DROUGHT MANAGEMENT PLAN 2019

WESTMINSTER

Drought Management Plan

April 2019

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0. Executive Summary

0.1. Overview

The Drought Management Plan outlines guidelines, rules and procedures the City of Westminster (the City) will use to manage water supply and water use during drought. The Drought Management Plan is designed to maintain the health, safety, and economic vitality of the community, to avoid adverse impacts to public activity and quality of life, and to consider individual customer needs as much as possible.

The Drought Management Plan is intended to provide a framework for timely drought response, allowing the City to respond to unique conditions with each drought. The goal is to provide assistance to the City in making decisions in times of drought. The City may adjust or refine the response based on actual drought conditions.

This plan will be updated regularly to ensure it captures lessons learned and addresses current conditions.

Drought Management Plan Components

The Drought Management Plan consists of:

- Drought Severity Indicators – A variety of factors that should be considered in choosing an appropriate drought response.
- Drought Response Actions – Guidelines for augmenting water supplies and reducing water use during times of drought.
- Drought Response Program Elements – Guidelines for water uses during different levels of drought.

Defining Drought

Drought is an extended period of below-average precipitation, below-average stream flows, and low levels of raw water storage, resulting in stressors on the City's potable water supply. Drought is a normal part of climate variability and occurs in nearly all climatic zones.

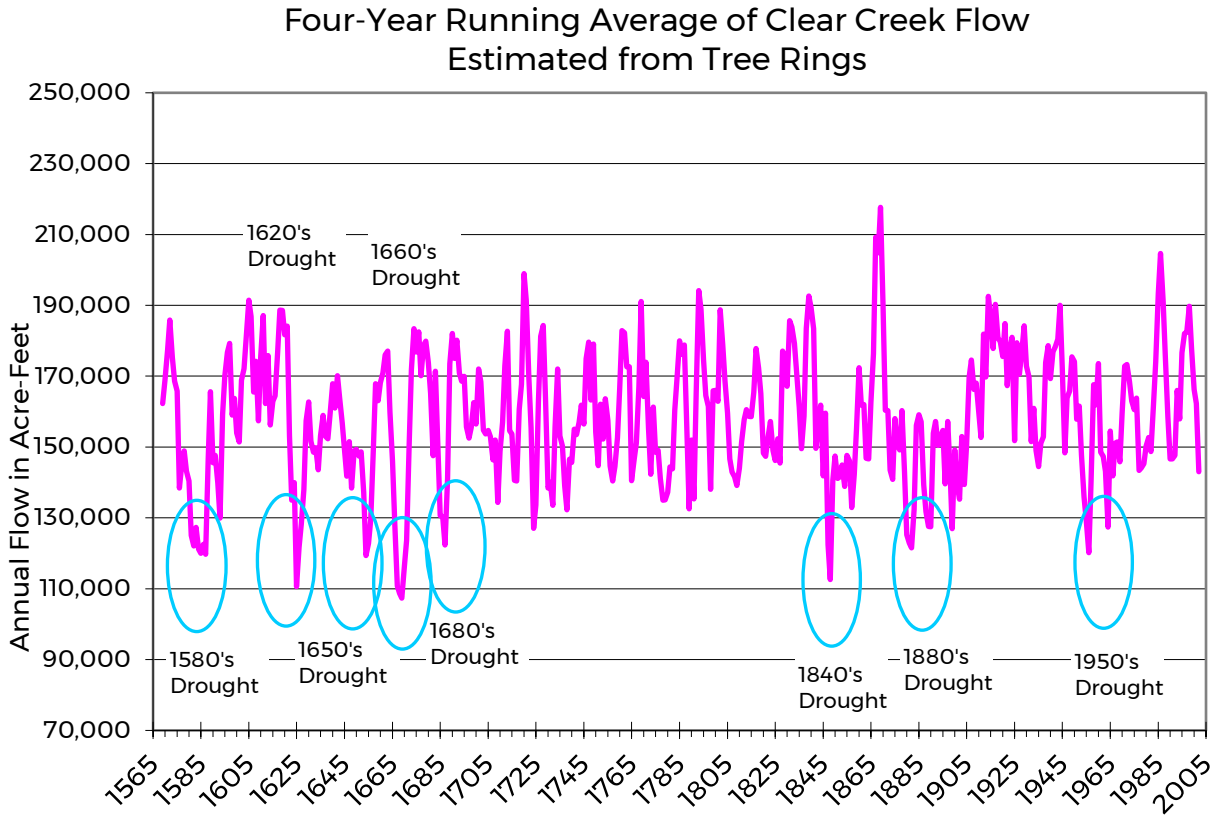

Figure 1: Drought is a common occurrence for City of Westminster water supply sources.

Supply

The City of Westminster's water supply system is designed to dependably meet the needs of its customers during hydrologic conditions similar to those of Clear Creek's paleo record, going back 453 years (1566-2002). Figure 1 shows Clear Creek flows, derived from the tree ring record. The City's supply is the estimated amount of water available from its water supply portfolio to meet water demand. Westminster's water supply portfolio derives the majority of its yield from Clear Creek.

To determine supply, the water system capabilities are modeled using streamflow estimates back to year 1566. The tree ring record was used to create paleo-conditioned hydrology to estimate possible future hydrologic conditions in Clear Creek. Figure 2 shows how the City's raw water storage in Standley Lake could behave in one possible future, assuming average annual demand levels representative of the future buildout of the City based on the 2013 Comprehensive Plan, and assuming water restrictions imposed according to the recommendations of this Plan.

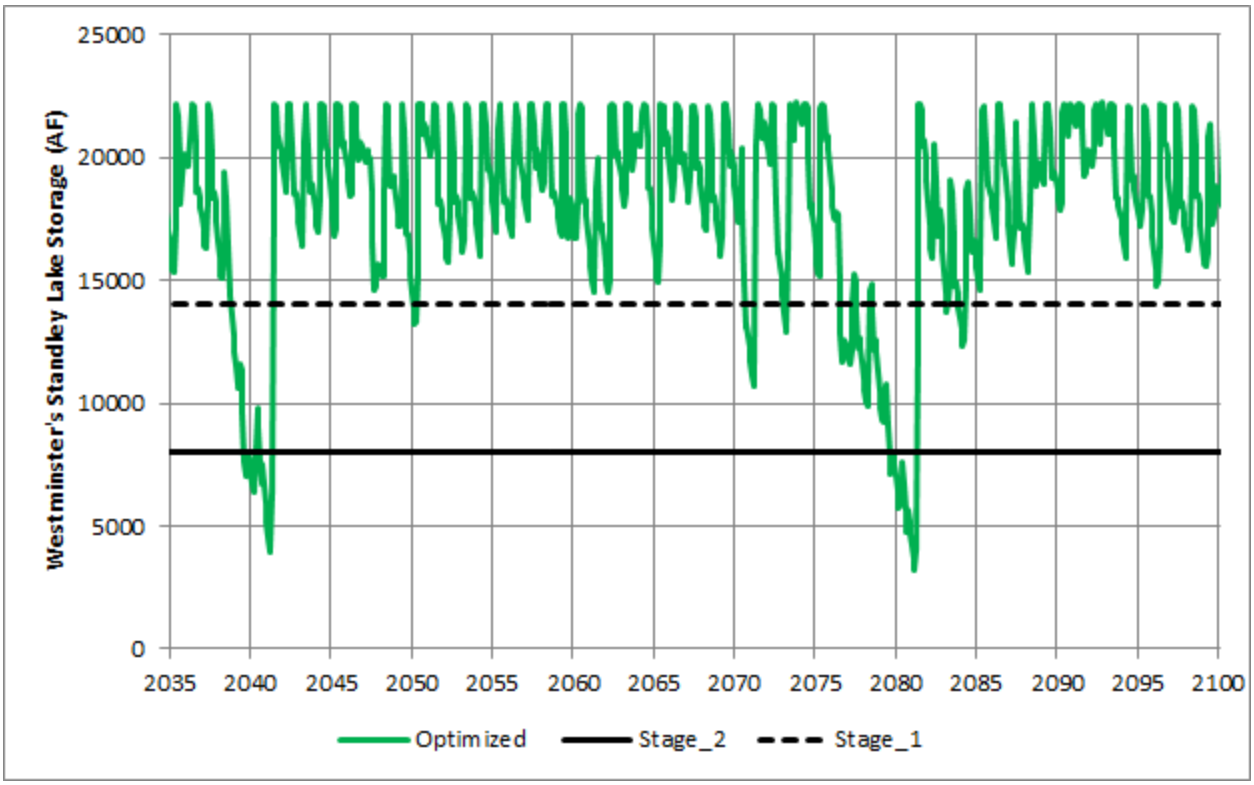

Figure 2: Modeling potential future droughts helps determine the frequency and severity of response actions.

<u>Long-term Conservation Efforts</u>

Drought restrictions should be considered an emergency response to immediately reduce water use, as opposed to conservation, which is a way of life in Colorado's arid climate to make sure no water goes to waste. Since the 2002 drought, water use in the City has stayed lower to, or even with, water use levels prior to the drought. This "drought shadow" is evidence that a culture of conservation has taken hold within the City's customers, who place a value on water efficiency and wise water use.

Drought restrictions indicate urgency and are not intended for long-term application.

Due to an increasing awareness of conservation, water use reduction percentages will be harder to achieve now versus pre-2002 drought. Reduction targets in each drought stage have been set to reflect this principle.

0.2. Drought Severity Indicators

Drought severity indicators include water supply indicators and political/social/economic indicators.

Water Supply Indicators

Water supply indicators include snowpack, precipitation, temperature, wind, predicted reservoir storage, evaporation, streamflow, soil moisture, weather forecasts, and drought indices. Drought indices include the Surface Water Supply Index, the Standardized Precipitation Index, the Palmer Drought Severity Index, and the U.S. Drought Monitor.

Reservoir storage is directly impacted by and is an important indicator of drought. All of the factors affecting the indicators listed above will directly affect reservoir storage. The City of Westminster's primary storage vessel for drinking water is Standley Lake. Figure 3 displays a guide for drought response based on Westminster's storage in Standley Lake. It is important to note the reservoir storage is based on a projection of June 1 storage levels. City staff monitors the reservoir levels throughout the year. Prior to spring runoff, staff will use a June 1 projection of storage to make a recommendation of drought response. After the spring runoff, staff may use actual storage levels to make recommendations. Reservoir storage levels are one indicator out of many used to make the recommendation.

Political, Social, and Economic Indicators

In addition to physical water supply indicators, political, social, and economic indicators will influence the decision to implement drought stages as well as customer response to the restrictions.

Other municipalities and water providers in the metro-area have varying levels of system resiliency and water sources. Drought situations may cause each utility to respond differently. The City of Westminster will coordinate with its regional neighbors to develop a unified response to drought. Denver Water in particular has a large media influence, and many of the City's customers will hear and respond to Denver Water's messaging about restrictions.

The local news media and social media are key sources of information for residents, both of which are tremendously influential in shaping public perception of drought.

Inevitably, drought responses and water restrictions will have an impact on business and industry within the City. Reduced water use also has an impact on the City budget in a variety of ways, and may have an impact on the economic development of the City. The City will communicate and coordinate with the affected businesses to balance their needs with water supply. The City will seek to maintain the economic vitality of the community to the best extent possible.

Lower reservoir levels caused by drought can affect the environment, wildlife, fish, and recreation at Standley Lake and Jim Baker Reservoir, as well as the recreation-related

economic activity of surrounding communities. The City will take environmental effects into account in drought-response decisions.

