CITY OF MEDICINE HAT

Water Shortage Management Plan

For more information, contact:
Director of Environmental Utilities
Office: 403-529-8176
Email: eu@medicinehat.ca

May 24, 2024
(Adapted from 2018 Drought Management Plan)

Medicine Hat

CITY OF MEDICINE HAT

Water Shortage Management Plan

Table of Contents

Document Control

Document Owners	
Ownership	**Department**
Lead	Environmental Utilities
Support	Emergency Management

Document Print Control		
Copy #	**Recipient**	**Location**
1	Director of EU	Environmental Utilities Administration Building
2	Managing Director of D&I	Development and Infrastructure, City Hall

Unless identified as an original copy as per the Document Print Control section, this document is considered uncontrolled and may be out of date when printed.

Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AHS	Alberta Health Services
CEM	Communications, Engagement & Marketing, a City of Medicine Hat department
City	City of Medicine Hat
D & I	Development and Infrastructure, a City of Medicine Hat division
DEM	Director of Emergency Management
ELT	Executive Leadership Committee, a City of Medicine Hat committee
EPA	Alberta Environment and Protected Areas
EU	Environmental Utilities, a City of Medicine Hat department
IWCC	Intrabasin Water Coordinating Committee
m^3/s	Cubic metre per second flow rate
MAA	Master Agreement on Apportionment
MEMP	Municipal Emergency Management Plan
Plan	Water Shortage Management Plan
SMRID	St. Mary River Irrigation District
SSR	South Saskatchewan River
SSRB	South Saskatchewan River Basin
TP	Treatment Plants
WSAs	Water Shortage Advisor(s)
WTP	Water Treatment Plant

Introduction

Plan Purpose

The purpose of the Water Shortage Management Plan (the "Plan") is to outline the guidelines established by the City of Medicine Hat (the "City") to be followed in the event of a water shortage and/or drought. The Plan serves as the foundation for a prioritized, systematic framework of actions and measures to be implemented during progressive phases of water shortage or drought management.

The Plan covers specific response elements for the following City departments:

1. Communications, Engagement & Marketing (CEM)
2. Electric Generation
3. Environmental Utilities (EU)
4. Emergency Management
5. Parks & Recreation

Drought Conditions

Drought is a prolonged period of abnormally low precipitation, often combined with high temperatures in spring and summer, leading to below average water supply and/or flow. Severe or prolonged drought conditions can impact the City's ability to provide adequate treated water to all customers.

The City's water supply is drawn from the South Saskatchewan River (SSR). Originating at the confluence of the Bow River and Oldman River west of Medicine Hat at Grassy Lake, the SSR is part of the South Saskatchewan River Basin (SSRB). With headwaters originating in the Rocky Mountains, the City's water supply is susceptible to upstream drought conditions.

Drought within the SSRB is the result of reduced snowfall and rainfall, and often high temperatures, leading to a sustained period of below average spring runoff into reservoirs and rivers, reducing water storage and supply security. These conditions are discussed during annual Intrabasin Water Coordinating Committee (IWCC)

meetings and with Alberta Environment and Protected Areas (EPA). This information is used to inform internal decision making in the event of water shortage or drought.

Plan Goal

The severity of water shortage or drought conditions can range from mild to critical; there could be a shortage in the City's water supply, or an inability for the Water Treatment Plant (WTP) to maintain adequate pumping capacity. It is important that the City establishes guidelines to be followed during a water shortage or drought to mitigate and/or prevent the impacts of a water shortage emergency situation.

Effective water shortage and/or drought management can help protect the integrity of potable water systems to safeguard and preserve public health and safety, especially regarding domestic water use, sanitation, and fire protection.

Plan Implementation

The Plan applies to all entities utilizing the City's water supply. The service area is within the City's municipal boundaries, but also includes:

1. Specified bulk supply gates to Cypress County, as defined in the Potable Water Supply Agreement with Cypress County.
2. Bulk supply to two Water Co-ops as defined in the Water Supply Agreements with each association.

The Plan will be initiated at the discretion of the Director of EU (the "Director"). Triggers for Plan initiation may include forecasted adverse impacts of a water supply shortage, a water shortage emergency condition, or anticipation of water conservation mandates from EPA. The Plan may also be implemented based on direction from EPA to meet the requirements of the Master Agreement on Apportionment (MAA).

Document Review

The Plan shall be reviewed every three years or as required by the Director. During each review, the addition and/or implementation of long-term water conservation measures to the Plan shall be considered.

General Procedures

Since the severity, timing, and duration of water shortage and/or drought can be unpredictable, this Plan serves as a guideline for actions that may be taken throughout escalating water shortage and/or drought management phases. Any specific direction on actions to be taken from EPA shall prevail over the provisions of the Plan.

Below is an overview of actions to be completed in the event of a water shortage or drought.

1. Drought Identification

Forecast water shortage or drought conditions within the SSRB are communicated to the Director or Water & Wastewater Treatment Plants Manager (TP Manager) by the IWCC at annual meetings during spring. Once the IWCC and/or EPA has forecasted a water shortage or drought, the TP Manager shall monitor river flow levels as well as the City's water demand. Communication with EPA and/or IWCC shall continue as necessary to ensure the City is aware of changes in the forecast conditions. The Risk Assessment Considerations (Appendix A) may also be used to determine water shortage or drought management actions.

Initial Contacts

Once water shortage or drought conditions have been identified to be of concern by the Director, they will be communicated to:

a) The Director of Emergency Management (DEM)
b) The Managing Director of Development & Infrastructure (D & I)
c) The City Manager and Executive Leadership Team (ELT)
d) Any applicable stakeholders including, but not limited to:
    I. Impacted City Departments
    II. Cypress County
    III. Water Co-ops
    IV. Industry stakeholders
    V. The public
    VI. Alberta Health Service (AHS)
    VII. EPA and/or IWCC

2. Response Actions

Appointing Water Shortage Advisors

The Director shall appoint Water Shortage Advisors (WSAs) as required to ensure effective Plan implementation. WSAs must possess the qualifications and experience to effectively collect and assess technical information associated with drought to a high degree of accuracy.

Determining Advancement of Water Shortage and/or Drought Phases

Various actions are required from many City departments as water shortage and/or drought phases progress and severity of the City's response increases. The decision-making hierarchy also shifts with changing phases. The following shall be responsible for declaring the escalation/de-escalation of Plan phases:

Phase 1: Director in consultation with WSAs.

Phase 2: Managing Director of D & I with recommendation from Director.

Phase 3: City Manager with recommendation from Managing Director of D & I and Director.

Phase 4: DEM as determined by the current situation and adverse impacts on critical infrastructure.

Communicating Water Shortage and/or Drought Conditions

The Director and/or delegate shall ensure Plan provisions are communicated to applicable stakeholders. Stakeholders shall then be responsible for communicating information as required.

