permit is being issued.

Action Level I: Watering on two specified days per week. No watering Monday or between 10 a.m. and 6 p.m.

Action Level II: Watering on one specified day per week. No watering Monday through Thursday or between 10 a.m. and 6 p.m.

Action Level III: No permits will be issued.

Large (Four Acres or Greater) and City Parks Inactive Areas Permit

This permit is to establish a custom watering schedule for privately-owned areas with four acres or more or City parks of any size, that use treated water, excluding areas with active athletic/playing fields. Documentation that the existing sprinkler system cannot water the area within the designated watering days and watering limits are necessary to be eligible for this permit. A complete permit application is required. Utilities reserves the right to inspect the controller(s) and schedules associated with the permit to verify that the setting matches the submitted application. Averaging the amount of water applied throughout the area, is allowed.⁴

Action Level I: Average maximum of 1.00 inches or 0.62 gallons per square-foot per week. Watering may occur on three specified days per week. No watering between the hours of 10 a.m. and 6 p.m.

Action Level II: Average maximum of 0.75 inches or 0.47 gallons per square-foot per week. Watering may occur on three specified days per week. No watering between the hours of 10 a.m. and 6 p.m.

Action Level III: No permits will be issued.

City and Community Active Areas Permit

This permit is to establish a custom watering schedule for City parks and areas owned by other entities that consist of playing and athletic fields that use treated water. Documentation that the existing sprinkler system cannot water the area within the designated watering days and watering limits are necessary to be eligible for this permit. These areas are subject to less restriction in order to protect more actively used landscapes and maintain safety for those using the areas. A complete permit application is required. Utilities reserves the right to inspect the controller(s) and schedules associated with the permit to verify that the setting matches the submitted application. Averaging the water use application throughout the area is allowed (see footnote 4, for more details).

Action Level I: Average maximum of 1.25 inches or 0.78 gallons per square-foot per week. May water any day, as defined within a permit; no watering between the hours of 10 a.m. and 6 p.m.

Action Level II: Average maximum of 1.0 inches or 0.47 gallons per square-foot per week. May water any day, as defined within a permit; no watering between the hours of 10 a.m. and 6 p.m.

Action Level III: No permits will be issued.

Well or Raw Water Sources

Customers who use a well or raw water source for lawn watering or other irrigation are not restricted because this water is not provided by Utilities and is not subject to the the WSAP. Customers using a well or raw water for irrigation are required to register their address so that if a complaint is received, it can be disregarded. Those customers must post a sign that is visible from the street. Free signs will be supplied by Utilities.

⁴ Averaging occurs by determining the total amount of water applied to the property each week and dividing it by the area of property subject to the permit. The total water applied per square foot must be equal or less than the maximum application specified for the applicable action level, per the permit. This allows some areas of the property subject to the permit to receive more water and other areas less water than the maximum application.

2.2 Permit Application and Process

Customers may obtain a permit application or renewal form by downloading the application form from Utilities' website or by requesting one by mail or email. Complete applications must be submitted to Utilities.

Utilities staff must use reasonable discretion when reviewing permit applications for approval or applying terms and conditions to approve permits. Utilities staff must consider the impacts of the permitted activity on Utilities' water supply or water system operations. Utilities staff may conduct investigations in the review of the permit application.

When a permit application meets the eligibility requirements, a permit will be granted and issued by Utilities' Executive Director. Decisions on permit applications will be determined within five business days of receipt, unless the permit is incomplete or requires additional investigation. A determination of a permit will be provided in writing to the applicant with an explanation of the basis of approval or denial. Permits may contain terms and conditions, as determined by Utilities staff, to allow the minimum watering necessary to carry out the intent of the permit.

Properties with approved permits remain subject to enforcement of restrictions outside of the terms of the permit.

At Utilities' discretion, some permits may be renewed during subsequent water shortages. A request to renew a previously approved permit must be made to and approved by Utilities on a renewal form provided by Utilities. The applicant must confirm that the previously approved conditions and permit terms will be adhered to. Renewals are subject to staff review and approval and may include additional requirements or amendments to the previously approved permit so that the renewed permit conforms to this WSAP and the water shortage declaration at that time.

Not all permits can be renewed. New sod and seed permits shall not be available for renewal. Other permits shall not be renewed if there have been changes to properties' landscape, irrigation, or other circumstances. Other permits shall not be renewed if they are inconsistent with the current WSAP. Where a permit cannot be renewed, customers can still submit applications for new permits under the current WSAP.

Permit Approval Process – New and Renewal Applications

1. All permit applications are submitted to Utilities for an initial review to determine if the application is complete. If additional information is required, staff will contact the applicant to obtain missing information.
2. Staff reviews application and presents a recommendation to Utilities' Executive Director or his/her designee(s).
3. If a permit is granted by Utilities' Executive Director or his/her designee(s), a permit number is assigned. If a permit is denied by Utilities' Executive Director or his/her designee(s), then an explanation of the basis will be provided to the applicant.
4. Staff notifies customer and provides applicable water use information and signage.

5. If the level of restrictions is changed, communication will be made to all permit holders advising of the change and required changes to water use.

Signage

Upon permit approval, Utilities will provide a sign to be posted in a location that is visible from the street for the duration of the exemption. Signs should be returned to Utilities for reuse following the term of the permit or the conclusion of the water shortage.

Permits and Changing Action Levels

Permit holders will be notified if the Action Level changes during the term of their permit. Once notified, it is the responsibility of the customer to revise their watering schedule to meet the new requirements. New Sod and Seed permits are the exception; the terms of the permit are good until the expiration date listed on the permit.

Appeals

Final permit determinations may be appealed pursuant to City Code Section 26-53.

Chapter 3 Enforcement

The enforcement and permitting functions for Utilities' water restrictions are designed to ensure compliance with the WSAP, as well as City Code Section 26-166 (Prohibition of waste). Enforcement of restrictions, together with ongoing public education and outreach, are needed to achieve the goal of decreasing water demand, thus minimizing the need for greater water restriction action levels. It is vital to the success of the enforcement program that customers perceive fair enforcement of restrictions, while receiving the necessary information to successfully comply, along with permits for specific situations as noted in [Chapter 2](#).

3.1 Need for Additional Resources

The implementation and enforcement of water use restrictions will likely require additional financial and personnel resources.

3.2 Fines for Violations

Compliance with the WSAP shall be subject to City Code Section 26-168 (Obligation to comply; penalties). Violations of the WSAP, including noncompliance with restrictions imposed during a declared water shortage or the terms of a permit issued hereunder, shall therefore be a civil infraction and shall be subject to the penalty provisions of Subsection 1-15(f) of City Code, except that, notwithstanding the provisions of Subsection 1-15(f), fines for violations of the WSAP shall be follows:

	Water Shortage Watch - Voluntary	I - Low	II - Medium	III - High	IV - Alternative
Residential Fines per Violation	Not applicable	\$50-1,000	\$100-1,000	\$100-1,000	\$50-1,000

Non-Residential Fines per Violation		\$250-1,000	\$500-1,000	\$500-1,000	\$250-1,000
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Each day during which a violation of any term of the WSAP or permit issued hereunder occurs or continues shall constitute a separate offense.

3.3 Enforcement Guidelines

Business and Residential Violations

The restrictions shall apply to Utilities residential and business water customers, whether within or outside of the City of Fort Collins. Premises within City of Fort Collins municipal limits that are served water by other water providers must comply with their water provider's restrictions, if applicable. In the case of single-family and duplex dwellings, the Notice of Complaint, Warning, or Citation should be issued to the Utilities account holder. If the customer responsible for the violation is renting a residential property, it is possible that the property owner may also be responsible for allowing the tenant or others to use water in a manner in violation of the restrictions.

In the case of businesses and multi-family residential violations, the summons and complaint should be issued to the person Utilities account holder – either the property owner or the tenant, if renting. If the identity of that person is unknown, and/or to the owner of the business or the registered agent of the business is unknown, the information can be obtained from the Colorado Secretary of State website. The City Attorney's Office can assist as necessary.

Methods of Enforcement

Utilities' water conservation programs are based on an educational approach with proactive public outreach. Depending on the severity of the shortage and other factors, this approach may be continued with mandatory water restrictions, to engage and maintain the willing cooperation and support of customers.