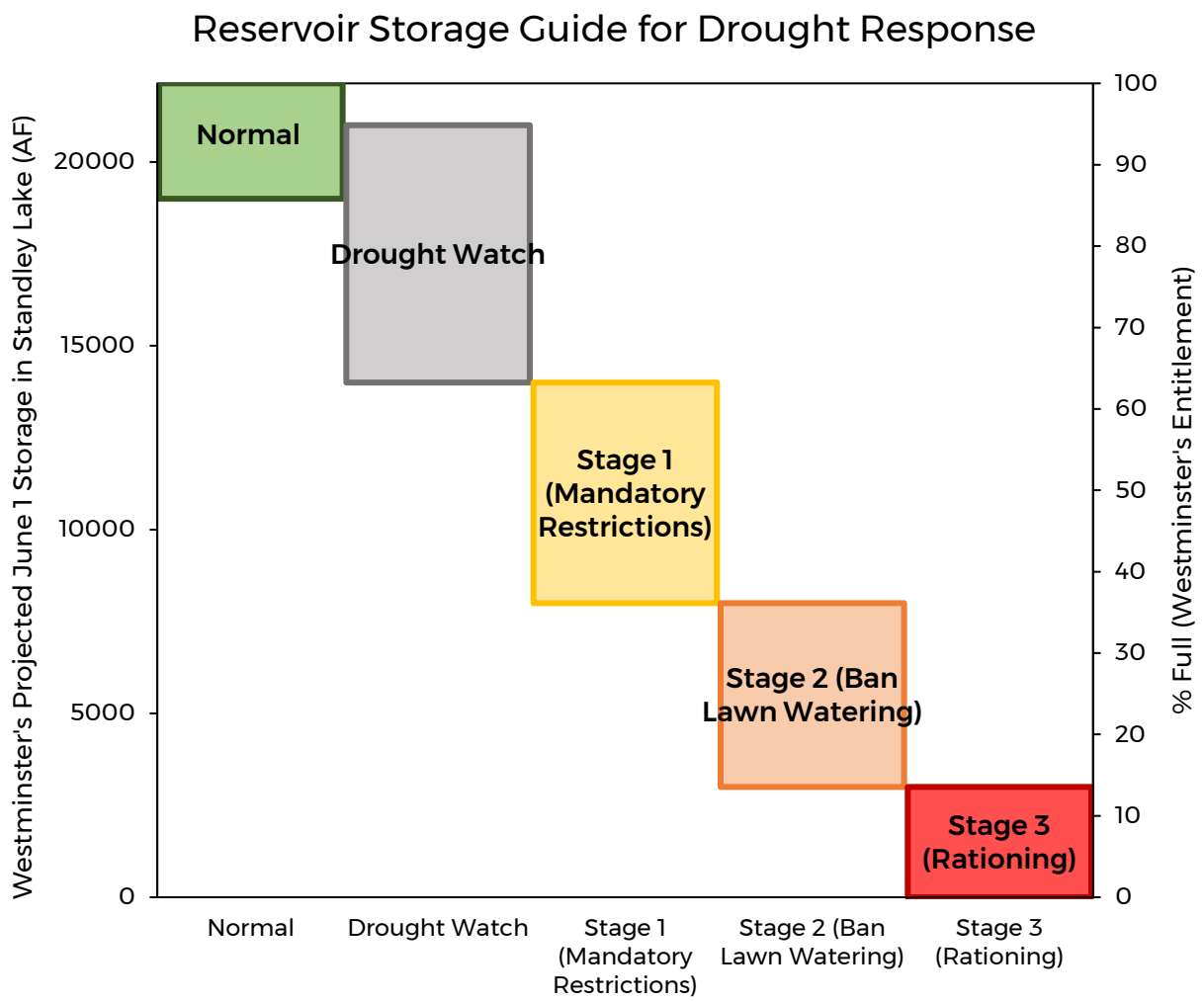

Figure 3 Reservoir storage is an important factor in determining drought stages, with lower storage volumes resulting in greater response actions.

<u>Uncertainty Associated with Forecasts</u>

Even with all of the above mentioned indicators, influences, and impacts, drought forecasting is not certain. It is difficult to predict whether a dry year is a single year drought or an extended decade-long drought. City Staff will update Council and customers of current conditions and provide the best information available.

0.3. Drought Response Actions

As a drought progresses, increasingly more stringent responses are recommended. Initially responses may be recommended, but will then become mandatory, more costly, and impactful as a drought intensifies.

Guiding Principles

The City of Westminster's goal for drought response is to maintain the health, safety, and economic vitality of the community to the extent possible in the face of water shortage. This will be achieved through a series of guiding principles that will help determine response actions. The response actions will follow these principles as much as possible during a drought.

Avoid irretrievable loss of natural resources.

- Allow for watering of trees to the greatest extent possible.
- Avoid damaging perennial landscaping if possible.
- Tailor watering restrictions to actual landscape water demand as much as possible.

Restrict less essential uses before essential uses.

- Curtail outdoor water use (and delaying impact on trees and shrubs and urban gardens) before restricting domestic indoor use, which is the highest priority use.
- Eliminate water waste.

Affect individuals or small groups before affecting large groups or the public as a whole, allowing as much public activity as possible to be unaffected.

- Work towards developing a water budget program for public parks and golf courses to allow prioritization of water for heavily-used landscapes, community resources, and revenue sources.
- Preserve community pools before residential pools.

Minimize adverse financial effects.

- Be respectful of water-based businesses that may be financially affected by restrictions.
- Engage in ongoing dialogue with the landscaping industry to obtain input and to allow these businesses to plan for future months.

Implement extensive public information and media relations programs.

- Inform customers about conditions and actions they can take to reduce water use.
- Continue open, clear, and consistent messaging and communication.
- Maintain the trust of customers and the community.

The drought response stages begin with a Drought Watch, then move to Stage 1 mandatory watering restrictions, followed by Stage 2 prohibition of lawn watering, and finally a Stage 3 rationing for essential uses only.

Drought Watch: Customer Outreach

Description: Abnormally dry conditions. The focus will be to increase monitoring, public awareness, and preparation for response if conditions worsen.

Indicators:

1. Projected June 1 Standley Lake reservoir volume (Westminster's allocation) is lower than 17,000 acre-feet, but above 14,000 acre-feet. In addition, Standley Lake did not fill the previous year. See Figure 3.
2. Watershed characteristics such as precipitation, snowpack, streamflow, and soil moisture indicate abnormal and prolonged dryness.
3. Precipitation within the City's service area has been below average and indicated abnormal and prolonged dryness.
4. Previous years had similar conditions.
5. Metro-area communities indicate similar action or are preparing to take similar action.
6. News media are communicating or implying drought conditions.
7. Customers believe a Drought Watch and its response actions are appropriate.
8. City Council suggests implementation of a Drought Watch.
9. Other situations that limit distribution of water such as: short or long term equipment failure, power failure or restrictions, or contamination of water supplies.

Available Responses:

1. Increase communication and outreach to customers and stakeholders to explain we are beginning to see indicators of drought.
2. Encourage efficient and wise water use and provide suggestions for reducing water use. Doing so may reduce the risk of progression to the next drought response stage.
3. Warn of and prepare for the possibility of mandatory watering restrictions.
4. Federal Heights and other districts that receive Master Meter water from the City will be required to implement similar measures.

Expected results: a small reduction (minimal) over the average summer water use might be expected in average weather. In dry conditions, water use may be maintained at average water use levels. Revenues from water sales could remain stable or fall slightly, as possible lower water use may result in lower billings and rates falling into the lower blocks of the increasing block rate structure.

Stage 1 Drought Response: Mandatory Watering Restrictions

Description: Severely dry conditions. Imposes mandatory watering restrictions and requires effort on the part of the customers.

Indicators:

1. Projected June 1 Standley Lake reservoir volume (Westminster's allocation) is below 14,000 acre-feet. See Figure 3.
2. Watershed characteristics such as precipitation, snowpack, streamflow, and soil moisture indicate severe and prolonged dryness.

3. The previous year had a Stage 1 or higher drought response.
4. Metro-area communities indicate similar action or are preparing to take similar action.
5. Customers believe mandatory watering restrictions are appropriate.
6. City Council suggests implementation of mandatory watering restrictions.
7. Circumstances warrant possible adverse impacts on water-dependent businesses involved in outdoor water use.
8. Other situations that limit distribution of water such as: short or long term equipment failure, power failure or restrictions, or contamination of water supplies.

Available Responses:

1. Implement a rotational watering schedule for a Stage 1 drought response. These stages correspond with Denver Water's schedule for communication simplicity.
    a. Single-family residential properties with odd-numbered addresses are restricted to watering activities on Saturdays and Wednesdays only.
    b. Single-family residential properties with even-numbered addresses are restricted to watering activities on Sundays and Thursdays only.
    c. All others (multi-family, HOAs, commercial, industrial, government) are restricted to watering activities on Tuesdays and Fridays only, unless a watering permit is received from the City.
2. Implement the Program Elements (see Section 0.4) for the Stage 1 response.
3. Enforce waste of water fines and violation of water restrictions fines.
4. Federal Heights and other districts that receive Master Meter water from the City will be required to implement similar measures.
5. Limit all leases of Westminster water to others, to the maximum extent contractually allowed.

Expected results: Thirty (30) percent reduction of average outdoor water use, or fifteen (15) percent reduction of total annual water use. Revenues from water sales may fall as lower water use may result in lower billings and rates falling into the lower blocks of the increasing block rate structure. Stage 1 restrictions will lower the likelihood of calling for more stringent restrictions in the following years.

Stage 2 Drought Response: Ban on Lawn Watering

Description: Extremely dry conditions. Imposes mandatory watering restrictions. Stage 2 drought restrictions are severe and will likely result in damage to or loss of landscapes. Avoid depletion of water sources, provide minimum water supplies to protect public health and safety, support essential and high priority water uses, and avoid unnecessary economic impacts.

Indicators:

1. Projected June 1 Standley Lake reservoir volume (Westminster's allocation) is below 8,000 acre-feet. See Figure 3.
2. Watershed characteristics such as precipitation, snowpack, streamflow, and soil moisture indicate extreme dryness.
3. The previous year had a Stage 2 or higher drought response.

4. Metro-area communities indicate similar action or are preparing to take similar action.
5. Customers believe severe water-use restrictions are appropriate.
6. State water officials have declared a drought emergency.
7. City Council suggests implementation of severe water-use restrictions.
8. Circumstances warrant adverse impacts and prohibitions on water-dependent businesses involved in outdoor water use.
9. Other situations that limit distribution of water such as: short or long term equipment failure, power failure or restrictions, or contamination of water supplies.

Available Responses:

1. Implement an outdoor watering ban, following the Program Elements (see Section 0.4) for the Stage 2 response.
2. Enforce waste of water fines and violation of water restrictions fines.
3. Federal Heights and other districts that receive Master Meter water from the City will be required to implement similar measures.
4. Lease or purchase any available water.
5. Limit all leases of Westminster water to others, to the maximum extent contractually allowed.

Expected results: Ninety (90) percent reduction of average outdoor water use, or forty-five (45) percent reduction of total annual water use. Revenues from water sales may fall as lower water use may result in lower billings and rates falling into the lower blocks of the increasing block rate structure. Stage 2 restrictions will lower the likelihood of requiring Stage 3 Rationing in the following years.

