

DROUGHT AND WATER SUPPLY SHORTAGE PLAN

Town of Erie

Draft for Public Review – March 2021

Prepared for:

TOWN OF ERIE
1874

Prepared by:

INTERA
GEOSCIENCE & ENGINEERING SOLUTIONS

Acknowledgements

A sincere vote of appreciation is extended to the Colorado Water Conservation Board for the grant monies to fund the development of this Drought and Water Supply Shortage and to the following individuals and entities that participated in the Plan development.

Erie Staff Members

Tyler Kesler, M.S. Environmental Policy & Management	Sustainability & Water Conservation Specialist
Todd Fessenden	Public Works Director
Bruce Chameroy, Certified Water Professional	Water Division Manager
Mike McGill	Parks and Open Space Division Manager
Ben Pratt, CEcD	Economic Development Director
Lucas Workman, MBA	Economic Development Specialist
Wendi Palmer, P.E. Certified Flood Manager	Civil Engineer
Patrick Hammer	Parks and Recreation Director
Deborah Bachelder, AICP	Planning Manager/Deputy Director, Planning & Development
David Pasic, P.E.	Town Engineer
Jody Lambert	Operations and Maintenance Division Manager
Fred Starr, AICP	Planning and Development Director
Amber Luttrell	Communications and Marketing Manager
Misty Hall, CPESC	Stormwater Coordinator
Jesse Ascunce	GIS Coordinator
Daniel Borrastero	GIS Technician

Other Stakeholders

Phil Brink	Erie Open Space and Trails Advisory Board
Frank Kinder	Northern Water
Luke Shawcross	Northern Water
Brian Craig	Northern Water

Consultant

Courtney Black, P.E.	INTERA Incorporated
Paul Zilis, Esq.	Vranesh and Raisch, LLP

Executive Summary

Background

The Town of Erie (Erie or Town) was founded as a mining town in the 1870s and remained a small rural town until the mid-1990s when it started to experience new development. Erie is now rapidly changing into a prosperous northern Colorado municipality. A key component to Erie's water management strategy is maintaining a long-term reliable and sustainable water supply as the Town continues to grow. Paramount to this effort is acquiring the water necessary to meet growing water demands, managing water efficiently, and ensuring resiliency in times of drought or other water shortages.

Erie responded to the 2002 drought by implementing a three-tiered water restrictions program. The program included both voluntary and mandatory level of restrictions providing flexibility to customers by recommending an irrigation schedule. In 2015, Erie developed a Drought Management Plan in accordance with the Colorado Water Conservation Board's (CWCB) guidelines. This Drought and Water Supply Shortage Plan (Plan) is an update to the 2015 plan, capitalizing on new ideas, updated information and weather data available, and the experience of Erie staff.

Erie has a long history of addressing drought through mitigation measures, proactive planning, and a shortage response program.

Objectives and Operating Principles

This Plan better prepares Erie for drought and provides a framework to respond to a water shortage when it occurs. The objectives of this Plan are provided below.

Maintain and preserve – Maintain health and safety to the maximum extent possible and preserve the economic vitality, quality of life, environmental and recreational stewardship during a water shortage.

Guidance – Provide data-driven guidance to decision makers and Town staff during a water shortage on how to best proceed while remaining aligned with community values and other planning efforts.

Responsible monitoring and response – Proactively monitor regional drought conditions, to ensure the Town's data-driven response to its water shortage and responsibility contribute to lessening the local and regional stress that large scale droughts can have on the State.

Proactive planning is critical to maintaining a resilient community during times of drought and water shortages. This Plan provides a framework and set of guidelines directing Town leadership, Town staff and community members on how to work together to minimize impacts and preserve community livelihood and values when water supplies are stressed.

Operating principles were developed as means to assist with the development of this Plan and be used as a decision-making guidance tool when implementing this Plan. These are listed below.

Ensure resiliency – Resiliency to water shortages is paramount to the health and safety, economic vitality, and sustainability. Implementation of mitigation and response efforts are intended to minimize adverse impacts

DRAFT

during shortages while ensuring the critical functions (e.g., health and safety) necessary to maintain a resilient community.

Ensure successful coordination and communication – The response to water shortages is an inter-departmental effort. Coordination and communication among Erie staff are critical for implementing successful mitigation and response and in conveying consistent effective messages to the community.

Maintain equity and stewardship – Where possible, efforts should be made to allocate the costs and impacts associated with water use restrictions among all customers in an equitable manner. Adverse impacts to the environmental and recreational attributes of the Town's surrounding land should also be avoided to the extent possible during a shortage.

Capitalize on beneficial opportunities – While drought and water shortages can be challenging to address, Erie will capitalize on learning opportunities and on establishing beneficial collaborative relationships among local and regional partners.

Provide flexible framework – Each water shortage is different and therefore flexibility is needed to best address unique circumstances during a drought. The drought response outlined in this Plan is intended to serve as a guiding framework for timely drought response. During a shortage, the response measures listed in Table E-1 and Section 7.0 may be adjusted to best meet current conditions.

Figure E-1 below summarizes Erie's prioritization of customer-use during periods of a water shortage. Uses of highest priority consist of services essential to public health and safety such as indoor residential use, hospitals, schools, and firefighting. During periods of shortage, Erie will ensure that these essential needs are met. Depending on the severity and duration of the water shortage, customers will be encouraged or required to reduce water use.

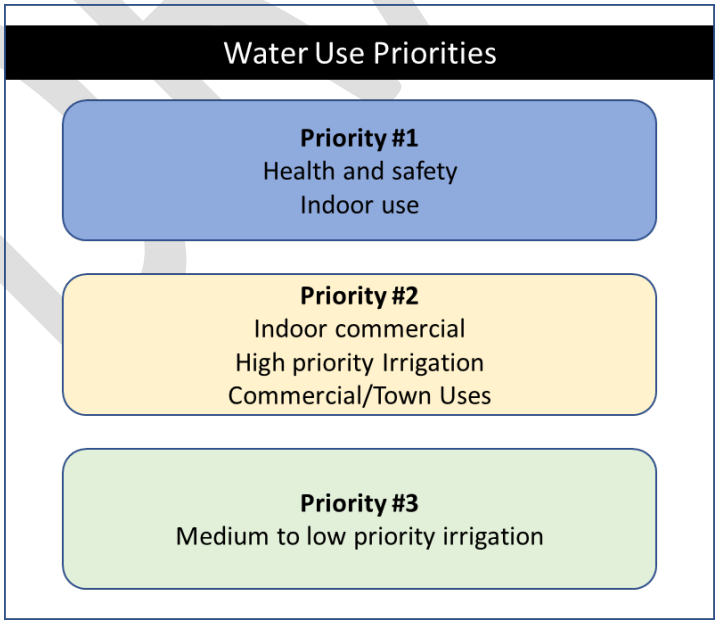


Figure E-1: Water Use Priorities

DRAFT

Mitigation

Erie is committed to drought preparedness by mitigating for drought and water shortages before they occur. This includes mitigation measures that focus on firming existing and acquiring new supplies, operational practices, and water efficiency practices addressed in Erie's Water Efficiency Plan. These are listed in Figure E.2 below. Additional information each of these measures is provided in Section 6.1.

Mitigation consists of actions taken prior to a drought or water shortage to ensure optimum water supply reliability and that Erie is prepared for addressing shortages. Responses are actions taken during a shortage to avoid and reduce impacts while best maintaining water storage for future community needs and essential services.

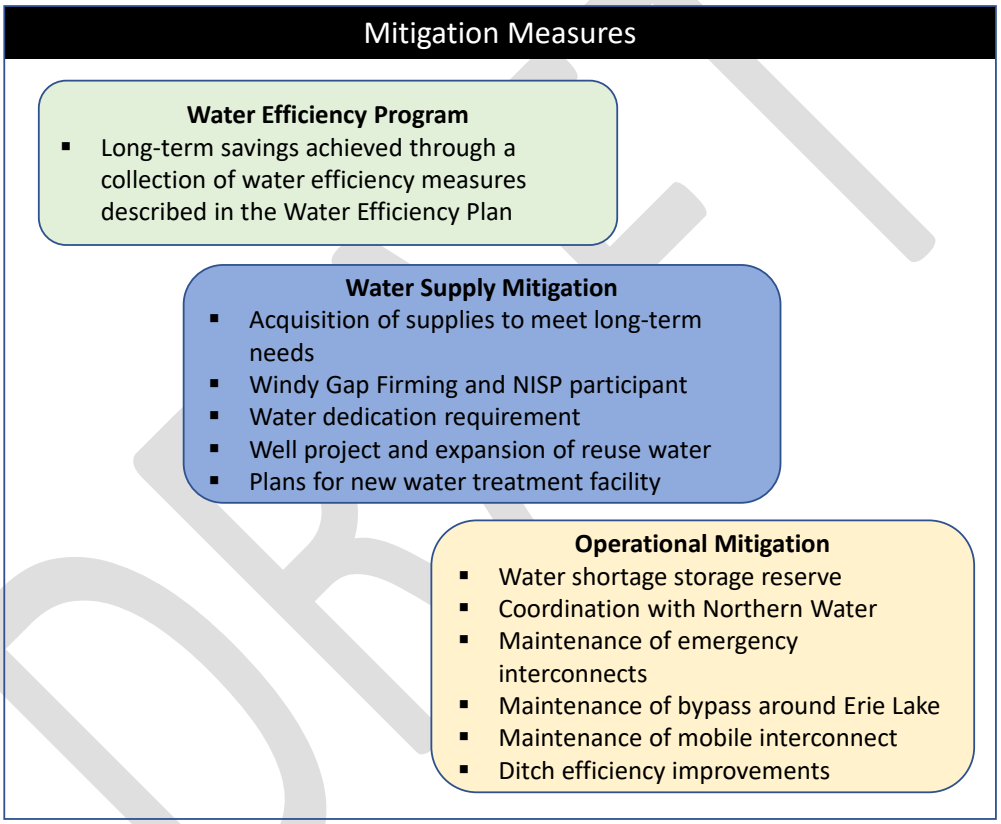


Figure E-2: Mitigation Measures

For purposes of this Plan, water efficiency practices are considered a form of drought mitigation. A community that understands the value of water and actively uses water responsibly is more likely to respond to the need to achieve additional water savings during a period of shortage. Furthermore, supply-side measures that support the efficient delivery of water supplies, reduces water waste and places less stress on the need for additional supplies during a shortage.

DRAFT

Water Shortage Monitoring, Declaration, and Response

A collection of climate and hydrologic indicators such as snowpack, streamflow, and climate forecasts are collected by Erie on a regular basis to assess water supply conditions. This is particularly important in the spring just prior to snowmelt and runoff. Erie also relies on the Colorado Big Thompson (CBT) quota Northern Colorado Water Conservancy District (Northern Water) typically announces in early spring, which plays a strong role in how much wet water Erie will receive for the year. Other information including a drought index, calculated as the ratio of Erie's projected annual water demand to supply, information on local water providers' actions if a drought is pending, and water supply infrastructure considerations all help inform Erie's decision on whether to declare a drought.

Erie's response to water shortages is based on the four stages shown in Figure E-2 below. Each stage increases in severity as the index decreases[1], calling for a higher water use reduction targets (more water to be saved) with each elevating stages. The total reduction target entails the water savings the Town is to achieve on an annual basis while the irrigation target focuses on outdoor water savings to be achieved during the irrigation season. Stages 1 and 2 (Voluntary and Watch) generally promote water efficiency and voluntary reductions of water use among all priorities detailed in Figure E-1. However, mandatory water restrictions may be implemented during Stage 2 if necessary, to meet water saving targets. Stage 3 (Severe) triggers mandatory restrictions of outdoor irrigation while Stage 4 (Emergency) may require prohibition of irrigation. Low priority irrigation may also be prohibited under Stage 3 (Severe) if needed to meet targeted water savings.

The water shortage index and other indicators serve as guidelines for a water shortage declaration. Recommendations are to be presented by Erie staff to the Town Board of Trustees (Town Board) who is responsible for making the final decision on whether to declare a shortage and the appropriate stage. Once the Town Board has decided to declare a shortage, the Town will initiate a Community Water Resiliency Campaign to educate the community on the shortage and implement a series of response measures.

Water shortages are not only attributed to drought but can also be caused by natural events such as wildfire or infrastructure failure. This Plan may be used to address prolonged water shortages attributed to drought or other unforeseen circumstances.

Table E-1 below provides a summary of the response measures that may be implemented for each stage. This table will be used as guidance to develop and implement the response effort when a drought or water shortage declaration has been made.

[1] The index represents the ratio of supplies to demands. Additional information on this index is provided in Section 5.

DRAFT

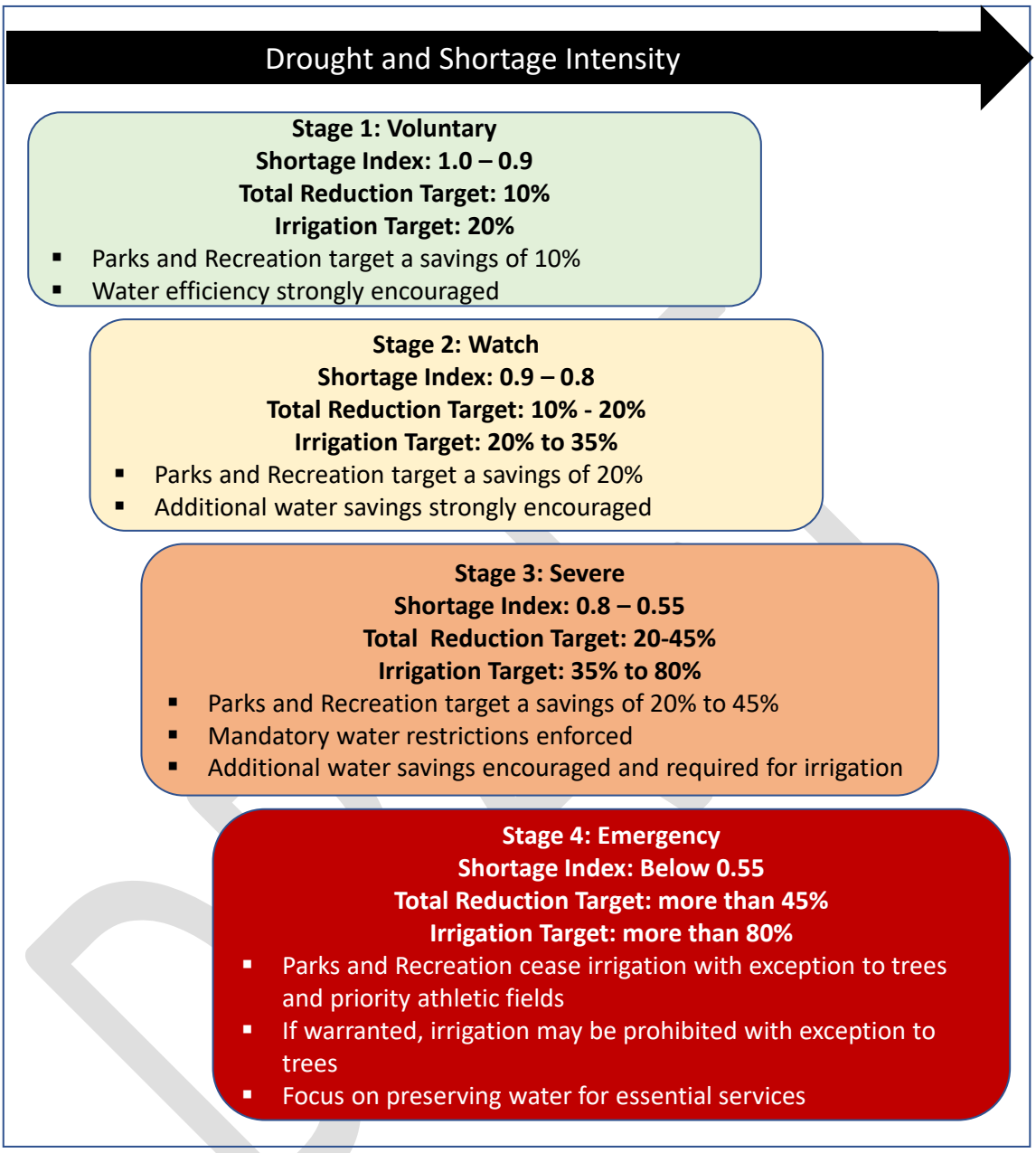


Figure E-3: Drought Stages, Trigger Guidelines, and Demand Reduction Targets

A community that understands the value of water and actively uses water responsibly is more likely to respond to the need to achieve additional water savings during a period of shortage.

Table E-1: Response Measures

Response Measures	Voluntary **Shortage Index: 1.0 to 0.9** **Total Target: 10%** **Irrigation Target: 20%**	Warning **Shortage Index: 0.9 to 0.8** **Total Target: 10% to 20%** **Irrigation Target: 20% to 35%**	Severe **Shortage Index: 0.8 - 0.55** **Total Target: 20% to 45%** **Irrigation Target: 35% to 80%**	Emergency **Shortage Index: Below 0.55** **Total Target: more than 45%** **Irrigation Target: more than 80%**
Supply-Side Measures				
Actions for Implementations that can do Independently				
Seek technical and financial assistance.	n/a	Identify any technical and financial assistance opportunities.	Identify any technical and financial assistance opportunities.	Identify any technical and financial assistance opportunities.
Maximize well project yields.	Optimize well project yields including reuse to preserve shortage reserves in storage.	Optimize well project yields including reuse to preserve shortage reserves in storage.	Optimize well project yields including reuse to preserve shortage reserves in storage.	Optimize well project yields including reuse to preserve shortage reserves in storage.
Maximize storage.	Ensure a 20% CBT carryover.	Ensure a 20% CBT carryover and consider maximizing storage in Erie, Thomas and the NWRF Storage as additional supply reserve.	Ensure a 20% CBT carryover and maximize storage in Erie, Thomas and the NWRF Storage as additional supply reserve to the extent possible.	Maximize CBT carryover and storage in Erie, Thomas and the NWRF Storage as additional supply reserve to the extent possible.
Modify operations/infrastructure to optimize efficiency of water supply distribution system and for distribution of new supplies, when applicable.	Modify operations/infrastructure to optimize efficiency of water supply distribution system and for distribution of new supplies, when applicable (e.g., use of Erie's mobile interconnect).	Modify operations/infrastructure to optimize efficiency of water supply distribution system and for distribution of new supplies, when applicable (e.g., use of Erie's mobile interconnect).	Modify operations/infrastructure to optimize efficiency of water supply distribution system and for distribution of new supplies, when applicable (e.g., use of Erie's mobile interconnect).	Modify operations/infrastructure to optimize efficiency of water supply distribution system and for distribution of new supplies, when applicable (e.g., use of Erie's mobile interconnect).
Actions for Implementation that Require Partnerships and Agreements				
Acquire additional short-term water supplies during shortages.	Consider additional short-term water supplies during shortage, if needed.[2]	Acquire additional short-term water supplies, if needed.[1]	Acquire additional short-term water supplies, if available. [1]	Acquire additional short-term water supplies, if available. [1]

[2] Additional supply options may include leasing arrangements from farmers and other municipalities, leasing excess CBT supplies (if available), exchanging non-potable reuse for potable supplies, leasing of groundwater pumped by other entities, and developing water transfers/trades with other entities to increase yield. In extreme circumstances, additional supplies could also entail a water hauling program or use of dead storage in Erie's local reservoir.