Utilities' goal of enforcement is to encourage all customers to help with conserving water during a shortage. The WSAP allows for citations to be issued following a warning. During mandatory levels, enforcement may be implemented using various methods, including the following:

- Complaint-based enforcement
- Active patrolling and violation identification by Utilities and Code Compliance
- Remote monitoring by Utilities, using advanced metering infrastructure

Educational Resources

Existing Water Conservation Division programs and services can be used to assist customer with compliance challenges:

- Sprinkler Audit Program – irrigation controller changes included
- WaterSmart Customer Portal – monitor water use
- Rebates – improve indoor and outdoor water use efficiency

- Xeriscape Incentive Program – convert high-water use landscapes to regionally adapted water-wise landscapes
- Landscape Water Budget Program – compares recommended water use to current water use to identify inefficiencies

Reporting Complaints

Customers may report water shortage violations and related complaints by contacting Utilities through a number of ways:

- Saving Water Hotline⁴: (970) 416-2881, answered live during working hours or voicemail
- Email: utilities@fcgov.com
- Access Fort Collins – water restrictions category: fcgov.com/accessfortcollins

Information needed for enforcement staff to investigate the report:

- Complainant's name and contact information (may be anonymous)
- Address or specific location where the violation occurred
- Date and time the violation was observed
- Details about the violation (wrong day, wrong time, wasting water, etc.)

3.4 Turning Off Water

Reports are occasionally received where sprinklers or other water uses have been running for hours or days and all means of reaching the customer have failed. In those cases, Utilities staff can enter the property to shut off the sprinklers. See City Code Section 26-22 (Right of Entry) and Section 26-28(f) (Abatement of Imminent Hazards).

Chapter 4 WSAP Updates

4.1 WSAP Review

Utilities' customers and stakeholders across the City organization and community will be included in any review and update process. Water shortages and related demand reduction strategies impact the community in a variety of ways, and any review will benefit from a broad and diverse public and stakeholder engagement process, including under-represented populations. For technical and professional recommendations, Colorado Water Conservation Board (CWCB) should be included in a WSAP review process. CWCB can provide insight from the State and regional level, as well as provide funding for water shortage planning and implementation.

4.2 Public Review Process

During any review and update process, Utilities staff will engage stakeholders and the public to share what a water shortage is, the value of a prepared action plan, the current WSAP, and solicit input on the WSAP and potential updates. Methods of engagement may include print and online materials and resources; in-person workshops, focus

⁴ This hotline is also used to report wasted water year-round regardless of a water shortage declaration, in accordance with City Code Section 26-166.

groups, presentations; and, digital tools, such as social media and electronic surveys. The method used will depend on the extent of the review and updates needed.

Stakeholders to engage include, but are not limited to:

- Affordable housing providers
- Business Associations
 - Chamber of Commerce
 - North Fort Collins Business Association
 - Midtown Business Association
 - Downtown Business Association
 - Downtown Development Authority
- Carwashes
- Certified Landscape Professionals and others in the landscape industry
- Faith-based and other non-profit organizations
- Key Accounts
- Vehicle Dealerships

Public engagement methods include, but are not limited to:

- Events like:
 - Bike to Work Day
 - Open Streets
 - Water Conservation or other Utilities events
- OurCity – interactive website
- Utilities Bill insert
- Water Reports

City Staff to engage include, but are not limited to:

- Code Compliance
- Natural Areas
- Operation Services
- Parks:
 - Forestry
 - Golf
- Planning and Development
- Recreation
- Streets
- Sustainability Services
- Transfort
- Utilities:
 - Customer Accounts
 - Customer Care and Technology
 - Distribution
 - Finance
 - Water Resources
 - Wastewater Treatment
 - Water Treatment
 - Water Quality

4.3 Updates

Regular and frequent review of the WSAP and water shortage action measures is critical to ensure Utilities' staff and customers are prepared for a water shortage. The WSAP should be reviewed at least every five years, or sooner as new information becomes available. Updates may be necessary during or following a water shortage event, updates to either the *Water Supply and Demand Management Policy* or the *Water Efficiency Plan*, or changes to City Code. The next update should be considered in 2023-2024 for potential adoption in 2025.

Updates for 2025 or Sooner

Updates for future versions of the WSAP were identified during the review and development of the current WSAP but could not be explored or incorporated due to resource or other constraints. The identified opportunities include:

While there are challenges to a **regional water shortage approach**, mainly being that water providers in the area do not have the same water supply portfolios, infrastructure, demands, or levels of service and; therefore, not all providers will experience shortages at the same time or to the same extent. Staff identified that there is potential grant funding available to develop a more regional type of approach but would require additional resources. Benefits to regional collaboration could include the following:

- Enhance existing and create new mutual aid agreements.
- Improve resiliency on a regional level regardless of water provider.
- Minimize customer confusion and experience of disjointed approaches.

Water Budgets is a method of assigning a target water use level based on characteristics of the property. The level or "budget" may be a function of occupancy, building size, landscape size and type, type of business, etc. Water budgets can be used for informational purposes, to inform rate structures, and/or to manage demand during a water shortage. Significant resources and customer communication efforts would be required to establish and administer water budgets. Beyond staffing and cost, assigning water budgets to commercial properties would require significant technical analysis. Benefits of a water budget approach to a water shortage could include the following:

- More equitable.
- Easier to implement during a water shortage compared to prescriptive restrictions.
- Greater customer flexibility and choice.

Among other goals and programs, the **CWCB** provides technical and financial assistance for communities and water providers wanting to develop a water shortage plan. CWCB provided a preliminary review of the WSAP in February 2020. Some recommendations were able to be incorporated; however, others will require additional funding and time to integrate. Utilities should consider the challenges and benefits of developing the following in future plan updates:

- Supply-side response strategies, like developing short-term supply agreements, for use during a water shortage.
- Supply and demand-side water shortage mitigation strategies, like tactics to implement prior to a shortage to minimize the likelihood of a shortage or minimize the severity of a shortage.

- Vulnerability assessments that evaluate what impacts could result from a water shortage, like studies that assess impacts to the economy resulting from water shortages.

Appendix A Communication and Engagement Plan

A.1 Communications and Marketing

A strong communications plan is the foundation to successful implementation of the WSAP. Utilities recognizes the need to be prepared to communicate to customers, stakeholders, City staff and departments, and others:

- 1) The water shortage situation and its associated impacts.
- 2) The WSAP and the water restrictions specific to the water shortage situation.

A public information campaign will need to be developed for each unique water shortage. The campaign will be closely coordinated with Utilities' current water efficiency and conservation programs, as well as other key, relevant messages. The program(s) will promote the importance of conserving water and achieving water savings in times of plenty and in times of water shortages. During non-shortage years, a water shortage public information campaign will instead focus on awareness of the WSAP and the importance of preparedness.

The public information campaign will coordinate campaign efforts with nearby municipal entities, other water providers and conservation-oriented entities to capitalize on synergistic opportunities and convey, where appropriate, a consistent water shortage message.

Developing key messages is important. Utilities has created an extensive list of tactics for reaching customers with timely information about water restrictions. Messages will include information about the nature of the water shortage, how it will affect customers and what they can do to follow the restrictions to minimize further impacts and the need for stronger restrictions.

Depending on capacity and other factors, Utilities may contract with a communication consulting firm(s) to help develop effective messaging and graphic design.

Targeted outreach to internal and external customers also will be very important and is discussed in the Engagement section, below.

The following outlines communication objectives, messages and strategies that can be used in a variety of external communications and media during different stages of a water shortage. The messages and examples below are not comprehensive or necessarily exact. The current best practices for message development and delivery will be utilized and may result in different messages than what is contained in this appendix.

A.1.1 Messaging

Objective: To inform and educate our customers and key stakeholders about the water shortage, the water restrictions associated with the WSAP, actions to take to conserve water, and programs available to help customers through a water shortage.

Tagline: Reduce Our Use. This tagline was chosen during the 2013 water shortage to reflect the community commitment needed to achieve the reduction goals established.