Stage 3 Drought Response: Rationing

Description: exceptionally dry conditions. Activates a rationing program for City of Westminster customers. *Conditions that would lead to a Stage 3 drought are highly unlikely.* Stage 3 will include rationing of indoor water use. Avoid depletion of water sources, provide minimum water supplies to protect public health and safety, support essential and high priority water uses, and avoid unnecessary economic impacts.

Indicators:

1. Projected June 1 Standley Lake reservoir volume (Westminster's allocation) is below 3,000 acre-feet. See Figure 3.
2. Watershed characteristics such as precipitation, snowpack, streamflow, and soil moisture indicate exceptional and prolonged dryness.
3. The previous year had a Stage 3 or higher drought response.
4. Other Denver Metro-area communities are rationing water.
5. News media are sending messages that we are in a crisis situation.
6. Customers believe we are in a crisis situation.
7. City Council is saying that water rationing is appropriate.
8. The situation suggests that severe impacts to water-dependent businesses are unavoidable.

9. Other situations that limit distribution of water such as: short or long term equipment failure, power failure or restrictions, or contamination of water supplies.

Available Responses:

1. Implement a rationing program, following the Program Elements (see Section 0.4) for the Stage 3 response.
2. Enforce waste of water fines and violation of water restrictions fines.
3. Federal Heights and other districts that receive Master Meter water from the City will be required to implement similar measures.
4. Lease or purchase any available water.
5. Limit all leases of Westminster water to others to the maximum extent contractually allowed.

Expected results: One hundred (100) percent reduction of average outdoor water use, and more than fifty (50) percent reduction of total annual water use. Revenues from water sales may fall drastically as lower water use may result in lower billings and rates falling into the lower blocks of the increasing block rate structure. Rationing increases the likelihood of preserving critical health and safety water uses.

0.4. Drought Response Program Elements

The program elements table below sets forth the water uses under various levels of drought restrictions.

Table 1 Program Elements

Element	Normal	Drought Watch	Stage 1 (Mandatory Restrictions)	Stage 2 (Ban on Lawn Watering)	Stage 3 (Rationing)
Outdoor Watering and Irrigation					
Turf grass	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	Suggested watering guidelines: maximum of three watering days/week, no watering between 10am and 6pm, no waste of water.	Two days/week per mandatory schedule based on customer class and address. No watering allowed between 10AM and 6PM. No watering before May 1 or after September 30.	No watering allowed. No herbicide, fertilizer, or pesticide application.	No watering allowed. No herbicide, fertilizer, or pesticide application.
New seed and sod	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	Allowed with a permit. No July or August installations.	No watering allowed. No installations.	No watering allowed. No installations.
New plantings	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	Allowed with a permit. No July or August installations.	No watering allowed. No installations.	No watering allowed. No installations.
Trees, large shrubs, and perennials	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	May be watered by hand-held hose or low-volume non-spray (“drip”) on any day, during the same watering hours as turf grass.	Existing trees only, watered by means of a hand-held hose or low-volume non-spray (“drip”) irrigation no more than once per week on scheduled day.	Not allowed, or use of hand-held hose or low-volume non-spray (“drip”) may be limited to no more than one assigned day per month. TBD based on conditions at the time.

Element	Normal	Drought Watch	Stage 1 (Mandatory Restrictions)	Stage 2 (Ban on Lawn Watering)	Stage 3 (Rationing)
Flowers, vegetables, and community gardens	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	May be watered by means of a hand-held hose or low-volume non-spray ("drip") irrigation on the assigned watering days, not between 10AM and 6PM.	Existing plants may be watered by means of a hand-held hose or "drip" irrigation. Community gardens by means of "drip" irrigation only. No watering of annual beds. No new plantings. No watering between 10AM and 6PM.	No watering allowed.
Athletic and playing fields	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	Irrigated via mandatory schedule.	Irrigated via mandatory schedule. Irrigation of playing turf only.	No watering allowed.
Public parks (other than athletic and playing fields)	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	Irrigated at 70% of ET* rate, overall average across all parks. Reclaimed water sites will be irrigated via mandatory schedule.	Irrigated at 10% of ET* rate. Reclaimed water sites will be irrigated at 30% of ET* rate. Reductions are overall average across all parks.	No watering allowed.
Golf courses	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	Irrigated via mandatory schedule.	Tees and greens only.	No watering allowed.
Daytime irrigation of high-traffic areas (parks, golf courses)	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	By hand or hose watering only. City facilities only.	Hand watering only. City facilities only.	No watering allowed.

Element	Normal	Drought Watch	Stage 1 (Mandatory Restrictions)	Stage 2 (Ban on Lawn Watering)	Stage 3 (Rationing)
Irrigation taps not covered by other rules	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	Irrigated via mandatory schedule.	Irrigated via mandatory schedule, following the same outdoor watering restrictions (trees, shrubs, and perennials only)	Same as outdoor watering restrictions
Water Features					
Unlined ponds	Filled using approved backflow.	Filled using approved backflow.	No filling allowed unless used for irrigation.	Not allowed.	Not allowed.
Swimming pools	N/A	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	Single-family residential pools shall not be filled or refilled, except by special permit for structural integrity. Operation of other pools, including community recreation center pools, may be permitted.	No filling of pools.
Public spray pads	N/A	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	No waste of water per W.M.C. §§ 8-7-25 and 8-12-16.	No operation or filling.	No operation or filling.
Other decorative water features (fountains, waterfalls, etc.)	N/A	N/A	No operation or filling of water features. No installation of new features.	No filling or operation of water features. No installation of new features.	No filling or operation of water features. No installation of new features.
Misting devices	N/A	N/A	Not allowed	Not allowed	Not allowed
Washing/Events					
Cars – washing at home	N/A	With bucket or hand-held hose with shut-off nozzle	With bucket or hand-held hose with shut-off nozzle	With bucket only.	Not allowed

Element	Normal	Drought Watch	Stage 1 (Mandatory Restrictions)	Stage 2 (Ban on Lawn Watering)	Stage 3 (Rationing)
Cars – commercial car washes	N/A	N/A	Car washes must implement industry BMP's and reduce water use to no more than 40 gallons/vehicle	Car washes must implement industry BMP's and reduce water use to no more than 20 gallons/vehicle	Not allowed
Fleet vehicle washing	N/A	No open ended hose use.	Maximum one time per week, permit required, with a pressure washer	One time per month only for health and safety, permit required, with a pressure washer	Not allowed
Charity events (e.g. car washes)	N/A	N/A	Permit required	Not allowed	Not allowed
Street cleaning equipment	N/A	N/A	N/A	Obtain water from designated locations only.	Extreme health and safety issues only; high-efficiency equipment only.
Washing/ impermeable surfaces	N/A	Use dry cleanup methods prior to washing. No waste of water.	Use dry cleanup methods prior to washing. High-efficiency equipment required.	Use dry cleanup methods prior to washing. Health and safety issues only; high efficiency equipment required.	Use dry cleanup methods prior to washing. Health and safety issues only; high efficiency equipment required.

Element	Normal	Drought Watch	Stage 1 (Mandatory Restrictions)	Stage 2 (Ban on Lawn Watering)	Stage 3 (Rationing)
Commercial-Industrial Processes					
Restaurants	N/A	N/A	Water served only on request. Display table tent cards provided by the City.	Water served only on request. Display table tent cards provided by the City.	Water served only on request. Display table tent cards provided by the City.
Lodging	N/A	N/A	Only wash towels and linens when requested. The City may encourage the placement of conservation focused messaging cards in rooms.	Only wash towels and linens when requested. The City may encourage the placement of conservation focused messaging cards in rooms.	Only wash towels and linens a maximum of once in 5 days for each customer or when requested if longer. The City may encourage the placement of conservation focused messaging cards in rooms.
Construction water for dust control	N/A	N/A	Implement current industry best management practices; no water waste; hydrant permit may be rescinded for violations.	Implement current industry best management practices; no water waste; hydrant permit may be rescinded for violations.	On case by case basis approved by the City Manager or his designee; Implement current industry best management practices; no water waste; hydrant permit may be rescinded for violations.
Hydrant permits	N/A	N/A	Hydrant permit cancelation clause may be invoked; intended use only, possible surcharge.	Use only on case by case basis approved by the City Manager or his designee. Surcharges may be applied.	No hydrant use allowed except for firefighting purposes (health and safety).

*Note: ET = Evapotranspiration. Reductions will be based on a calculation of the water demand of bluegrass or the turf type present. Parks will be calculated on a program-wide basis.

1. Introduction

1.1. Profile of Westminster's System

The City of Westminster (Westminster) is located in the Denver Metro Area on the Front Range of the Rocky Mountains, partially in Jefferson County and partially in Adams County, Colorado. Westminster provides treated water, reclaimed water, and wastewater services to approximately 120,000 people. Westminster is primarily an urban area, with most of the City already developed. The current population is expected to grow as the Front Range population grows, and because Westminster is an attractive location for businesses, industries, and families. One of Westminster's strategic goals is to be the next urban center of the Front Range.

Westminster's water supply portfolio consists mainly of water rights from Clear Creek that are stored in Standley Lake. A small portion of the portfolio is based on contracts for raw water from Denver Water. The City's fully consumable effluent is treated and returned to the City for outdoor irrigation as reclaimed water.

1.2. Drought Mitigation and Response Planning

The main purpose of drought mitigation and response planning is to preserve essential public services, and minimize the adverse effects of drought on public health and safety, economic activity, environmental resources, and individual lifestyles during a drought event. A drought management plan is an emergency response plan, put in place in advance of the emergency in order to remove the "crisis" from the situation. This plan can be activated for drought situations as well as water shortage situations arising from causes other than drought. Drought mitigation refers to actions taken in advance of a drought that reduce potential drought-related impacts when the drought occurs. Drought response planning specifies the actions that must take place in response to a drought as defined in this plan.

It is important to recognize that Westminster is part of a larger region sharing common communication resources such as social media, television, radio and newspaper outlets. Drought response is more effective when a common message and in many instances common restrictions are issued. When responding to a drought we must work closely with our neighbors, state and federal governments as well as media, local businesses and organizations. For this reason, the drought response stages, language, and guidelines in this plan closely align with Denver Water's Drought Response Plan.

1.3. Historical Drought Planning Efforts

The City's drought planning efforts began during the drought of 2002. A plan document was drafted in 2003 and has been periodically updated since, with the last informal update in 2013.

For this plan update, several modifications have been made to improve the plan overall. An internal stakeholder group of City staff was assembled to provide feedback on the drought stages and measures. Advances in water supply modeling provided

insights into the possible frequency of drought stages in future years. A communications firm has been hired to provide a professionally designed public communications framework for messaging.

1.4. Definitions

Drought – An extended period of below-average precipitation, below-average stream flows, and low levels of raw water storage, resulting in stressors on the City's potable and reclaimed water supply. Drought is a normal part of climate variability and occurs in nearly all climatic zones.

US Drought Monitor	
Drought Intensity Levels	
D0	Abnormally Dry
D1	Drought - Moderate
D2	Drought - Severe
D3	Drought - Extreme
D4	Drought - Exceptional

Table 2 Drought Intensity Levels

Drought or Dryness Types		
S	Short-Term,	Typically <6 months(e.g. agricultural, grasslands)
L	Long-Term,	Typically >6 months (e.g. hydrology, ecology)

Table 3 Dryness Types

Essential Water Use – Water use for health and safety purposes, including indoor, school, hospital, and fire-fighting water uses.

Non-Essential Water Use – Water use that does not directly benefit or maintain health, personal cleanliness, or firefighting purposes.

Drought Watch – A period to alert necessary entities and the public regarding the onset of conditions indicating the potential for future drought-related problems.