Monitor Water Shortage and/or Drought Conditions

The WSAs shall monitor, or facilitate monitoring of, and report on current conditions to the Director. Conditions include, but are not limited to:

- Drought conditions in the SSR.
- WTP pumping capacity.
- Electric Generation operating demands.
- Parks & Recreation water usage.
- Other City department water usage.
- Effectiveness of water conservation efforts.

Water Conservation Measures

The City shall implement both voluntary and/or mandatory water conservation measures to lessen water demand. Voluntary actions shall be prevalent in the early Plan phases to promote reductions in short-term water use. CEM shall work with EU to encourage voluntary and/or mandatory water conservation measures by recommending opportunities for customers to reduce water use.

Mandatory water conservation measures shall be implemented should voluntary measures not provide sufficient reduction in water demand. These measures shall be enforced through the service shut off provisions outlined in Bylaw #2379.

City Water Conservation Measures

The City shall lead by example throughout Plan implementation to demonstrate its commitment to managing drought and water shortage impacts. All departments shall implement mandatory water conservation measures at or above those expected of external entities. City departments with significant water use must also be able to initiate water conservation measures immediately upon instruction to do so.

Determining the Termination of Plan Phases

Phases are transitioned to higher/lower levels when the entity responsible for initiating the phase determines the water shortage and/or drought conditions leading to the initiation of the phase either no longer exist, have been mitigated, or have increased in severity and/or magnitude. They shall also consider recommendations provided by the WSAs.

3. Follow-Up Actions

The City shall carry out an after-action review of all actions taken after water shortage and/or drought conditions have subsided. The review will assess whether response actions assured all possible management actions were taken to protect public health and safety. Deficiencies will be identified and addressed in Plan updates.

Roles & Responsibilities

Detailed below are the roles and responsibilities for entities involved in the City's drought and water shortage management.

City Manager

The City Manager shall serve as the liaison with City Council. They shall also provide corporate resources, where available, and support within their authority to direct business continuity in support of the Plan.

Managing Director of Development & Infrastructure

The Managing Director of D & I shall serve as the liaison with the D & I Committee and ELT. They shall also provide strategic direction and support as Plan phases progress in severity and/or as conflicting City departments require mediation.

Director of Environmental Utilities

The Director shall assume overall management of the incident; and delegate tasks and responsibilities to others in the role of Incident Commander until the DEM states otherwise. The Director shall oversee WSAs, delegating tasks as required by current drought or water shortage conditions.

The Director shall serve as the primary liaison between all impacted stakeholders and shall provide strategic direction throughout all Plan phases. During early Plan phases, the Director or designate shall be the media spokesperson for communications related to the event.

Emergency Management

The DEM shall monitor Plan implementation and provide support where available. The DEM shall activate the Municipal Emergency Management Plan (MEMP) and implement other emergency response plans as required.

Water Shortage Advisor(s)

The WSAs shall serve as subject matter experts and department liaison(s) to ensure successful Plan implementation. The team of WSAs shall be comprised of interdepartmental technical experts representative of all stakeholders impacted by water shortage and/or drought conditions. WSAs shall be appointed by the Director to ensure effective Plan implementation.

WSAs are responsible to:

1. Maintain communication with EPA.
2. Assess the potential risk of water shortage and/or drought conditions on City operations.
3. Recommend to the Director the escalation/de-escalation of Plan phases based on risk assessment.
4. Evaluate and report on Plan effectiveness.
5. Provide additional information as requested.
6. Complete additional tasks as assigned by the Director.

Communications Engagement & Marketing

CEM shall relay current information to the media and public and assist in the relay as stated in the City's Crisis Communication Plan. Public engagement and outreach shall increase to ensure awareness of voluntary and mandatory water conservation measures, and how to achieve them.

Electric Generation

Electric Generation shall monitor and report to the Director or designate on the operational status of generation turbines. Applicable water conservation measures shall be implemented as required by the current response phase.

Parks & Recreation

Parks & Recreation shall monitor and report to the Director or designate on water usage as required by the current response phase. Applicable water conservation measures shall be implemented as required by the current response phase (Appendix B).

Stakeholders

Applicable stakeholders shall monitor and report to the director or designate on water usage upon instruction from the Director and/or WSAs. Applicable water conservation measures shall be implemented as required by the current response phase.

Stakeholders may include:

1. AHS
2. Cypress County
3. Water Co-ops
4. Local school divisions
5. The public
6. Industries and other businesses with substantial water use
7. Other impacted City departments
    - May include Fire & Emergency Services, Utility Distribution Systems, Municipal Works, Bylaw Enforcement, and Parks & Recreation.

Public water conservation measures outlined in the Plan apply to residents within the City's municipal boundaries. Industry water conservation measures apply to all industrial corporations and businesses not operating under separate water licenses.

Other stakeholders shall be advised of current conditions as required.

Dependent on water shortage and/or drought conditions, Cypress County will monitor river levels and implement water restrictions as per Plan recommendations and individual agreements.

Water Shortage and/or Drought Response Phases Summary

The Plan's water shortage and/or drought response phases provide a guideline of actions to be taken throughout escalating water shortage and/or drought conditions.

Due to the variability of water shortage and/or drought conditions and their impact on City water supply, outlined actions are subject to change based on the discretion of EPA, the City Manager, Managing Director of D & I, Director, and/or WSAs to ensure effective mitigation of water shortage and/or drought impacts.

Summary of Water Shortage and/or Drought Response Phases			
Phase	**Level**	**Triggers**	**Actions**
1	Warning	Risk Assessment Considerations	Appoint WSAs to monitor, evaluate and prepare the City for the risk of worsening water shortage and/or drought. Increase public messaging on water conservation and be prepared to advise the public and industry on potential water conservation measures.
2	Moderate	Risk Assessment Considerations	Monitor, evaluate and prepare for the risk of escalating water shortage and/or drought conditions and minimize water demand. Increase drought preparation messaging and advise the public and industry on water conservation measures.
3	Severe	Risk Assessment Considerations Increased threat to WTP ability to maintain capacity	Monitor, evaluate and prepare for the risk of critical water shortage and/or drought conditions and limit non-essential water use to maintain operational status.
4	Emergency	Risk Assessment Considerations Loss of water supply	MEMP activation and implementation of applicable plans as required.

Phase 1: Water Shortage and/or Drought Warning

Summary

Possible Conditions

- SSR rates below normal (seasonal demand may be a factor).
- Forecasted water shortage/drought by IWCC.
- EPA posts a water shortage advisory for Medicine Hat.
- EPA requests activation of water shortage plans.
- Political considerations (i.e., upstream communities have issued water restrictions, however they may have different operating conditions).
- WTP able to maintain adequate pumping capacity.
- Water supply is sufficient to maintain Electric Generation operations.
- There is no threat of a loss of water supply.
- There is no threat to public health and safety.