This also created a social-based, community message that we are all involved in the solution. It could be used again, or another tagline could be created.

The following is an example of messaging that might be developed during the voluntary level when a shortage could occur due to drought. Similar plans could be created at any action level for any shortage situation.

Voluntary Shortage Watch Objective: Public Awareness

Water Shortage Scenario:

- Water supplies are below average.
- Conditions are dry.
- Continued dry weather could lead to mandatory watering restrictions.

Message to Public: To reduce the risk of progression to mandatory restrictions, limit watering your lawn to two days a week before 10 a.m. and after 6 p.m. only. Watering new seed, sod, plants, shrubs and gardens as recommended is allowed, but do not waste water and stay alert to water shortage status changes. Minimize indoor water waste by using water wisely: turn off faucets when not in use; shorten shower time when possible; and ensure full loads when running dishwashers and clothes washers.

A.1.2 Key Messages

Below are key messages, both primary and secondary, to help Utilities customers understand our water supply situation and the restrictions.

Primary Messages

Watering trees and vegetable gardens is not restricted.

Watering gardens and trees will be allowed in all levels of restrictions. Watering during Action Level III is limited to a hose with a shut-off nozzle or by drip and microspray irrigation.

Education is key.

Citizens can help reduce water use by educating family, neighbors and co-workers. Education is a critical first step of enforcing restrictions.

Fines are secondary.

First violations will generally receive a written warning (though this is not required) and information about the water restrictions.

Fort Collins has reduced its use significantly in the past decade.

Since the drought of 2002, the community has reduced overall water use by 25%. As the population has grown, total water use by customers has decreased, which has helped defer water shortages. Continued conservation is necessary year-round, but especially during a water shortage.

We can all make a difference.

Everyone in our community can help conserve water at home and at work. See *fcgov.com* for tips, rebates and programs.

Permits will be issued to accommodate special circumstances.

Permits will allow exceptions to restrictions as set forth in the WSAP.

Utilities may go to higher action levels of restrictions.

Stay updated on the current status. Higher levels of restrictions include rate increases to further promote conservation and recognize the reduction in revenue due to less water use at each respective action level of the WSAP.

Restrictions apply only to treated water.

Residents and businesses that use well or raw water to irrigate grass are exempt from the water restrictions. However, we strongly encourage them to follow the restrictions in order to set an example for the community, avoid negative perceptions and continue to conserve raw and well water sources. Signs must be posted.

The City of Fort Collins has reduced its water use.

The City has taken steps to reduce treated water at parks and golf courses, as well as in its facilities. By purchasing separate water rights for irrigation, the City uses 80% raw water on parks, golf courses and other outdoor lawn areas. Newer facilities built by the City have exceeded requirements for water efficiency indoors, saving water year-round.

We have two main sources for drinking water: the Poudre River and Horsetooth.

The Poudre River was traditionally the source of water for Fort Collins, but as the City grew, it purchased units in the CBT project, which are delivered out of Horsetooth. Each source provides about half of the supply of water for treatment.

The City of Fort Collins will follow water restrictions.

The Parks department plans to adhere to current restriction levels even though 80% of irrigation water comes from raw water. The City also plans to curtail hydrant flushing and limit vehicle washing, per restrictions.

A.1.3 Strategies and Tactics

Below are possible strategies for reaching our communication goals. These include outreach materials, advertising and media contacts. Spanish translation should be considered for strategies and tactics. This list is not comprehensive.

Print Collateral

- Water restrictions brochure to explain WSAP
- Poster campaign
- Tabletop cards for “Water Served Only Upon Request” for restaurants
- Hotel/lodging cards with current City logo, restrictions, and encouragement to reuse linens and towels
- Utility Bill Inserts
- Printed coasters with water conservation messages
- Direct mail campaigns all customers or targeted groups

Website

- Create and update a webpage on fcgov.com
- Spotlight on Utilities page and City home page
- Update Access Fort Collins
- Update conservation tips: watering, landscape/tree care, lawn dormancy
- CityNet (intranet website for City of Fort Collins employees)

City Newsletter Articles

- City News
- Neighborhood Newsletter
- Keep Current
- ClimateWire and other ClimateWise communications
- Economic News
- Fort Shorts

Media Articles

- *In the City* articles in the *Coloradoan*
- News releases
- Media outreach
- Advertorials

Newspaper/Magazine Advertising

- *Coloradoan*
- *NoCo Style* Magazine
- *BizWest*
- *Rocky Mountain Parent* Magazine
- *50 and Better* Magazine
- *CSU Life* Magazine
- PSD Newsletters
- *Fort Collins* Magazine

Outdoor Advertising

- Bus benches
- Bus shelters
- Bus panels
- City parks, recreation, and other public facilities

Digital Marketing

- Digital ads
- Social media (Facebook, Twitter, Instagram, Nextdoor) advertising with organic
- FCTV CityView
- FCTV Bulletins
- Interactive Voice Response (IVR) Messages on phone system
- Sign up to receive water efficiency tips and updates and corresponding email campaign
- Messages in bills, usage reports and portals
- Presentation materials

Displays

Design to have at events and public locations, such as City buildings, libraries and other venues. Messages should include information about restrictions and efficient water use.

Other

- Graph(s) that illustrate water supplies relative to water demands to be updated regularly prior to and during a water shortage (consider using during non-water shortage times as well, to develop customer awareness)
- Door panel magnets for Utilities vehicles with conservation message
- Distribute water conservation kits – hose nozzles, showerheads and aerators
- Internal communication plan for City staff

Water Restrictions Icon

Design a graphic icon for newspapers and other media for customer awareness of restriction action levels. The icon can be updated to show different restriction levels.

Frequently Asked Questions

Frequently Asked Questions (FAQs) should be developed to help clarify and consistently answer questions about the restrictions. General FAQs should be on the website and a select list through Access Fort Collins.

Enforcement Materials

Prepare a packet of information that can be mailed or left as a door hanger when complaints are received. Develop materials for enforcement communication and permits.

- **Packets**
 - Flyers with restrictions
 - Residential focus
 - Commercial focus
 - Violation notices
 - Water restrictions: Notice of Complaint and Warning
 - Wasting water: Notice of Complaint and Warning
 - Brochure: watering with restrictions for lawn and tree health, landscape care, rebates, tips, controller programming help
- **Permits**
 - Applications with cover letters
 - Approval or non-approval letters/emails
 - Permit yard signs
 - Raw water yard signs
 - Email campaigns to communicate action level changes

A.2 Public Engagement

A well-planned public engagement program is critical to Utilities' success in achieving water savings goals established by each action level. Public engagement is an extremely important step, as it asks the community to be a part of the solution during a water shortage and can minimize enforcement efforts. A wide range of engagement strategies should be pursued to inform internal and external stakeholders, and all customer types.

A.2.1 Speaker's Bureau

Utilities will consider preparing several standard presentations for the public and train other Utilities staff as Ambassadors to give the appropriate presentation to the given

audience. Updates may be provided to the speakers and presentation content, as needed. Staff may accommodate requests for presentations and will proactively offer presentations to known groups and organizations.

Examples of organizations and existing groups that might receive a presentation are: Rotary Clubs, Kiwanis, Chamber of Commerce, Downtown Development Authority, Downtown Business Association, Board of Realtors, ClimateWise partners, Certified Landscape Professionals, Key Accounts, affordable housing providers, Colorado State University's clubs and student organizations, faith based organizations, non-profit organizations that serve under-represented populations, etc.

OTHER ENGAGEMENT OPPORTUNITIES	
Internal	External
Develop Customer Service Representative (CSR) script and Frequently Asked Questions	Income-Qualified Assistance Program customers
Give monthly presentations to update CSRs	Latinx community organizations
Give presentations to water and light and power crews	Poudre School District: Dr. Water Wise and Children's Water Festival
Presentation/training meetings – All Staff/Large Staff/Senior Staff, etc.	Library displays
Presentation at existing team meetings	Sprinkler Audit Program and controller setting service
Provide communication materials to all	Sustainable Neighborhoods
Water conservation challenge	Events such as Open Streets, Earth Day, Garden Party, ClimateWise events, High Plains Landscape Workshops and Watershed Tours

A.2.2 Public Engagement Goals and Tracking

Goals for public engagement should be established and progress toward completion should be monitored and tracked. This allows activities and efforts to be reported on during a water shortage, supports successful water savings and allows Utilities to evaluate whether gaps exist in engagement efforts or customer segments. The following are metrics that can be used to track progress toward the goal(s):

- Number of presentations.
- Number of people present during presentations.
- Diversity of audiences.
- Number of ambassadors trained, including tracking ambassador efforts and consider recognizing co-workers' contributions.
- Evaluation of effectiveness with a survey or live polling during a presentation to possibly assess familiarity with the water shortage and understanding of associated restrictions.