Stage 1 Mandatory Watering Restrictions – This phase implements mandatory watering restrictions and prepares for coordinated response to imminent drought conditions and potential water supply shortages.

Stage 2 Ban on Lawn Watering – This stage is a concentrated management phase of operations to deploy all available resources to respond to actual emergency conditions.

Stage 3 Rationing – This phase is a response to a severe exceptional drought where emergency conditions are exceeded and the potential exists that there is not sufficient water to meet even indoor health and safety demands.

Denver-metro area communities include, but are not limited to:

- Centennial Water and Sanitation District
- City and County of Broomfield
- City and County of Denver/Denver Water
- City of Arvada
- City of Boulder
- City of Brighton
- City of Golden
- City of Longmont
- City of Northglenn
- City of Thornton
- Denver Water
- South Adams County Water Authority
- Town of Erie
- Town of Lafayette
- Town of Louisville
- Town of Superior

2. Stakeholders, Objectives, and Principles

2.1. Drought Planning Committee

Drought response is a group effort requiring the efforts of many city departments, employees, and residents including, in some instances, participation on task forces and implementation teams. Westminster has a wealth of skills, knowledge, and experience within its employee and customer base. By focusing our joint energies and imagination on the problem at hand we can successfully deal with any adversity.

During development of this Plan, a Drought Committee was formed to review components of the draft Plan and provide feedback. Committee members were selected by the Westminster Public Works and Utilities Department (PWU) based on their expertise, position, and included representatives from all City departments affected by implementation of the Plan. Table 4 lists the Staff who attended three Internal Stakeholder Meetings in November 2018, December 2018, and January 2019:

Department/Division	Name	Position
Public Works and Utilities	Megan Orloff	Senior Water Resources Engineer
Public Works and Utilities	Bob Krugmire	Water Resources Engineer
Public Works and Utilities	Sarah Borgers	Water Resources and Quality Manager
Public Works and Utilities	Drew Beckwith	Project Specialist
Public Works and Utilities	Chris Gray	Business Operations Coordinator
Public Works and Utilities	Bret Eastberg	Reclaimed Water
Public Works and Utilities	Roger Harshman	Water Distribution
Public Works and Utilities	Mark Uhland	Utility Systems Specialist
Public Works and Utilities	Kelly Cline	Water Quality Administrator
Fire	Greg Moser	Emergency Management Coordinator
Fire	Bob Hose	Fire Marshall
Police	Norm Haubert	Police Commander
Police	Joy Tallarico Hunt	Code Enforcement Supervisor
Parks Rec and Libraries	Nicole Ankeney	Senior Landscape Architect
Parks Rec and Libraries	Lance Johnson	Park Services Manager
Parks Rec and Libraries	Chris Johnson	Park and Golf Superintendent
Parks Rec and Libraries	Blake Ramsey	Parks and Hort Superintendent
Economic Development	John Burke	Senior Projects Engineer
City Manager's Office	Paul Schmiechen	Sustainability Coordinator
City Manager's Office	Chris Lindsey	Policy and Budget Manager
City Manager's Office	Jodie Carroll	Communication and Outreach Coordinator
Community Development	Andrew Spurgin	Principal Planner
Community Development	Amy Johnson	Senior Planner
Community Development	Aric Otzelberger	Business Operations Coordinator
Community Development	Joe Schalk	Landscape Designer
Community Development	Dave Horras	Building permits
City Attorney	Kristin Decker	Deputy City Attorney

Table 4 Internal Stakeholders from all affected city departments participated in Drought Plan preparation

2.2. Objectives of the Drought Management Plan

The purpose and scope of this plan is to establish the City of Westminster's policies and procedures in the event of drought, water shortages, or delivery limitations in the water supply. This plan shall apply to all residential, commercial, and industrial water customers.

The internal stakeholder meetings identified the water use priorities for the City as:

1) Health and Safety (interior residential, essential commercial, school use, sanitation, hospitals, and firefighting)
2) Commercial & Industrial (indoor use, including businesses, industries, restaurants, etc above and beyond health & safety uses)
3) Mature trees, both publically and privately owned
4) Public parks: athletic fields, revenue-producing facilities, green spaces as a community resource
5) Residential turf irrigation
6) Construction water and other miscellaneous water uses

3. Historical Drought and Impacts

3.1. Historical Assessment of Drought, Available Supplies, and Demands

The City of Westminster continues to develop its water supply based on projections of buildout water use, compared against a statistical analysis of paleo-conditioned Clear Creek flows. Westminster has been proactive in developing a water supply and its supply currently includes water beyond current needs, but anticipates buildout conditions. While this additional supply can help buffer current and near term water shortages, that buffer will quickly reduce as buildout approaches in the next couple of decades.

The most recent drought which resulted in implementation of a response occurred in 2002. That water year, Westminster's account in Standley Lake dropped to a low of 15,600 acre-feet. Clear Creek stream flows were worrisomely low, with a June peak of 267 cfs (21% of average peak), late summer/early fall flows of 30 cfs, and December low flows of 12 cfs at the Golden gage.

3.2. Historical Drought Impact, Mitigation, and Response Assessment

During 2002 both voluntary and mandatory restrictions were imposed. Voluntary restrictions produced less than a 10% water use reduction while mandatory restrictions produced over 20% in reductions compared to non-drought anticipated use. Voluntary restrictions including a recommended 3 day per week watering schedule were in place for the month of July 2002. Mandatory restrictions included a rotational watering schedule (circle, diamond, square) for August and September 2002 and no outdoor watering was allowed after September 30, 2002.

A Drought Committee was established in June 2002 which included department directors and eventually added key staff. The Committee received weekly water supply and production updates and approved implementation of strategies. City Council was updated at the beginning of each study session during the period. A drought hotline was established early and manned during working hours through September 2002. Drought violation patrols were implemented in August 2002 staffed by Public Works employees during early morning and evening hours. An Appeals Hearing Committee was established in August 2002 to hear appeals from residents on issued violations.

The Drought of 2002 was a very severe one-year event and would have continued had the blizzard of 2003 not arrived. The drought ended abruptly in March of 2003 when a significant blizzard hit the Front Range region depositing up to 7 feet of snow in the Clear Creek watershed. Post-drought review highlighted the fact that while Westminster water supplies were impacted, one of the main triggers was the drought declarations of neighboring providers and the unknown duration of the drought. A conservative approach to declaration was deemed prudent and appropriate.

After the drought the Standley Lake embankment was modified due to issues unrelated to drought, and the decision was made to add a lower outlet to allow for outflows at lower lake levels in the future.

4. Drought Vulnerability Assessment

4.1. Water Supply Reliability and Drought Management Planning

Water supply reliability planning is an important component of ensuring sufficient supplies during times of drought and to some extent overlaps with drought management planning. Westminster's water supply reliability planning efforts focus on the ability of the City's water supply system to meet the needs of its customers during times of stress. This reliability depends on a multitude of factors including the City's water source(s), seniority of water rights, storage capacities, and rate of customer demand growth.

The City's Water Resources and Quality Division last updated the Water Supply Plan (WSP) in 2012, and is working on a 2019 update. The City's Community Development department is updating its Comprehensive Plan in 2019 and will coordinate with the WSP. The Comprehensive Plan and WSP will guide Westminster to meet its future growing demands while maintaining water supply reliability during drought periods. Westminster could experience a variety of future drought-related impacts of significant to minor severity. Potential significant future impacts include reduction in storage reserves, disruption of water supplies, degraded water quality, sediment and debris loading to reservoir following wildfire, and increased costs to acquire additional supplies. The community could also experience a variety of future drought-related impacts. While some of the impacts are beyond the immediate control of the City of Westminster, drought mitigation activities and daily operational adjustments could be made to alleviate some of these impacts. One of the main objectives of this Plan is to minimize drought impacts on the City and community.

5. Drought Mitigation and Response Strategies

5.1. Drought Mitigation Measures

Drought mitigation refers to actions taken in advance of a drought that reduce potential drought related impacts when the event occurs. Westminster's current and planned drought mitigation measures include the following:

Drought mitigation planning – The major components of this Plan provide an effective means for Westminster to prepare for drought. When done in advance of a drought, planning is considered drought mitigation. These components include the objectives and operating principles; assessment of historical and potential drought impacts; drought-related monitoring; drought stages, trigger points and response targets; declaration of a drought; development of drought-related ordinances; and the public drought education campaign. This planning effort in advance of a drought is considered mitigation.

Development of new water supplies – Westminster is planning to develop additional water supplies to meet the growing water demands through buildout of the City, as defined in the City's Comprehensive Plan. A portion of these new supplies will be designated for new growth while the remainder will be reserved for use during periods of drought.

Explore development of cooperative sharing agreement opportunities with neighboring communities during periods of drought – Westminster's water supply yields may be increased by making some adjustments to how water rights are traditionally managed and through other synergies developed via cooperative agreements with other local water users. Where possible, agreements may be explored in advance of a drought as part of the mitigation effort and activated during drought periods. Agreements may include exchanges, agricultural leases, trades, temporary fallowing, etc. Appropriate Substitute Water Supply Plans and/or water court filings may occur as necessary to ensure that the agreement is viable under Colorado Water Law.

Existing operation and maintenance activities that improve water distribution efficiency – Westminster's Water Resources and Quality Division, Engineering Division, and the Utilities division currently conducts annual audits on their water distribution system, routinely repairs leaks on an as-needed basis, monitors and replaces inaccurate meters, and strategically operates its water supply system to keep water in Standley to the maximum extent possible by limiting its use for downstream replacement needs.

Conservation measures specified in the Conservation Plan – Many of Westminster's conservation measures serve the dual purpose of conserving water while also providing drought protection. A portion of the water saved through these conservation measures is stored as drought reserves in Westminster's reservoir, Standley Lake. Reductions in water use through conservation can be considered additional water supply, although conservation is a separate discussion.

Standard practices of the City of Westminster – Westminster's management and operations reflect the City's values of sustainability and environmental stewardship. Many of the City's standard operations focus on water conservation, providing multi-year water savings, and drought mitigation during dry periods.

5.2. Drought Public Information Campaign

The public information campaign will be one of Westminster's largest drought management efforts. The campaign will be closely coordinated with Westminster's current conservation education programs and Value of Water Campaign. When reasonable, these programs may be integrated into a single program to integrate efforts and enhance efficiencies. These program(s) will promote the importance of conserving water and achieving water savings in both normal and drought years. During non-drought years the drought campaign component will simply provide a general overview on drought and the importance of drought preparedness. During a drought, the drought messages will increase in frequency and intensity and will be expanded to include information on the staged drought response program and the necessity to conserve supplies. The drought program will work closely with Westminster's Community Outreach Division to fine-tune and deliver the campaign.

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

The City has retained Orange Circle as a communications specialist to prepare drought communications for this Plan. Shown below is the Messaging Brief prepared by Orange Circle, which includes communication objectives, a message platform about drought response in the City, and drought stage messaging that can be used in a variety of external communications media during different stages of drought.

Messaging Brief

Communication Objectives

- Alert water customers to changes in the drought status.
- Educate water customers about their role and responsibility during the current drought status.
- Increase water customer knowledge about online resources to track updates, other drought status rules, and additional drought information.
- Promote water-saving behaviors during a drought (and water-efficient behaviors during non-drought periods).

Message Platform

[COPY and use the following]:

Drought is a naturally occurring consequence in arid climates like Colorado.

Drought happens when there is not enough water in our streams and reservoirs due to low precipitation. Reduced water supplies cause lower storage levels, so there is less water for local residents, businesses, farms, and recreation.