DRAFT

Response Measures	Voluntary **Shortage Index: 1.0 to 0.9** **Total Target: 10%** **Irrigation Target: 20%**	Warning **Shortage Index: 0.9 to 0.8** **Total Target: 10% to 20%** **Irrigation Target: 20% to 35%**	Severe **Shortage Index: 0.8 - 0.55** **Total Target: 20% to 45%** **Irrigation Target: 35% to 80%**	Emergency **Shortage Index: Below 0.55** **Total Target: more than 45%** **Irrigation Target: more than 80%**
Coordinate and collaborate with others to create beneficial opportunities for Erie and the region.	Coordinate and collaborate with other entities and water users on strategies that benefit Erie and the region.[3]	Coordinate and collaborate with other entities and water users on strategies that benefit Erie and the region.[2]	Coordinate and collaborate with other entities and water users on strategies that benefit Erie and the region.[2]	Coordinate and collaborate with other entities and water users on strategies that benefit Erie and the region.[2]
Utilize existing emergency interconnects with Lafayette and Left Hand Water District, if needed.	If needed, coordinate with Lafayette and Left Hand Water District to deliver additional supplies to Erie through its existing interconnects with these providers.	If needed, coordinate with Lafayette and Left Hand Water District to deliver additional supplies to Erie through its existing interconnects with these providers.	If needed, coordinate with Lafayette and Left Hand Water District to deliver additional supplies to Erie through its existing interconnects with these providers.	If needed, coordinate with Lafayette and Left Hand Water District to deliver additional supplies to Erie through its existing interconnects with these providers.
Actions for Consideration				
Use reuse water to preserve key landscape features under severe and emergency droughts.	n/a	n/a	Use reuse water to preserve key landscape features. (In areas not accessible by the non-potable distribution system, hauling of reuse water to key features may be needed).	n/a
Extend water supplies by using water of lesser quality than would normally use to meet needs while still meeting drinking water standards.	n/a	n/a	Extend water supplies by using water of lesser quality than would normally use to meet needs while still meeting drinking water standards.[4]	Extend water supplies by using water of lesser quality than would normally use to meet needs while still meeting drinking water standards.[3]
Demand-Side Measures				
TOWN: Active Turf Recreation (Park zones that are heavily used. This includes regular programmed	Target 10% savings relative to historical irrigation.	Target 20% savings relative to historical irrigation.[4]	Target 20% to 35% savings relative to historical irrigation. Maintain athletic fields to level needed to ensure safety.[4]	Watering limited to certain athletic fields. Athletic events may still be held on these fields at a reduced schedule.[4]

[3] This may include entities in the Boulder Creek watershed, Northern Water Partners and potentially a regional water supply program during extreme droughts.

[4] Sources of supply may include ditch water rights that are typically used for non-potable purposes. Erie will mitigate impacts where possible (e.g., blending of multiple sources and increase monitoring).

DRAFT

Response Measures	Voluntary Shortage Index: 1.0 to 0.9 Total Target: 10% Irrigation Target: 20%	Warning Shortage Index: 0.9 to 0.8 Total Target: 10% to 20% Irrigation Target: 20% to 35%	Severe Shortage Index: 0.8 - 0.55 Total Target: 20% to 45% Irrigation Target: 35% to 80%	Emergency Shortage Index: Below 0.55 Total Target: more than 45% Irrigation Target: more than 80%
athletic events and spaces rented by the community).[5]				
TOWN: Passive Turf Recreation (Park zones of moderate use. Includes areas where the community recreates on an informal basis without a programmed schedule).[5]	Target 10% savings relative to historical irrigation.	Target 20% savings relative to historical irrigation.	Target 20% to 45% savings relative to historical irrigation. Irrigate enough to ensure survival.	Watering prohibited.
TOWN: Irrigated Native and Grasses (Parks, medians, and open space zones with little foot traffic). [5]	Target 10% savings relative to historical irrigation.	Target 20% savings relative to historical irrigation.	Target 20% to 45% savings relative to historical irrigation. Irrigation may be prohibited in certain areas. Decisions on what areas to maintain vs irrigate will be based on how to best minimize asset losses.	Watering prohibited.
TOWN: Town Facilities (Turf grass on Town facilities). [5]	Target 10% savings relative to historical irrigation.	Target 20% savings relative to historical irrigation.	Target 20% to 45% savings relative to historical irrigation. Irrigate enough to ensure survival. Signs may be posted on dormant grass to educate community that the grass is dormant and can be revived once restrictions are over.	Watering prohibited.
TOWN: Shrubs and Perennial Plantings (Zones in Parks, Town facilities and medians). [5]	Target 10% savings relative to historical irrigation.	Target 20% savings relative to historical irrigation.	Target 20% to 30% savings relative to historical irrigation. Maintain irrigation to ensure survival.	Watering prohibited. Key shrubs may be watered just enough to ensure survival. Sprinkler system prohibited.
TOWN: Annual Plantings.	n/a	n/a	No irrigated annual plantings. Signs may be posted promoting need to save water.	Annual plantings prohibited. Signs may be posted promoting need to save water.

[5] The targeted savings applies to the type of irrigation zone within all parks. There are many site-specific factors that influence the amount of savings that may be achieved at each site (e.g., sun exposure, slope, soils) etc. The percentages here apply to the cumulative total zoned area within all parks. Some areas will achieve greater savings than other areas.

DRAFT

Response Measures	Voluntary **Shortage Index: 1.0 to 0.9** **Total Target: 10%** **Irrigation Target: 20%**	Warning **Shortage Index: 0.9 to 0.8** **Total Target: 10% to 20%** **Irrigation Target: 20% to 35%**	Severe **Shortage Index: 0.8 - 0.55** **Total Target: 20% to 45%** **Irrigation Target: 35% to 80%**	Emergency **Shortage Index: Below 0.55** **Total Target: more than 45%** **Irrigation Target: more than 80%**
TOWN: Hydrants.	n/a	n/a	Reduce frequency of flushing while maintaining water quality.	Reduce frequency of flushing while maintaining water quality.
TOWN: Fleet vehicles (Including police vehicles).	Reduce washing frequency.	Limit washing to once per week.	No washing of fleet vehicles.	No washing of fleet vehicles.
TOWN: Ornamental fountains in parks and splash pad	n/a	Ornamental fountains in parks are turned off and splash pads are turned off between 7 p.m. and 4 p.m. to avoid high evaporation during the day.	Ornamental fountains in parks and splash pads are turned off.	Ornamental fountains in parks and splash pads are turned off.
TOWN: Water efficiency activities that promote savings during a shortage.	Increase public outreach through water efficiency programs. Such programs may include: EyeOnWater, Green Business & HOA Certification program, Slow the Flow sprinkler consultations, smart irrigation control clock and automated rain sensor discounts and direct installs, turf replacement program (if applicable), indoor water audits, and working with high water users.	Increase public outreach through water efficiency programs. Such programs may include: EyeOnWater, Green Business & HOA Certification program, Slow the Flow sprinkler consultations, smart irrigation control clock and automated rain sensor discounts and direct installs, turf replacement program (if applicable), indoor water audits, and working with high water users.	Increase public outreach through water efficiency programs. Such program may include: EyeOnWater, Green Business & HOA Certification program, Slow the Flow sprinkler consultations, smart irrigation control clock and automated rain sensor discounts and direct installs, turf replacement program (if applicable), indoor water audits, and working with high water users.	Increase public outreach through water efficiency programs. Such programs may include: indoor water audit and working with high water users.
TOWN: Drought surcharge.	n/a	n/a	Consider drought surcharge.	Consider drought surcharge.
TOWN, RESIDENTIAL and COMMERCIAL: Trees (All irrigated trees within Erie's service area).	Voluntary Promote and apply best management practices to ensure efficient irrigation.	Voluntary Limit watering to hand-held hose or low-volume non spray on any day from 9 p.m. to 5 a.m.	Mandatory In areas where not irrigated with sprinkler system, limit watering to hand-held hose or low volume non spray two days a week from 9 p.m. to 5 a.m..	Mandatory Limit watering to just enough to ensure survival. Use hand-held hose or low-volume non spray from 8 p.m. to 8 a.m.

DRAFT

Response Measures	Voluntary **Shortage Index: 1.0 to 0.9** **Total Target: 10%** **Irrigation Target: 20%**	Warning **Shortage Index: 0.9 to 0.8** **Total Target: 10% to 20%** **Irrigation Target: 20% to 35%**	Severe **Shortage Index: 0.8 - 0.55** **Total Target: 20% to 45%** **Irrigation Target: 35% to 80%**	Emergency **Shortage Index: Below 0.55** **Total Target: more than 45%** **Irrigation Target: more than 80%**
TOWN, RESIDENTIAL and COMMERCIAL: Indoor Use.	n/a	Voluntary Public campaign encourages reductions.	Voluntary Public campaign encourages reductions.	Mandatory Public campaign encourages reductions. Fines/flow restrictors may be applied to abnormally high users.
TOWN AND RESIDENTIAL: High residential water users.	Provide outreach to high water users (billing at Tier 3 and 4) on how to reduce water use. Encourage free water audits.	Provide outreach to high water users (billing at Tier 3 and 4) on how to reduce water use. Encourage free water audits.	Provide outreach to high water users (billing at Tier 3 and 4) on how to reduce water use. Require free water audit and implementation of recommendations if water use remains at Tier 3 or 4 levels.	If applicable, provide outreach to high water users (billing at Tier 3 and 4) on how to reduce water use. Require free water audits and implementation of recommendations if water use remains at Tier 3 or 4 levels.
TOWN and COMMERCIAL: Large public irrigators (Colorado National Golf Club, school districts, landscapers).	Coordinate with large public water users to optimize water efficiency and promote voluntary restrictions.	Coordinate with large public water users to optimize water efficiency and promote voluntary restrictions.	Coordinate with large public water users to optimize water efficiency and discuss impacts associated with mandatory restrictions.	If applicable, coordinate with large public water users to optimize water efficiency and discuss impacts associated with mandatory restrictions.
RESIDENTIAL & COMMERCIAL: Turf grass (residents, businesses, HOAs, and schools). .[6]	Voluntary Eliminate waste with additional water savings encouraged. Watering should not exceed three times per week and only occur from 8 p.m. to 8 a.m. per Municipal Code. Exceptions to timing may be made for those with large areas of irrigated turf or not on automated systems.	Voluntary Eliminate waste. Additional water savings encouraged. Watering should not exceed two times per week and only occur from 8 p.m. to 8 a.m. per Water Waste code. Exceptions to timing may be made for those with large areas of irrigated turf or not on automated systems.	Mandatory Eliminate waste and additional savings required. Watering should not exceed two times per week from 8 p.m. to 8 a.m. per Water Waste code. Exceptions to timing may be made for those with large areas of irrigated turf or not on automated systems.	Mandatory to Prohibit If allowed, watering should not exceed once per week from 8 p.m. to 8 a.m. per Water Waste code. Exceptions to timing may be made for those with large areas of irrigated turf or not on automated systems.

[6] In large areas (e.g., HOA open space) where irrigation of the entire area cannot be accomplished within the designated time, signs will be provided by the Town that includes messaging to inform the community of why watering is occurring outside of the designated window.

DRAFT

Response Measures	Voluntary **Shortage Index: 1.0 to 0.9** **Total Target: 10%** **Irrigation Target: 20%**	Warning **Shortage Index: 0.9 to 0.8** **Total Target: 10% to 20%** **Irrigation Target: 20% to 35%**	Severe **Shortage Index: 0.8 - 0.55** **Total Target: 20% to 45%** **Irrigation Target: 35% to 80%**	Emergency **Shortage Index: Below 0.55** **Total Target: more than 45%** **Irrigation Target: more than 80%**
RESIDENTIAL & COMMERCIAL: Shrubs, perennials, vegetable gardens.	Voluntary Apply best management practices to water efficiently.	Voluntary Limit watering to hand-held hose or low-volume non spray on any day from 8 p.m. to 8 a.m..	Mandatory Limit watering to hand-held hose or low volume non spray two days a week from 8 p.m. to 8 a.m. Special cases may be made for vegetable gardens.	Mandatory to Prohibit If allowed limit watering to hand-held hose or low volume non spray two days a week from 8 p.m. to 8 a.m. Special cases may be made for vegetable gardens.
RESIDENTIAL & COMMERCIAL: New seed and sod.	n/a	n/a	Mandatory Residents may apply for waiver to irrigate every day to establish vegetation for two-week period. Resident will receive signage from Town to post in front lawn explaining why exempted from restrictions.	Mandatory to Prohibit If allowed, residents may apply for waiver to irrigate every day to establish vegetation for two-week period. Resident will receive signage from Town to post in front lawn explaining why exempted from restrictions.
RESIDENTIAL & COMMERCIAL: New plantings (trees, shrubs, perennials).	n/a	n/a	Mandatory Limit watering to hand-held hose or low-volume non spray from 8 p.m. to 8 a.m.	Mandatory to Prohibit If allowed limit watering to hand-held hose or low-volume non spray from 8 p.m. to 8 a.m. Consider prohibiting new plantings if irrigation throughout community is prohibited. Special cases may be made for establishment of low water use vegetation.
RESIDENTIAL & COMMERCIAL: Street, sidewalk, driveway, house/auxiliary structure cleaning and misting devices.	Voluntary Reduce/eliminate use of water for cleaning. Alternative cleaning methods encouraged.	Voluntary Reduce/eliminate use of water for cleaning. Alternative cleaning methods encouraged.	Prohibit Use of water for outdoor cleaning purposes is prohibited.	Prohibit Use of water for outdoor cleaning purposes is prohibited.
RESIDENTIAL & COMMERCIAL: Ornamental fountains.	n/a	Voluntary Shut off ornamental fountains.	Mandatory Shut off ornamental fountains. Special cases may be made for ponds containing fish or	Mandatory Shut off ornamental fountains. Special cases may be made for ponds containing fish or

DRAFT

Response Measures	Voluntary **Shortage Index: 1.0 to 0.9** **Total Target: 10%** **Irrigation Target: 20%**	Warning **Shortage Index: 0.9 to 0.8** **Total Target: 10% to 20%** **Irrigation Target: 20% to 35%**	Severe **Shortage Index: 0.8 - 0.55** **Total Target: 20% to 45%** **Irrigation Target: 35% to 80%**	Emergency **Shortage Index: Below 0.55** **Total Target: more than 45%** **Irrigation Target: more than 80%**
			used for food production purposes.	used for food production purposes.
RESIDENTIAL & COMMERCIAL: Private and public pools and hot tubs.	Voluntary Encourage use of covers & minimize filling.	Voluntary Encourage use of covers & minimize filling.	Voluntary Encourage use of covers & minimize filling.	Mandatory Require use of covers and minimize filling. Public works may coordinate filling events of public pools and hot tubs.
RESIDENTIAL & COMMERCIAL: Private car washing.	n/a	Encourage use of commercial car washes that use recycled water.	Consider prohibiting private car washing. Encourage use of commercial car washes that use recycled water.	Prohibit private car washing.
COMMERCIAL: Car washes without recycling.	Voluntary Promote best management practices to save water.	Voluntary Promote best management practices to save water.	Mandatory Must meet a standard of 40 gallons or less per vehicle.	Prohibit operations.
COMMERCIAL: Car washes with recycled water.	Voluntary Promote best management practices to save water.	Voluntary Promote best management practices to save water.	Voluntary Promote best management practices to save water.	Town review facilities to ensure water is being conserved at optimum levels. Modifications to operations may be required.
COMMERCIAL: Golf courses.	Voluntary Efficient irrigation required Limit twice per week.	Mandatory Efficient irrigation required Limit once per week.	Watering prohibited Exception: Trees may be hand watered.	Watering prohibited All outdoor vegetation.
COMMERCIAL: Construction water.	Encourage efficient use of construction water.	Encourage efficient use of construction water.	Encourage efficient use of construction water.	Town may review use of construction water on a site-by-site basis to ensure water is being used at optimum efficiency.

DRAFT

Table of Contents

Background 1

1.1 Plan Purpose and Development 1

1.2 Overview of Erie's Water System and Service Area 2

1.3 Erie's Definition of Drought 5

2.0 Objectives and Operating Principles 8

2.1 Objectives 8

2.2 Operating Principles 8

2.3 Plan Jurisdiction and Coordination with Other Planning Efforts 10

3.0 Drought Impact and Vulnerability Assessment 12

3.1 Drought and CBT Supplies 12

3.2 Erie and History of Drought 13

3.3 Water Supply Reliability Planning and Vulnerabilities 15

4.0 Drought and Water Shortage Monitoring 18

4.1 Drought and Water Shortage Indicators 18

4.2 Monitoring 19

5.0 Shortage Stages, Trigger Points, and Response Targets 21

6.0 Drought Mitigation and Response Strategies 24

6.1 Drought Mitigation Measures and Action Plan 24

6.2 Response Strategies 27

6.3 Community Water Resiliency Campaign 29

7.0 Drought and Shortage Response 32

7.1 Voluntary Stage 32

7.2 Watch Stage 35

7.3 Severe Stage 38

7.4 Emergency Stage 42

8.0 Operational and Administrative Framework of Response 46

8.1 Drought and Shortage Declaration Process 46

8.2 Implementation of the Drought and Shortage Response 46

8.3 Enforcement of the Drought and Shortage Response 48

DRAFT

8.4 Revenue Implications and a Financial Budgeting Plan 50
8.5 Monitoring of Response 50
9.0 Plan Adoption and Updates 52
9.1 Community Engagement and Public Review Process 52
9.2 Plan Adoption or Promulgation 52
9.3 Periodic Review and Update 52
References 53

Appendix A – Park Designations
Appendix B – Summary of Public Comments
Appendix C – Resolution Adopting Plan

DRAFT

Background

1.1 Plan Purpose and Development

The Town of Erie has experienced significant development since the 1990s and is developing into a prosperous northern Colorado municipality. A key component to Erie's water management strategy is maintaining a long-term reliable and sustainable water supply as the Town continues to grow. Paramount to this effort is acquiring the water necessary to meet growing water demands, managing water efficiently and ensuring resiliency in times of drought or other water shortages. This Water Shortage and Drought Management Plan provides the Town guidance necessary to ensure that such shortages are addressed in a proactive manner, minimizing long-term impacts, and ensuring that sufficient water is available for the health, safety, and community livelihood during water shortages.

This Plan is an update to the Erie's 2015 Drought Management Plan. It was developed in accordance with the CWCB's drought management planning guidelines and is the Town's second State-approved Plan. Since 2015, Erie has experienced significant growth and changes to Town staff including hiring a Sustainability & Water Conservation Specialist focused on Town sustainability and water efficiency as well as a full-time Water Conservation Technician. This Plan capitalizes on the new ideas and experience offered by additional staff. The Plan was also developed in parallel with Erie's Water Efficiency Plan 2021 update. Updating each plan in tandem provided an opportunity for Erie to streamline the development processes where appropriate, while also ensuring that the plans were integrated in a manner that optimizes both Erie's water efficiency program and Erie's approach to drought mitigation and response.