Initiation

The Director shall be responsible for initiating Phase 1 of the Plan.

De-Escalation

Phase 1 is moved back to normal at the discretion of the Director and/or when the SSR at Medicine Hat flow returns to acceptable flow rates.

Goals

- Appoint WSAs to help prepare the City for the possibility of worsening water shortage and/or drought.
- 10% reduction of current water use throughout the community.

Phase 1: Water Shortage and/or Drought Warning
Response Actions

Director of Environmental Utilities

☐ **Receive information/direction from EPA and/or IWCC**
- Review information and forecast provided by EPA and/or IWCC, and current situation.
- Coordinate, provide information for follow-up reviews with EPA and/or IWCC, WSAs.
- Provide additional information as requested.

☐ **Appoint WSAs**
- Brief WSAs on current situation and provide additional direction as required.

☐ **Engage stakeholders to review current situation**
- Correspond with impacted City departments (i.e., Electric Generation, Utility Distribution Systems, Parks & Recreation, Fire & Emergency Services, CEM, etc.).
- Correspond, as required, with representatives from Cypress County, Water Co-ops, Industry stakeholders, local school boards and golf courses.
- Review Plan for specific actions required from each City department or stakeholder.
- Communicate voluntary and mandatory water conservation measures.
- Advise City departments and stakeholders to review internal water conservation practices.

☐ **Prepare media statement to advise on current situation**
- Coordinate with CEM for media release.
- Develop communication statement requesting the public implement water conservation measures.
- Speak with media.

☐ **Oversee all actions carried out by WSAs**
- Ensure communication with stakeholders.
- Communicate advice from WSAs as required.
- Delegate tasks as required, ensuring WSAs obtain information as required.

☐ **Initiate action as directed by EPA**

Managing Director of Development & Infrastructure

☐ **Contact D & I Committee for situation brief**
- Brief D & I Committee on current situation and EPA and/or IWCC forecast.
- Inform ELT to coordinate water shortage response actions as required.

Water Shortage Advisor(s)

☐ **Receive information/direction from Director**
- Review information provided by EPA and/or IWCC and current forecast.
- Participate in EPA and/or IWCC reviews.
- Provide additional information as requested.

☐ **Review Plan**
- Review the current version of the Plan.
- Identify differences between any EPA direction and the Plan.

☐ **Assess risk of current and continuing water shortage and/or drought conditions**
- Complete weekly assessment of conditions using the Plan's Risk Assessment Considerations (Appendix A).

☐ **Evaluate effectiveness of the Plan**
- Evaluate the effectiveness of all actions taken under the Plan.

☐ **Report pertinent information and recommendation to Director**

Director of Emergency Management

☐ **Receive information from Director**

- Review information provided by Director.
- Provide assistance and/or guidance as requested.

Environmental Utilities

☐ **Monitor WTP**

- Monitor daily WTP pumping capacity.
- Report information weekly to Director and/or WSAs.

☐ **Monitor SSR**

- Monitor SSR flow rate daily.
- Report information weekly to Director and/or WSAs.

☐ **Monitor water distribution system**

- Monitor reservoir levels and pumping capacities.
- Report information to Director and/or WSAs as required.

Parks & Recreation

☐ **Monitor water usage**

- Estimate monthly water use.
- Report information monthly to Director and/or WSAs.
- Report water conservation measures taken to Director and/or WSAs.

Electric Generation

☐ **Monitor generation turbines**

- Monitor daily water use and optimize operation of generator turbines to minimize intake requirements.
- Report information weekly to Director and/or WSAs.
- Communicate to Managing Director D & I and Director if turbine shut down is required.

Communications, Engagement & Marketing

☐ **Engage media and public**

- Review statement developed by/with the Director.
- Contact media venues for media release to the public.
- Increase water conservation messaging in coordination with EU.

Stakeholders: Cypress County, Industry, Other City Departments

☐ **Receive information from Director**

- Receive information provided by EPA and/or IWCC and current forecast.
- Review license agreements and direction from Director as required.

☐ **Develop/review internal water shortage and/or drought plans**

- Develop and/or review internal plans.

☐ **Review/implement local water conservation measures**

- Implement water conservation measures as required.

Phase 1: Water Shortage and/or Drought Warning
Water Conservation Measures

The following water conservation measures may be implemented upon initiation of a Phase 1 water shortage and/or drought and remain in effect until conclusion of the water conservation period. Measures should be considered options, recognizing each situation is different.

Water Conservation Measures*		
City Departments	Mandatory	
	Develop and/or review operational water conservation measures. Implement measures to minimize non-essential water use.	
Environmental Utilities	Mandatory	
	Develop and/or review operational water conservation measures while maintaining regulatory compliance obligations. Implement measures to minimize non-essential water use. Review hydrant bottle fill station water use.	
Parks & Recreation	Mandatory	
	Implement Phase 1 of the Water Conservation Plan (Appendix B).	
Electric Generation	Mandatory	
	No actions at this time.	
Public	Mandatory	Voluntary
	No actions at this time.	Implement water conservation measures to minimize non-essential water use. (e.g., limiting irrigation, using washing machines and dishwashers only on full loads, etc.). Limit irrigation of lawn and vegetable gardens to **60 minutes per day** not more than **three days per week** corresponding with residential odd and even address numbers as follows: • Even number addresses (ending in 0, 2, 4, 6, 8) may use outdoor irrigation and sprinklers on Tuesday, Thursday, and Saturday. • Odd number addresses (ending in 1, 3, 5, 7, 9) may use outdoor irrigation and sprinklers on Wednesday, Friday, and Sunday.
Industry	Mandatory	Voluntary
	No actions at this time.	Develop and/or review operational water conservation measures. Implement water conservation practices to minimize non-essential water use.

*Water conservation measures subject to change based on direction from EPA and/or IWCC.

Phase 2: Moderate Water Shortage and/or Drought Conditions

Summary

Possible Conditions

- SSR rates below normal (seasonal demand may be a factor).
- Forecasted water shortage/drought by IWCC.
- EPA posts a water shortage advisory for Medicine Hat.
- EPA requests activation of water shortage plans.
- Political considerations (i.e., upstream communities have issued water restrictions, however they may have different operating conditions).
- WTP able to maintain adequate pumping capacity.
- Water supply is sufficient to maintain Electric Generation operations.
- There is no threat of a loss of water supply.
- There is no threat to public health and safety.

Initiation

The Managing Director D & I, with recommendation from the Director, shall be responsible for declaring the advancement to Phase 2 of the Plan.

De-Escalation

Phase 2 returns to Phase 1 at the discretion of the Managing Director of D & I with recommendation from the Director, and/or WSAs.