Westminster Water has a plan for drought.

Our response plan is recognized as the best way to extend water supplies through a drought and is consistent with the plans of surrounding cities and counties. To ensure we all have enough water for our most essential uses, sometimes customer restrictions are necessary, depending on which of the four stages of drought we are in.

[CALL TO ACTION on all pieces of communication]:

For the most up-to-date information about drought status and restrictions visit https://www.cityofwestminster.us/drought.

Drought Stage Messaging

[COPY and use the following]:

[If announcing all at one time]: The four stages of drought and the response plan is as follows:

Drought Watch: Public Awareness

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

Response: To reduce the risk of progression to mandatory restrictions, limit watering your lawn to 3 days a week before 10am and after 6pm only. Watering new seed, sod, plants, shrubs, and gardens, as recommended is okay, but do not waste water and stay alert to drought status changes.

Stage 1 Drought: Mandatory Restrictions

- Mandatory watering restrictions go into effect, fines enforced
- Restrictions require water customers to reduce their use to only the essentials.

Response: Water your lawn on your assigned 2 days a week 6pm-10am only. No watering before May 1 or after September 30. Some additional watering on new seed, sod, and plantings may be allowed with a permit or by low-volume methods (e.g. drip, handheld hose.) Do not waste water and stay alert to drought status changes.

Stage 2 Drought: Lawn Watering Ban

- No more watering your lawn, fines enforced
- Restrictions are severe, damage to or loss of landscapes could occur

Response: Do not water turf grass, new seed or sod, or new plantings. Existing trees and plants may be watered using a low-volume method once per week on your scheduled day.

Stage 3 Drought: Rationing

- Rationing program for an indefinite period of time, fines enforced
- Ensure there is adequate water for essential uses for as long as possible

Response: No watering is allowed. Existing trees may be watered no more than once per month using a low-volume method. Indoor use is restricted to limited water use and will require shorter showers, limited clothes washer and dishwasher use, recycling water for multi-uses, and more.

CALL TO ACTION

[COPY to include with each Stage if only sending one isolated message]:

We understand your water is personal, and limiting your use can be a short-term inconvenience, but the long-term outcome is dependent on your conservation.

Thank you for valuing your water as much as we do.

For complete details, tips, and to learn more about what your specific restrictions will be for residential, businesses, events, public parks, public spaces, and other types of usage, get the complete Westminster Water Drought Plan at https://www.cityofwestminster.us/drought

Updates to the Public Information Campaign

Specific outreach strategies may be developed and included in a Statement of Procedures (SOP) in the spring of 2019. The SOP will be included as an appendix to this Plan following its completion.

6. Drought Stages, Trigger Points and Response Targets

The City of Westminster has four levels of drought response. Each level of response corresponds to a severity level reflective of water supply conditions at any time. This plan may be implemented at any phase based on the determination of the City Manager. According to City Code Section 8-7-24, approval of this Plan by the City Council grants authority to the City Manager to carry out this Plan.

Preparedness may require looking ahead to develop the next phase measures before they may be needed. Some measures such as utility rates may be developed and placed in the City Code far before they may be necessary.

Droughts are not declared based on any one triggering criteria. Each trigger is listed as a level to take notice. Declarations are made based on multiple inputs. Drought severity indicators include water supply indicators and political/social/economic indicators.

Water Supply Indicators

Water supply indicators include snowpack, precipitation, temperature, wind, predicted reservoir storage, evaporation, streamflow, soil moisture, weather forecasts, and drought indices. Drought indices include the Surface Water Supply Index, the Standardized Precipitation Index, the Palmer Drought Severity Index, and the U.S. Drought Monitor.

Reservoir storage is directly impacted by and is an important indicator of drought. All of the factors affecting the indicators listed above will directly affect reservoir storage. The City of Westminster's primary storage vessel for drinking water is Standley Lake. Figure 3 in the Executive Summary displays a guide for drought response based on Westminster's storage in Standley Lake. Reservoir storage levels are one indicator out of many used to make the recommendation.

The Standley Lake storage trigger levels are based on water supply modeling of the City's water rights portfolio, and optimized against a variety of reservoir trigger level scenarios.

Political, Social, and Economic Indicators

In addition to physical water supply indicators, political, social, and economic indicators will influence the decision to implement drought stages as well as customer response to the restrictions.

Other municipalities and water providers in the metro-area have varying levels of system resiliency and water sources. Drought situations may cause each utility to respond differently. The City of Westminster will coordinate with its regional neighbors to develop a unified response to drought. Denver Water in particular has a large media influence, and many of the City's customers will hear and respond to Denver Water's messaging about restrictions.

The local news media and social media are key sources of information for residents, both of which are tremendously influential in shaping public perception of drought.

A portion of the City's water supply is provided by contract with Denver Water through the Moffat system. This West Slope water has different political pressures than the City's East Slope Clear Creek water rights. The Colorado Compact or West Slope/East Slope relations may influence a portion of the City's water supply.

Inevitably, drought responses and water restrictions have an impact on business and industry within the City. Reduced water use also has an impact on the City budget in a variety of ways, and may have an impact on the economic development of the City. The City will communicate and coordinate with the affected businesses to balance their needs with water supply. The City will seek to maintain the economic vitality of the community to the best extent possible.

Lower reservoir levels caused by drought can affect the environment, wildlife, fish, and recreation at Standley Lake and Jim Baker Reservoir, as well as the recreation-related economic activity of the surrounding community. The City will take environmental effects into account in drought-response decisions.

Uncertainty Associated with Forecasts

Even with all of the above mentioned indicators, influences, and impacts, drought forecasting is not certain. It is difficult to predict whether a dry year is a single year drought or an extended decade-long drought. City Staff will update Council and customers of current conditions and provide the best information available.

6.1. Drought Stages, Trigger Points and Response Targets

Table 5 presents Westminster's drought stages based on drought severity. The four stages increase in intensity from watch to Stages 1-3.

Drought Response Stage	Drought Watch	Stage 1 Mandatory Watering Restrictions	Stage 2 Ban on Lawn Watering	Stage 3 Rationing
Water savings goal	0 - 10%	30% outdoor, 15% overall	90% outdoor, 45% overall	>50%

Table 5 Water Savings Goals Increase as Drought Stages Increase.

City staff monitors the abovementioned drought indicators on an ongoing basis. The water supply indicators are particularly important during the spring months, and staff evaluates conditions on approximately May 1 of every year in order to make a recommendation. City staff monitors the reservoir levels throughout the year. Prior to spring runoff, staff will use a June 1 projection of storage to make a recommendation of drought response. After the spring runoff, staff may use actual storage levels to make recommendations. Reservoir storage levels are one indicator out of many used to make the recommendation.

Multi-year droughts could require a significant modification to the drought triggers based on the duration and severity of the drought and the City staff's historical experience managing Westminster's water supply system. The declaration of a drought, timing of the declaration and corresponding drought stage will ultimately be a real-time decision based on a combination of the drought trigger guidelines in this section, staff experience, and other drought indicator data.

Section 0.4 and Section 7.2 of this Plan presents the drought response targets and measures (targeted water savings) which also increase with each stage, with a 15% water savings target under Stage 1 Mandatory Water Restrictions and over 50% water savings target under Stage 3 Rationing. Targets may be adjusted based on conditions and the menu of measures chosen to achieve the target.

Reclaimed Water

Westminster's Reclaimed Water Treatment Facility treats wastewater to near-drinking water standards and delivers nonpotable water throughout a portion of the City for irrigation purposes. Reclaimed water may be more or less abundant during periods of drought than raw water supplies, and may be needed for legal purposes other than irrigation. The City reserves the right to apply the same or different drought restrictions to reclaimed water sites depending on conditions.

6.2. Drought Declaration Protocol

It is important for the City to officially declare a drought and adjust corresponding drought stage in a timely manner. Staff will provide a recommendation to the City Manager on approximately May 1 of every year. If a drought is declared too late or actions are not taken early enough to reduce water use, supplies can be severely depleted and strict water restrictions may be required, leading to economic impacts that could have been avoided. Conversely, premature drought declarations can result in unnecessary mandatory water restrictions and associated impacts while customers can lose confidence in the declaration. This Plan lays out guidelines for drought declaration to ensure timely and accurate declaration. Once approved by City Council, this Plan will be ready when conditions call for its application. The City Manager is ultimately responsible for making the official declaration. City Code Section 8-7-24 describes the authority and process for drought declaration and response implementation.

7. Staged Drought Response Program

Drought response planning specifies the actions that should be taken in response to drought induced water supply shortages. Westminster's staged drought response program is summarized in Section 10 Response Stages.

7.1. Implementation of the Staged Drought Response Program

This Plan lays out the specific roles and responsibilities that the City Departments have in carrying out the Staged Drought Response Program. Effective collaboration and coordination through the Drought Advisory Committee is crucial to the success of this program.

Table 6 lists the measures identified for the drought response program. Measures may be added or subtracted based on current conditions. The list of measures is not all inclusive. The Drought response team must remain open to new ideas both internal and external to the organization. A coordination effort among regional providers may identify ways to save water through a coordinated timing and implementation of measures.

Definitions of each element are provided in Section 7.2.

Table 6 Available Drought Response Measures by Drought Stage

Drought Response Stage	**Drought Watch**	**Stage 1 Mandatory Watering Restrictions**	**Stage 2 Ban on Lawn Watering**	**Stage 3 Rationing**
Water savings goal	0 - 10%	30% outdoor, 15% overall	90% outdoor, 45% overall	>50%
Possible Measures Available for Implementation				
Public Awareness Campaign				
Regional coordination with providers	Yes	Yes	Yes	Yes
Articles in Westminster Window	Yes	Yes	Yes	Yes
Westminster City Edition articles	Yes	Yes	Yes	Yes
Distribute door Hangers, restriction schedule and fact sheets. (contractors and community groups like Boy Scouts)	Letter	All distribution possibilities	All distribution possibilities	All distribution possibilities
Television	Regional message	Westminster messaging if possible	Westminster messaging if possible	Westminster messaging if possible
Bill Stuffers	Yes	Yes	Yes	Yes
Separate mailing to water customers in emergency time crisis		Yes	Yes	Yes
Westminster Website and Social Media	Activate all messaging and resources	Activate all messaging and resources including tv and social media	Activate all messaging and resources including tv and social media	Activate all messaging and resources including tv and social media

Drought Response Stage	Drought Watch	Stage 1 Mandatory Watering Restrictions	Stage 2 Ban on Lawn Watering	Stage 3 Rationing
Press Releases	Coordinate with COD	Coordinate with COD	Coordinate with COD	Coordinate with COD
Speakers Bureau	Establish	Increase	Increase	Increase
Billboard and bus stop ads (consider)	Not necessary at this stage	Yes	Yes	Yes
Education and Training				
Public Presentations on reducing water use at City Facilities	Yes	Yes	Yes	Yes
Presentation on reducing water use and update to City employees	Presentation to City employees	Presentation to City employees	Presentation to City employees	Presentation to City employees
Landscape revival training		Coordinate with Resource Central	Coordinate with Resource Central	Coordinate with Resource Central
Resources for residents (web and printed)				
Drought schedules	Recommended on website	On website, bill stuffers, and other large scale distribution	On website, bill stuffers, and other large scale distribution	On website, bill stuffers, and other large scale distribution
Leak detection tablets	Available at City buildings and at Community meetings	Available at City buildings and at Community meetings	Sent to all customers	Sent to all customers