A series of five workshops were held both in-person and remotely (due to the COVID-19 pandemic) among a Planning Team throughout the development of both documents. The Planning Team, shown in Table 1, was comprised of representatives from a variety of Town services that could be impacted by a shortage. During the Plan development, the team members addressed potential public concerns based on their professional experience and provided valuable input. They also reviewed the draft Plan prior to distribution to the community for comment. Additionally, a remote meeting was held with Northern Water to discuss water supply reliability of the two major water sources of water supply for Erie; Colorado Big Thompson (CBT) and Windy Gap. Northern Water and the Town of Erie also discussed drought impacts including the 2020 wildfires and coordination during future drought mitigation and response efforts. In addition, a public and community engagement effort was launched to ensure that the Plan incorporated community values and priorities. Public engagement is discussed in further detail in Section 9.1.

Table 1: Drought Planning Team

Member	Title	Role and Contribution
Deborah Bachelder AICP	Planning Manager/Deputy Director	Provided input from a planning perspective and Town's upcoming planning efforts.
Phil Brink	Representative of the Erie Open Space and Trails Advisory Board (not a part of Erie's staff)	Provided input as a community member.
Bruce Chameroy	Water Division Manager	Provide data and input on WTF production and system operations.
Todd Fessenden	Public Works Director	Provided input as the Public Works Director.

DRAFT

Member	Title	Role and Contribution
Misty Hall	Storm Water Coordinator	Reviewed Plan to ensure that it is compatible with storm water management efforts.
Patrick Hammer	Park and Recreation Director	Provided input on Parks current and future efforts related to irrigation and demand management.
Tyler Kesler	Sustainability & Water Conservation Specialist	Managed the project, coordinated data acquisition, and provided input from a sustainability perspective.
Jody Lambert	Operations & Maintenance Division Manager	Provided input from an operational perspective.
Amber Luttrell	Communications & Marketing Manager	Provided input on the public drought campaign and Town' interface with the community.
Mike McGill	Parks & Open Space Division Manager	Provided input on Parks current and future efforts related to irrigation and demand management.
Wendi Palmer	Civil Engineer	Provided technical expertise based on her long tenure with the Town.
David Pasic	Town Engineer	Provided input on from the engineering and future development perspective.
Ben Pratt	Economic Development Director	Provided input on drought response related to economic vitality and the commercial sector.
Fred Starr	Planning & Development Director	Provided input from a planning perspective and Town's upcoming planning efforts.
Lucas Workman	Economic Development Specialist	Provided input on drought response related to economic vitality and the commercial sector.

1.2 Overview of Erie's Water System and Service Area

Erie provides water and wastewater services for residential, commercial, and other municipal needs. The service area consists of approximately 50 square miles bordered generally to the east by Interstate 25, to the west by Highway 287, to the north by Niwot Road, and to the south by Highway 7. Erie projects that it will serve approximately 50,020 people by 2035 assuming a 4% average growth rate. Approximately two thirds of Erie's planning area could ultimately be developed for residential and commercial uses with the remainder of the planning area consisting of open space and other regional facilities.

Water Demands and Customer Profile

Erie's total annual water use has increased with its demand as the Town continues to develop and its population increases; this is shown in Figure 1 below. The total annual water use divided into treated water, ditch water for non-potable irrigation, and total reuse. Treated water tends to generally increase with population whereas ditch water and reuse water fluctuate on an annual basis. This trend is attributed to a combination of factors including weather, management of supplies, and availability of ditch supplies.

DRAFT

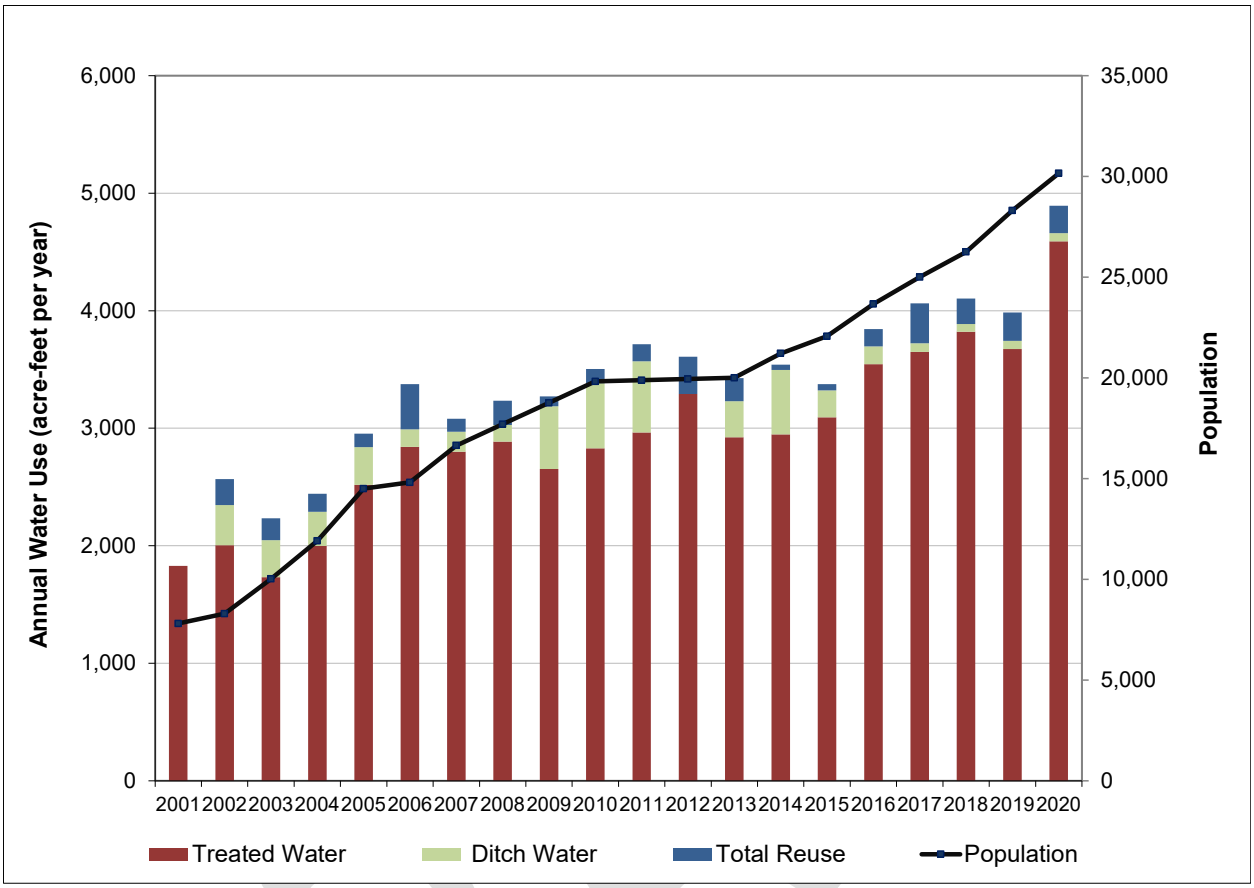


Figure 1: Historical Water Demands and Population[7]

Figure 2 below shows the average annual treated water use by customer sector from 2015 to 2019. Residential Single-family homes comprise nearly three quarters of demand followed by irrigation meters and water for construction. Section 3.1 in Erie's 2021 Water Efficiency Plan provides descriptions for each of the customer sectors.

7 Data on ditch water deliveries in 2001 is not available due to (can we add a note as to why we think it's not available or no?).

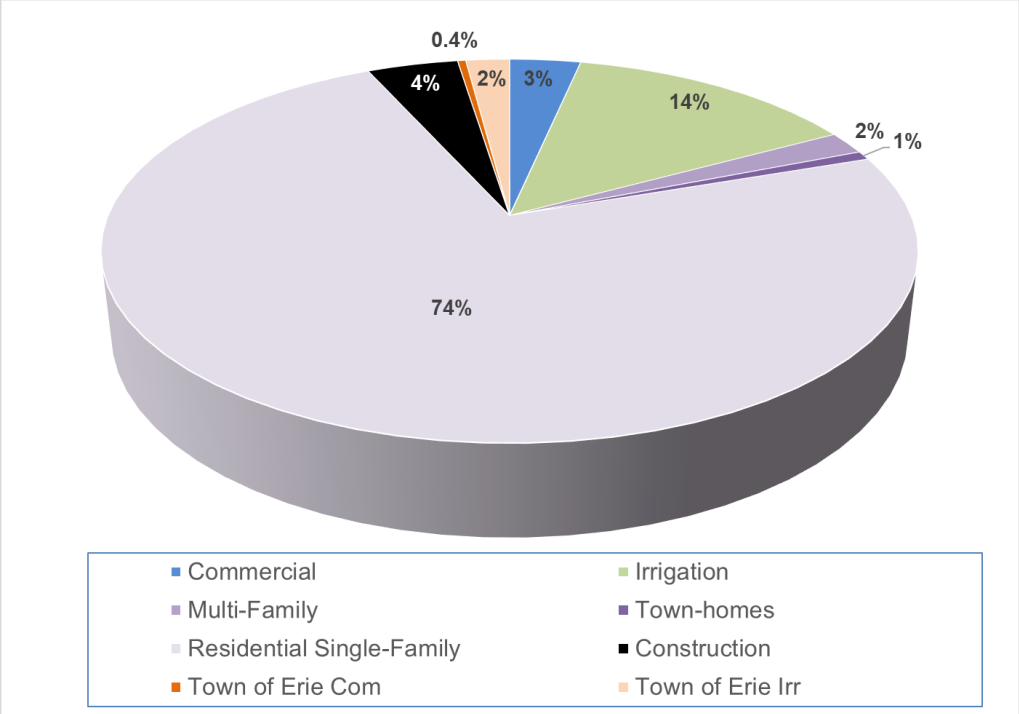


Figure 2: Average Customer Water Use by Sectors (2015-2020)

Water Supply

Erie obtains water from a variety of surface water sources. Most of Erie's supply is from the CBT and Windy Gap supply projects, which divert from the Colorado River Basin.



The CBT and Windy Gap projects are operated by Northern Water and provide water supplies for municipal and agricultural use in northeast Colorado.

The CBT project consists of 11 reservoirs on the west and east slopes with a total reservoir storage capacity of approximately 1,000,000 acre-feet (AF = 1 acre, 1 foot deep), 35 miles of tunnels, 95 miles of canals, 7 hydroelectric power plants and 700 miles of transmission facilities. Each April Northern Water's Board sets a CBT project quota which quantifies the amount of CBT water available to allottees each year.

The Windy Gap Project includes a diversion dam on the Colorado River, a 445-acre-foot reservoir, a pumping plant, and a six-mile pipeline to Lake Granby. Windy Gap water supplies are pumped and stored in Lake Granby before delivery to municipal water users through CBT's East Slope distribution system.

As a standard operational practice, Erie utilizes Northern Water's CBT carryover program, which allows Erie to store up to 20% of its annual CBT allotment in CBT project storage from one year to the next. This carryover storage serves as a drought reserve if drought conditions occur in the following year. Erie's locally derived water supplies consist of direct flow and storage rights diverted from South Boulder Creek and Coal Creek. Storage rights are diverted into Erie and Thomas reservoirs for potable and non-potable use.

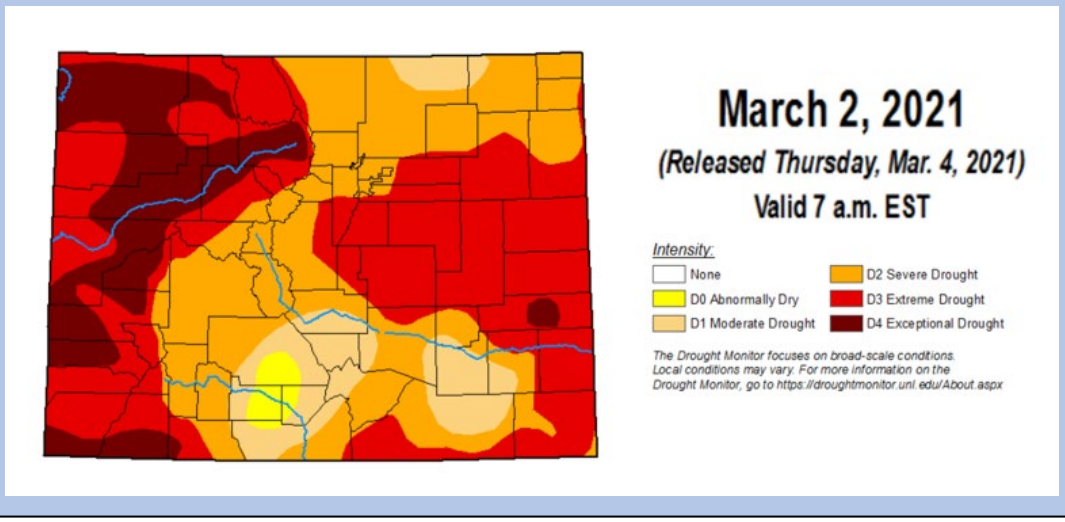
Erie's CBT, Windy Gap, and local water supplies are treated at the Lee Morgan Water Treatment Facility (WTF) for potable use. Return flows derived from Erie's first use of its Windy Gap water are legally reusable and Erie reuses its Windy Gap return flows for outdoor irrigation purposes. Wastewater is currently treated at the North Water Reclamation Facility (NWRF) and is either stored in a 1,000 AF reservoir adjacent to the NWRF (name of reservoir is "NWRF Storage") for non-potable reuse or discharged into Coal Creek. Reuse and untreated ditch water may also be stored in a raw water pond adjacent to the Erie Commons development. Erie also has treated water interconnections with the Left-Hand Water District and the City of Lafayette for emergency purposes. Figure 3 below shows Erie's the general location of Erie's water supplies and service area.

1.3 Erie's Definition of Drought

Drought may be generally defined as "a period of abnormally dry weather sufficiently long enough to cause a serious hydrological imbalance."[1] Meteorologists describe drought as a span of time when the actual supply of moisture for a given location is consistently less than normally expected. The magnitude of an associated water shortage depends on the severity, geographic extent, and duration of the drought. While droughts do not occur at regular predictable intervals, they are inevitable and in Colorado, droughts are historical natural occurring events.

Erie defines drought within the context of its system and this Plan as periods when there is a lack of precipitation and so there is an insufficiency in available water supplies to meet current or future customer demand. The magnitude of water shortage depends on the severity and duration of the drought. Multi-year droughts could have a significant impact on CBT storage and consequently impact the amount

Most of Colorado was in extreme to exceptional drought conditions during the development of this Plan. This is depicted in the Drought Monitor map below.



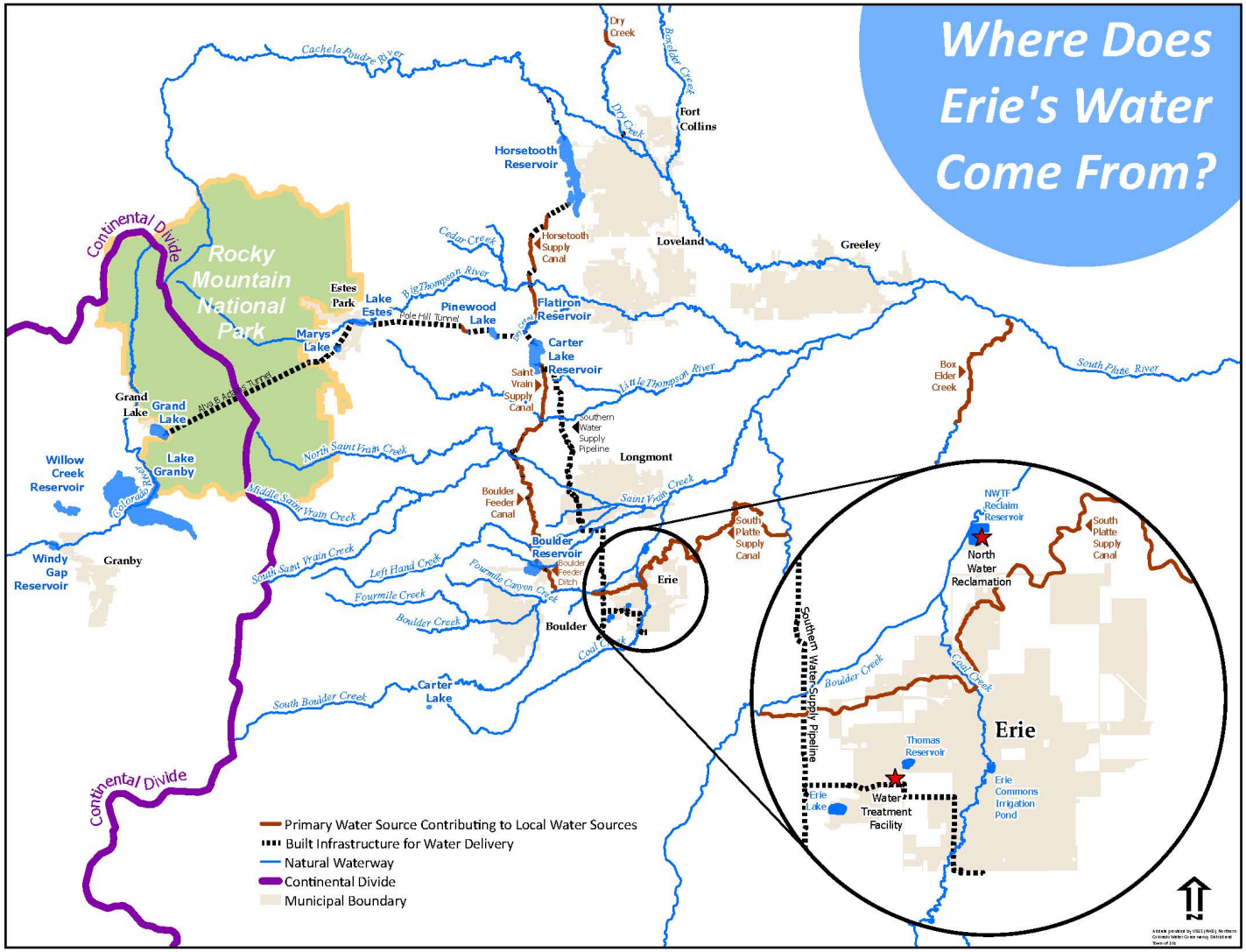


Figure 3: Erie's Water Supplies and Service Area

project water available to Erie. Single-year droughts could significantly reduce Erie's Windy Gap supplies, which would also reduce Erie's reuse supply. In addition to CBT and Windy Gap supplies, drought can reduce Erie's ditch and reservoir supplies which decreases the Town's water supply redundancy.

It is important to note that drought impacts Erie differently than from its surrounding municipalities on the Front Range. Each water provider has a unique water supply portfolio and infrastructure system that "behaves" differently, producing differing yields of water in the face of drought. While Erie will continue to grow and the additional acquisition of additional supplies is necessary for long-term sustainability, Erie's water supply portfolio is secure at the time of this Plan development. Erie will closely monitor drought and water shortage conditions among other local providers to inform how the Town will respond to a regional drought. This is discussed in greater detail throughout the Plan.

It is also important to note that water supply shortages and drought are different situations that requires similar but individual response strategies. Water supply shortages may occur during drought or could be caused by other factors such as the failure of a key water distribution pipeline or facility. During a shortage, Erie is not able to maintain storage at adequate levels while also meeting community water demands. Strategies are needed to maintain supplies while also lowering community demands.