Goals

- Monitor, evaluate and prepare the City for the risk of escalating water shortage and/or drought conditions.
- 20% water use reduction throughout the community.

Phase 2: Moderate Water Shortage and/or Drought Conditions

Response Actions

Director of Environmental Utilities

☐ **Receive information/direction from EPA and/or IWCC**

- Review information and forecast provided by EPA and/or IWCC, and current situation.
- Coordinate, provide information for follow-up reviews with EPA and/or IWCC, WSAs.
- Provide additional information as requested.

☐ **Communicate with WSAs**

- Brief WSAs on current situation and provide additional direction as required.
- Provide information for follow-up reviews with EPA and/or IWCC.
- Engage WSAs to obtain information as required.

☐ **Engage stakeholders to review current situation**

- Coordinate meeting with impacted City departments (i.e., Electric Generation, Utility Distribution Systems, Parks & Recreation, Fire & Emergency Services, CEM, etc.).
- Coordinate meetings, as required, with representatives from Cypress County, Water Co-ops, Industry stakeholders and golf courses.
- Review current situation and EPA and/or IWCC forecast.
- Review Plan for specific actions required from each City department or stakeholder.
- Communicate voluntary and mandatory water conservation measures.
- Coordinate follow-up reviews with EPA and/or IWCC.

☐ **Prepare media statement to advise on current situation**

- Coordinate with CEM for media release.
- Develop communication statement requesting public implement water conservation measures.
- Speak with media.

☐ **Initiate action as directed by EPA**

Managing Director of Development & Infrastructure

☐ **Contact D & I Committee to brief on situation**

- Brief D & I Committee on current situation and forecast provided by EPA and/or IWCC as required.
- Inform ELT to coordinate water shortage response actions as required.

Water Shortage Advisor(s)

☐ **Receive information/direction from Director**

- Review information provided by EPA and/or IWCC and current forecast.
- Participate in EPA and/or IWCC reviews.
- Provide additional information as requested.

☐ **Review the Plan**

- Review the current version of the Plan.
- Identify differences between any EPA direction and the Plan.

☐ **Assess risk of current and continuing drought conditions**

- Complete daily assessment of drought conditions using the Plan's Risk Assessment Considerations (Appendix A).

☐ **Evaluate effectiveness of the Plan**

- Evaluate the effectiveness of all actions taken under the Plan.

☐ **Report pertinent information and recommendation to Director**

Director of Emergency Management

☐ **Receive information from Director**

- Review information provided by Director.
- Provide assistance and/or guidance as requested.

Environmental Utilities

☐ **Monitor SSR**

- Monitor SSR flow rate daily.
- Report information weekly to Director and/or WSAs.

☐ **Monitor WTP**

- Monitor daily WTP pumping capacity.
- Report information weekly or as required to Director and/or WSAs.

☐ **Monitor water distribution system**

- Monitor reservoir levels and pumping capacities.
- Report information to Director and/or WSAs as required.

Parks & Recreation

☐ **Monitor water use**

- Estimate weekly water use.
- Report information weekly to Director and/or WSAs.
- Report water conservation measures taken to Director and/or WSAs.

Electric Generation

☐ **Monitor generation turbines**

- Monitor daily water use and optimize operation of generator turbines to minimize water intake requirements.
- Report information daily to Director and/or WSAs.
- Communicate to Managing Director D & I and Director if turbine shut down is required.

Communications Marketing & Engagement

☐ **Engage Media**

- Review statement developed by/with the Director.
- Contact media venues for media release to the public.
- Increase water conservation messaging in coordination with EU.

City Manager

☐ **Contact City Council to brief on situation**

- Brief City Council on current situation and forecast provided by EPA and/or IWCC as required.

Stakeholders: Cypress County, Industry, Other City Departments

☐ **Receive information from Director**

- Receive information provided by EPA and/or IWCC and current forecast.
- Review license agreements and direction from Director as required.

☐ **Develop/review drought management plan**

- Review internal plans.

☐ **Review/implement local water conservation measures**

- Implement water conservation measures as required.

Phase 2: Moderate Water Shortage and/or Drought Conditions

Water Conservation Measures

The following water conservation measures may be implemented upon initiation of a Phase 2 water shortage and/or drought and remain in effect until conclusion of the water conservation period. Measures should be considered options, recognizing each situation is different.

Water Conservation Measures*		
City Departments	Mandatory	
	Implement water conservation measures to minimize non-essential water use.	
Environmental Utilities	Mandatory	
	Implement means to conserve and/or reuse water during operational and maintenance functions as required to maintain regulatory compliance obligations. Review hydrant bottle fill station water use.	
Parks & Recreation	Mandatory	
	Implement Phase 2 of the Water Conservation Plan (Appendix B).	
Electric Generation	Mandatory	
	No actions at this time.	
Public	Mandatory	Voluntary
	<u>Restricted</u>: Limit irrigation of lawn and vegetable gardens to **45 minutes per day** not more than **three days per week** corresponding with residential odd and even address numbers as follows: • Even number addresses (ending in 0, 2, 4, 6, 8) may use outdoor irrigation and sprinklers on Tuesday, Thursday, and Saturday. • Odd number addresses (ending in 1, 3, 5, 7, 9) may use outdoor irrigation and sprinklers on Wednesday, Friday, and Sunday. **<u>Prohibited</u>**: Use of decorative outdoor water features, washing outdoor surfaces, and filling swimming pools/hot tubs.	Implement water conservation measures to minimize non-essential water use. (e.g., using washing machines and dishwashers only on full loads, stop washing vehicles, etc.)
Industry	Mandatory	Voluntary
	No actions at this time.	Implement water conservation practices to minimize non-essential water use.

*Water conservation measures subject to change based on direction from EPA and/or IWCC.

Phase 3: Severe Water Shortage and/or Drought Conditions Summary

Possible Conditions

- SSR flow rates significantly below normal (seasonal demand may be a factor).
- Forecasted water shortage/drought by IWCC.
- EPA posts a water shortage advisory for Medicine Hat.
- EPA requests activation of water shortage plans.
- Political considerations (i.e., upstream communities have issued water restrictions, however they may have different operating conditions).
- WTP able to maintain adequate pumping capacity with water conservation efforts.
- Water supply is sufficient to maintain Electric Generation operations but approaching threshold.
- There is concern of a loss of water supply.
- There is an escalating threat to public health and safety.

Initiation

The City Manager, with recommendation from the Managing Director D & I and the Director, shall be responsible for declaring the advancement to Phase 3 of the Plan.

De-Escalation

Phase 3 returns to Phase 2 at the discretion of the City Manager with recommendation from the Managing Director D & I and the Director.

Goals

- Monitor, evaluate and prepare the City for the risk of escalating to critical water shortage and/or drought conditions.
- Limit non-essential water use only to maintain operational status.
- 30% water use reduction throughout the community.