A.2.3 Targeted Business and Organization Outreach

Two major educational organizations that either would be impacted during a water shortage or can provide important partnership opportunities are **Colorado State University (CSU)** and **Poudre School District (PSD)**. CSU uses little Utilities water to irrigate but should be considered a partner to provide consistent messages to the general public. Information and presentations should be provided for facilities staff, Associated Students of CSU and through CSU's media channels (i.e. CSU Today). Information should also be disseminated to students living off campus, including fraternities and sororities.

Most of PSD's athletic fields are irrigated by treated water provided by Utilities. Staff and key account representatives should work closely with PSD through calls, meetings and emails to facilitate understanding of the restrictions and their impacts. A meeting for all athletic directors should be held. In partnership with PSD, various engagement opportunities may exist to help with water shortage commutation efforts.

There are a variety of other commercial customers that may be affected by water restrictions. The following list of customers should be considered for targeted engagement:

- Breweries
- Retail, grocery stores, and coffee shops:
 - Store visits/meetings
 - In-store flyers and posters
- City's Economic Health meeting
- Car Dealerships
 - Direct mail, restrictions limit car washing
- Car Washes
 - Direct mail
- Power Washing Companies
 - Direct mail, restrictions limit washing for only "health and safety"
 - Contact Downtown Business Association about sidewalk washing (meeting or mailing)
- Landscapers/Nurseries/Garden Centers
- Certified Landscape Professionals bi-annual meeting or email
 - Group meeting
 - Direct mailing
- Homeowner Associations (HOA)
 - Set up meeting/workshop
 - Information with HOA audits/Landscape Water Budgets
 - Direct mailing/water fountain information
 - Information at Neighborhood Service's HOA meetings
 - Property management companies - send information/fountain information
- Health Clubs
 - Meeting
 - Signage for showers, faucets
- Hotels/Motels
 - Distribute linen and towel reuse cards
- Restaurants
 - Meeting/workshop
 - Information with pre-rinse program

- Design and distribute “Water Served Upon Request” table cards

A.2.4 Surrounding Water Districts

The neighboring water districts should be contacted prior to and during water restrictions to discuss opportunities to align communication plans and other responses and to keep other districts updated. The adjacent districts include:

- Fort Collins-Loveland Water District (FCLWD)
- East Larimer County Water District (ELCO)
- West Fort Collins Water District (WFCWD)

A.2.5 Agriculture Water Renters

Previous agricultural CBT water renters should be contacted if the Utilities has decided to not conduct a raw water rental program as part of a supply-side response strategy.

A.2.6 Internal Communication

Staff will present water shortage and restrictions information to City staff and when possible, will use established meetings. Information and updates should be provided to City boards and commissions and City Council and Mayor. High focus should be given to the following, who’s work may be affected by water restrictions.:

- Parks and Recreation Department
- Operation Services
- Code Compliance
- Natural Areas
- Development Review
- Communications and Public Involvement Office
- Environmental Services
- Economic Health
- Utilities:
 - Water Treatment
 - Water Quality
 - Water Distribution
 - Environmental Regulatory Affairs
 - Customer Care and Technology

Utilities staff can serve as ambassadors to convey water shortage key messages to the public. In addition, staff will partner with other City departments who can help be ambassadors when engaging with external customers during their normal business/work.

Appendix B Relation to Other Plans and Policies

The WSAP relates to other City plans and policies, most notably the *Water Supply and Demand Management Policy* (WSDMP) and the *Water Efficiency Plan* (WEP).

The WSDMP sets criteria for how to plan and manage Utilities' water supply system, which can affect how often the WSAP may need to be used. The WEP outlines specific measures to be implemented to reach a specified water use goal. The measures address long-term conservation and efficiency efforts, not short-term adaptation measures, as outlined by the WSAP.

B.1 Water Supply and Demand Management Policy

The WSAP relies on a set of water supply and demand criteria in order to evaluate real or potential water shortages. These criteria are established by the City's WSDMP, which provides general criteria for decisions regarding water supply projects, acquisition of water rights and demand management measures.

B.2 Water Efficiency Planning

A water shortage often requires a relatively immediate response, which is intended to be employed for a short duration. The response includes various adaptations to reduce demand and/or increase supplies. This differs from water conservation and efficiency efforts guided by the Water Efficiency Plan (WEP) in several ways.

WEP is meant to provide long-term demand reduction to increase resiliency to changing climate and increase awareness and education amongst Utilities' customer base. The WEP is integrated into Utilities' water resources planning, specifically the WSDMP. The focus areas within the WEP address codes, programs, incentives, planning and other work that result ongoing and persistent water conservation and efficiency.

The WEP is currently updated at least every seven years. Future updates to the WEP should consider long-term strategies for water shortage mitigation, including but not limited to:

- Water budgets
- Irrigation codes that require efficient watering best practices such as:
 - Seasonal watering windows
 - Minimization of daytime watering
 - Minimization of overwatering

Utilities Water Conservation Department began its efforts in 1977. In 1999, it began the Sprinkler Audit Program, which was then followed by several education programs, rebates and other incentives for customers to reduce their use with improved efficiency and greater conservation. In addition to the WEP, several codes exist that help mitigate water shortages and promote ongoing and long-term water efficiency and conservation.

B.3 Other Water and Emergency Policies

Several City policies and plans relate to the WSAP. Below is a list of current sections of the City Code that should be considered during a water shortage or when amending and

updating policies and plans, including the WSAP, to ensure consistency and cohesiveness.

- City Code Section 26-166 (Waste of water prohibited)
- Section 26-167 (Water supply shortage response, emergency restrictions)
- Section 26-168 (Obligation to comply, penalties)

B.4 Emergency Planning

Many emergency plans are not made public for safety and security reasons. For purpose of the WSAP, it's important to know that these plans exist and may be enacted prior to or during a water shortage, depending on the scenario.

Utilities Water Production Division maintains jurisdiction over various emergency operation plans:

- *Emergency Response Plan (ERP) / Emergency Operations Plan (EOP)*
- *ERP Appendix or Checklists for response to natural and manmade hazards*
- *Dam Emergency Action Plans*
- *Division of Drinking Water Emergency Notification Plan*
- *Hazard Mitigation Plans*
- *Continuity of Operations Plans (COOPs) / Continuity of Government Plans (COGs)/ Business Continuity Plans*
- *Water Outage / Emergency Drinking Water Plans*

Utilities Water Quality Services' *Spill Response Plan* outlines actions and communication procedures when a contaminate threatens the Poudre River.

Emergency operation plans are managed by Larimer County Office of Emergency Management, City of Fort Collins' Emergency Preparedness and Security Department, Poudre Fire Authority Office of Emergency Management and/or others who would respond to an emergency related to a water shortage.

Appendix C Historical Shortage Planning and Events

C.1 Timeline of Shortage Planning Efforts

Ordinance 112, 118 and 135, 2002

Between July and September 2002, multiple ordinances were adopted, each amending the previous ordinance to allow for greater lawn watering restrictions. In September 2002, City Council passed an ordinance limiting lawn watering to once per week and no watering between the hours of 10 a.m. and 6 p.m.