2.0 Objectives and Operating Principles

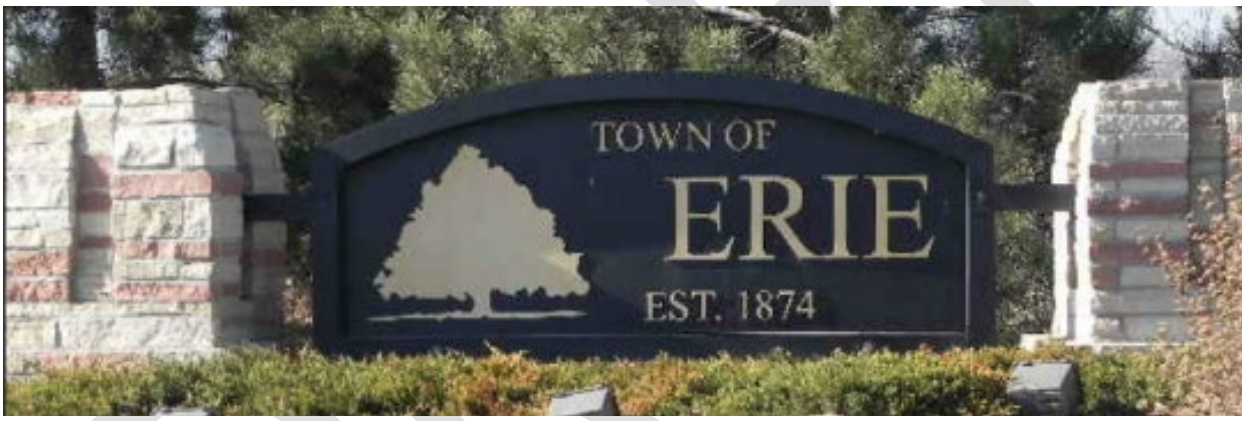
2.1 Objectives

This Plan better prepares Erie for drought and provides an action-based guidance framework to respond to a water shortage when it occurs. The objectives of this Plan are provided below.

Maintain and preserve – Maintain health and safety to the maximum extent possible and preserve the economic vitality, quality of life, environmental and recreational stewardship during a water shortage.

Guidance – Provide data-driven guidance to decision makers and Town staff during a water shortage on how to best proceed while remaining aligned with community values and other planning efforts.

Responsible monitoring and response – Proactively monitor regional drought conditions, to ensure the Town's data-driven response to its water shortage and responsibility contribute to lessening the local and regional stress that large scale droughts can have on the State of Colorado.



2.2 Operating Principles

The following operating principles were developed as means to assist with the development of this Plan and may also be used as a decision-making guidance tool when implementing drought response.

Ensure resiliency – Resiliency to water shortages is paramount to the health and safety, economic vitality, and sustainability. Implementation of mitigation and response efforts are intended to minimize adverse impacts during shortages while ensuring the critical functions (e.g., health and safety) necessary to maintain a resilient community.

Ensure successful coordination and communication – The response to water shortages is an inter-departmental effort. Coordination and communication among Erie staff are critical for implementing successful mitigation and response and in conveying consistent effective messages to the community.

Maintain equity and stewardship – Where possible, efforts should be made to allocate the costs and impacts associated with water use restrictions among all customers in an equitable manner. Adverse impacts to the environmental and recreational attributes of the Town's surrounding land should also be avoided to the extent possible during a shortage.

Capitalize on beneficial opportunities – While drought and water shortages can be challenging to address, Erie will capitalize on leveraging emerging best management practices and on establishing beneficial collaborative relationships among local and regional partners.

Provide flexible framework – Each water shortage is different and therefore flexibility is needed to best address unique circumstances during a drought. The drought response outlined in this Plan is intended to serve as a guiding framework for timely drought response. During a shortage, the response measures listed in Table E-1 and Section 7.0, both of which are able to be adjusted to best meet current conditions.

Priorities

Table 2 below presents Erie's prioritization of customer-use during periods of a water shortage. Customer uses of highest priority consist of services essential to public health and safety such as indoor residential use, hospitals, schools, and firefighting. During periods of shortage, the Town will ensure that these essential needs are met. Depending on the severity and duration of the water shortage, lower priority customer uses may be reduced or prohibited in very severe situations.

Table 2: Water Use Priorities

Priority	Customer Use	Description
1	Health and safety	Indoor use for essential services (e.g., hospitals, schools, etc.); indoor residential, fire fighting
2	Indoor, commercial, high priority irrigation and other commercial/Town uses	Indoor commercial building (businesses, schools)
		Indoor municipal buildings (Erie's recreation center including indoor pool)
		Construction water
		Commercial car washing
		High priority irrigation (golf course, trees, athletic fields with scheduled events and areas that can be rented experiencing a lot of use)
		Swimming pools
		Hydrant flushing
3	Medium to low priority irrigation	Residential irrigation
		Commercial irrigation
		HOA and recreation space irrigation
		Passive turf parks and public facilities
		HOA landscaping spaces
		Outdoor municipal facilities irrigation (e.g., Town Hall)

DRAFT

2.3 Plan Jurisdiction and Coordination with Other Planning Efforts

Drought vs Water Shortage

Water shortages are not only attributed to drought but can also be caused by natural events such as wildfire or infrastructure failure(s). Capital infrastructure improvements and operations and maintenance (O&M) procedures that are not properly planned for can cause shortages or exacerbate an existing shortage while in drought. This Plan may be used to address prolonged water shortages attributed to drought or other unforeseen circumstances. Acute short-term water shortages, such as a temporary break in a water main feeding a local neighborhood would activate an emergency response.

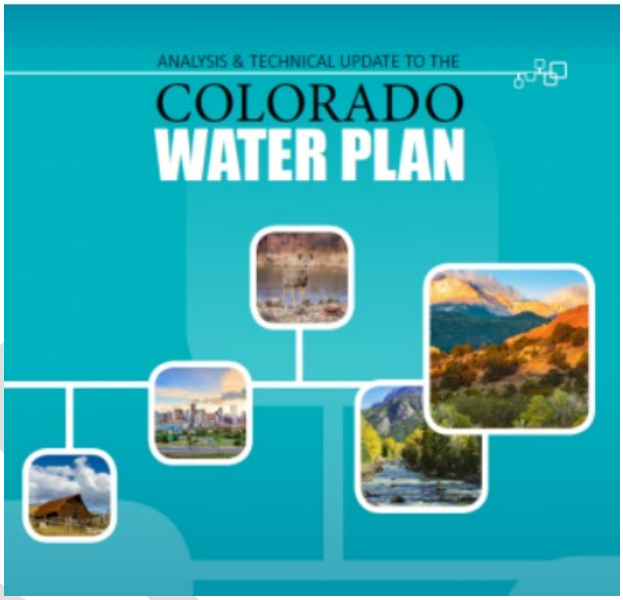
Service Area

This Plan directly applies to Erie's water customers. However, there are residences and entities within Erie's service area that use well water or alternative sources such as water from Left Hand Water District. This can result in some confusion when water restrictions are being enforced. In these cases, outreach and signs on lawns that are being irrigated with alternative water sources may be needed to inform the public that these water users are exempt from Erie's water restrictions.



Coordination with Other Plans

The Plan will be implemented in coordination with other local and regional planning efforts. These plans in include the following:



- 2021 Water Efficiency Plan
- 2019 Sustainability Master Plan
- 2015 Comprehensive Plan
- 2019 Water Master Plan Update
- 2020 Wastewater Utility Plan Update
- 2013 Source Water Protection Plan
- 2016 Parks and Recreation Open Space Master Plan
- 2016 Boulder County Natural Hazard Mitigation Plan
- 2015 Weld County Hazard Mitigation Plan
- Colorado Water Activation –Colorado Water and Wastewater Agency Response Network
- Colorado Drought Mitigation and Response Plan[8]
- South Platte Basin Implementation Plan
- Colorado Water Plan

[8] This Plan helps inform the State's Drought Plan by providing feedback on local drought vulnerabilities, mitigation, and response efforts.

DRAFT

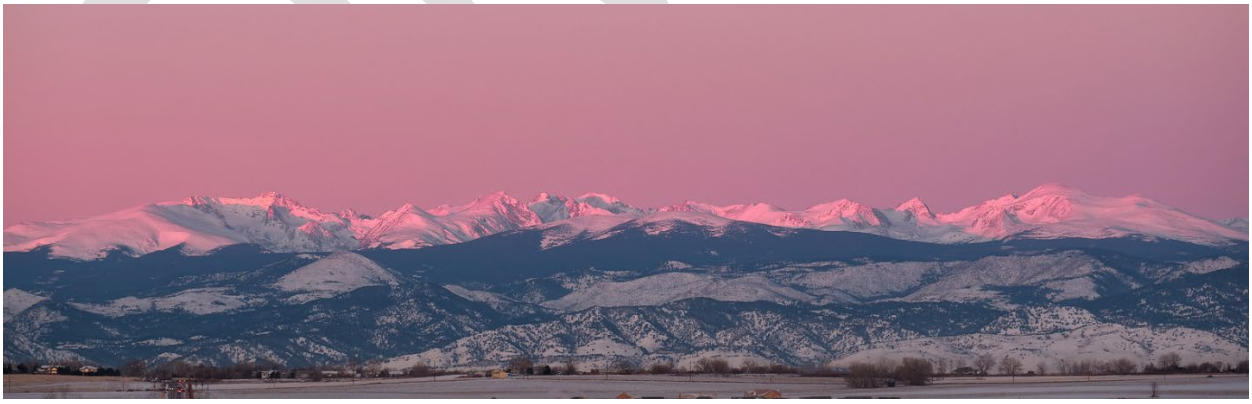
3.0 Drought Impact and Vulnerability Assessment

3.1 Drought and CBT Supplies

Most of Erie's supplies consist of CBT water and therefore, the annual CBT quota that Northern Water's Board determines plays a significant role in how much water is available through this delivery system to Erie. Figure 3 below shows the annual quota since the CBT project came online in the 1950s. Normally, the quota is based on the need for supplemental water (as low as 50%) in wet years because the native supply is plentiful and higher (as high as 100%) in dry years, when the need for supplemental supply is greater. In an average hydrological year, the quota is typically set at 70%. Other factors that can come into play in setting the quota include the amount of water in the CBT system and amount of supply reserves available.

Figure 4 below also shows monthly recorded CBT storage and project reserves.[9] CBT storage was significantly impacted during drought in the 1960s and 1970s. The CBT storage was also significantly impacted during the early 2000s when the dry years in 2000 and 2001 coupled with the drought in 2002 resulted in low storage.[10] While a blizzard in 2003 April provided relief, 2003 was the first time in history that the CBT quota was set at 50%, based on a supply-limited situation. A supply-limited situation occurred a second time in 2013 where the quota was set at 60% due to the drought in 2011/2012.

The CBT project provides supplemental water to users within Northern Water's boundaries. Erie owns 7,381 units out of a total of 310,000 units in the CBT system. The annual yield of each CBT unit is established by Northern Water's Board through an annual quota. The quota represents the annual water delivery volume per unit in AF. The quota has historically ranged from 50% to 100% (a 100% quota delivers 1.0 AF to each CBT unit). The Northern Water Board annually determines the quota through assessing snowpack, predicted runoff, soil moisture conditions, the availability and amount of local native supplies and the amount of water stored in CBT reservoirs. The quota is initially set in November and is then normally revisited in April, after most of the mountain snowpack has accumulated. Occasionally Northern Water's Board has increased the quota in the summer due to major unexpected reductions in supply or increases in demands.



[9] Project reserves consist of surplus unallocated CBT water in storage. These data did not start to be collected until the late 1980s.

[10] The 2002 drought impacted the entire state of Colorado and resulted in streamflow measurements that were the lowest on record for many areas throughout the State. This included the Poudre River where statistical analysis has shown that Water Year 2001-2002 resulted in a water deficit in the order of a 400+ year return period. Source: Pielke, 2005.

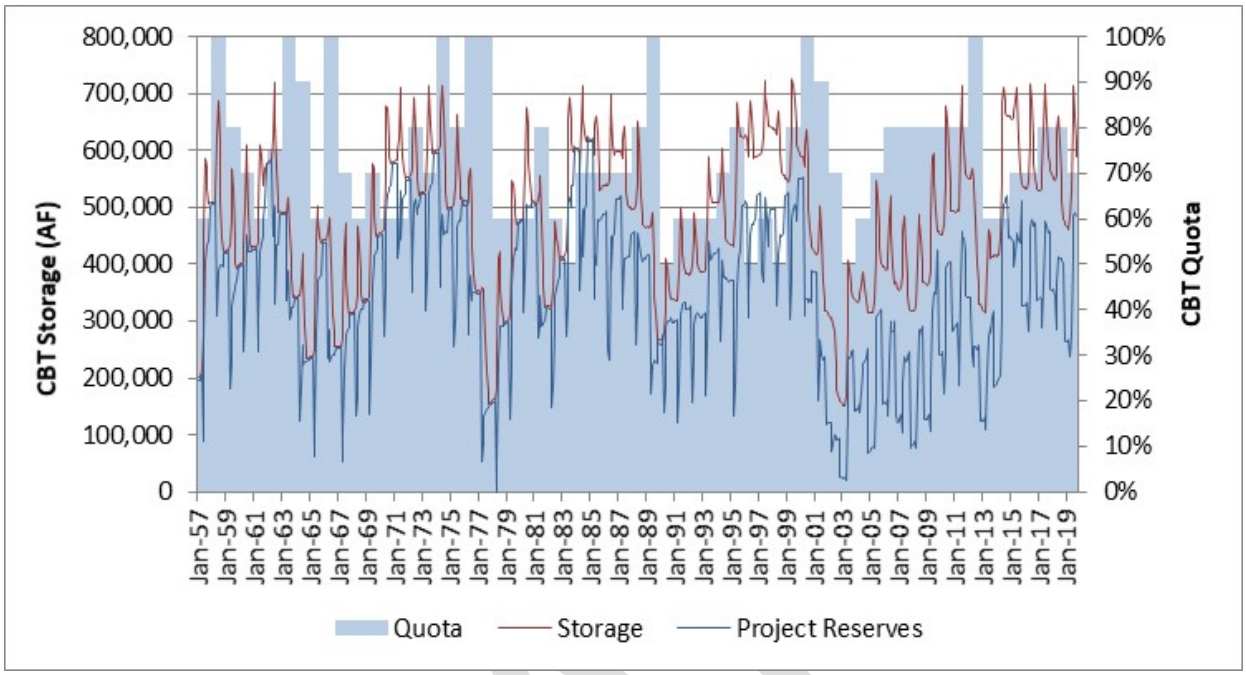


Figure 4: Storage and Quota of the CBT System[11]

Historical drought impacts on the CBT system have been a water quantity issue with little to no impacts related to water quality. However, the dry conditions and higher temperatures in 2020 contributed to the East Troublesome Wildfire in the fall of 2020. This wildfire burned a significant portion of the watersheds feeding both the Windy Gap and CBT systems. Northern Water is assessing the burn severity; potential debris flows and other impacts; and exploring water quality mitigation options for the 2021 spring runoff. Impacts will likely go on for years and will primarily occur on the western slope requiring extensive water quality monitoring and on-the-ground strategies to intercept sediment. Operational changes may also be made during 2021 to avoid water quality impacts to east-slope allottees in the spring and regional water restrictions may be implemented to reduce longer term impacts. This will require significant Northern Water staff time and resources to address the issues. The wildfire has altered the surrounding forest and runoff into the CBT and Windy Gap systems for decades to come.

3.2 Erie and History of Drought

Erie has a long history of addressing drought through mitigation measures, proactive planning, and a shortage response program. For purposes of this Plan, mitigation consists of actions taken prior to a drought or water shortage to ensure optimum water supply reliability and that Erie is prepared for addressing shortages. Responses are actions taken during drought and water shortages to avoid and reduce impacts while best maintaining water storage for future community needs and essential services. Erie has historically

[11] Data provided by Northern Water.

DRAFT

implemented the following mitigation practices, adopted as best management practices, to ensure the Town has sufficient supplies during periods of drought. These are discussed in further detail in Section 6.1.

- Acquisition of water supplies to meet future demands.
- Maximum storage – Ensure a 20% CBT carryover as a drought reserve.
- Maintain emergency interconnects with Lafayette and Left-Hand Water District.
- Installed and maintain bypass around Erie Lake.
- Implement a water efficiency program.



Erie responded to the 2002 drought by implementing a three-tiered water restrictions program. The program included both voluntary and mandatory level of restrictions. Since the 2002 drought, Erie has grown significantly and has acquired additional water supplies to meet the needs of its growing population. Given this dramatic change, impacts Erie experienced during the 2002 drought are not as applicable to Erie's current or future situation and are not included in this Plan. The drought impacts from the 2011/2012 drought are outlined in Table 3 below. Taste and odor complaints were of greatest significance, occupying the most amount of staff time to address. The remaining impacts were moderate to minor in severity requiring some to very little staff time. Mandatory water restrictions were not implemented during this period.

Table 3: Historical Impacts During the 2011/2012 Drought[12]

Severity	Impact
Significant	Taste and Odor
Moderate	Increased cost to parks
	Increase public complaints
	Loss of trees
Minor	Loss of revenues
	Recreational use
	Fish impacts

Minor –very little impact, did not require much staff time.
Moderate – some impact, required more staff time to address.
Significant – key impact, occupied staff time.

[12] These historical impacts were developed by Erie staff in preparation for the 2015 Drought Management Plan and are retained in this document given that institutional memory at the time of the development of the 2015 Plan. An exercise conducted during the development of this 2021 Plan identifying historical drought impacts and future vulnerabilities yielded similar results.

DRAFT

In 2015, Erie updated its drought response program through the development of the 2015 Drought Management Plan. This plan called for a public drought campaign and twenty drought response strategies that were customized to four drought stage levels. General voluntary water restrictions applied to the Stage 1 Voluntary level while mandatory restriction applied to the more severe drought stages.

Erie has not needed to implement a water shortage response since the development of the 2015 Drought Management Plan. However, the COVID pandemic in 2020 brought a unique set of challenges and pattern of water use. Many of Erie's residents worked from home, causing an increase in indoor water use at the onset of the pandemic in early spring. As residents opted to stay home more throughout the year, more attention was given to outdoor landscapes to maintain a "healthy" look. The aforementioned behavioral changes in 2020 coupled with a hotter and drier summer resulted in an increase in treated outdoor water use relative to the average outdoor water use from 2015 through 2019. This increase in municipal water use was observed throughout the Front Range. Water restrictions may be necessary in 2021 if dry conditions persist.

3.3 Water Supply Reliability Planning and Vulnerabilities

Water supply reliability planning is necessary to ensure there are sufficient supplies to meet growing demands in wet, normal, and dry years. The reliability of Erie's water supply during shortages depends on a multitude of factors including the seniority, diversity, and amount of its water rights; storage; rate of customer growth and ability to respond to emergencies. While the Town's current water supply portfolio is diverse with a sufficient amount of water to meet existing needs, additional water supplies are needed to meet future demands. Erie is actively engaged in efforts to firm existing supplies, acquire additional supplies, and increase system redundancy and diversity to further improve resiliency. Such efforts include participating in the Northern Integrated Supply Project (NISP) and Windy Gap firming projects, acquisition of additional ditch water rights, expansion of its non-potable reuse supplies, and development of a horizontal wellfield along Boulder Creek in the northern portion of the service area. Erie also has a water dedication policy requiring new development within the service areas to provide either new water supplies or equivalent cash-in-lieu. Additional information on each of these is provided as drought mitigation strategies in Section 6.1.