Phase 3: Severe Water Shortage and/or Drought Conditions

Response Actions

Director of Environmental Utilities

☐ **Receive information/direction from EPA and/or IWCC**

- Review information and forecast provided by EPA and/or IWCC, and current situation.
- Coordinate, provide information for follow-up reviews with EPA and/or IWCC, WSAs.
- Provide additional information as requested.

☐ **Communicate with WSAs**

- Brief WSAs on current situation and provide additional direction as required.
- Provide information for follow-up reviews with EPA and/or IWCC.
- Request assessment of Electric Generation and WTP water use to determine need for Electric Generation water conservation measures.
- Engage WSAs to obtain information as required.

☐ **Engage stakeholders to review current situation**

- Coordinate meeting with impacted City departments (i.e., Electric Generation, Utility Distribution Systems, Parks & Recreation, Fire & Emergency Services, Communications Engagement & Marketing, etc.).
- Coordinate meetings, as required, with representatives from Cypress County, Water Co-ops, Industry stakeholders, and golf courses.
- Review current situation and EPA and/or IWCC forecast.
- Review Plan for specific actions required from each City department or stakeholder.
- Communicate voluntary and mandatory water conservation measures.
- Coordinate follow-up reviews with EPA and/or IWCC.

☐ **Prepare media statement to advise on current situation**

- Coordinate with CEM for media release.
- Develop communication statement mandating the public implement water conservation measures.
- Speak with media.

☐ **Initiate action as directed by EPA/IWCC**

Managing Director of Development & Infrastructure

☐ **Contact D & I Committee to brief on situation**

- Brief D & I Committee on current situation and forecast provided by EPA and/or IWCC as required.
- Inform ELT to coordinate water shortage response actions as required.

☐ **Assess need for additional water conservation measures**

- Review information provided by Director.
- Determine need and identify opportunities for additional water conservation measures to lessen water demand.
- Communicate any additional water conservation measures to City Manager, Director, Electric Generation.

Water Shortage Advisor(s)

☐ **Receive information/direction from Director**

- Review information provided by EPA and/or IWCC and current forecast.
- Participate in EPA and/or IWCC reviews with Director.
- Provide additional information as requested.

☐ **Review the Plan**

- Review the current version of the Plan.
- Identify differences between any EPA direction and the Plan.

☐ **Assess risk of current and continuing drought conditions**
- Complete daily assessment of drought conditions using the Plan's Risk Assessment Considerations (Appendix A).

☐ **Evaluate effectiveness of the Plan**
- Evaluate the effectiveness of all actions taken under the Plan.

☐ **Report pertinent information and recommendation to Director**

Director of Emergency Management

☐ **Receive information from Director**
- Review information provided by Director.
- Provide assistance and/or guidance as required.

☐ **Activate MEMP if Electric Generation capacity is affected**
- Monitor Plan implementation to determine need for MEMP activation.

Environmental Utilities

☐ **Monitor WTP**
- Monitor daily WTP pumping capacity.
- Report information daily to Director and/or WSAs.

☐ **Monitor SSR**
- Monitor SSR flow rate daily.
- Report information daily to Director and/or WSAs.

☐ **Monitor water distribution system**
- Monitor reservoir levels and pumping capacities.
- Report information to Director and/or WSAs as required.

Parks & Recreation

☐ **Monitor water use**
- Estimate daily water use.
- Report information daily to Director and/or WSAs.
- Report water conservation measures taken to Director and/or WSAs.

Electric Generation

☐ **Monitor water usage**
- Monitor daily water use and optimize operation of generator turbines to minimize water intake requirements.
- Report information daily to Director and/or WSAs.
- Communicate to Managing Director D & I, Director and DEM if turbine shut down is required.

Communications, Engagement & Marketing

☐ **Engage Media**
- Review statement developed by/with the Director.
- Contact media venues for media release to the public.
- Increase water conservation messaging in coordination with EU.

City Manager

☐ **Contact City Council to brief on situation**
- Brief City Council on current situation and forecast provided by EPA and/or IWCC as required.

☐ **Assess need for additional water conservation measures**
- Assist Managing Director D & I with decision making processes as required.

Stakeholders: Cypress County, Industry, Other City Departments

☐ **Receive information from Director**

- Receive information provided by EPA and/or IWCC and current forecast.
- Review license agreements and direction from Director as required.

☐ **Develop/review drought management plan**

- Review internal plans.

☐ **Review/implement local water conservation measures**

- Implement water conservation measures as required.

Phase 3: Severe Water Shortage and/or Drought Conditions

Water Conservation Measures

The following water conservation measures may be implemented upon initiation of a Phase 3 water shortage and/or drought and remain in effect until conclusion of the water conservation period. Measures should be considered options, recognizing that each situation is different.

Water Conservation Measures*		
City Departments	Mandatory	
	Minimize non-essential water use to maintain operational status.	
Environmental Utilities	Mandatory	
	Minimize non-essential water use while maintaining operational status and regulatory requirements. Remove hydrant bottle fill stations.	
Parks & Recreation	Mandatory	
	Implement Phase 3 of the Water Conservation Plan (Appendix B).	
Electric Generation	Mandatory	
	Minimize non-essential water use to maintain operational status.	
Public	Mandatory	Voluntary
	<u>Restricted</u>: Limit watering of lawn and vegetable gardens to **30 minutes per day** not more than **two days** per week, by **hand-held means only,** corresponding with residential odd and even address numbers as follows: • Even number addresses (ending in 0, 2, 4, 6, 8) may use handheld means to water on Tuesday and Saturday. • Odd number addresses (ending in 1, 3, 5, 7, 9) may use handheld means to water on Wednesday and Sunday. **<u>Prohibited</u>**: Use of irrigation, decorative outdoor water features, washing outdoor surfaces, and filling swimming pools/hot tubs. Construction activities.	Implement water conservation measures to minimize non-essential water use. (e.g., limiting shower time, bath levels, toilet flushing, use of washing machines and dishwashers etc.).
Industry	Mandatory	Voluntary
	Limited to minimum potable water use to maintain operational status.	Any further actions to reduce water use.

*Water conservation measures subject to change based on direction from EPA and/or IWCC.

Phase 4: Emergency Water Shortage and/or Drought Conditions

Summary

Possible Conditions

- SSR flow rates extremely below normal.
- EPA communicates measures are required.
- EPA requests activation of water shortage plans.
- EPA posts a water shortage advisory for Medicine Hat.
- WTP unable to maintain adequate pumping capacity or has experienced complete loss of water supply.
- Water supply not sufficient to maintain Electric Generation operations.
- A threat exists to public health and safety.
- Political considerations (i.e., upstream communities have issued water restrictions).