Ordinance 048, 2003

Beginning in April 2003, Ordinance 048, 2003, was adopted by City Council to respond to the persistent drought that began in 2002 and continued into 2003 in Fort Collins and the much of the region. The *Water Supply Shortage Response Plan* (WSSRP) was designed to respond to four levels of water shortage with a list of appropriate restrictions that included many more outdoor water use restrictions for each response level, beyond what was previously just lawn watering restrictions. The projected water supply shortages adopted for each level are:

Response Level I: 1-10%

Response Level II: 11-20%

Response Level III: 21-30%

Response Level IV: Greater than 30%

Ordinance 047, 2013

In preparing for the potential of moving to Response Level II or higher, City Council adopted Ordinance 047, 2013 in March 2013, which added rate increases starting at Response Level II and included some additional, minor amendments. The rate increase applied to all water rates and attempt to maintain revenues at the current budgeted level for each possible response level, since the water rate adjustments are based on a percent reduction in demand. Ordinance 047, 2013 also increases the Excess Water Use Surcharge for each response level beginning with Response Level I.

In addition to the rate adjustments, Ordinance 047, 2013 included two amendments to Ordinance 048, 2003. One changes the definition and use of “water fountains” and the other involves changes to the terms of permits for large acreage and parks and athletic/playing fields. The definition of “water fountain” was changed to “water feature,” a more comprehensive term. The definition was modified to apply to both public and private water features and to exclude water features that are part of a swimming pool. The proposed restrictions allow the use of both public and private water features at Response Levels I and II and prohibit them for Response Levels III and IV. Ordinance 047, 2013 removed the restriction on irrigating parks and public athletic/playing fields Tuesday through Thursday for Response Levels II and III and removes the same restriction on irrigating private property of four acres or more for Response Level II.

Ordinance 88, 2014

Additional changes were made following the 2013 shortage and adopted in July 2014. These changes were minor, but numerous and included changing the violation from a criminal to civil infraction, adjusting the response levels for certain water restrictions, resulting in either less or more restrictive use.

C.2 Historical Water Shortage Events

Utilities has formally declared two water shortages – 2002 and 2013. There is limited historical information and data suggesting that water shortages have occurred in Fort Collins in the past, but only two have occurred since a formal process and plan has been adopted by City Council.

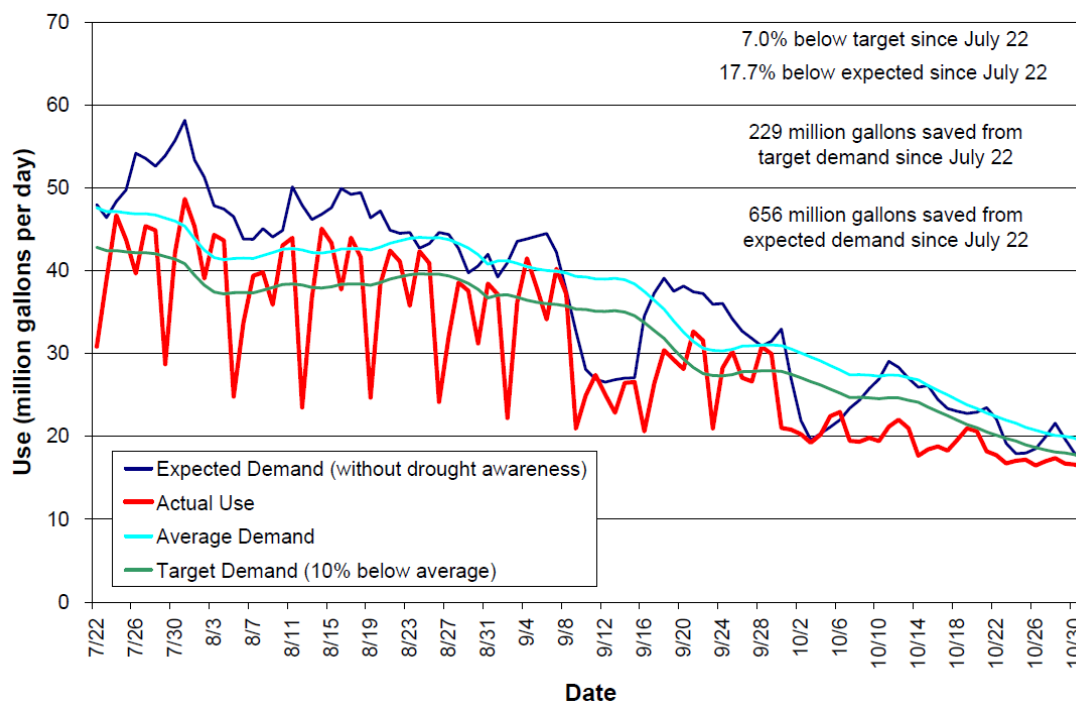
2002/03 Water Shortage

Drought conditions were severe in 2002 across Colorado and much of the western United States. The Poudre River produced runoff of only about 30% of average, which is the lowest runoff since records began in 1884. This followed two dry years when runoff was about 70% of average. In addition, Northern Water, which allocates CBT quotas, gave an initial 2003 quota of 30%, compared to a 70% quota provided in 2002.

Although Utilities was able to meet water demands for 2002, the severe drought raised many concerns about the effect it would have on supplies for 2003 and beyond. Water savings resulting from restrictions and other water conservation efforts were carried over for use during 2003.

In March of 2003 the area received significant snowpack and Northern Water issued a 50% quota in April 2003, which lessened the shortage. A formal declaration date, stating that restrictions were over, is unknown. Restrictions resulted in an estimated reduction in expected use of about 18%.

**City of Fort Collins
2002 Daily Water Use (since July 22)**



2013 Water Shortage

The 2013 water shortage was a result of water quality and quantity issues that necessitated the declaration of a Level I water shortage response for two months – April 1, 2013, to June 1, 2013. Utilities was unsure how much water they would receive from CBT at Horsetooth and there were water quality concerns for the Poudre River water supply following two fires within this Poudre River watershed ignited in 2012 – the Hewlett Fire in May and the High Park Fire in June – burning over 94,000 acres in total (about 10% of the watershed). Rain events over the burn areas led to large amount of ash, sediment and debris deposited in the Poudre River, making it difficult to treat and deliver water from this source.

June-September 2012: Utilities relied solely on CBT supplies.

October 2012: Utilities started to blend CBT and Poudre River water to respond to variability in sedimentation.

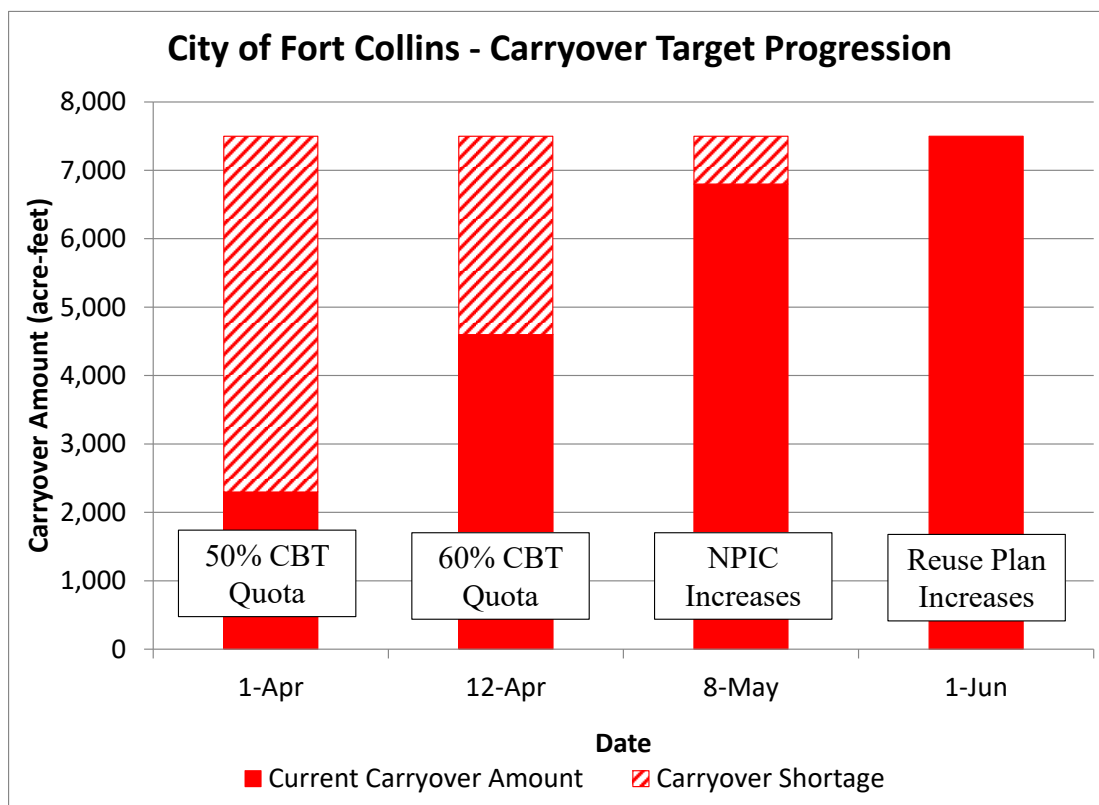
March 2013: Outlook for the western U.S. forecasted that drought would persist or intensify through the spring of 2013.