> The CBT system has provided a robust reliable water supply to allottees for seven decades with only two years (2003 and 2013) requiring reductions to allottees because of supply limitations. Modeling projections show that the CBT system is capable of meeting supply obligations through a 3-year drought of moderate severity. This duration could be less with droughts of higher severity.
> *–Northern Water staff*

A part of Erie's planning for long-term water supply reliability is considering the uncertainty and risk associated with climate change, a Colorado River compact call, and natural disasters such as wildfire. Numerous statewide and regional climate change studies have been conducted that provide insight into the potential implications of climate change on Erie's supplies.[13] Climate science is indicating that Colorado will likely see more frequent droughts of higher severity and duration than observed in the historical record. A modeling exercise was conducted by Northern Water in support of the City of Fort Collin Utilities' 2019 Water Supply Vulnerability Study. This study suggests that the average annual quota set by Northern Water, which historically has been 70%, may be less if average annual temperatures continue to increase and average annual precipitation remains the same or becomes drier. However, modeling simulations with a wetter future tend to show that

[13] These include the Colorado River Water Availability Study, the Joint Front Range Climate Change Vulnerability Study, Climate Change in Colorado: A Synthesis to Support Water Resources Management and Adaptation and Northern Water's recent modeling efforts in support of Fort Collin Utilities' Water Supply Vulnerability Study.

the average of annual quotas could remain at 70% or be higher with sufficient precipitation to compensate for increasing temperatures.[14]

A Colorado River compact call could also impact Erie's water supply since most of its supplies come from the Colorado River Basin that are junior to the Colorado River Compact of 1922. Under existing Colorado water law, a Colorado River Compact call could curtail water rights junior to the 1922 Colorado River Compact. These curtailed rights would be reserved for use by the lower basin states (California, Nevada and Arizona) and could not be diverted to the Front Range for use. Such a call could be attributed to low supply conditions in the lower basin states, even when the headwaters of the Colorado River (source of CBT and Windy Gap supplies) are not in a drought. The CWCB is currently leading a statewide engagement process bringing together stakeholders and technical experts to assess the diverse array of impacts and types of strategies that could be employed to meeting compact obligations if such a call occurs. Erie plans to continue to monitor new developments and act accordingly.

Erie's water supply may also be vulnerable to large-scale wildfires on the west slope that impact the water quality of CBT and Windy Gap supplies. As discussed in Section 3.1, the impacts associated with the recent East Troublesome Wildfire, which burned a significant portion of the watershed feeding the CBT and Windy Gap systems, are being assessed. Northern Water has a long history of partnering with federal agencies to mitigate wildfire impacts through restoring watershed and forest health.[15] Northern Water is actively working with these partnerships to develop strategies in managing runoff debris and develop forest restoration for years to come. Northern Water is also working diligently to develop operational strategies to minimize impacts. Such strategies may include filling the east slope reservoirs in the CBT system prior to the 2021 spring runoff. This will eliminate/reduce water quality impacts to East Slope facilities and allottees in the 2021 water year.



[14] Source: City of Fort Collins Utilities 2019.

[15] In 2012 the CBT Headwater Partnership was formed between Northern Water, U.S. Bureau of Reclamation and the U.S. Forest Service to pursue and restore forest and watershed health before wildlife fires occur and to develop a plan to protect water supplies after fires occur. Northern Water has also worked with local and federal stakeholders to address algae blooms and other related concerns in Granby Reservoir, Shadow Mountain Reservoir, and Grand Lake.

During a water shortage Erie could experience a variety of future impacts within its service area. These impacts and corresponding level of concern by the Planning Team are listed in Table 4 below. Impacts of greatest concern include potential economic impacts to livelihoods (e.g., landscapers), loss of revenues and Town irrigated assets, environmental and landscaping impacts, and taste and odor issues with drinking water.

Table 4: Potential Future Drought Impacts[16]

Level	Potential Impacts and Vulnerabilities
1	Potential economic impacts to livelihoods (e.g., landscapers)
	Loss of revenues and Town irrigated assets
	Environmental and landscaping impacts
	Taste and odor issues with drinking water
2	Town credibility with public
	Social unrest and increase in public complaints
	Loss of vegetation and secondary effects on public spaces (e.g., safety on ball fields)
	Changes to operations
	Increased salinity downstream resulting in operational issues with wastewater treatment
3	Limit construction water
	Reduced firefighting capacity
	Increased cost to Parks
	Golf course impacts
4	Recreational use
	Fish impacts
	Other community activities
	Wildfires
	Algae blooms
	Oil and gas impacts



[16]The Planning Team developed this list of vulnerabilities and voted on the vulnerabilities of highest concern. The category levels are reflective of this voting exercise.

DRAFT

4.0 Drought and Water Shortage Monitoring

4.1 Drought and Water Shortage Indicators

Monitoring is critical to ensuring a timely and appropriate response to drought. Monitoring includes climatic and hydrologic data along with projected near-term demands and actions others are taking. Figure 5 below shows the indicators that Erie monitors on a routine basis at a watershed, service area, and local level. Indicators that are critically important to assess when managing water supply conditions leading in to the irrigation season include snowpack conditions, near the onset of runoff, and Northern Water's CBT quota announcement in April.

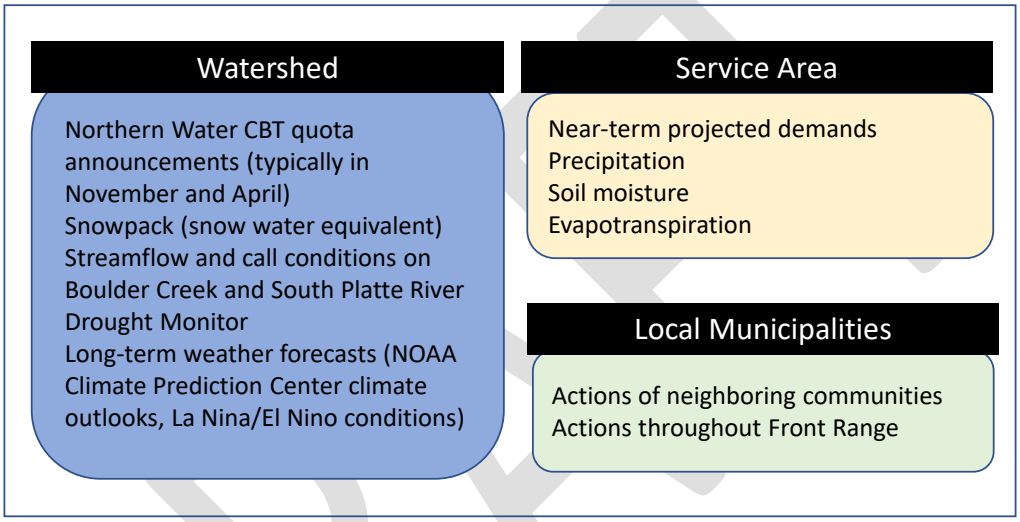


Figure 5: Drought Indicators

In addition to these indicators, a shortage index showing the ratio of Erie's projected water supply to demand, represents the availability of supplies relative demand. This may continue to be used in the long-term as Erie continues to develop and additional supplies and demands will evolve as the community develops. However, the level of water supply relative to demand will be just as applicable when long-term planning.

(1)

$$\text{Index} = \frac{\text{Projected supply}}{\text{Projected demand}}$$

(2)

$$\text{Index} = \frac{\text{CBT quota supply} + \text{CBT carryover from last year} + \text{Projected Windy Gap delivery} + \text{Projected yield of ditch rights} + \text{Projected yield of reservoir rights}}{\text{Historical average first use per capita demand} \times \text{This year's projected population} \times \text{10\% safety factor} + \text{Allowance for full CBT carryover}}$$

Details of the shortage index terms and input data are provided below.

- CBT quota supply: this year's CBT quota times Erie's CBT units (AF).
- CBT carryover from last year's storage in the CBT carryover program minus a 10% shrinkage (AF).
- Projected Windy Gap delivery: estimated yield of Windy Gap water (AF).
- Projected yield of ditch rights: estimated yield of ditch water rights (AF).
- Projected yield of reservoir right: estimated yield of storage water rights minus 10% evaporation (AF).
- Historical average first-use per capita demand: Average annual water treatment plant production (AF) and raw water ditch deliveries for non-potable use divided by last year's projected population (AF).
- This year's projected population.
- Allowance for full CBT carryover (AF): CBT units owned by Erie times 20%.

Erie's water shortage index plays a key role when declaring a water shortage and the corresponding level of response. The water shortage index is most frequently calculated and applied during the spring, normally in April after the spring update to the CBT quota has been announced, to project Erie's annual water supply and demand for the upcoming irrigation season. The index includes all of Erie's first-use supplies (CBT, Windy Gap, ditch water rights and reservoir rights). The projected demands entail last year's per capita demand of Erie's first-use water (this does not include reuse water) multiplied by this year's population and safety factor of 10% plus an allowance for a maximum carry-over of Erie's CBT supplies (number of CBT units owned by Erie x 0.2 acre-feet) into the following year.[17,18]

4.2 Monitoring

Erie will monitor the Town's water shortage index and other indicators on a regular basis. Monitoring will be most intense from late March until early May (when the spring mountain snowpack has accumulated and Northern Water has made its final CBT quota announcement). However, in dry years (or in wet years when the CBT quota is low), monitoring will extend into the irrigation season. If the summer continues to remain dry, monitoring will extend past the irrigation season to determine whether a shortage response is needed in the winter.

Erie's Public Works Department is responsible for calculating the Erie drought index and collecting the other drought indicator data listed in Figure 5. The drought index, coupled with the other drought indicator data, is used by Public Works to determine whether there is a drought related shortage for the Town. If a shortage is anticipated, Public Works will develop recommendations for the Erie Board of Trustees to consider prior to any

[17]The shortage index reflects the level of shortage Erie may experience in times of drought as well as in wet years when Northern Water sets a lower quota. Erie could be more vulnerable in wet years if Northern Water sets a lower quota (e.g., 50%). Historically this has happened in wet periods when the amount of supplemental supply needed for agricultural irrigation is low.

[18] This index does not include reuse of Erie's Windy Gap credits nor additional yields from the Well Project. Currently these yields are not a significant portion of Erie's supply portfolio. The incorporation of reuse and additional Well Project yields into the index should be revisited during the next Plan update once the Well Project has been developed.

DRAFT

specific drought stage declaration is made. This recommendation may be modified if conditions change that either intensify or reduce shortage conditions.

During the irrigation season of a drought or shortage, Public Works will continue to monitor key indicators. Erie may either increase or decrease the shortage stage (see Section 5 below) depending on the magnitude of shortage and regional drought conditions. Erie will also monitor the drought-related actions of other water providers in the region and consider whether these actions are relevant to Erie's water supply situation. This monitoring enhances the Town's ability to provide a consistent message to the community on why Erie's level of response (e.g., water restrictions) is similar to or different from other neighboring urban communities. The Town may also monitor indicators into the fall season to determine whether a shortage declaration is still needed for the fall and into the winter.



5.0 Shortage Stages, Trigger Points, and Response Targets

Erie's response to water shortages is based on the four stages shown in Table 5 below.[19] The stages increase in severity as the index decreases which calls for a higher demand reduction target (more water to be saved) with each elevating stage. Stages 1 and 2 ("Voluntary" and "Watch") generally promote efficient and voluntary reduction of water use among all priorities detailed in Table 2 above. Voluntary programs are designed to increase the community's awareness of shortage conditions and to provide information on ways to reduce water use. Stage 3 "Severe" entails mandatory restrictions of outdoor irrigation while Stage 4 "Emergency" may require prohibition of irrigation and/or rationing.

Table 5: Drought Stages, Trigger Guidelines and Demand Reduction Targets

Stage	Shortage Index (Trigger)	Total Reduction Target*	Irrigation Reduction Target	Summary of Response
Stage 1. Voluntary	1.0 - .9	10%	20%	Parks and Recreation target a savings of 10%. Water efficiency strongly encouraged.
Stage 2 Watch	0.9 - 0.8	10% - 20%	20% to 35%	Parks and Recreation target a savings of 20%. Additional water savings strongly encouraged.
Stage 3 Severe	0.8- 0.55	20% - 45%	35% to 80%	Parks and Recreation target a savings of 20% - 45%. Mandatory water restrictions enforced. Additional water savings encouraged and required for irrigation.
Stage 4 Emergency	Below 0.55	more than 45%	More than 80%	Parks and Recreation Department ceases irrigation with exception to trees and priority athletic fields. If warranted, irrigation may be prohibited with exception to trees. Focus on preserving water for essential services.

*These percentages should be applied to a "baseline demand" described in further detail below.

Each drought and water shortage events are unique and information from many indicators is needed to assess conditions and determine what water shortage stage is most appropriate. However, the shortage index serves as the main indicator and trigger. As discussed in Section 4.1, the index represents the ratio of Erie's projected water supply to demand. This index, in combination with the other indicators discussed in Section 4.1, serve as guidelines for a water shortage declaration rather than a "set of rules". Professional expertise, coupled with other factors, may contribute to staff recommendations and the Town Board's decisions on a shortage declaration and appropriate response. Furthermore, while the indicators and stages primarily focus on drought-related shortages, these stages may be applied to water shortages that may not be associated with a drought. Such shortages could be induced by the destruction of significant infrastructure caused by natural or anthropogenic events.

In years when Erie is in a declared shortage stage, the total reduction target (percentage of annual demand reduction) should be selected based on targets shown in Table 5 above. The targeted amount of annual water

[19] The drought stages were initially developed during the 2015 Drought Management Plan update. They were modified during this update based on input from the Planning Committee where the level of enforcement and number of mandatory restrictions was lessoned in the "Watch" stage to better represent the magnitude of response needed to meet targeted water use reductions and anticipated reactions from the community.

DRAFT

savings to be achieved (in AF or thousand gallons) should be determined by multiplying Erie's "baseline demand" by the designated percentage response target defined in Table 5. The baseline demand should be determined by multiplying Erie's current population by Erie's annual average per capita water use for the previous five years. This may include reuse demands if Erie is also targeting the reduction of reuse water. The irrigation target shown in Table 5, represents the percentage reduction in outdoor use during the irrigation season necessary to achieve the annual total reduction target, assuming most of the annual savings is accomplished through outdoor irrigation.[20]

The drought index, coupled with the other drought indicator data and professional expertise, is used by Public Works to determine whether there is a drought related shortage for the Town. If a shortage is anticipated, Public Works will develop recommendations for the Erie Board of Trustees to consider prior to any specific drought stage declaration is made.

Description of Stages

Stage 1 Voluntary – The "Voluntary" stage is considered for declaration when the index is between 1.0 to 0.9. Erie will take measures to optimize supply yields and efficiencies within the supply system, consider acquisition of additional supplies, if needed, and capitalize on beneficial opportunities that may occur from a regional drought.[21] The water use reduction target is 10% for the community as well as for irrigation by Parks and Recreation. The commercial and residential sectors will be highly encouraged to reduce water use on a voluntary basis and the Community Water Resiliency Campaign will be initiated. This campaign will promote the "why" and the "how" to save water along with amplify outreach on selected water efficiency programs.

Stage 2 Warning – The "Warning" stage is considered when the index is between 0.9 and 0.8. Like Stage 1, the Town will take action to increase the yield of their water supply system, if needed, and consider using available technical and financial assistance. The selected water use reduction target will range from a 10% to 20% reduction, depending on conditions. This target is determined at the onset of the drought stage and may be adjusted to reflect conditions as the shortage persists. The Town's Parks and Recreation Department will target a 20% water savings in irrigation. Voluntary water restrictions coupled with an aggressive Community Water Resiliency Campaign will be enacted. If sufficient savings cannot be achieved through voluntary restrictions, the Town may consider changing some of the voluntary restrictions to mandatory. This will coincide with community education and engagement regarding the restrictions and messaging tactics that foster community ownership and participation.

Stage 3 Severe – The "Severe" stage is considered when the index is between 0.8 and 0.55. Erie will explore opportunities available to increase the yield of their water supply system and consider a variety of options to further extend their supplies including using available technical and financial assistance, using reuse water to preserve key landscape features, and using lesser quality water that still meets drinking water standards. The water use reduction target will be set within the range of 20% to 45% reduction, depending on conditions. This target is determined at the onset of the drought stage and may be adjusted to reflect conditions as the shortage persists. The Town's Parks and Recreation Department will select an irrigation water savings target within the range of 20% to 45%. Mandatory water restrictions, coupled with enforcement, will be enacted to help ensure

[20] The irrigation targets are calculated by dividing the total (annual) reduction target by 55% which is Erie's annual average outdoor water use. For example, the irrigation target of 20% for Stage 1 "Voluntary" was calculated as 10% divided by 55%. The irrigation targets are rounded to 5% increments.

[21] Such benefits may include a regional program to provide additional water supplies to those in real need under a severe drought or a regional drought campaign. In January 2021, Denver Water facilitated discussions with Front Range water providers to discuss the dry conditions and exchange information.

water savings. If sufficient savings cannot be achieved through mandatory restrictions, the Town may consider prohibiting certain types of lower priority irrigation as shown in Table 2 above. The Community Water Resiliency Campaign will continue to aggressively promote water use reductions and provide supporting information on mandatory restrictions, fostering community ownership and buy-in accentuating responsible stewardship.

Stage 4 Emergency – The "Emergency" stage is considered when the index is below 0.55. A shortage of this severity would likely only occur under a severe multi-year drought that exceeds historical records. Focus is placed on ensuring that the health and safety needs of the community can be met. Erie will capitalize on opportunities available to increase the yield of their water supply system and set a water use reduction target exceeding 45%. This will require mandatory restrictions and possibly the prohibition of outdoor irrigation with exception to trees. The Parks and Recreation Department will cease irrigation with exception to highly valued trees and priority athletic fields. The Community Water Resiliency Campaign will emphasize the importance of preserving water for essential functions, fostering responsible stewardship, and amplify messaging on ways the community can save water from an indoor perspective.

Drought impacts Erie differently than from its surrounding municipalities on the Front Range. Each water provider has a unique water supply portfolio and infrastructure system that "behaves" differently, producing differing yields of water in the face of drought. The stages among municipalities differ.



6.0 Drought Mitigation and Response Strategies

Erie employs a variety of mitigation and response strategies to address and avoid the impacts associated with drought and water shortages. Mitigation consists of actions taken prior to a drought or water shortage to ensure optimum water supply reliability and that Erie is prepared for addressing shortages. Response strategies are actions taken during a shortage to avoid and reduce impacts while best maintaining water storage for future community needs and essential services such as health and safety.