Initiation

The DEM, in consultation with the City Manager, Managing Director of D & I and Director, is responsible for advancement to Phase 4 of the Plan based on the current situation and adverse impacts on critical infrastructure.

De-Escalation

Phase 4 returns to Phase 3 at the discretion of the DEM.

Goals

- MEMP activation and implementation of other plans as required.

Response Actions

- Refer to the MEMP, with direction from the DEM, for response procedures.

Phase 4: Emergency Water Shortage and/or Drought Conditions

Water Conservation Measures

The following water conservation measures shall be implemented immediately upon initiation of a Phase 4 water shortage and/or drought and remain in effect until conclusion of the water conservation period.

Water Conservation Measures*	
City Departments	Mandatory
	Water use is prohibited for all non-essential services.
Environmental Utilities	Mandatory
	Water use is prohibited for all non-essential services.
Parks & Recreation	Mandatory
	Implement Phase 4 of the Water Conservation Plan (Appendix B).
Electric Generation	Mandatory
	Water use is prohibited for all non-essential services.
Public	Mandatory
	Water use is prohibited for all non-essential uses.
Industry	Mandatory
	Water use is prohibited for all non-essential services.

*Water conservation measures subject to change based on direction from EPA and/or IWCC.

Enforcement

In accordance with Bylaw #2379 service shut off provisions, the Director may discontinue water supply to any customer in violation of any water conservation measures outlined in the Plan. One or more verbal or written warnings may be issued if, at the Director's discretion, such warnings may lead to compliance with the Plan. Pursuant to the response phases, Bylaw Enforcement will be engaged to inform them of current water restrictions in place.

Variances

Temporary variance may be granted in writing for existing water uses otherwise prohibited under the Plan. Temporary variances shall be considered should any conditions exist in which failure to grant such variance may cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or person requesting such variance. The following conditions must also occur:

1. Compliance with the Plan cannot be technically accomplished during the water supply shortage or other condition for which the Plan is in effect; and
2. Alternative methods cannot be implemented which would achieve the same level of reduction in water use.

Persons requesting temporary variance shall file a request to the City within 5 days of the Plan or particular response phase being invoked. All requests for variances shall be reviewed by the Director and shall include the following:

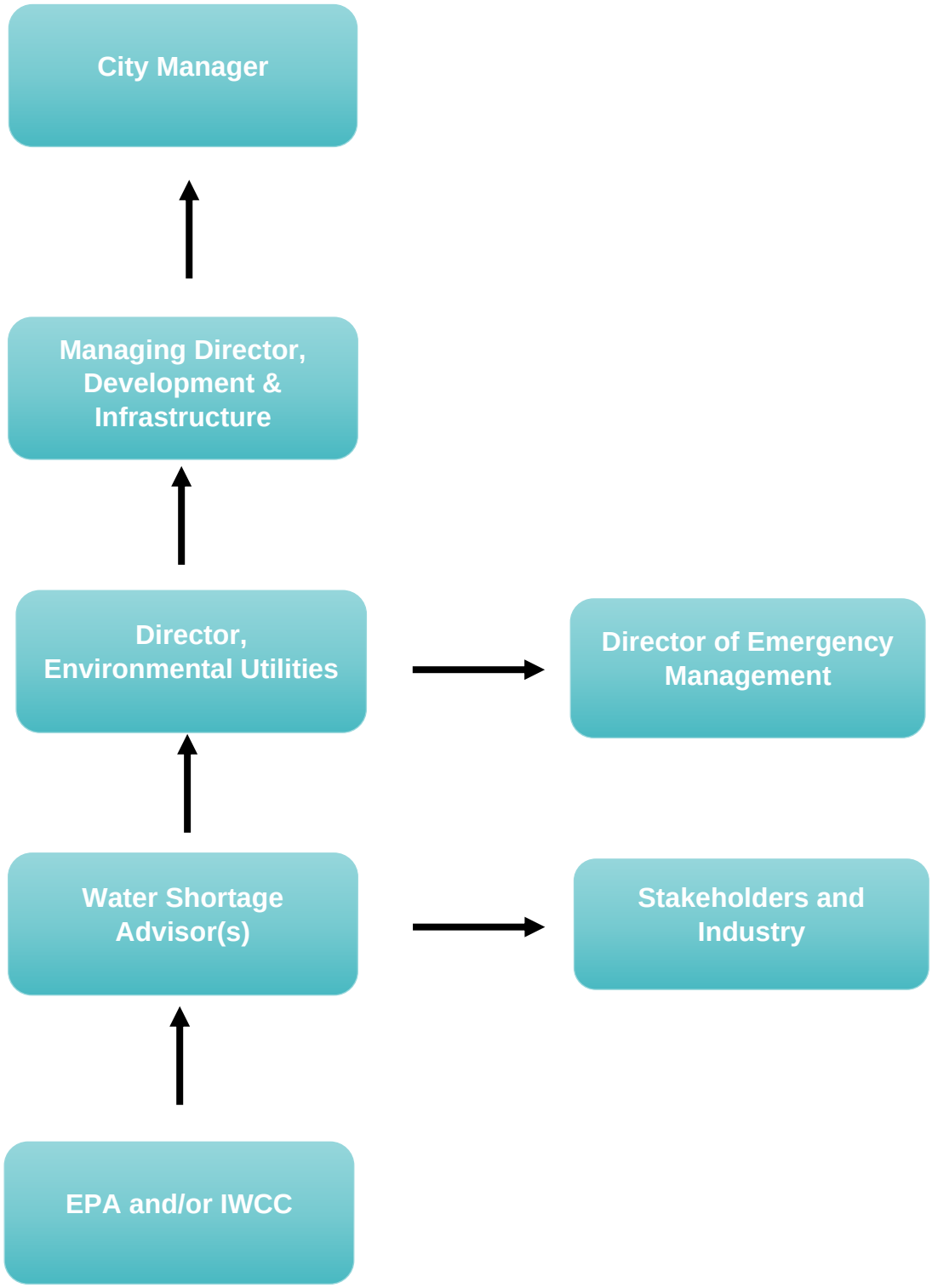
1. Name and address of the petitioner(s).
2. Purpose of water use.
3. Specific provision(s) of the Plan from which the petitioner is requesting relief.
4. Detailed statement as to how the specific provision of the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if the petitioner complies with the Plan.
5. Description of the relief requested.
6. Period of time for which the variance is sought.
7. Alternative water conservation measures or other measures the petitioner is taking or proposes to take to meet the intent of the Plan and the compliance date.
8. Other pertinent information.

Variances granted by the City shall be subject to the following conditions, unless waived or modified by the Director:

1. Variances granted shall include a timetable for compliance.
2. Variances granted shall expire when the Plan is no longer in effect.
3. The Director may cancel the variance if the petitioner has failed to meet specified requirements.
4. The Director may cancel the variance if water conditions have become more severe than anticipated when the variance was granted.