Drought Response Stage	Drought Watch	Stage 1 Mandatory Watering Restrictions	Stage 2 Ban on Lawn Watering	Stage 3 Rationing
Fact sheets for indoor and outdoor conservation	Available on website, with the option to have available at Community meetings in print	Available on website, at Community meetings in print, and for large scale distribution	Available on website, at Community meetings in print, and for large scale distribution	Available on website, at Community meetings in print, and for large scale distribution
DIY irrigation audit	On Website	On Website	No watering	No watering
Links - Drought monitor, Et, current conditions, restrictions.	On Website	On Website	On Website	On Website
Internal City				
Establish Drought Advisory Committee (Department Directors, CMO, COD, CAO at first)	City Staff	Add residents	Add residents	Add residents
Train and update Utility Billing Customer Service Reps	Yes - Before any other measures	Yes	Yes	Yes
Staff for customer calls	Not necessary at this stage	Yes	Increase	Increase
Staff for restriction patrols	Not necessary at this stage	Yes	Increase	Increase
Establish drought operations center	Not necessary at this stage	Yes	Yes	Yes
Set up Telephone extension (Extension was created in 2002)	Messages taken, restrictions listed, menu with other messages and FAQ's	Staffed with routing to Dispatch after hours, violations accepted	Increase staffed hours	Staffed 24 hours

Drought Response Stage	Drought Watch	Stage 1 Mandatory Watering Restrictions	Stage 2 Ban on Lawn Watering	Stage 3 Rationing
Irrigation audits and upgrades for City facilities	Recommended	Implemented	No Watering	No Watering
Indoor audits for City facilities	Recommended	Implemented	Implemented	Implemented
Hydrant Flushing	N/A	Reduce or eliminate flushing	No Flushing	No Flushing
Westminster facilities reduction targets	No Waste of Water	30% savings on irrigation	90% savings on irrigation and 10% savings on indoor water use	No irrigation and 20% savings on indoor water use
Reduce pressure in distribution zones	N/A	N/A	Yes	Yes
Print notice of high water use on bills	Yes	Yes	Yes	Yes
Meter reading and billing			Multiple meter readings and billing per month	Multiple meter readings and billing per month
Rebates			.8 GPF toilets - Top tier HE washers - waterless or 1 pint urinals	.8 GPF toilets - Top tier HE washers - waterless or 1 pint urinals
Product purchase and distribution		Aerators and Showerheads	Aerators and Showerheads	Aerators and Showerheads
Water Supply				
Lease water available from other sources	N/A	Lease if Available	Lease if Available	Lease if Available
Track water production data	Weekly	Weekly or Daily	Daily	Daily
Track utility billing data	Monthly	Monthly	Each reading	Each reading

Drought Response Stage	Drought Watch	Stage 1 Mandatory Watering Restrictions	Stage 2 Ban on Lawn Watering	Stage 3 Rationing
Leasing water to others	N/A	No leasing of City water	No leasing of City water	No leasing of City water
Moffat water	Maximize	Increase to contract limits	Increase to contract limits	Increase to contract limits
Coordination				
Federal Heights must implement the same measures as Westminster	Federal Heights must implement the same measures as Westminster	Federal Heights must implement the same measures as Westminster	Federal Heights must implement the same measures as Westminster	Federal Heights must implement the same measures as Westminster
Set up meetings to coordinate with regional utilities	Yes	Yes	Yes	Yes

7.2. Drought Response Measures

Regional Coordination of Providers

Drought is not a localized event. It generally affects entire regions. When drought conditions seem possible the message to customers can be reinforced and amplified by consistent messaging through coordination of water providers. In 2012, meetings were set up including a range of North Metro providers with the goal of crafting a unified message that could work for all providers. The message was distributed using a variety of outlets including press releases, customer mailers, bill messaging and articles in provider newsletters. The messaging helped create a regional awareness while allowing for different responses, by provider, based on each provider's water situation. Additional providers may be included based on each situation. Coordination with providers such a Denver Water will help reinforce the message throughout the region since the news outlets generally prioritize Denver Water's messaging. Westminster's Communication and Outreach Division (COD) staff are an important participant in this process.

Coordination of provider's drought response and planning will help all measures be more effective. For instance, while individual providers must each respond based on their needs, using the same restriction base schedule recognizes that we all share a common media market. If all customers within a category have the same watering days, a common message can be released through the media so residents as well as landscape contractors can count on the base schedule. Providers will implement at different levels but at least the base schedule is common. Results of prior regional cooperation on watering restrictions are available in the Lawn Watering Group recommendations from 2002 and 2003.

Coordination can also occur on a menu of offerings that have a record of proven savings. There is no benefit of each provider learning the same lesson individually. Care must be taken to explain the benefits of coordination to utility departments, boards, and councils.

There is a benefit to all in knowing the level of need across providers. When known, extra effort can be made in timing announcements and implementing drought response measures so that the greatest overall result is obtained.

Special coordination must occur between the Cities of Westminster and Federal Heights. Federal Heights is required by contract to implement the same restrictions as Westminster. Coordination and prior notice may make this easier and allow for common preparation.

Westminster Articles and Notices

Current local outlets for Westminster specific articles include the City Edition publication put together by Westminster's Communication and Outreach staff, and the "Westminster Window" and "Westsider" (same publisher) 303-426-6000. Westminster's Communication and Outreach staff are an important part of the messaging process and should be included when any article is written.

Television

Denver television stations news area includes Westminster but broadcasts go to a much wider area. Westminster can benefit from its information being listed on TV news but since Denver is by far the largest newsmaker confusion can occur if messages differ. Coordination is again an important step. In the end each provider must set its own program and TV news is an important medium for distribution. The best method is to work with the Westminster COD to distribute any messaging.

Door Hangers

In the past, when it was critical to get printed messages out fast, Westminster has used a Door to Door distribution company to place door hangers on each resident's door, including making information available to multifamily projects. The package could include a letter from the Mayor, fact sheets on indoor and outdoor conservation, outdoor watering schedules and the effective date, and web and phone contact information for updates to restrictions, information, and a violation reporting process. All information can be stuffed into a door hanger plastic bag by community service workers and staff. A separate door hanger card can be printed and distributed when restrictions are scheduled to change. For distribution companies search "door hangers" in the web. Alternative distribution methods can include community groups such as Boy Scouts, community service workers, and utility crews in cases of localized equipment failures.

Direct Mail

Direct mailings to customers can be an effective way to reach customers fast and at the same time. It is important that all occupants as well as owners of properties be reached. Utility bills may not be regularly sent to both occupants and owners so mailing lists should include all addresses that a bill was sent to as well as all property addresses that were different than the utility bill address. The envelope should be marked "Urgent Information from the City of Westminster" in red and can include a letter from the Mayor.

Bill Stuffers and Messages

Utility bill stuffers are a good way to communicate to all customers who receive a bill at little additional cost but they only occur once a month to each customer and they occur throughout each month. Bill stuffer messages may be out of date by the time the last customers receive them. Bill stuffers may be started immediately in an emergency. Messages that relate to a specific date and or need may not be appropriate for a bill stuffer to be the only communication. In time of drought the bill stuffer may be appropriate to use for general concerns but it is critical to highlight and promote a website or phone extension for current information on restrictions or conditions. A separate bill stuffer on bright colored paper (red for emergency) is generally better read than a message printed on the bill or paragraph on an enclosed "Water Matters" document.

Press Releases

All press releases should be coordinated with the Westminster Communication and Outreach Division (COD) staff.

Westminster Website and Social Media

The first thing to do when a drought is possible is to make sure the City's website and social media sites have prominent locations for current conditions, current restrictions and helpful information for customers. The front page of the website should have hot links available to customers to reach the information as well as a front page article summarizing conditions. Customer tools such as saving water in your home, or tree watering factsheets are critical. Additional resources could include shortcuts to irrigation controller manuals, home irrigation audit tools, evapotranspiration information, and the drought monitor. Placing information on the Westminster website is a good way to communicate current information and can be a labor saver when customers can be directed to the website for information and help.

Speakers Bureau

As soon as a drought is a possibility, a speaker's bureau can be established and its members trained on talking points. The Speakers Bureau is then available to make presentations to the public for drought education purposes. A PowerPoint presentation could be created and be updateable as conditions change. Presentations are generally made during open houses scheduled for the general public, HOA's by request, Church groups and to other groups as requested. The members can also be made available for media interviews and public events which may require additional printed materials for distribution and charts for display.

Other Public Awareness Opportunities

Additional opportunities to increase public awareness can include billboards, bus stop advertising, magnetic signs for City vehicles, advertisements, etc.

Education and Training

Education and training presentations are a good way to both build awareness of drought conditions and help customers learn how to take recommended actions. Topics can include current conditions, the restrictions themselves, programming irrigation controllers, tree watering, repairing irrigation deficiencies, indoor leak detection and fixing leaks, availability of water saving appliances and fixtures as well as their installation. Locations for presentations can include the City Park community room, the Westview Recreation Center, the Northwest Water Treatment Facility, and the Reclaimed Water Facility. Audiences can be the general public, City employees, or whoever else requests training. The first priority should always be the customer service representatives in Utility Billing as well as all switchboard personnel and administrative staff so that customer questions may be answered on the initial contact.

As the drought begins to ebb, trainings on landscape revival, including xeriscape and alternative turfs may be appropriate. Sources for the training may be internal staff, master gardeners, and local gardening centers. Resource Central (https://resourcecentral.org/) should be utilized as a training resource.

Internal City measures

The City has many roles in the case of a drought. City facilities and parks are one of the largest water customers in the City. The manner in which City facilities respond to drought sets an example for the community. City administration, including City Council, must kept informed so that appropriate decisions on drought response can be made.

Drought Advisory Committee

As drought approaches, a Drought Advisory Committee should be set up as a decision making team for drought response. Attendees may include Department Heads or their designees, the City Manager, the Water Resources and Quality Manager, Utility Operations Manager, COD staff and other relevant PWU staff. Staff who participated in the 2018/2019 Internal Stakeholder Meetings would be appropriate members for this task force. Key members of the public, both residents and business owners, may be nominated and included as well.

Each meeting should include an update on current drought conditions and water use projections as well as summaries of the drought response implementation. Most staging and response decisions should be run through the committee.

Westminster City Council

The Westminster City Council must receive appropriate updates on a timely basis and be presented with the drought response in a timely manner.

Train Internal Staff for Drought Implementation

All Staff with public contact must be updated on drought conditions and response so that correct information is delivered to the public in a timely manner. The first staff to train are the Customer Service Representatives in Utility Billing and switchboard operators as they are generally the first contact customers make. Distributing written talking points and FAQ's may help those working with customers provide the best information.

Staffing

Staff may be utilized to operate the required functions for the drought response. Staffing recommendations will be detailed in the SOP. In the case of prolonged drought, additional staff may be hired through a part time staffing agency. Often current City staff hours may be adjusted to provide coverage beyond regular working hours. While overtime has been paid in the past it is advisable to minimize overtime hours based on costs.

The City may have active contracts with organizations to provide conservation services such as inspections and audits. When all effort is focused on enforcement and it may not be practical to operate other conservation programs, agreements may be implemented to refocus conservation staff to drought response. Contracted organizations may find it acceptable to provide drought staff using budget amounts already approved thus solving a problem for the City and the organization.

During droughts, many in the green industry may have less than full employment. Landscape installation and maintenance companies may have available staff hours to provide enforcement personnel. In general, these green industry employees will have clean driving records as a requirement of their job and be available for part time or full time work. One of the Staff must be trained prior to implementation and should be provided with talking points and procedures. A mobile phone is required for field staff to receive reports of violations and provide office contact when answering customer questions.