6.1 Drought Mitigation Measures and Action Plan

Erie is committed to drought preparedness by mitigating impacts of a drought before it occurs. This includes mitigation measures that focus on firming existing as well as acquiring new supplies, operational practices, and water efficiency practices addressed in Erie's Water Efficiency Plan. Erie currently implements the following mitigation measures.[22]

Water Supply Mitigation Measures

Acquisition of supplies to meet long-term needs – Erie continues to acquire additional CBT unit and local ditch water rights. These acquisitions are necessary to meet the growing demands of the community as well as to ensure that there are sufficient supplies during dry periods.

Windy Gap Firming and NISP Participant – Erie is a participant in NISP requesting an annual 6,500 AF of firm yield. The Town is also a participant in the Windy Gap Firming Project, which would increase the reliability of Windy Gap supplies such that Erie would be able to receive a substantial portion of its Windy Gap allotment during dry years.

Water dedication requirement – Municipal Code 8.19 requires new development within the service area to provide either new water supplies or equivalent cash-in-lieu.

Well Project and expansion of reuse water – Erie is in the process of developing a horizontal wellfield on Boulder Creek just upstream of the NWRF. The wellfield will enable the Town to divert junior water rights from South Boulder Creek. When the junior water rights are out-of-priority, Erie may use its Windy Gap reuse credits, stored at the 1,000 AF NWRF storage facility, to augment pumping. This will enable the Town to optimize reuse of its Windy Gap water. The increase in yield of its Windy Gap shares and addition of junior Boulder Creek water rights expands the diversity of Erie's water supply portfolio that is independent of the CBT system. This diversity coupled with the new system redundancy introduced by the well project improves the Town's resiliency to drought.

Plans for a new WTF – Erie plans to introduce additional redundancy into its system by building a new WTF near the NWRF by 2024. This WTF will treat water from the NWRF storage facility and junior Boulder Creek water pumped directly from the wellfield to potable standards. It may also be used to treat water normally dedicated to non-potable for potable use, if needed during a water shortage.

[22] Discussions were held with the Planning Committee in developing the mitigation measures. Erie's previous plan, coupled with Worksheets B and C in CWCB's Municipal Drought Management Plan Guidance Document, were used in selecting the mitigation measures.

DRAFT

Operational Mitigation Measures

Water shortage storage reserve – Erie maximizes its 20% CBT carryover as a standard operational and drought mitigation practice. When possible, Erie will continue to do this in periods of drought to firm this storage reserve in the case the drought persists into the following year(s).

Coordination with Northern Water – Erie and Northern Water communicate on a regular basis regarding relevant capital improvements and infrastructure operations and maintenance. This is especially critical at the onset or during drought to ensure that there is sufficient storage and infrastructure necessary to meet community needs.

> Coordination with Northern Water is essential to ensuring a consistent reliable supply. During the latter part of the summer of 2020, Northern Water lowered Boulder Reservoir for maintenance purposes. Northern Water provided advance notice to Erie which enabled Erie to lease water from Broomfield and Louisville to ensure peak irrigation demands could be met.

Maintenance of emergency interconnects – Erie has emergency interconnects with Lafayette and Left Hand Water District. Erie will consider working with these water providers in expanding the terms of use of these interconnects during dry periods.

Maintenance of bypass around Erie Lake – Low reservoir levels during dry periods can result in algae blooms and taste and odor issues in Erie Lake. Erie has installed a pipeline to bypass CBT and Windy Gap water around Erie Lake and thereby avoid water quality issues.

Maintenance of mobile interconnect – Erie is in the process of purchasing a mobile interconnect that can be transported by truck or trailer. The interconnect can be connected to the distribution system to circumnavigate portions of Erie's system under acute short-term emergencies (e.g., move water around a distribution line failure). This equipment can also be used for beneficial purpose during longer-term water supply shortages.

Ditch efficiency improvements – Water savings may be achieved by lining ditches Erie uses to convey supplies within its service area. Erie plans to do this on an as needed basis.

Water Efficiency Mitigation Measures

Responsible and efficient use of water is a prudent to Erie's resiliency in times of water shortages and drought. Both of Erie's water efficiency and drought planning efforts entail a combination of actions for reducing water use. However, one key distinction is that the water efficiency actions are geared towards long-term reductions in water use while the response actions in this Plan focus on temporary short-term water reuse reductions while in a shortage.

For purposes of this Plan, water efficiency practices are considered a form of drought mitigation. A community that understands the value of water and actively uses water responsibly is more likely to respond to the need to achieve additional water savings during a period of shortage. Furthermore, supply-side measures that support the efficient delivery of water supplies, reduces water waste and places less stress on the need for additional supplies during a shortage.

DRAFT

One of Erie's guiding principles for education in its Water Efficiency Plan is creating community buy-in where the community understands why their water is valuable and how they can actively participate in using water efficiently. The Town plans to foster inclusivity by establishing a community based social marketing approach to the value of water along with its link to a sustainable community and the many benefits of water efficiency.

Mitigation Action Plan

The Mitigation Action Plan provided in Table 6 below outlines the action items, milestone deadlines, and the Town's departments and divisions leading the implementation of mitigation measures.

Table 6: Mitigation Action Plan

Mitigation Measures	Action Items	Milestones	Lead
Water Supply Measures			
Acquisition of supplies to meet long-term needs	Continue to acquire new CBT units and local ditch water rights.	Ongoing	Public Works
Windy Gap Firming and NISP participant	Continue to participate in NISP and the Windy Gap Firming projects.	Estimated completion: NISP– 2030 Windy Gap Firming - 2024	Public Works
Water dedication requirement	Continue to implement water dedication requirement.	Ongoing	Engineering
Well project and expansion of reuse water	▪ Continue water court application process. ▪ Develop wellfield.	Completion of wellfield - 2024	Public Works
Plans for a new WTF	▪ Initiate planning process for new WTF near the NWRF. ▪ Consider options for drought response such as treating water normally designated for non-potable irrigation for potable purposes in a water shortage situation.	WTF is anticipated to be completed by 2024	Public Works
Operational Measures			
Drought storage reserve	Maximize CBT carryover on an annual basis.	Ongoing	Public Works
Coordination with Northern Water	Communicate on regular basis regarding relevant capital improvements and infrastructure operations and maintenance.	Ongoing	Public Works
Maintenance of emergency interconnects	Maintain emergency interconnects with Lafayette and Left-Hand Water District.	Ongoing	Public Works
Maintenance of bypass around Erie Lake	Maintain bypass around Erie Lake.	Ongoing	Public Works
Maintenance of mobile interconnect	Maintain mobile interconnect.	Ongoing	Public Works

DRAFT

Mitigation Measures	Action Items	Milestones	Lead
Ditch efficiency improvements	Consider improving ditch efficiencies if needed.	n/a	Public Works
Implementation of the water efficiency program	▪ Update Water Efficiency Plan every 7 years. ▪ 2) Implement water efficiency program.	Ongoing - Water Efficiency Plan to be updated in 2027.	Public Works

6.2 Response Strategies

Erie plans to implement a variety of supply and demand-side response strategies during droughts and water shortages. The supply-side strategies entail actions the Town will implement to extend water supplies. The demand-side response strategies focus on actions by Town staff and the Erie community to reduce water.[23] Table 7 below provides the supply-side response strategies and Table 8 below provides and the demand-side response strategies.

Table 7: Supply-Side Response Strategies

Strategies	Details
Actions for Implementation that can do Independently	
Seek technical and financial assistance	Investigate opportunities for technical assistance with the drought and water shortage and capitalize on if needed.
Maximize well project yields	When the well project comes online, optimize groundwater extractions and use of Windy Gap return flows as a source of augmentation.
Maximize storage	Ensure a 20% CBT carryover in storage in case of a multi-year drought and consider maximizing storage in Thomas and Erie Reservoirs as well as the NWRF Storage as additional supply reserve.
Modify operations/infrastructure to optimize efficiency of water supply distribution system and for distribution of new supplies, when applicable.	This may include using Erie's mobile interconnect to address an issue in the water supply distribution system when delivering existing or new supplies.
Actions for Implementation that Require Partnerships and Agreements	
Acquire additional short-term water supplies during shortage	Additional supply options may include leasing arrangements from farmers and other municipalities, leasing excess CBT supplies (if available), exchanging non-potable reuse for potable supplies, and developing water transfers/trades with other entities to increase yield. In extreme circumstances additional supplies could also entail a water hauling program or use of dead storage in Erie's local reservoirs.
Coordinate and collaborate with others to create beneficial opportunities for Erie and the region.	Coordinate and collaborate with other entities and water users on strategies that benefit Erie and the region. This may include entities in the Boulder Creek watershed, Northern Water allottees, and potentially a regional water supply program, if available during extreme droughts.
Utilize existing emergency interconnects with Lafayette and Left Hand Water District, if needed.	If needed, coordinate with Lafayette and Left Hand Water District to deliver additional supplies to Erie through its existing interconnects.

[23] The response strategies were selected using the following criteria: 1) Technical feasibility:will the strategy work as intended in a timely manner? Is there staff available to implement the action? 2) Actual cost and perceived benefits: will the selected strategy provide an adequate amount of water savings/additional supplies relative to the cost? 3) Enforceable: is the strategy worth the cost/effort of enforcing it? 4) Public acceptance: how will the public accept the selected strategy?

DRAFT

Strategies	Details
Actions for Consideration	
Use reuse water to preserve key landscape features under severe and emergency droughts	Apply reuse water to landscape features of higher monetary, environmental, and social value such as larger established trees. In many cases, to limit irrigation only to key features, this would require direct application of reuse water (via a mobile unit) that is separate from the irrigation system.
Extend water supplies by using water of lesser quality water to meet needs while still meeting drinking water standards.	Use of lesser quality water, that typically is not used, could result in taste and odor issues. To mitigate issues Erie may increase water quality monitoring and consider options to reduce impacts such blending multiple sources of various qualities.

Table 8: Demand-Side Response Strategies

Category	Strategies
Town	Reduce water use on Town parks, open space, medians, and Town facilities.
	Limit use of hydrants (except for public safety).
	Reduce/prevent washing of Town fleet vehicles.
	Prohibit use of splash pad and ornamental fountains.
	Prohibit/limit Town street cleaning.
	Increase outreach of designated water efficiency activities that promote savings.
	Consider drought surcharge.
Town, residential, commercial	Reduce irrigation of trees under severe and emergency shortages.
	Reduce indoor water use.
	Focus on reductions of large residential and commercial water users.
Town and commercial	Address use of covers and other best management practices on hot tubs and pools.
	Coordinate with large public water users to reduce water use.
Residential and commercial	Reduce outdoor watering of turf grass.
	Reduce irrigation on trees, shrubs, perennials, and vegetable gardens.
	Limit new seed and sod.
	Limit new plantings.
	Limit installation of new sod, seeding, and/or other landscaping.
	Limit street, sidewalk, driveway, house/auxiliary structure cleaning and misting devices.
	Limit ornamental fountains.
	Address use of covers and other best management practices on hot tubs and pools.
	Limit private car washing.
Commercial	Address commercial car washing depending on whether use recycled water.
	Limit outdoor irrigation of golf courses.
	Promote and review efficiencies of using construction water.

DRAFT

6.3 Community Water Resiliency Campaign

The Community Water Resiliency Campaign will be closely coordinated with Erie's water efficiency programs and rebates. During wet and normal periods, when there is not a pending or existing water shortage, Erie will rely on its water efficiency programs to increase community awareness on the importance of efficient water use. The Community Water Resiliency Campaign will be initiated at the onset of a drought or water shortage, educating the community on the implications, and promoting additional water savings beyond what is typically achieved through the water efficiency program. The frequency of messaging and staff effort focused on reaching out to the community will be elevated to ensure that the community understands the implications of the water shortage and what they can do to contribute to achieving additional water savings.

The objectives of the Community Water Resiliency Campaign are:

- Ensure all Town staff are updated on the status of the water shortage stage and interface with the community conveying coordinated consistent messages.

- Minimize the need for enforcement by fostering a nimble two-way partnership with the community where the community is an integral part of the solution. Campaign messaging should proactively address community concerns with flexibility to be adjusted based on unique circumstances of the shortage.

- Coordinate campaign efforts with relevant conservation-oriented entities and nearby municipalities, water districts, counties, and water providers to capitalize on synergistic opportunities and convey, where appropriate, consistent messaging on why there are differences in drought response in other jurisdictions.

Figure 6 below highlights the types of messaging Erie will convey to the community about water. During times when there is not a drought or shortage, messaging focuses on the value of water and promotion of using water efficiency. The goals and additional information on this educational outreach program are provided in Erie's Water Efficiency Plan. During a drought and water shortage, messaging is expanded to encourage additional savings also shown in Figure 6. Messaging may be customized to each shortage situation, to ensure



No Shortage
Water Efficiency

Shortage
Additional Savings

Messaging to Consistently Convey

- Source of Erie's water and status of water supply conditions
- Relationship of water efficiency to community sustainability (emotional connection)
- Value of water and benefits of water efficiency described in Water Efficiency Plan
- Public assess to Erie's Water Efficiency and Water Shortage Plans
- Erie's water efficiency goals
- Actions of Town to ensure a resilient and sustainable long-term water supply
- Relationship of water rates and sustainable long-term water supplies
- Actions of Town to be water efficient (lead by example)
- Promotion of water efficiency actions (Table X in Water Efficiency Plan)
- Tips on being water efficient for the resident and business owner

Messaging During a Shortage

- Status of water supply conditions & corresponding stage and savings target
- Measures/impacts that are expected if shortage continues/intensifies
- Water restrictions throughout community and enforcement (if relevant)
- Phone number for questions and to report water waste and water restriction infractions
- Tip on how to save additional water during shortage

Messaging for Consideration During a Shortage

- Efforts of individuals, businesses & HOAs to reduce water use
- Landscaping tips (which plants to covert to drip, which to save, which to let die)
- Post-shortage landscape revival information
- Encouragement of public discourse on how to save additional water
- Explanation of drought surcharge (if applicable)
- Discourage fishing to reduce stress on environment
- Instructions on how to track water use within home

Figure 6: Community Messaging `

the campaign adequately addresses each unique circumstance. The frequency and intensity of the messaging should also be customized to each shortage and corresponding stage. For instance, the messaging for a multi-year drought with increasing intensity entering Stage 3 "Severe" drought will be very different from a short-term Stage 1 "Voluntary" drought that entails voluntary restrictions during the summer. Generally, messaging should focus on the following for each water shortage stage:

Stage 1 Voluntary – Promote the "why" and the "how" to save water along with amplify outreach on selected water efficiency programs.

Stage 2 Warning – Enact intensive messaging effort on why and how to reduce outdoor water irrigation, fostering community buy-in and a sense of responsible stewardship. If some of the voluntary restrictions are changed to mandatory status to meet the water use reduction target, additional messaging will be provided to educate the community on the need for the restrictions and importance to adhere to such restrictions.

Stage 3 Severe – Aggressively promote water use reduction and provide supporting information on mandatory restrictions, fostering community ownership and buy-in, and sense of responsible stewardship. During enforcement, appropriate transparency of data and consistency of messaging are critical to gaining community support and trust.

Stage 4 Emergency – Emphasize the importance of preserving water for essential functions, fostering responsible stewardship, and amplify messaging on ways the community can save water from an indoor perspective.

Prior to the formal declaration of a water shortage, Public Works will work with the Communications & Community Engagement Department in developing the Community Water Resiliency Campaign to ensure that the messages delivered are accurate. The Communications & Community Engagement Department will take the lead in developing the communications plan which will include key messages, groups to focus messaging on, frequency of messaging and communication tools. Messaging will heavily rely on current tools that routinely prove to be effective. This includes the Town's .gov and Erie.Earth websites, sustainability newsletter, social media, bill inserts, distribution lists, education videos, and demonstration gardens. Additional avenues for communication may be introduced such as newspaper articles, booths at special events, and school programs.

Coordination with other entities is an important component of the Community Water Resiliency Campaign. Efforts will be made to capitalize on synergistic opportunities with other conservation-oriented entities and nearby municipal, district, county, and water providers (e.g. Left Hand Water District) to provide drought messaging. Erie will also track other local water providers' drought-related response activities, water use restrictions, and means of enforcement. This will enable Erie to explain to its customers their similarities and differences between Erie's drought response activities and neighboring urban areas as well as build a regional response effort; water delivery is intimately connected and the actions of one community usually affect another.

DRAFT

7.0 Drought and Shortage Response

This section outlines supply and demand-side response measures specific to each shortage stage.

7.1 Voluntary Stage

Stage 1 Voluntary: Index of 1.0 to 0.9

Total Water Use Reduction Target: 10% Irrigation Target: 20%

Summary: The voluntary stage is considered for declaration when the index is between 1.0 to 0.9. Erie will take measures to optimize supply yields and efficiencies within the supply system, consider acquisition of additional supplies, if needed, and capitalize on beneficial opportunities that may occur from a regional drought. The water use reduction target is 10% for the community as well as for irrigation by the Parks and Recreation. The commercial and residential sectors will be highly encouraged to reduce water use on a voluntary basis and the Community Water Resiliency Campaign will be initiated. This campaign will promote why and how to save water along with amplify outreach on selected water efficiency programs.

Supply–Side Measures

- Optimize well project yields including reuse to preserve shortage reserves in storage.
- Ensure a 20% CBT carryover.
- Modify operations/infrastructure to optimize efficiency of water supply distribution system and for distribution of new supplies, when applicable (e.g., use of Erie's mobile interconnect).
- Consider additional short-term water supplies during shortage, if needed.[24]
- Coordinate and collaborate with other entities and water users on strategies that benefit Erie and the region.[25]
- If needed, coordinate with Lafayette and Left Hand Water District to deliver additional supplies to Erie through its existing interconnects with these providers.

Demand–Side Measures

Town

Note: The targeted savings (as percentages) in this section applies to the cumulative total zoned area within all Town parks and facilities. There are many site-specific factors that influence the amount of savings that may

[24] Additional supply options may include leasing arrangements from farmers and other municipalities, leasing excess CBT supplies (if available), exchanging non-potable reuse for potable supplies, leasing of groundwater pumped by other entities, and developing water transfers/trades with other entities to increase yield. In extreme circumstances, additional supplies could also entail a water hauling program or use of dead storage in Erie's local reservoir.

[25] This may include entities in the Boulder Creek watershed, Northern Water partners, and potentially a regional water supply program during extreme droughts.

DRAFT

be achieved at each site individual site (e.g., sun exposure, slope, soils etc.). Some areas will achieve greater savings than other areas.

- Active Turf Recreation (Park zones that are heavily used. This includes regular programmed athletic events and spaces rented by the community) – Target 10% savings relative to historical irrigation.
- Passive Turf Recreation (Park zones of moderate use. Includes areas where the community recreates on an informal basis without a programmed schedule) – Target 10% savings relative to historical irrigation.
- Irrigated Native and Grasses (Parks, medians, and open space zones with little foot traffic) – Target 10% savings relative to historical irrigation.
- Town Facilities – Turf grass on Town facilities – Target 10% savings relative to historical irrigation.
- Shrubs and Perennial Plantings (Zones in parks, Town facilities and medians) – Target 10% savings relative to historical irrigation.
- Fleet Vehicles (Including police vehicles) – Reduce washing frequency.
- Water efficiency activities that promote savings during a shortage – Increase public outreach through water efficiency programs. Such programs may include: EyeOnWater, Green Business & HOA Certification Program, Slow the Flow sprinkler consultations, smart irrigation control clock and automated rain sensor discounts and direct installs, turf replacement program (if applicable), indoor water audits, and working with high water users.