No variance shall be retroactive or otherwise justify any violation of the Plan occurring prior to the issuance of the variance.

Communication Tree – Plan Phases 1 - 3



Appendix A- Phase Advancement & Risk Assessment Considerations

Water Supply Conditions

☐ **What is the water supply forecast?**

- IWCC provides a forecast of conditions within the SSRB each spring. The forecast considers snowpack, precipitation, and upstream conditions.
- EPA may issue low-flow advisories. Consider upstream conditions in addition to low-flow advisories for the immediate area.
- Upstream conditions impact the water supply forecast for Medicine Hat. SSR flow levels will be significantly impacted by conditions of the Old Man and Bow Rivers.
- Lower soil moisture may increase stress on water supply. Irrigation districts may be regulated when water supply is low or reservoirs are down.

☐ **What direction has been provided by EPA?**

- EPA may implement recommendations to mitigate low flow levels. Direction provided by EPA takes precedence over the Plan. EPA's stages are as follows:
  Stage 1: Monitoring and observation: Water availability trend is a concern.
  Stage 2: Active management begins: Water shortages are predicted to occur.
  Stage 3: Priority call: Assessment and Administration of Priority.
  Stage 4: Multiple water management areas: Large scale water shortage.
  Stage 5: Declare an emergency under the Water Act: Emergency measures.
  Source: ***Water Shortage Management Stages****, published August 2023*.

☐ **Are overall conditions improving or worsening?**

- IWCC may coordinate a follow-up meeting to provide updates on drought conditions.

☐ **What are other municipalities doing?**

- Consider the actions (voluntary or mandatory) of other upstream municipalities impacted by similar conditions, and the public and media's perceptions of taking or not taking action.

☐ **Are the City's junior licenses impacted by the current flow rates?**

- Other City departments have junior water diversion licenses where water conservation measures must be taken, regardless of EPA direction.
- Consider the overall public/media perception of using water conservation measures in some departments in the City and not in others.

Water Demand Conditions

☐ **Have we reached peak water demand?**

- Peak water demand typically occurs in July and August.

☐ **Are WTP pumps able to keep up with demand?**

- It is uncertain at what river level the pumps at the WTP lose pumping capacity. Pumps need to be monitored closely as the threshold is approached so mitigation and response actions can be taken to lessen demand to prevent a loss of supply.
- WTP and Electric Generation river pump capacity is shared between facilities. Electric Generation requires potable water from WTP to maintain full steam production.
- If water conservation measures are insufficient to maintain adequate supply, the DEM may need to activate the MEMP.

☐ **How successful are other communities at maintaining water demands?**

- Redcliff may be experiencing the same pressures. Communication may be beneficial in determining the conditions of intakes and pumping capacity.

☐ **Are current water conservation measures effective?**

- The City Manager and/or Managing Director of D & I may choose to pursue additional or alternate water conservation measures to lessen water demand and avoid progression to a higher Plan phase.

Impacts of Water Conservation Measures

☐ **What are the financial and legal implications of rationing the water supply?**

- Costs to City and customers include cost of full import from the grid; legal implications from loss of industrial production; etc.

☐ **How much water can stakeholders ration before shutting down?**

- Consider minimal water use needed to maintain operational status (e.g., Some industry stakeholders may be able to reduce operations before a facility is forced to shut down).

☐ **Will there be an impact on public health and safety?**

- The City needs to maintain adequate fire flow.
- If there is an impact to public health and safety, MEMP activation may be required, and AHS shall be notified of the situation.

☐ **How long can water conservation measures be implemented?**

- Consider the long-term implications of water conservation measures (e.g., health impacts, impacts on industry, loss of parks, loss of revenue from sporting events, etc.).

Appendix B – Summary of Parks & Recreation Water Conservation Measures

Non-Potable Sites

- Fields at Big Marble Go Centre (Aquifer)
- South Ridge Community Park (SMRID)
- Kin Coulee Park (Seven Persons Creek)
- Celebration Park (SMRID)
- Connaught Park (Storm Pond, SMRID)
- Primrose Dr SE Land Development (Storm Pond, SMRID)

Non-potable sites will be reviewed by the Director of Parks & Recreation as well as with suggestions provided to the Director of EU. These locations may not be subject to the same water restrictions as potable sites.

Individual Parks & Recreation water diversion license requirements may require further conservation measures.

Lands Operated through Lease or Private Ownership utilizing SMRID Non-Potable Water

The Manager of Parks or their designate will initiate conversations at Phase 1 Water Conservation Measures with the Connaught Golf Club and Medicine Hat College pertaining to the implementation of the Water Conservation Management Action plan as stated in the June 2, 2023, Memorandum of Understanding For Water Conservation Management.

Parks & Recreation Projects During Restrictions

Parks & Recreation projects where there is need for continued or increased irrigation will be permitted under the direction of the Parks & Recreation Manager of Asset Planning & Manager of Parks.

- Phases 1 & 2: Parks & Recreation will reduce at other park locations to meet the Water Conservation Measures.
- Phase 3: Locations will be watered as per Class A.
- Phase 4: All locations will be turned off.

Outdoor and Indoor Pools

- Restriction of water filling/refilling requirements and or closure of these facilities will be reviewed and decided upon by the City Manager and responsible Director(s).

Spray Park Operations

- Medicine Hat spray parks operate without a water recirculation or treatment system, meaning the water used in the spray parks is sourced from the potable water distribution system and is directed to the City's Wastewater Treatment Plant post-use.
- The spray parks' water consumption averages around 65,000 cubic meters annually. This is equivalent to filling 26 Olympic-sized pools or 216,000 bathtubs within the three (3) months (on average) they are in operation.
- Operational adjustments for the spray parks are limited beyond modifying the hours of operation with the programming systems designed for single open and closed times within a day, without multiple intervals.
- Parks and Recreation considers factors such as user demographics, seasonal trends, operational hours, water conservation, and the parks' functional capabilities, alongside comparisons with other cities, to determine the best approach for overseeing spray parks while considering the Plan and the actions outlined in each phase.

City Maintained Facilities

City facilities will follow the mandatory Parks & Recreation Class A water conservation measures throughout each phase of the Plan.