April 1, 2013: Given the uncertainties and outlook, the City declared Level I water restrictions in order to prepare for a low CBT quota, which wouldn't be issued until mid-April, and respond to the Poudre River water treatment challenges.

April 12, 2013: A 60% CBT quota was issued by Northern Water, which was insufficient to meet the carryover goals for 2014 supplies.

May 2013: A significant increase in mountain snowpack occurred that resulted in additional Horsetooth Reservoir supplies. Most of these additional supplies were from the unexpected pumping of Windy Gap water and an increase in CBT water appropriations from the North Poudre Irrigation Company.

June 1, 2013: Declaration terminating water restrictions. The graph below illustrates the increase in CBT supplies and the relationship to a 7,500 acre-feet carryover target that determined the termination of the water restrictions.



These additional Horsetooth supplies allowed Utilities to:

- Meet remaining 2013 water demands, even with a hot, dry summer.
- Achieve the carryover goal of having approximately 7,500 acre-feet of water in storage in the CBT system for use in 2014.
- Not require taking additional supplies from the fire-impacted Poudre River.

Mitigation Measures

Utilities spent 2012 and 2013 responding to expected increases to sediment levels and preparing for mitigation. The sedimentation issues at the treatment facility were mainly due to the variability of the sediment concentration. Whenever there were flow changes in the river, the sediment and subsequent turbidity changes. A pre-sedimentation basin was designed and constructed to mitigate the variation in the river water quality before it reaches Utilities' infrastructure. The basin allowed Utilities to manage raw water from the Poudre River during times of high sediment that naturally occur during spring snowmelt and runoff.



Construction of Pre-Sedimentation Basin,
March 2013

In addition to the basin, the Water Treatment Facility modified the treatment processes to address the challenges with variability of the river's water quality. This included:

- 1) Adding oxidation for enhanced coagulation and taste and odor control
- 2) Monitoring additional raw water
- 3) Increasing pilot plant activity

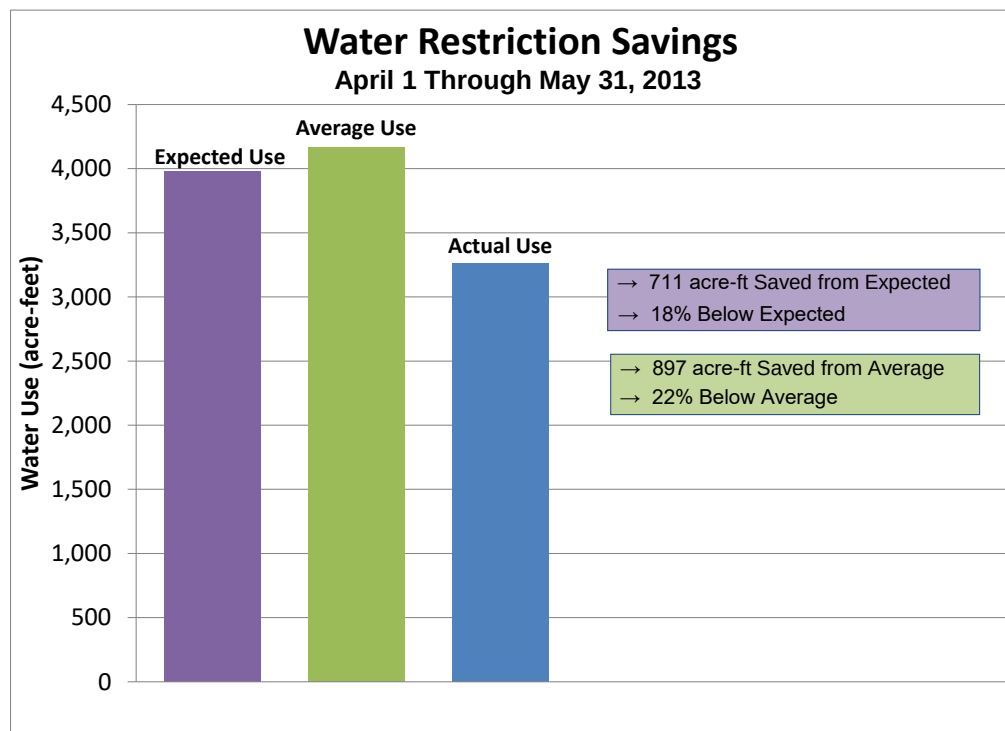
Water quality monitoring infrastructure was enhanced in 2012 by adding two rainfall gauges and one water quality gauge in the Poudre Canyon, giving the treatment facility more information about the water quality and amount of water in the river. Two more water quality monitoring instruments were installed in April 2013. The gauges enable better understanding of how storms and runoff events will affect water quality.

Response Effort

An educational approach was taken to water restrictions, rather than issuing citations to customers. Utilities worked to engage and maintain the willing cooperation and support of customers.

One full-time Water Conservation employee issued permits and responded to complaints during the water shortage. In total 191 permits were issued, and 53 complaints were received, but no citations were ever issued.

The graph below illustrates the water savings during the water restriction period of April 1 through May 31, 2013. Although the wet, cool weather during this period may have been a large factor, water use was significantly lower than average and modeled expected use.



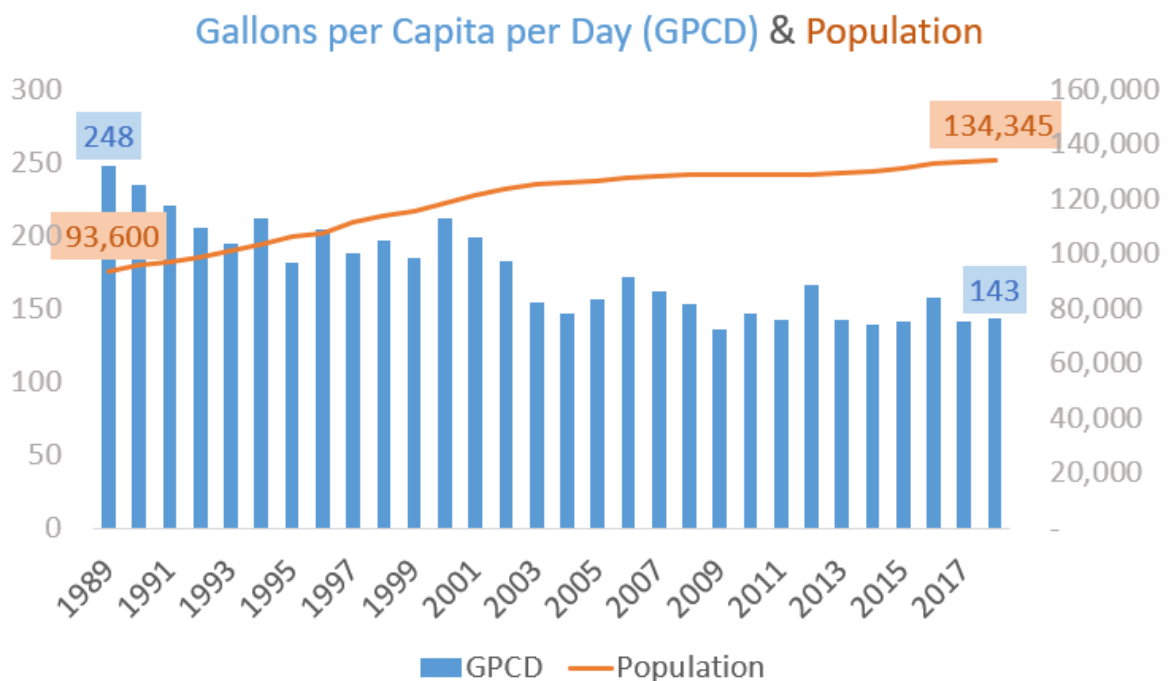
Appendix D Profile of Existing System

D.1 Service Area and Customer Profile

Fort Collins residents and businesses receive treated water from various water providers, the largest of which is Utilities. There are 134,000 Utilities water customers, which account for about 75% of Fort Collins residents and businesses.