Drought Operations Center

A Drought Operations Center may be necessary for Drought Response Stages 2 and 3. Specific details for the Center will be covered in the SOP.

Westminster City Facilities Water Reduction Targets

When a drought is declared, the City may establish reduction targets for both indoor and outdoor water use at City facilities. City water reduction goals may lower water use and prepare the City for the expected reduction of City revenues due to residents reducing water use. Municipal water use reductions may also provide residents with an example of wise stewardship.

Water Audits and Upgrades to City Facilities

In an effort to help the City to reduce water use irrigation and indoor water audits can be made available to City facilities. In more severe droughts very low volume fixtures may be installed for the duration of the drought. These installations may include 1.5 or 1 gallon per minute or less showerheads, .5 gpm faucet aerators, and adjusting flushometer toilets to the lowest level possible.

Hydrant Flushing

While hydrant flushing is an important maintenance procedure, doing it during a drought may lead to the public perception of the city wasting water. Flushing should be limited to only specific flushing activities necessary to maintain water quality parameters (at dead ends, etc). When flushing must occur, thought should be put into where the water is deposited. Applying the flushing water to irrigated areas will serve two purposes.

Rates and Fees

Restrictions of water use may result in lower revenues for the City during a period of increased costs for drought response. Some providers have imposed a drought rate surcharge to help make up for those revenue effects and enforcement costs. In 2002 the City imposed a planned rate increase earlier than planned to increase revenues.

If the drought is severe, the quantity of new taps may be reduced. New landscapes may not be allowed to be planted since the water required to establish them is greater than restriction levels or normal operation. New irrigation taps may be put off or allowed during specific time periods. The City may want to consider drought rates and/or surcharges if these effects are anticipated.

Drought Response Budgets

Tracking of costs associated with an emergency drought response can be simplified by establishing a separate drought response budget and account. By having separate accounts, expenses can be segregated from the City budgets. Budget transfers into drought response can be made periodically as needed since the term of the drought is unknown. Line items to be considered can include:

- Staff clerical and enforcement (including overtime if needed)
- Expenses (including gasoline and office supplies)
- Office equipment
- Postage
- Conservation products such as showerheads and aerators
- Rebates for customer purchased high efficiency fixtures and appliances
- Public outreach and advertising

Fixture and Appliance Replacement

While fixture and appliance replacement is usually the in the purview of long term conservation, during drought, the immediate need for water savings may be sufficient to operate these programs. Encouraging replacement may entail no City cost, except advertising, but the offering of rebates or even replace on sale programs may achieve the savings sooner than otherwise anticipated.

Low cost fixtures such as showerheads and aerators may be purchased in bulk at low cost and distributed to customers in many ways. If possible, thought should be put into distributing fixtures of sufficient quality and performance so that customers will not remove them after the drought and the water savings remain long term.

Water Supply and Delivery

Leasing Water from Others

Potential short term water leasing opportunities may provide additional water for the City's water supply system. Decisions regarding water leasing need to be made as soon as possible during the early spring months.

In order to use the City's unchanged shares in an emergency SWSP, the City will need to make the decision prior to arranging short term leases with irrigators in January of each year.

Leasing Water to Others

The City may terminate water leased to others if contracts permit and conditions are severe, on a contract by contract basis based on the terms of each agreement. City Code specifies that water leases may be terminated in times of official drought declaration.

Moffat Water Deliveries

Moffat water delivered to Westminster may be subject to reduction during a drought based on the Denver contract. Staff will work with Denver Water to ensure maximum Moffat water can be delivered to Standley Lake. Current reductions in the contract are as follows.

A. Voluntary restriction program - 5% reduction
B. Mandatory day and hour watering restrictions - 15% reduction
C. Prohibition on all irrigation usage - 50% reduction
D. Limitations on domestic uses - an additional percentage reduction equal to the reduction in domestic usage

If current Moffat water delivery quantities are not yet maximized, it is suggested that deliveries be increased to full contract levels to increase Westminster's water supply. The City must budget for the additional quantity of water.

Tracking Water Produced and Usage

During a drought, water production should be tracked daily to provide the earliest feedback on the effectiveness of the drought response. Weekly and biweekly water production data should be charted for presentation to City officials.

During normal operations, water meters are read once per month. During times of severe drought meter routes may be read and billed multiple times in a month to provide residents the most up to date usage information allowing them to adjust their behavior more frequently than monthly. Customers who violate restrictions or miss reduction targets may be read individually more frequently than others in a severe drought.

The City has plans to install Advanced Metering Infrastructure (AMI) for all residential meters within the next few years. AMI technology will allow Public Works and Utilities to monitor water usage remotely, and will result in significant resource savings (patrols, staffing, gas, time). This Plan will need to be adjusted once this technology is implemented to acknowledge the change in monitoring protocol.

8. Implementation and Monitoring

Effective implementation and monitoring of this Plan is critical to ensuring Westminster's preparedness and ability to respond to drought. These include the following:

- *Drought declaration protocol* – It is important for the City Manager to officially declare a drought and adjust corresponding drought stage in a timely manner. If a drought is declared too late or actions are not taken early enough to reduce water use, supplies can be severely depleted and strict water restrictions may be required, leading to economic impacts that could have been avoided. Conversely, premature drought declarations can result in unnecessary mandatory water restrictions and associated impacts while customers can lose confidence in the declaration. This Plan lays out a specific protocol for drought declaration to ensure timely and accurate declaration. According to City Code Section 8-7-24, after City Council provides approval of the plan, the City Manager is authorized to make the official drought declaration.

- *Implementation of the Staged Drought Response Program* – This Plan lays out the basic roles and responsibilities that the City Departments have in carrying out the Staged Drought Response Program. The SOP will provide specific details. Effective collaboration and coordination through the Drought Management Task Force is crucial to the success of this program.

- *Enforcement of the Staged Drought Response Program* – Westminster's level of enforcement will be customized to the severity of the drought (drought stage) as well as to how responsive the public is to mandatory drought response measures. Enforcement will be a critical component of successful Drought Management Plan implementation. It will translate into actual water savings.

- *Revenue implications and a financial budgeting plan* – A reduction in customer water use during periods of drought reduces water sales and consequently could result in a revenue shortfall for Westminster. Increased costs associated with the drought response could further intensify the shortfall. To alleviate this issue, funds for the implementation of Westminster's staged drought response program are included in the rate stabilization reserve. A thorough evaluation of expenditures and funding sources would need to be evaluated in long term droughts. Additional emergency funds may be raised from drought surcharges and rate adjustments for drought Stages 2 and 3 to help defray the additional costs of the response effort at City Council's discretion.

- *Monitoring of Plan Effectiveness* – Monitoring provides the information and data necessary to improve the effectiveness of updates to Westminster's Plan. This process is key to improving Westminster's ability to prepare and respond to drought.

Monitoring is both an ongoing and post-drought evaluation process. Ongoing monitoring includes testing components of the drought management plan when a drought is not occurring as well as tracking and following through with the drought mitigation measures.

9. Implementation

Per City Code Section 8-7-24, the City Manager is authorized to implement the applicable provisions of this plan upon the determination that such implementation is necessary to protect the public health, safety, and welfare. The City Manager, or his/her designee, shall have the authority to make the determination to initiate or terminate drought or other water supply emergency response measures as described in this plan.

10. Response Stages

For any measures with a $ sign, a cost related to the recommended action has been identified.

10.1. Drought Watch

Description: Abnormally dry conditions. Increase monitoring, public awareness, and preparation for response if conditions worsen.

Triggering Considerations

1. Projected June 1 Standley Lake reservoir volume (Westminster's allocation) is lower than 17,000 acre-feet, but above 14,000 acre-feet. In addition, Standley Lake did not fill the previous year. See Figure 3.
2. Watershed characteristics such as precipitation, snowpack, streamflow, and soil moisture indicate abnormal and prolonged dryness.
3. Precipitation within the City's service area has been below average and indicated abnormal and prolonged dryness.
4. Previous years had similar conditions.
5. Metro-area communities indicate similar action or are preparing to take similar action.
6. News media are communicating or implying drought conditions.
7. Customers believe a Drought Watch and its response actions are appropriate.
8. City Council suggests implementation of a Drought Watch.
9. Other situations that limit distribution of water as determined by the Public Works and Utilities Director such as: short or long term equipment failure, power failure or restrictions, or contamination of water supplies.

Available Measures

(Any measure or combination of measures may be considered for implementation)

1. Work with area communities to standardize public message.
2. Work with customers to promote a recommended watering schedule. (See Lawn Watering Group recommendations)
3. Work with area utilities to promote a recommended time of day irrigation recommendation (no watering from 10:00 AM to 6:00 PM).
4. Require Federal Heights to implement similar measures.
5. Request Westminster facilities including Parks to draw up plans to save water at each facility. Implement 10% target immediately and plan for 30% and 90% future targets (percent targets are of outdoor use). Reductions are percentages of evapotranspiration.
6. Establish a Drought Advisory Committee to coordinate communication and activities. Consider customer and resident inclusion in the committee as well.
7. Initiate public awareness campaign.
    a. Message – supplies adequate, there is never enough water to waste. Request efficient use especially outdoors.

8. Initiate discussions with available City contractors and green industry partners on the availability of contract labor for City drought response operations. Develop or modify contracts as needed.
9. Informational Messaging:
    a. Develop a bill stuffer to inform residents of the Westminster water situation and provide conservation tips.
    b. Update all City staff on current conditions and provide a link to drought recommendations.
    c. Provide a training to Utility Billing customer service representatives (CSR's) and City administrative support staff updating them on current and projected drought conditions, how to answer drought questions, provide recommendations to customers.
    d. Implement and promote a drought response telephone hotline to answer questions and provide advice to customers. There has already been an extension created by the IT department. Create a menu with:
        i. Current conditions
        ii. Current restrictions
        iii. Violation reporting
        iv. Speak to an operator
        v. Leave a message
    e. Create a section on the City's webpage to perform similarly to the phone extension with additional:
        i. Links to conservation resources
        ii. Links to the Drought Monitor
        iii. Links to irrigation controller instructions
        iv. Provide standard information on the City's website related to indoor and outdoor water conservation.
    f. If a bill insert is not appropriate or time is of the essence, consider door hangers for distribution by a contractor.
    g. Develop fact sheets for customers for posting on the City's website.
    h. Issue press releases through the COD when appropriate
    i. Develop training classes to offer residents on water savings and current conditions.
    j. Place articles in City Edition, Window, Westsider and TV when available
    k. Prepare speakers bureau
    l. Prepare Help flag water waste program – city employees place irrigation flags and informational door hangers when problems are observed.
    m. Develop homeowner trainings with Home Depot, Lowes, O'Tooles, etc., Resource Central, and CU Cooperative Extension
        i. Irrigation system repair
        ii. Designing irrigation schedules
        iii. Toilet replacement
        iv. Offer discounts on products.
10. Evaluate expenditures and funding sources.
11. Prepare a drought response budget.
12. Target HOA's and commercial accounts that overuse water for irrigation.
    a. Offer trainings on efficient outdoor and indoor water use.
    b. May need funding to implement with a consultant if demand is high.
    c. Recommend insertion of water budget clause in maintenance contracts.

    d. Include representatives in newsletter update mailing list
13. Detail possible future measures if situation does not improve.
14. Discourage new lawns and landscapes due to potential future restrictions and required additional water needs of new lawns.
15. Offer toilet leak detection tablets to customers.
16. Arrange to lease or purchase any available water.