Irrigation Methods for Manicured Parks, Sport Fields, Medians and Boulevards

- Irrigation (watering) Scheduling and Programming
    - During the first 3 Water Conservation phases, daily irrigation continues in City parks, sport fields, medians, and boulevards.
    - Flow and pressure reductions affect parks irrigation systems, limiting the time that Parks & Recreation can effectively water the 650 acres of manicured turf.
    - Different soil types and conditions across the city mean the Parks & Recreation irrigation team must create schedules to prevent over-saturation, runoff, or standing water in parks.
    - To meet permitted moisture levels per week in each Water Conservation Phase, some locations require sprinklers to operate daily, but with less run times, and in some locations multiple cycles in an irrigation event (evening), to allow water to soak into the soil. This method of irrigation requires more time, and it is difficult to achieve the allowed moisture level as quickly as it can be on residential properties.
    - Depending on the park class, for maintenance levels, soil type, condition, and given Water Conservation Phase, residents may see this type of irrigation method in some locations (especially “In Season” Sport fields) occurring up to 6 days a week.
- Trees in Irrigated Parks, Medians and Boulevards
    - In accordance with the City’s commitment to responsible water management, this approach entails implementing irrigation selectively in parks, sport fields, medians, and boulevards.
    - Where feasible, priority may be given to zones where irrigation effectively sustains the health of public trees. Consequently, areas within parks, sport fields, medians, or boulevards not receiving irrigation may experience the transition of grass (turf) into dormancy, appearing as a yellowing/browning appearance.
    - Parks & Recreation possesses the expertise and resources to swiftly restore turf to a healthy condition with the necessary irrigation. However, it's essential to acknowledge that the process of replacing a mature tree and its canopy is significantly more time-consuming. While turf is relatively easy to return to normal health, the restoration of a tree and its canopy is a more complex and potentially long-term endeavor, often spanning decades.

Phase 1 Parks & Recreation Water Conservation Measures: 25% Reduction

Park Class/Water Feature/Water Park	City of Medicine Hat Parks Watering Plan	Normal Operating Standard
C	3 days per week max (30mins per zone)	5 days per week maximum
B	4 days per week max (30mins per zone)	5 days per week maximum
A	5 days per week max (30mins per zone)	7 days per week maximum
Sport Fields	In Season 6 days per week max Out of Season 5 days a week max (30mins per zone)	7 days per week maximum
Water Features/Fountains	Off	Daily from 9am to 10pm
Aesthetic Ponds	Off	Filled as required to maintain proper levels
Strathcona Island Spray Park	On with reduced operating hours*	Daily from 9am to 9pm
Kiwanis Central Spray Park	On with reduced operating hours*	Daily from 9am to 9pm
Saamis Rotary Spray Park	On with reduced operating hours*	Daily from 9am to 9pm
Ross Glen Spray Park	On with reduced operating hours*	Daily from 9am to 9pm
Cemetery	5 days per week max (30mins per zone)	7 days per week maximum
Campground	5 days per week max (30mins per zone)	7 days per week maximum
Echo Dale	5 days per week max (30mins per zone)	7 days per week maximum
Flower Beds	Watered per Irrigation Schedule and hand watering	Watered per Park classification with hand watering once per week.
Echo Dale Swim Lake	No Change	Filled as required to maintain safe/adequate swimming levels

*Refer to www.medicinehat.ca/swim for spray park operating hours.

Phase 2 Parks & Recreation Water Conservation Measures: 50% Reduction

Park Class/Water Feature/Water Park	City of Medicine Hat Parks Watering Plan	Normal Operating Standard
C	2 days per week max (30mins per zone)	5 days per week maximum
B	3 days per week max (30mins per zone)	5 days per week maximum
A	4 days per week max (30mins per zone)	7 days per week maximum
Sport Fields	In Season 5 days per week max Out of Season 4 days a week max (30mins per zone)	7 days per week maximum
Water Features/Fountains	Off	Daily from 9am to 10pm
Aesthetic Ponds	Off	Filled as required to maintain proper levels
Strathcona Island Spray Park	On with reduced operating hours*	Daily from 9am to 9pm
Kiwanis Central Spray Park	On with reduced operating hours*	Daily from 9am to 9pm
Saamis Rotary Spray Park	Closed	Daily from 9am to 9pm
Ross Glen Spray Park	Closed	Daily from 9am to 9pm
Cemetery	4 days per week max (30 mins per zone)	7 days per week maximum
Campground	4 days per week max (30 mins per zone)	7 days per week maximum
Echo Dale	4 days per week max (30 mins per zone)	7 days per week maximum
Flower Beds	Watered per Irrigation Schedule and hand watering	Watered per Park classification with hand watering once per week.
Echo Dale Swim Lake	No Change	Filled as required to maintain safe/adequate swimming levels

*Refer to www.medicinehat.ca/swim for spray park operating hours.

Phase 3 Parks & Recreation Water Conservation Measures: 80% Reduction

Park Class/Water Feature/Water Park	City of Medicine Hat Parks Watering Plan	Normal Operating Standard
C	1 day every 2 weeks max (15 mins per zone)	5 days per week maximum
B	1 day per week max (15 mins per zone)	5 days per week maximum
A	1 day per week max (30 mins per zone)	7 days per week maximum
Sport Fields	In Season 2 days per week max Out of Season 1 day per week max (30 mins per zone)	7 days per week maximum
Water Features/Fountains	Off	Daily from 9am to 10pm
Aesthetic Ponds	Off	Filled as required to maintain proper levels
Strathcona Island Spray Park	Closed	Daily from 9am to 9pm
Kiwanis Central Spray Park	Closed	Daily from 9am to 9pm
Saamis Rotary Spray Park	Closed	Daily from 9am to 9pm
Ross Glen Spray Park	Closed	Daily from 9am to 9pm
Cemetery	1 day per week max (30 mins per zone)	7 days per week maximum
Campground	1 day per week max (30 mins per zone)	7 days per week maximum
Echo Dale	1 day per week max (30 mins per zone)	7 days per week maximum
Flower Beds	No Watering	Watered per Park classification with hand watering once per week.
Echo Dale Swim Lake	Closed	Filled as required to maintain safe/adequate swimming levels

Phase 4 Parks & Recreation Water Conservation Measures: 100% Reduction

Park Class/Water Feature/Water Park	City of Medicine Hat Parks Watering Plan	Normal Operating Standard
C	Off	5 days per week maximum
B	Off	5 days per week maximum
A	Off	7 days per week maximum
Sport Fields	Off	7 days per week maximum
Water Features/Fountains	Off	Daily from 9am to 10pm
Aesthetic Ponds	Off	Filled as required to maintain proper levels
Strathcona Island Spray Park	Closed	Daily from 9am to 9pm
Kiwanis Central Spray Park	Closed	Daily from 9am to 9pm
Saamis Rotary Spray Park	Closed	Daily from 9am to 9pm
Ross Glen Spray Park	Closed	Daily from 9am to 9pm
Cemetery	Off	7 days per week maximum
Campground	Off	7 days per week maximum
Echo Dale	Off	7 days per week maximum
Flower Beds	No watering	Watered per Park classification with hand watering once per week.
Echo Dale Swim Lake	Closed	Filled as required to maintain safe/adequate swimming levels