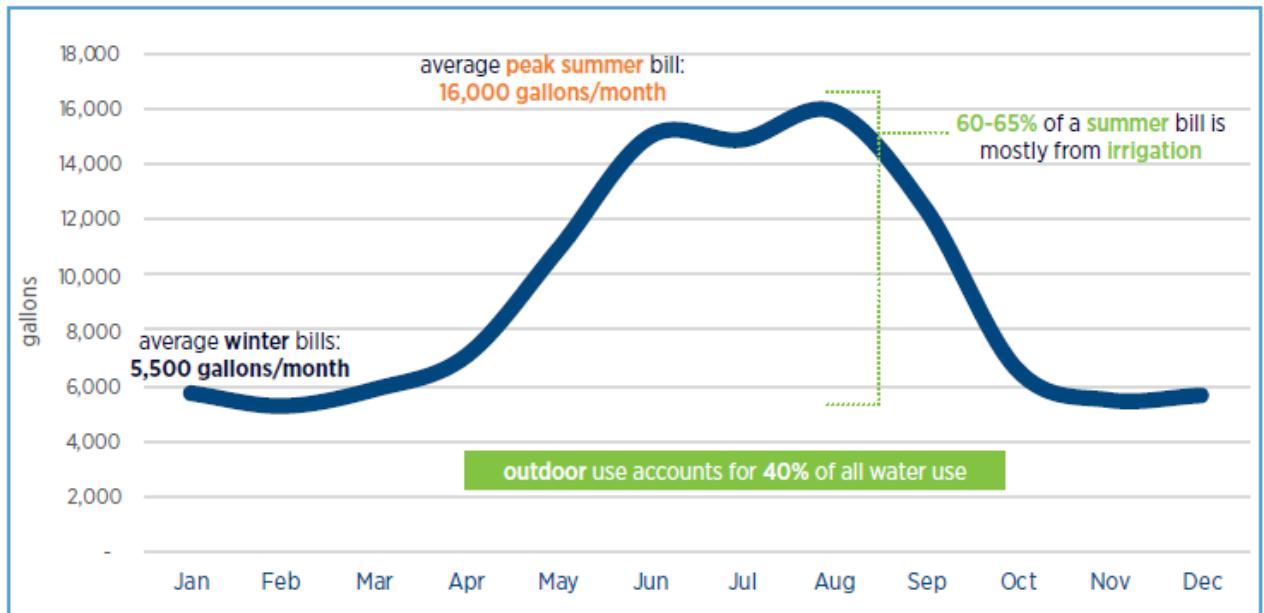
In 2018, there were 32,900 residential accounts (single-family, duplex, and multifamily) and 2,800 commercial accounts (businesses, institutions and irrigation). Currently, Utilities delivers an average of approximately 24,000 acre-feet per year (21.4 million gallons per day) to its treated water customers. Utilities has approximately 5,000 acre-feet per year (4.5 million gallons per day) of treated and other raw water delivery obligations to other entities. The primary factor that affects demands is the weather. Annual water demands from Utilities' customers can vary by around 10% above or below projected annual use depending on the local temperatures and precipitation.

The Utilities' service area population continues to grow; however, the use per capita has become much more efficient over the last few decades. Utilities water customers used 143 gallons per capita per day in 2018. That's down 32% since 2000 when all customers' use averaged 211 gallons per person per day.



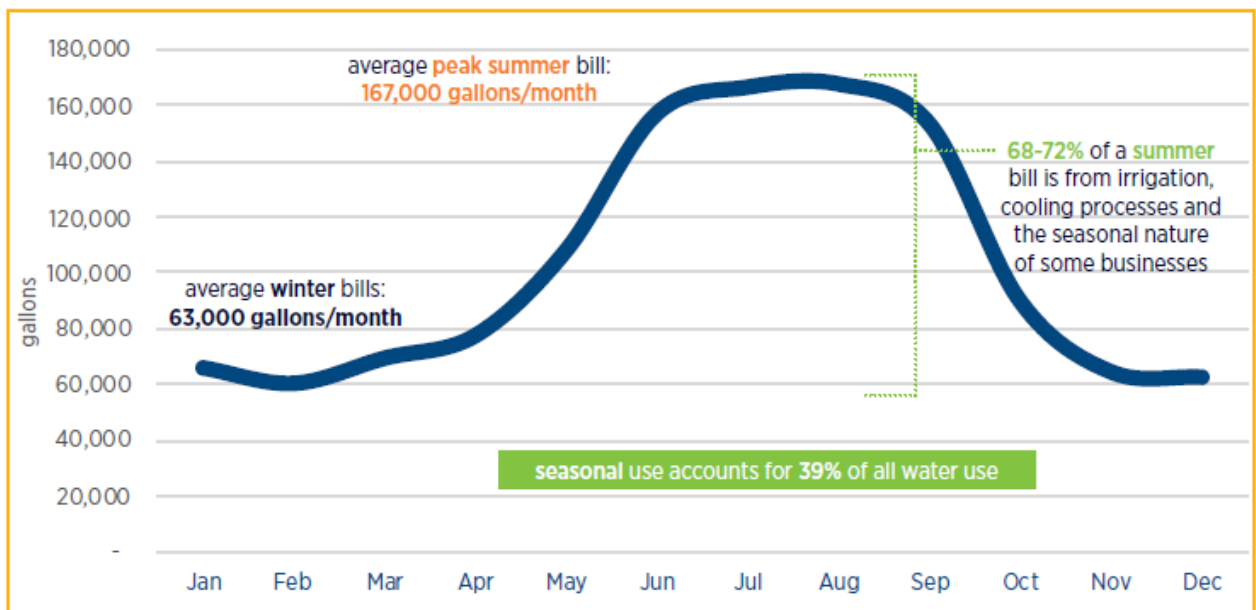
In 2018 the average monthly use for residential and commercial accounts show seasonal and outdoor use varies significantly compared to winter months; accounting for 40% of the total annual water use.