Termination Criteria

PWU will recommend when water supply conditions warrant termination. The City Manager or designee shall determine when conditions warrant termination of each stage of the plan based on water supply and social indicators.

Expected results

A small reduction (minimal) over the average summer water use might be expected in average weather. In dry conditions water use may be maintained at average water use levels.

Revenues from water sales could remain stable or fall slightly as lower water use will result in lower billings and rates falling into the lower blocks of the increasing block rate structure.

10.2. Stage 1: Mandatory Watering Restrictions

Description: Severely dry conditions. Imposes mandatory watering restrictions and requires effort on the part of the customers. Initiates initial mandatory and additional conservation measures to avoid or reduce shortages, and relieve stressed sources. Development of new sources may be necessary.

Triggering Considerations

1. Projected June 1 Standley Lake reservoir volume (Westminster's allocation) is below 14,000 acre-feet. See Figure 3.
2. Watershed characteristics such as precipitation, snowpack, streamflow, and soil moisture indicate severe and prolonged dryness.
3. The previous year had a Stage 1 or higher drought response.
4. Metro-area communities indicate similar action or are preparing to take similar action.
5. Customers believe mandatory watering restrictions are appropriate.
6. City Council suggests implementation of mandatory watering restrictions.
7. Circumstances warrant possible adverse impacts on water-dependent businesses involved in outdoor water use.
8. Other situations that limit distribution of water as determined by the Public Works and Utilities Director such as: short or long term equipment failure, power failure or restrictions, or contamination of water supplies.

Available Measures

(Any measure or combination of measures may be considered for implementation)

1. Determine the level of savings required and choose restriction measures from Table 6 Available Drought Response Measures by Drought Stage. Since it is hard to change restrictions after implementation, considerable thought must be put into the level of savings required. Notifying customers of changes is expensive for the City and adjusting behaviors and schedules can be difficult for residents. Underestimating required savings goals can have negative long term effects.
2. Continue Drought Watch measures and plan.
3. Require Federal Heights to implement similar program and goals.
4. Request implementation of outdoor water use reduction in all Westminster facilities of 30%. Special coordination with PRL will be necessary to develop a parks plan for water use reduction, possibly including water budgets.
5. Staffing
    a. Assign and train additional staff from various Westminster departments, who might be on light duty restrictions or have reduced workloads, to promote the water efficiency campaign and for the implementation of restriction enforcement.
    b. Implement staffing for the drought response using available contract labor.
6. Implement waste of water fines or bans (Westminster municipal code 8-7-25) using city staff and/or contract labor.

7. Institute a fine program for violations of water restrictions (Westminster municipal code 8-7-24)
8. Implement mandatory day of week and time of day irrigation schedule with fines. This schedule aligns with Denver Water's Stage 1 schedule.
    a. Single-family residential properties with odd-numbered addresses: Saturday, Wednesday.
    b. Single-family residential properties with even-numbered addresses: Sunday, Thursday.
    c. All others (multi-family, HOAs, commercial, industrial, government): Tuesday, Friday, unless watering permit is received from the City.
9. Fines
    a. Follow City Code Section 8-7-24 for fines.
10. Appeal
    a. Any person subject to a charge for violation of this provision may appeal on a form designed by the City of Westminster.
    b. The City Manager or such other decision maker as may be appointed by the City Manager shall conduct the hearing.
    c. Fine amounts may be adjusted based on the severity of the drought.
11. Leak detection
    a. Mandate leak repairs in public restrooms
    b. Increase leak detection using billing consumption methods
12. Drought Communications
    a. Implement communications messages
    b. Consider use of a high profile billboard to promote conservation messages
    c. Print notice of high use on high water use bills. High use will be based on the monthly water use over the average use by meter size or customer class
13. Work with community groups to distribute info and some products
    a. Toilet leak detection tablets
    b. Fact Sheets
    c. Rain gauges
14. Other measures
    a. Water use surveys of irrigation accounts.
        i. Review account usage per square foot of irrigated area.
        ii. Offer rebates for consultant provided irrigation audits.
        iii. Offer targeted rebates for irrigation equipment $
        iv. Irrigation audit rebates for over-users who follow audit recommendations
    b. Establish water budgets for irrigation accounts

Termination Criteria

PWU will recommend when water supply conditions warrant termination. The City Manager or designee shall determine when conditions warrant termination of each stage of the plan based on water supply and social indicators.

Expected results

A reduction of 30 percent over the average summer outdoor water use, or 15 percent of overall annual water use, might be expected depending on the level of restrictions implemented.

Revenues from water sales may fall as lower water use may result in lower billings and rates falling into the lower blocks of the increasing block rate structure.

10.3. Stage 2: Ban on Lawn Watering

Description: Extremely dry conditions. Imposes mandatory watering restrictions. Stage 2 drought restrictions are severe and will likely result in damage to or loss of landscapes. Avoid depletion of water sources, provide minimum water supplies to protect public health and safety, support essential and high priority water uses, and to avoid unnecessary economic impacts.

Triggering Considerations

1. Projected June 1 Standley Lake reservoir volume (Westminster's allocation) is below 8,000 acre-feet. See Figure 3.
2. Watershed characteristics such as precipitation, snowpack, streamflow, and soil moisture indicate extreme dryness.
3. The previous year had a Stage 2 or higher drought response.
4. Metro-area communities indicate similar action or are preparing to take similar action.
5. Customers believe severe water-use restrictions are appropriate.
6. State water officials have declared a drought emergency.
7. City Council suggests implementation of severe water-use restrictions.
8. Circumstances warrant adverse impacts and prohibitions on water-dependent businesses involved in outdoor water use.
9. Other situations that limit distribution of water as determined by the Public Works and Utilities Director such as: short or long term equipment failure, power failure or restrictions, or contamination of water supplies.

Available Measures

(Any measure or combination of measures may be considered for implementation):

1. Determine the level of savings required and choose restriction measures from Table 6 Available Drought Response Measures by Drought Stage. Since it is hard to change restrictions after implementation, considerable thought must be put into the level of savings required. Notifying customers of changes is expensive for the City and adjusting behaviors and schedules can be difficult for residents. Underestimating required savings goals can have negative long term effects.
2. Continue Stage 1 measures.
3. Physical water use reduction measures
    a. Require Federal Heights to implement similar program and goals.
    b. Prepare for the installation of restrictors on accounts that overuse water, have been fined, and overuse on the account has escalated to the point of necessitating the restrictors.
    c. Request implementation of overall water use reduction in Westminster facilities of 45%, with outdoor use banned. Exceptions are laid out in the Program Elements Table. Special coordination with PRL will be necessary.
4. Staffing
    a. Increase enforcement using city employees and contractors

    b. Increase penalties for violations within limits of City Code Section 8-7-24.
5. Other measures
    a. Ban on new water taps
    b. Eliminate all fire hydrant use except for fires and when necessary to maintain water quality parameters (at dead ends, etc.). When necessary for water quality or hydrant repair, pump flush water into a tanker and reuse for irrigation.
    c. Ban outdoor potable water use except for trees or health and safety.
    d. Implement increased temperatures in cooling tower, cooled buildings
    e. Institute an aggressive campaign to promote evaporative cooler maintenance.
    f. Implement a distribution program for low flow devices and toilet flappers for older neighborhoods.
    g. Ban herbicide, fertilizer, and pesticide applications
    h. Ban new landscape installations
    i. Ban median irrigation except for trees.
    j. Offer rebates for low flow toilets, waterless urinals.
    k. Impose water budgets and an abusive block for all accounts
6. Drought Communications
    a. Develop an education program with area businesses and schools on post drought landscape revival.
    b. Implement communications messages
7. Lease or Purchase any available water.
8. Prepare Substitute Water Supply Plan if necessary.

Termination Criteria

PWU will recommend when water supply conditions warrant termination. The City Manager or designee shall determine when conditions warrant termination of each stage of the plan based on water supply and social indicators.

Expected results

A reduction of 90 percent over the average outdoor summer water use, or 45% reduction in overall annual water use, might be expected.

Revenues may be greatly impacted by a significant reduction in water use.

10.4. Stage 3: Rationing

Focus: exceptionally dry conditions. Activates a rationing program for City of Westminster customers. *Conditions that would lead to a Stage 3 drought are highly unlikely.* Stage 3 will include rationing of indoor water use. Avoid depletion of water sources, provide minimum water supplies to protect public health and safety, support essential and high priority water uses, and to avoid unnecessary economic impacts.

Triggering Considerations

1. Projected June 1 Standley Lake reservoir volume (Westminster's allocation) is below 3,000 acre-feet. See Figure 3.
2. Watershed characteristics such as precipitation, snowpack, streamflow, and soil moisture indicate exceptional and prolonged dryness.
3. The previous year had a Stage 3 or higher drought response.
4. Other Denver Metro-area communities are rationing water.
5. News media are sending messages that we are in a crisis situation.
6. Customers believe we are in a crisis situation.
7. City Council is saying that water rationing is appropriate.
8. The situation suggests that severe impacts to water-dependent businesses are unavoidable.
9. Other situations that limit distribution of water as determined by the Public Works and Utilities Director such as: short or long term equipment failure, power failure or restrictions, or contamination of water supplies.

Available Measures

(Any measure or combination of measures may be considered for implementation):

1. Determine the level of savings required and choose restriction measures from Table 6 Available Drought Response Measures by Drought Stage. Since it is hard to change restrictions after implementation, considerable thought must be put into the level of savings required. Notifying customers of changes is expensive for the City and adjusting behaviors and schedules can be difficult for residents. Underestimating required savings goals can have negative long term effects.
2. Continue Stage 2 measures.
3. Require Federal Heights to implement similar program and goals.
4. Read and bill water meters twice each month
5. Impose a flat rate surcharge to ensure all minimum revenue needs are met and a severe penalty if water use exceeds 90% of the 2 year average winter demand per residential customer. Accounts with additional occupants may be reviewed for an increased allotment on a case by case basis.
6. Businesses who cannot meet the average 2-year indoor usage may be reviewed on a case by case basis.
7. Portable water tankers may be required in neighborhoods where water pressures are critical.
8. Accounts that overuse their budget may have a flow restrictor placed on the water service.

Termination Criteria

PWU will recommend when water supply conditions warrant termination. The City Manager or designee shall determine when conditions warrant termination of each stage of the plan based on water supply and social indicators.

Expected results

A reduction of more than 50 percent over the average summer water use might be expected.

11. Enforcement

Once restrictions have been announced publicly, they become immediately enforceable per City Code Section 8-7-24. The imposition and enforcement of mandatory water use restrictions will likely increase administrative costs in the business operations, water resources and quality, and operations divisions of the Department of Public Works and Utilities and in the Finance Department.

12. Variances

During the times the various stages of the Drought Management Plan are in operation, the City Manager, or a designated official, may grant variances in special cases after the evaluation of hardship, need or customer efforts to conserve water.

Variances should be granted only under the following circumstances and conditions:

The applicant must sign a compliance agreement form, agreeing to use water only in the amount and manner permitted by the variance

Granting the variance must not cause an immediate significant reduction in the City's water supply, or water shortages within certain pressure zones or areas.

The applicant must demonstrate extreme hardship or need relating to their health, safety, or welfare, and show evidence of substantial water conservation efforts.

The health, safety, and welfare of other persons must not be adversely affected by the granting of the variance.

A granted variance may be revoked under the following circumstances:

That the conditions of the above section are no longer being met.

The terms of the compliance agreement are violated

The health and safety of the other persons requires that the variance be revoked.