Town, Residential and Commercial

- Trees (all irrigated trees within Erie's service area) – Voluntary. Promote and apply best management practices to ensure efficient irrigation.

Town and Residential

- High Residential Water Users – Provide outreach to high water users (billing at Tier 3 and 4) on how to reduce water use. Encourage free water audits.

Town and Commercial

- Large public irrigators (Colorado National Golf Club, HOA common spaces, school districts, landscapers) – Coordinate with large public water users to optimize water efficiency and promote voluntary restrictions.

Residential and Commercial

- Turf grass (residents, businesses, HOAs, and schools) – Voluntary. Eliminate waste with additional water savings encouraged. Watering should not exceed three times per week and only occur from 8 p.m. to 8

DRAFT

a.m. per Municipal Code. Exceptions to timing may be made for those with large areas of irrigated turf or not on automated systems.[26]

- Shrubs, perennials, vegetable gardens – Voluntary. Apply best management practices to water efficiently.
- Street, sidewalk, driveway, house/auxiliary structure cleaning, and misting devices – Voluntary. Reduce/eliminate use of water for cleaning. Alternative cleaning methods encouraged.
- Private and public pools and hot tubs – Voluntary. Encourage use of covers and minimize filling.

Commercial

- Car washes without recycling – Voluntary. Promote best management practices to save water.
- Car washes with recycled water – Voluntary. Promote best management practices to save water.
- Golf course – Voluntary. Efficient irrigation required. Limit twice per week.
- Construction water – Encourage efficient use of construction water.



[26] In large areas (e.g., HOA open space) where irrigation of the entire area cannot be accomplished within the designated time, signs will be provided by the Town that includes messaging to inform the community of why watering is occurring outside of the designated window.

7.2 Warning Stage

Trigger: Index of 0.9 to 0.8

Total Water Use Reduction Target: 10% to 20% Irrigation Target: 20% to 35%

Summary: The warning stage is considered when the index is between 0.9 and 0.8. Like Stage 1, the Town will take action to increase the yield of their water supply system, if needed, and consider using available technical and financial assistance. The selected water use reduction target will range from a 10% to 20% reduction, depending on conditions. This target is determined at the onset of the drought stage and may be adjusted to reflect conditions as the shortage persists. The Parks & Recreation Department will target a 20% water savings in irrigation. Voluntary water restrictions coupled with an aggressive Community Water Resiliency Campaign will be enacted. If sufficient savings cannot be achieved through voluntary restrictions, the Town may consider changing some of the voluntary restrictions to mandatory. This will coincide with community education on the restrictions and messaging tactics that foster community buy-in.

Supply–Side Measures

- Identify any technical and financial assistance opportunities.
- Optimize well project yields including reuse to preserve shortage reserves in storage.
- Ensure a 20% CBT carryover and consider maximizing storage in Erie, Thomas, and the NWRF Storage as additional supply reserve.
- Modify operations/infrastructure to optimize efficiency of water supply distribution system and for distribution of new supplies, when applicable (e.g., use of Erie's mobile interconnect).
- Acquire additional short-term water supplies during shortage, if needed[27].
- Coordinate and collaborate with other entities and water users on strategies that benefit Erie and the region[28].
- If needed, coordinate with Lafayette and Left Hand Water District to deliver additional supplies to Erie through its existing interconnects with these providers.

Demand–Side Measures

[27] Additional supply options may include leasing arrangements from farmers and other municipalities, leasing excess CBT supplies (if available), exchanging non-potable reuse for potable supplies, leasing of groundwater pumped by other entities, and developing water transfers/trades with other entities to increase yield. In extreme circumstances, additional supplies could also entail a water hauling program or use of dead storage in Erie's local reservoir.

[28] This may include entities in the Boulder Creek watershed, Northern Water partners, and potentially a regional water supply program during extreme droughts.

DRAFT

Town

Note: The targeted savings (as percentages) in this section applies to the cumulative total zoned area within all Town parks and facilities. There are many site-specific factors that influence the amount of savings that may be achieved at each site individual site (e.g., sun exposure, slope, soils, etc.). Some areas will achieve greater savings than other areas.

- Active Turf Recreation (Park zones that are heavily used. This includes regular programmed athletic events and spaces rented by the community) – Target 20% savings relative to historical irrigation.
- Passive Turf Recreation (Park zones of moderate use. Includes areas where the community recreates on an informal basis without a programmed schedule) – Target 20% savings relative to historical irrigation.
- Irrigated Native and Turf Grasses (Parks, medians, and open space zones with little foot traffic) – Target 20% savings relative to historical irrigation.
- Town Facilities – Turf grass on Town facilities – Target 20% savings relative to historical irrigation.
- Shrubs and Perennial Plantings (Zones in Parks, Town facilities and medians) – Target 20% savings relative to historical irrigation.
- Fleet Vehicles (Including police vehicles) – Limit washing to once per week.
- Ornamental fountains in parks and splash pad – Ornamental fountains in parks are turned off and splash pads are turned off between 10 a.m. to 4 p.m.
- Water efficiency activities that promote savings during a shortage – Increase public outreach through water efficiency programs. Such programs may include: EyeOnWater, Green Business & HOA Certification Program, Slow the Flow sprinkler consultations, smart irrigation control clock and automated rain sensor discounts and direct installs, turf replacement program (if applicable), indoor water audits, and working with high water users.

Town, Residential and Commercial

- Trees (all irrigated trees within Erie's service area) – Voluntary. Limit watering to hand-held hose or low-volume non spray on any day from 8 p.m. to 8 a.m.
- Indoor Use – Voluntary. Public campaign encourages reductions.

Town and Residential

- High Residential Water Users – Provide outreach to high water users (billing at Tier 3 and 4) on how to reduce water use. Encourage free water audits.

Town and Commercial

- Large public irrigators (Colorado National Golf Club, school districts, landscapers) – Coordinate with large public water users to optimize water efficiency and promote voluntary restrictions.

DRAFT

Residential and Commercial

- Turf grass (residents, businesses, HOAs, and schools) – Voluntary. Eliminate waste with additional water savings encouraged. Watering should not exceed two times per week and only occur from 8 p.m. to 8 a.m. per Water Waste code. Exceptions to timing may be made for those with large areas of irrigated turf or not on automated systems. [29]

- Shrubs, perennials, vegetable gardens – Voluntary. Limit watering to hand-held hose or low-volume non spray on any day from 8 p.m. to 8 a.m.

- Street, sidewalk, driveway, house/auxiliary structure cleaning and misting devices – Voluntary. Reduce/eliminate use of water for cleaning. Alternative cleaning methods encouraged.

- Ornamental fountains – Voluntary. Shut off ornamental fountains.

- Private and public pools and hot tubs – Voluntary. Encourage use of covers and minimize filling.

- Private car washing – Encourage use of commercial car washes that use recycled water.

Commercial

- Car washes without recycling – Voluntary. Promote and apply best management practices to save water.

- Car washes with recycled water – Voluntary. Promote best management practices to save water.

- Golf course – Mandatory. Efficient irrigation required. Limit once per week.

- Construction water – Encourage efficient use of construction water.



[29] In large areas (e.g., HOA open space) where irrigation of the entire area cannot be accomplished within the designated time, signs will be provided by the Town that includes messaging to inform the community of why watering is occurring outside of the designated window.

7.3 Severe Stage

Trigger: Drought Index of 0.8 to 0.55

Total Water Use Reduction Target: 20% to 45% Irrigation Target: 35% to 80%

Summary: The severe stage is considered when the index is between 0.8 and 0.55. Erie will explore opportunities available to increase the yield of their water supply system and consider a variety of options to further extend their supplies including using available technical and financial assistance, using reuse water to preserve key landscape features, and using lesser quality water that still meets drinking water standards. The water use reduction target will be set within the range of 20% to 45% reduction, depending on conditions. This target is determined at the onset of the drought stage and may be adjusted to reflect conditions as the shortage persists. The Parks and Recreation will select an irrigation water savings target within the range of 20% to 45%. Mandatory water restrictions, coupled with enforcement, will be enacted to help ensure water savings. If sufficient savings cannot be achieved through mandatory restrictions, the Town may consider prohibiting certain types of low priority irrigation as shown in Table 2. The Community Water Resiliency Campaign will continue to aggressively promote water use reductions and provide supporting information on mandatory restrictions, fostering community buy-in and sense of responsible stewardship.

Supply–Side Measures

- Identify any technical and financial assistance opportunities.
- Optimize well project yields including reuse to preserve shortage reserves in storage.
- Ensure a 20% CBT carryover and maximize storage in Erie, Thomas and the NWRF Storage as additional supply reserve to the extent possible.
- Modify operations/infrastructure to optimize efficiency of water supply distribution system and for distribution of new supplies, when applicable (e.g. use of Erie's mobile interconnect).
- Acquire additional short-term water supplies during shortage, if available[30].
- Coordinate and collaborate with other entities and water users on strategies that benefit Erie and the region[31].
- If needed, coordinate with Lafayette and Left Hand Water District to deliver additional supplies to Erie through its existing interconnects with these providers.
- Use reuse water to preserve key landscape features. (In areas not accessible by the non-potable distribution system, hauling of reuse water to key features may be needed).

[30] Additional supply options may include leasing arrangements from farmers and other municipalities, leasing excess CBT supplies (if available), exchanging non-potable reuse for potable supplies, leasing of groundwater pumped by other entities, and developing water transfers/trades with other entities to increase yield. In extreme circumstances, additional supplies could also entail a water hauling program or use of dead storage in Erie's local reservoir.

[31] This may include entities in the Boulder Creek watershed, Northern Water partners, and potentially a regional water supply program during extreme droughts.

DRAFT

- Extend water supplies by using water of lesser quality than would normally use to meet needs while still meeting drinking water standards[32].

Demand–Side Measures

Town

Note: The targeted savings (as percentages) in this section applies to the cumulative total zoned area within all Town parks and facilities. There are many site-specific factors that influence the amount of savings that may be achieved at each site individual site (e.g., sun exposure, slope, soils, etc.). Some areas will achieve greater savings than other areas.

- Active Turf Recreation (Park zones that are heavily used. This includes regular programmed athletic events and spaces rented by the community) – Target 20% to 35% savings relative to historical irrigation. Maintain athletic fields to level needed to ensure safety.

- Passive Turf Recreation (Park zones of moderate use. Includes areas where the community recreates on an informal basis without a programmed schedule) – Target 20% to 45% savings relative to historical irrigation.

- Irrigated Native and Turf Grasses (Park and open space zones with little foot traffic). – Target 20% to 45% savings relative to historical irrigation. Irrigate enough to ensure survival. Irrigation may be prohibited in certain areas. Decisions on what areas to maintain vs. irrigate will be based on how to best minimize asset losses.

- Town Facilities (Turf grass on Town facilities) – Target 20% to 45% savings relative to historical irrigation. Irrigate enough to ensure survival. Signs may be posted on dormant grass to educate community that the grass is dormant and can be revived once restrictions are over.

- Shrubs and Perennial Plantings (Zones in parks, Town facilities, and medians) – Target 20% to 30% savings relative to historical irrigation. Maintain irrigation to ensure survival.

- Annual Plantings – No irrigated annual plantings. Signs may be posted promoting need to save water.

- Hydrants – Reduce frequency of flushing while maintaining water quality.

- Fleet Vehicles (Including police vehicles) – No washing of fleet vehicles.

- Ornamental fountains in parks and splash pad – Ornamental fountains in parks are turned off and splash pads are turned off.

- Water efficiency activities that promote savings during a shortage - Increase public outreach through water efficiency programs. Such program may include: EyeOnWater, Green Business & HOA Certification Program, Slow the Flow sprinkler consultations, smart irrigation control clock and automated rain sensor

[32] Sources of supply may include ditch water rights that are typically used for non-potable purposes. Erie will mitigate impacts where possible (e.g., blending of multiple sources and increasing monitoring).

DRAFT

discounts and direct installs, turf replacement program (if applicable), indoor water audits, and working with high water users.

- Drought surcharge – Consider drought surcharge.

Town, Residential and Commercial

- Trees (all irrigated trees within Erie's service area) – Mandatory. In areas where not irrigated with sprinkler system, limit watering to hand-held hose or low volume non spray two days a week from 8 p.m. to 8 a.m.

- Indoor Use – Voluntary. Public campaign encourages reductions.

Town and Residential

- High Residential Water Users – Provide outreach to high water users (billing at Tier 3 and 4) on how to reduce water use. Require free water audit and implementation of recommendations if water use remains at Tier 3 or 4 levels.

Town and Commercial

- Large public irrigators (Colorado National Golf Club, HOA common spaces, school districts, landscapers) – Coordinate with large public water users to optimize water efficiency and promote voluntary restrictions.

Residential and Commercial

- Turf grass (residents, businesses, HOAs, and schools) – Mandatory. Eliminate waste and additional savings required. Watering should not exceed two times per week from 8 p.m. to 8 a.m. per Water Waste code. Exceptions to timing may be made for those with large areas of irrigated turf or not on automated systems.[33]

- Shrubs, perennials, vegetable gardens – Mandatory. Limit watering to hand-held hose or low volume non spray two days a week from 8 p.m. to 8 a.m. Special cases may be made for vegetable gardens.

- New seed and sod – Mandatory. Residents may apply for waiver to irrigate every day to establish vegetation for two-week period. Resident will receive signage from Town to post in front lawn explaining why exempted from restrictions.

- New plantings (trees, shrubs, perennials) – Mandatory. Limit watering to hand-held hose or low volume non spray two days a week from 8 p.m. to 8 a.m. Special cases may be made for vegetable gardens.

- Street, sidewalk, driveway, house/auxiliary structure cleaning, and misting devices – Prohibit. Use of water for outdoor cleaning purposes is prohibited.

[33] In large areas (e.g., HOA open space) where irrigation of the entire area cannot be accomplished within the designated time, signs will be provided by the Town that includes messaging to inform the community of why watering is occurring outside of the designated window.

DRAFT

- Ornamental fountains – Mandatory. Shut off ornamental fountains. Special cases may be made for ponds containing fish or used for food production purposes.
- Private and public pools and hot tubs – Voluntary. Encourage use of covers & minimize filling.
- Private car washing – Consider prohibiting private car washing. Encourage use of commercial car washes that use recycled water.

Commercial

- Car washes without recycling – Mandatory. Must meet a standard of 40 gallons or less per vehicle.
- Car washes with recycled water – Voluntary. Promote best management practices to save water.
- Golf course – Watering prohibited with exception to tees and trees. Tress may be hand watered.
- Construction water – Encourage efficient use of construction water.



7.4 Emergency Stage

Trigger: Index below 0.55

Water Use Reduction Target: More 45% Irrigation Target: More than 80%

Summary: The emergency stage is considered when the index is below 0.55. A shortage of this severity would likely only occur under a severe multi-year drought that exceeds historical records. Focus is placed on ensuring that the health and safety needs of the community can be met. Erie will capitalize on opportunities available to increase the yield of their water supply system and set a water use reduction target exceeding 45%. This will require mandatory restrictions and possibly the prohibition of outdoor irrigation with exception to trees. The Parks and Recreation will cease irrigation with exception to priority athletic fields for events. The Community Water Resiliency Campaign will emphasize the importance of preserving water for essential functions, fostering responsible stewardship, and amplify messaging on ways the community can save water from an indoor perspective.

Supply–Side Measures

- Identify any technical and financial assistance opportunities.
- Optimize well project yields including reuse to preserve shortage reserves in storage.
- Maximize CBT carryover and storage in Erie, Thomas and the NWRF storage as additional supply reserve to the extent possible.
- Modify operations/infrastructure to optimize efficiency of water supply distribution system and for distribution of new supplies, when applicable (e.g., use of Erie's mobile interconnect).
- Acquire additional short-term water supplies during shortage, if available.[34]
- Coordinate and collaborate with other entities and water users on strategies that benefit Erie and the region.[35]
- If needed, coordinate with Lafayette and Left Hand Water District to deliver additional supplies to Erie through its existing interconnects with these providers.
- Extend water supplies by using water of lesser quality than would normally use to meet needs while still meeting drinking water standards.[36]

[34] Additional supply options may include leasing arrangements from farmers and other municipalities, leasing excess CBT supplies (if available), exchanging non-potable reuse for potable supplies, leasing of groundwater pumped by other entities, and developing water transfers/trades with other entities to increase yield. In extreme circumstances, additional supplies could also entail a water hauling program or use of dead storage in Erie's local reservoir.
[35] This may include entities in the Boulder Creek watershed, Northern Water partners, and potentially a regional water supply program during extreme droughts.
[36] Sources of supply may include ditch water rights that are typically used for non-potable purposes. Erie will mitigate impacts where possible (e.g., blending of multiple sources and increasing monitoring).

DRAFT

Demand–Side Measures

Town

Note: The targeted savings (as percentages) in this section applies to the cumulative total zoned area within all Town parks and facilities. There are many site-specific factors that influence the amount of savings that may be achieved at each site individual site (e.g., sun exposure, slope, soils, etc.). Some areas will achieve greater savings than other areas.

- Active Turf Recreation (Park zones that are heavily used. This includes regular programmed athletic events and spaces rented by the community) – Watering limited to certain athletic fields. Athletic events may still be held on these fields at a reduced schedule.
- Passive Turf Recreation (Park zones of moderate use. Includes areas where the community recreates on an informal basis without a programmed schedule) – Watering prohibited.
- Irrigated Native and Turf Grasses (Parks, medians, open space zones with little foot traffic) – Watering prohibited.
- Town Facilities (Turf grass on Town facilities) – Water prohibited.
- Shrubs and Perennial Plantings (Zones in parks, Town facilities and medians) – Water prohibited. Key shrubs may be watered just enough to ensure survival. Sprinkler system prohibited.
- Annual Plantings – No irrigated annual plantings. Signs may be posted promoting need to save water.
- Hydrants – Reduce frequency of flushing while maintaining water quality.
- Fleet Vehicles (Including police vehicles) – No washing of fleet vehicles.
- Ornamental fountains in parks and splash pad – Ornamental fountains in parks are turned off and splash pads are turned off.
- Water efficiency activities that promote savings during a shortage – Increase public outreach through water efficiency programs. Such programs may include: indoor water audit and working with high water users.
- Drought surcharge – Consider drought surcharge.

Town, Residential and Commercial

- Trees (all irrigated trees within Erie's service area) – Mandatory. Limit watering to just enough to ensure survival. Use hand-held hose or low-volume non spray from 8 p.m. to 8 a.m.
- Indoor Use – Mandatory. Public campaign encourages reductions. Fines/flow restrictors may be applied to abnormally high users.

DRAFT

Town and Residential

- High Residential Water Users – If applicable, provide outreach to high water users (billing at Tier 3 and 4) on how to reduce water use. Require free water audits and implementation of recommendations if water use remains at Tier 3 or 4 levels.

Town and Commercial

- Large public irrigators (Colorado National Golf Club, HOA common spaces, school districts, landscapers). – If applicable, coordinate with large public water users to optimize water efficiency and discuss impacts associated with mandatory restrictions.