2018 AVERAGE MONTHLY WATER USE PER **RESIDENTIAL** ACCOUNT*

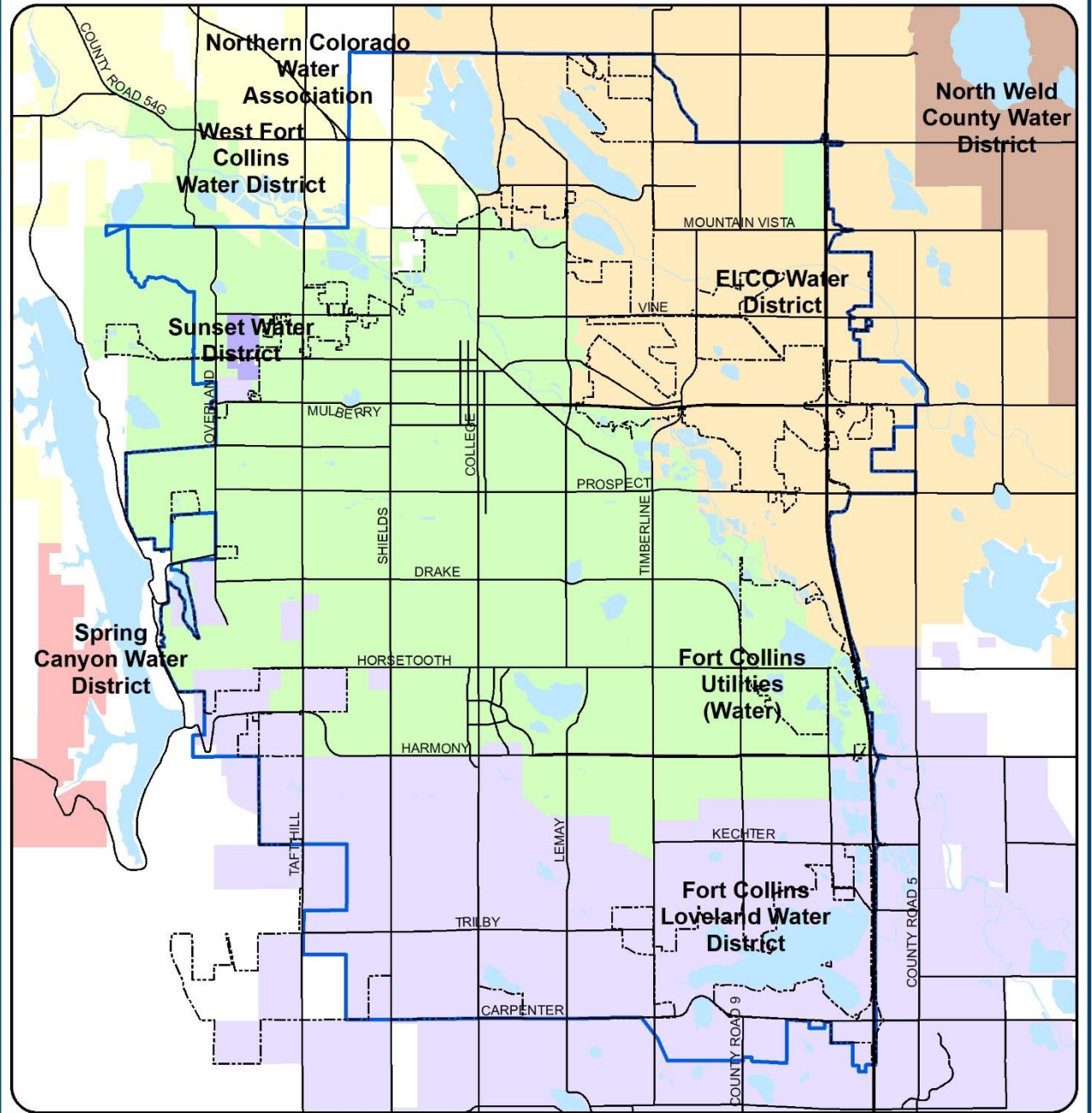


*includes single-family, duplex and multifamily

2018 AVERAGE MONTHLY WATER USE PER **COMMERCIAL** ACCOUNT



Water District Service Areas



Scale 1:100,000

0 1 2 3 Miles

CITY OF FORT COLLINS

GEOGRAPHIC INFORMATION SYSTEM MAP PRODUCTS

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Water District Service Areas

- Fort Collins Utilities (Water)
- Fort Collins Loveland Water District
- North Weld County Water District
- West Fort Collins Water District
- ELCO Water District
- Spring Canyon Water District
- Sunset Water District

- City Limits - Outline
- Growth Management Area
- Water Features
- Streets - Major



February 21, 2020

Existing Supplies

Utilities receives raw surface water from two main sources, the Poudre River and Horsetooth (which delivers waters available to Utilities from both the CBT project and Windy Gap). On average, each source provides about half of the supplies used to meet Utilities' customer treated water demands. Utilities also uses transbasin water from the Michigan River that is conveyed to the Poudre River via the Michigan Ditch, as well as transmountain water through its ownership of shares in the Water Supply and Storage Company.

Utilities' Horsetooth supplies can be taken directly into the treatment facility, whereas the Poudre River supplies must be delivered via two different pipelines. The management of this system has allowed for flexibility to mitigate water quality issues by mixing these sources at different times of the year to meet customer demands and water quality requirements.

Utilities also rents water to local agriculture users in years when projections verify that supplies will be in excess of demands and maximum reservoir storage capacity.

Because of system capacity constraints, legal constraints, and annual yield variations, the amount available to meet treated water demands varies. Utilities' water supplies can meet an average annual treated water demand of approximately 30,400 acre-feet during a period that includes a 1-in-50 drought. During droughts that are more severe than 1-in-50, conservation measures or restrictions may need to be implemented to reduce demand levels to meet the available supplies.

D 1.1 Poudre River Sources

Utilities has five senior direct flow water rights decrees on the Poudre River that allow Utilities to divert water into the Fort Collins Pipeline year-round. These decrees are very senior and are available to Utilities most of the time. The yields are fairly constant and do not vary significantly from wet to dry years.

Utilities also owns and has changed to municipal use shares in several of the irrigation canal and reservoir companies that are in and around Fort Collins, which provide other Poudre River sources. The yields from these changed irrigation rights can vary significantly from wet to dry years. However, without additional Poudre basin storage, the ability to use these sources is limited. The proposed Halligan Reservoir enlargement will significantly improve the usefulness of these water rights.

Finally, Utilities has several junior pipeline decrees that allow Utilities to divert water into the Fort Collins Pipeline year-round. These junior decrees are typically only in priority during the peak runoff period and in very dry years; Utilities may not be able to divert any water under these rights.

D.1.2 Joe Wright Reservoir-Michigan River System

The Joe Wright Reservoir-Michigan Ditch System is another important source of water for Utilities. This system, using the Michigan Ditch, diverts water from the Michigan River basin into the Poudre River basin through Joe Wright Reservoir. The reservoir can store Michigan Ditch diversions and water from Joe Wright Creek. To ensure that the Michigan Ditch system can continue to operate even when there is a call placed on the Michigan River that is senior to Utilities' Michigan Ditch water rights, Utilities owns rights to water in Meadow Creek Reservoir. This reservoir is located in the Michigan River basin and

water can be released from the reservoir to allow the Michigan Ditch to continue to divert water. Even with Meadow Creek Reservoir, the yields from this system can vary considerably from wet to dry years.

D.1.3 CBT and Windy Gap Supplies

Northern Water manages and operates both the CBT and Windy Gap projects, which can be delivered out of Horsetooth. Utilities owns 18,855 units of CBT and these units typically deliver between a half to a full acre-foot per unit. Utilities also owns 3,564 shares of the North Poudre Irrigation Company, each of which includes four CBT units, though Utilities typically receives less water per unit from them due to assumed losses in the North Poudre Irrigation Company system.

Utilities also has a contractual right to annually receive 4,200 acre-feet of Windy Gap water through the *Reuse Plan*. The Windy Gap system has a junior water right and there is no dedicated storage to manage this water. The Windy Gap Firming Project is expected to improve the reliability of this supply.

Appendix E Water Supply Vulnerability Assessment

Utilities conducted a Water Supply Vulnerability Study (Study) in 2018-2020⁵. The study evaluated thousands of supply and demand scenarios including the potential effects from changing climate. The model indicated that increased temperature and/or decreased precipitation could result in more frequent water shortages than previously experienced. The modeling for the study needs additional refinement in order to evaluate impacts to water supplies resulting from various action level restrictions and other demand and supply-side responses.

Impacts of changing climate further the importance for water shortage action planning and highlight the need for long-term responses, as well as both increasing supplies and improving efficiency during non-water shortage years.

Improving supply vulnerabilities - Halligan Reservoir

Utilities has been pursuing the enlargement of Halligan Reservoir through a federal permitting process since 2006. Additional storage in an enlarged Halligan Reservoir would reduce the frequency and severity of water restrictions during droughts.

An enlarged Halligan Reservoir will help meet most of Utilities' future projected water demands, while maintaining this same level of service. Our current treated water firm yield (amount of demand that can be met through the 1-in-50 drought while maintaining a 20% storage reserve) without an enlarged Halligan Reservoir is about 30,400 acre-feet. Once built, an enlarged Halligan Reservoir will help meet Utilities' projected future treated water demands of about 38,400 acre-feet. So roughly 8,000 acre-feet (or about 20%) of Utilities' projected future demands will be firmly provided with the addition of an enlarged Halligan Reservoir.



Halligan Reservoir

⁵ The Water Supply Vulnerability Study can be made available, upon request, by contacting the Fort Collins Utilities Water Resources Division.