Residential and Commercial

- Turf grass (residents, businesses, HOAs, and schools) – Mandatory to Prohibit. If allowed, watering should not exceed once per week from 8 p.m. to 8 a.m. per Water Waste code. Exceptions to timing may be made for those with large areas of irrigated turf or not on automated systems.[37]

- Shrubs, perennials, vegetable gardens – Mandatory to Prohibit. If allowed limit watering to hand-held hose or low volume non spray two days a week from 8 p.m. to 8 a.m. Special cases may be made for vegetable gardens.

- New seed and sod – Mandatory to Prohibit. If allowed, residents may apply for waiver to irrigate every day to establish vegetation for two-week period. Residents will receive signage from Town to post in front lawn explaining why exempted from restrictions.

- New planting (trees, shrubs, perennials) – Mandatory to Prohibit. If allowed limit watering to hand-held hose or low-volume non spray from 8 p.m. to 8 a.m. Consider prohibiting new plantings if irrigation throughout community is prohibited. Special cases may be made for establishment of low water use vegetation.

- Street, sidewalk, driveway, house/auxiliary structure cleaning and misting devices – Prohibit. Use of water for outdoor cleaning purposes is prohibited.

- Ornamental fountains – Mandatory. Shut off ornamental fountains. Special cases may be made for ponds containing fish or used for food production purposes.

- Private and public pools and hot tubs – Mandatory. Require use of covers and minimize filling. Public works may coordinate filling events of public pools and hot tubs.

- Private car washing – Prohibit private car washing.

[37] In large areas (e.g., HOA open space) where irrigation of the entire area cannot be accomplished within the designated time, signs will be provided by the Town that includes messaging to inform the community of why watering is occurring outside of the designated window.

DRAFT

Commercial

- Car washes without recycling – Prohibit operations.
- Car washes with recycled water. – Town review facilities to ensure water is being conserved at optimum levels. Modifications to operations may be required.
- Golf course – Watering prohibited on all outdoor vegetation.
- Construction water – Town may review use of construction water on a site-by-site basis to ensure water is being used at optimum efficiency.



DRAFT

8.0 Operational and Administrative Framework of Response

8.1 Drought and Shortage Declaration Process

Public Works Department is responsible for the monitoring of climactic conditions and providing recommendations to the Town Administrator and Board of Trustees on the declaration of a drought and/or water shortage and accompanying stage. The water shortage index and other indicators in Figure 5 serve as guidelines for a declaration. Recommendations are to be presented to the Town Board who is responsible for making the final decision considering the Public Works Director's recommendations. The Town Board will have an opportunity to discuss the recommendations, ask questions and ultimately decide whether the recommended stage should be officially declared. Once the Town Board has decided to make a declaration, the Mayor may make the declaration and the Town Administrator is the appointed authority during a Drought Declaration per Municipal Code 1-8. The Town's Communications Department will be responsible in delivering the message to the community in close coordination with Public Works.

The declaration of drought and water shortages is not a straight-forward decision. There are a lot of climatic, operational, and community factors to take into consideration. Monitoring data coupled with professional expertise and other critical factors inform the final decision.

The timing of a declaration will be an important consideration by both Erie staff and the Town Board. If a shortage is declared too late, and actions are not taken early enough to reduce water use, water storage can be severely depleted and result in impacts that would have been less or otherwise avoided. Conversely, premature declarations can result in unnecessary actions and messaging where the community can lose confidence in Town leadership.

8.2 Implementation of the Drought and Shortage Response

In preparation for the declaration of a water shortage or drought, the Public Works Director will develop a Response Team consisting of a consortium of interdepartmental Erie staff to help coordinate the response. Figure 7 below highlights the key departments and essential staff positions to be included on the Response Team. Additional staff may be included depending on circumstances of the shortage.

Weekly or bi-weekly staff meetings will be initiated prior to the declaration of a shortage to start preparing the response effort and Community Water Resiliency Campaign. Ideally, this should be started as soon as the Public Works Department acquires enough information to warrant the consideration of such a declaration. This may occur early spring prior to final snowpack accumulation if there is sufficient climatic data suggesting a drought of such intensity that a declaration is warranted. The initial Response Team meetings will focus on the response measures and Community Water Resiliency Campaign. Suggested items are listed below. As the shortage persists, the Public Works Department will be responsible for developing agendas, posting meeting minutes, and facilitating discussions as appropriate.

DRAFT

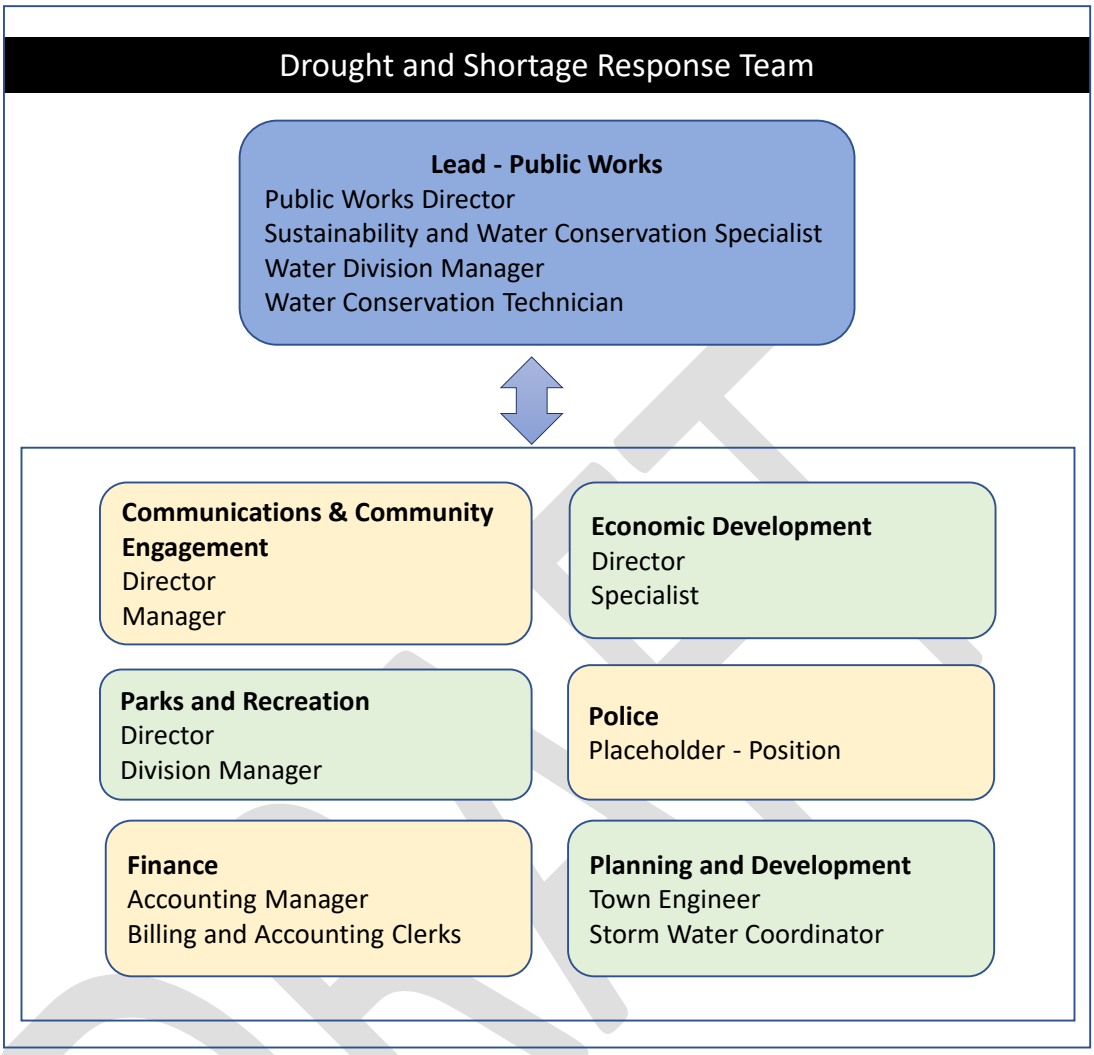


Figure 7: Drought and Shortage Response Team `

- Review of funds available for implementation of the drought and water shortage response.
- Actions necessary to initiate the response measures necessary to achieve the appropriate water use reduction target.
- Messaging to the community including education of Town staff interfacing with the public and an outreach plan for conveying the messaging. This should include how the messaging will be conveyed and how the Town will receive input from the community as the shortage persists.
- Roles and responsibilities of individual staff in carrying out the response.
- Actions necessary for enforcement (if applicable).

An overview of roles and responsibilities on a departmental level for administering the drought and shortage response is provided in Table 9 below. This will need to be refined to include specific staff members and

individual responsibilities at the onset of the declaration. Responsibilities will be adjusted throughout the declaration period as each response is unique.

Table 9: Implementation of the Drought and Water Shortage Response

Roles and Responsibilities	Timeframe	Lead
Monitor climate and hydrologic indicators Calculate drought index.	Year round with frequency increasing early spring	Public Works Parks and Recreation
Provide recommendations to Town Board on shortage declaration.	ASAP prior to declaration	Public Works
Formulate interdepartmental Response Team and facilitate weekly or bi-weekly meetings.	ASAP prior to declaration and during declaration period	Public Works
Develop plan for shortage response (using Table ES-1 and Section 7 as a guideline).	ASAP prior to declaration	Public Works (with help from Response Team)
Develop plan for the Community Water Resiliency Campaign.	ASAP prior to declaration	Marketing and Communications (with help from Response Team)
Estimate costs and staff resource needs for implementation of response measures.	ASAP prior to declaration	Public Works (coordinate with Finance)
Administer response measures and coordinate responsibilities among Town staff.	During declaration period	Public Works (with help from Response Team)
Reduce irrigation to meet targeted reductions on parks and Town facilities.	During declaration period	Parks and Recreation
Monitor revenue changes and expenses.	During declaration period	Finance
Monitor enforcement actions including citation of fines (for Stage 3 Severe and Stage 4 Emergency).	During declaration period	Finance
Monitor irrigation use in relation to water savings target.	During declaration period	Parks and Recreation
Monitor water demands in relation to water use reduction target.	During declaration period	Public Works
Develop community messaging when coming out of a shortage or drought.	End of declaration	Communications
Closely monitor and document response (Section 8.5).	ASAP prior to declaration and during declaration period	Public Works

8.3 Enforcement of the Drought and Shortage Response

Enforcement of the drought and shortage response measures is needed when mandatory water restrictions are enacted and there is noncompliance. This will occur in Stage 3 “Severe” and Stage 4 “Emergency” and could potentially occur in Stage 2 “Watch” if monitoring data is showing that the necessary water use reduction target is not being achieved. Prior to enforcement, the Community Water Resiliency Campaign will craft messaging to prepare the community for mandatory restrictions underlying the importance of reducing water use and how the restrictions will be enforced. Appropriate transparency or data and consistency of messaging are important to gain community support and trust. The Public Works Department will work closely with the Communications & Community Engagement Department to ensure that information on enforcement is accurate and appropriately messaged.

DRAFT

Prior to stage declaration, the Public Works Department will work with the Response Team to determine the level of enforcement necessary and penalties assigned to infractions. The severity of penalty will depend upon the declared stage and number of infractions incurred by a customer. Penalties could range from warning citations and monetary fines to the temporary shut-off of water services in severe cases.

Enforcement will be managed by the Public Works Department in coordination with the Police Department. This will include patrol of neighborhoods and business districts to identify community members that are in violation of mandatory restrictions and issuing citations and appropriate penalties. Additional temporary staff or contractor(s) may be needed to assist with enforcement. The Public Works Department will work with the Response Team in identifying the necessary resources ensure sufficient enforcement. A call-in number (hotline) may also be established where members of the community can call to report infractions within their local area. These "hotline claims" would be verified by the Town prior to issuance of citations. Outreach and enforcement actions will also be coordinated with the Police Department to ensure consistent messaging and to explore further opportunities to coordinate with enforcement efforts.

Customers will also have an opportunity to appeal citations. Written appeals may be mailed/emailed to the Town Clerk's office at Town Hall (PO Box 750, Erie CO 80516 or 645 Holbrook Street Erie, CO 80516) providing justification for why the citation should be appealed. An email address may also be set up for correspondence. Reasons for appeal may include:

- The citation mistakenly included the wrong address.
- New resident has moved into a house that had received multiple previous citations through no fault of the new resident.
- Resident irrigates with water from a well of another service provider (Left Hand Water District).
- Resident is establishing new sod where frequent irrigation is necessary for establishment and has been approved for a temporary exemption.

For certain exceptions, signage may be provided by the Town for posting on the irrigated area informing others of why the exception exists for established water restrictions.



DRAFT

8.4 Revenue Implications and a Financial Budgeting Plan

A reduction in customer water use during periods of droughts and shortages also reduces water sales and consequently could result in a revenue shortfall for the utility. Increased costs associated with implementation of the drought and shortage response, Community Water Resiliency Campaign, and enforcement could further intensify the shortfall. At the onset of a declaration, the Public Works Department will work with the Finance Department in estimating the costs necessary to implement the response and potential revenue shortfalls. If necessary, the Public Works Department will request supplemental appropriations from the Town Board for additional funding.

In addition, Erie plans to seek available financial drought-related assistance (e.g., public drought-related loans, grants, etc.) in a "Watch", "Severe", or "Emergency" stage. Also, the shortage response calls for the consideration of a temporary shortage surcharge which would be applied to the utility bills that would be approved by the Town Board. The main objective of the surcharge is to provide additional financial incentive to save water; however, as a secondary benefit, the surcharge could also be used to help compensate for reduced water sales and increased response costs.

8.5 Monitoring of Response

The monitoring of Erie's mitigation, climatic monitoring data, and shortage response is important to ensuring Erie's success in preparing and responding to drought and shortages. The following data will be collected by the Public Works Department on an annual basis. This information provides a useful inventory of data that can be used to inform future drought and shortage planning along with long-term water supply planning efforts.



- Index and indicators – The drought index will be recorded on an annual basis (e.g., index calculated in November, March, April, and May) including the specific parameters needed to develop the drought index (see equation in Section 4). Information on the other indicators provided in Section 4 will also be recorded in addition to changes in CBT policy/operations, infrastructure repairs, or modifications that affect supply delivery, etc.
- Customer water demands – The Water Efficiency Plan provides a set of demand monitoring data to record on an annual basis.
- Drought mitigation measures – Status of the mitigation activities and documentation of other relevant factors that could be useful for future planning efforts.

Shortly following a shortage declaration, the Public Works Department, in coordination with the Response Team, will develop a report documenting the following items. These monitoring data provide a means to assess the effectiveness of this Plan and make beneficial adjustments for future water shortage response efforts.

DRAFT

- Water use and targets – Discussion and data supporting whether water use reductions corresponded to the response and how the present year's demands compare to previous non-drought years. This should include Parks and Recreation irrigation data as well as water use by the community.

- Community - Community perceptions and behavioral changes made in response to the Community Water Resiliency Campaign and shortage response. This includes documentation of public comments on the response given at public/Town meetings and through phone calls and electronic correspondence. Formal public surveys may also be used to gather public input.

- Administrative data on the response – This includes the amount of citations delivered to customers, summary of shortage-related calls received via a hotline, specific response measures that were enacted and enforced, etc.

- Lessons learned – Any issues, challenges, and concerns that arose during implementation of the response measures, enforcement, and the Community Water Resiliency Campaign.



9.0 Plan Adoption and Updates

9.1 Community Engagement and Public Review Process

Erie held a 30–day public review period from March 15 to April 15, 2021 to obtain feedback on this Plan as well as the Water Efficiency Plan. The plans were posted online where members of the public were able to review the plans and post comments. Additionally, Erie used a variety of methods to educate the community about the plans and receive public input. The outreach was conducted digitally during the 2020/2021 COVID pandemic and therefore, outreach and education was developed to accommodate safe distancing. These methods are highlighted in the bullets below.

- Announcements on the plan review process and the opportunity to provide comments were made through the following avenues during the public review period:
    - Customer water bills;
    - Social media outreach;
    - Letters and personal correspondence with commercial businesses and public and private schools; and
    - Personal correspondence with partners encouraging them to review the plans (e.g. Northern Water, Resource Central, registrants of the Green Business and HOA Program, Town's O.N.E. group, Town Advisory Boards, and the Sustainability listserv).
- A questionnaire asking for specific feedback on water efficiency and drought and water shortage response was distributed to members on the Town's community advisory boards during the public review period.
- A special study session was held during the public review period with stakeholders providing background on the plans, a panel session, and an opportunity for participants to ask questions.
- A community member from the Erie Open Space and Trails Advisory Board was included on the Planning Committee during the Plan development.
- A video session was held with Northern Water to discuss the resiliency of the CBT and Windy Gap water supply systems, the recent wildfires, Northern Water's response to drought, and its efforts in promoting water efficiency.

9.2 Plan Adoption or Promulgation

Resolution X was passed on X adopting the Town of Erie's Drought and Water Supply Shortage. Each Board member had the opportunity to review the Plan and comment prior to finalization of the Plan and formal approval. No additional regulatory codes were needed to as of a result of this Plan update. As a component of the Water Efficiency Plan, the Town plans to update its Water Waste Municipal Code 8-1-11 which will provide congruent priorities with this Plan as well as additional clarification on water waste.

Erie currently does not have any official agreements with other entities related to drought mitigation or response. Erie will consider entering future agreements if such agreement(s) provide Erie with drought mitigation and/or response benefits.

9.3 Periodic Review and Update

Erie's Drought Management Plan will be updated every seven years. The next update is scheduled for 2028. The new plan will incorporate information from the annual monitoring reports discussed in Section 8.5.

DRAFT

References

CWCB. 2030. Draft *Municipal Drought Management Plan Guidance Document*. https://cwcb.colorado.gov/drought-assistance. Accessed Jan. 28, 2021.

City of Thornton. 2019. *City of Thornton Drought Management Plan.* Prepared by: Headwaters Corporation.

City of Fort Collins Utilities. 2019. *Fort Collins Utilities Water Supply Vulnerability Study Draft Report*. Prepared by: Stantec.

CWCB. 2011. Sample Municipal Drought Management Plan.

Glossary of Meteorology, 2nd edition. 2000. American Meteorological Society.

Northern Water. 2020. Data on annual quota, CBT project reserves and CBT storage.

Pielke, Roger A et al. 2005. *Drought 2002 in Colorado: An Unprecedented Drought or a Routine Drought?* Pure and Applied Geophysics. DOI 10.1007/s00024-005-2679-6.

Town of Castle Rock. 2018. *Town of Castle Rock Municipal Drought Management Plan*. Prepared by: Amec Foster Wheeler.

Town of Erie. 2007. *Town of Erie Water Conservation Plan.*

Town of Erie. 2014. *Town of Erie Water Conservation Plan.*

Town of Erie. 2015. *Town of Erie Drought Management Plan.*

Town of Erie. 2020. *Water Supply and Demand Data.*

Town of Firestone. 2012. *Drought Management Plan.* Prepared by: Clear Water Solutions.

DRAFT

Appendix A – Park Designations

Placeholder - To be added in final draft

Put in disclaimer that these designations will change with time as Erie continues to develop.

DRAFT

Appendix B – Summary of Public Comments

Place holder - To be added in final draft

DRAFT

Appendix C – Resolution Adopting Plan

Place holder - To be added in final draft

DRAFT