

# Drought Response



# MPW Drought Management and Response Plan

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# Section I:

## Declaration of Purpose and Intent

- A. Purpose:** To ensure that the Mount Pleasant Waterworks (MPW) adequately manages its water, Mount Pleasant Waterworks understands the fundamental need to make efficient use of the limited and valuable water resource under its stewardship in order to protect the public's health and safety and environmental integrity. The purpose of this document is to establish a plan and procedures for managing water demand and evaluating supply options before and during a drought-related water shortage.
- B. Intent:** The intent is to satisfy the requirements of the Drought Response Act of 2000 (Code of Laws of South Carolina, 1976, Section 49-23-10, et seq., as amended) with the goal of achieving the greatest public benefit from domestic water use, sanitation, and fire protection and to provide water for other purposes in an equitable manner.
- C. Plan Summary:** Mount Pleasant Waterworks has adopted this Drought Management Response Plan that provides the policies and the authority to fulfill this obligation. The Drought Management Plan outlines the framework by which Mount Pleasant Waterworks will internally prepare for water shortages. The Response Plan provides the policies and procedures by which Mount Pleasant Waterworks will manage and control its customer water usage during various levels of a drought.
- D. Plan Updates:** This Plan will be reviewed and updated as necessary and not less than 5-year interval. Any plan updates or changes must be submitted to the South Carolina Department of Natural Resources for review to ensure consistency with the State Drought Response Plan (Code of Laws of South Carolina, 1976, Section 49-23-90, et seq., as amended).

# Section II:

## Definition and Terms

For the purposes of this Plan, the following definitions will apply:

**Aesthetic Water Use:** Water used for ornamental or decorative purposes such as fountains, reflecting pools and waterfalls.

**Average Daily Demand (ADD):** The total annual pumpage divided by 365.

**Maximum Daily Demand (MDD):** The maximum water demand for any 24-hr period.

**Commercial and Industrial Use:** Water use integral to the production of goods and/or services by any establishment having profit as its primary aim.

**Conservation:** Reduction in water use to prevent depletion or waste of the resource.

**Customer:** Any person, company or organization using finished water owned or supplied by Mount Pleasant Waterworks.

**Domestic Water Use:** Water use for personal needs or for household purposes such as drinking, bathing, heating, cooking, sanitation or for cleaning a residence, business, industry or institution.

**Drought:** Deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity group or environmental purpose. Drought conditions can also occur rapidly in a matter of days and are referred to as “Flash Droughts” which occur due to a lack of precipitation coupled with extreme heat.

**Drought Alert Phases:** There are four drought alert phases to be determined by the Drought Response Committee for the State of South Carolina. The four phases are:

- 1) Incipient Drought
- 2) Moderate Drought
- 3) Severe Drought
- 4) Extreme Drought

**Drought Response Management Areas (DMAs):** There are four drought management areas corresponding to the major river basins in South Carolina. The four areas are:

- 1) West or Savannah
- 2) Central or Santee
- 3) Northeast or Pee Dee
- 4) Southern or Ashepoo, Combahee, and Edisto (MPW location.)

In order to prevent overly broad response to drought conditions, drought response measures shall be considered within individual drought management areas or within individual counties, as applicable.

**Drought Response Committee (DRC):** A committee composed of State and local representatives created for the purpose of coordinating responses to water supply shortages within Drought Management Areas and making recommendations for action to the South Carolina Department of Natural Resources and/or the Governor. The Committee is composed of State agency representatives from the South Carolina Emergency Management Division of the Office of the Adjutant General, South Carolina Department of Health and Environmental Control, South Carolina Department of Agriculture, South Carolina Forestry Commission, and South Carolina Department of Natural Resources, as well as local committees representing counties, municipalities, public service districts, private water suppliers, agriculture, industry, domestic users, regional councils of government, commissions of public works, power generation facilities, special purpose districts and Soil and Water Conservation Districts.

**Essential Water Use:** Water used specifically for firefighting, maintaining in-stream flow requirements and to satisfy Federal, State or local public health and safety requirements.

**Finished Water:** Water distributed for use after treatment. The terms “water use,” “water user,” and “water customer” refer to finished water use unless otherwise defined.

**Institutional Water Use:** Water used by government, public and private educational institutions, churches and places of worship, water utilities, and organizations within the public domain.

**Irrigation Water Use:** Water used to maintain gardens, trees, lawns, shrubs, flowers, athletic fields, rights-of-way and medians.

**Non-essential Water Use:** Categories of water use other than Essential Water Use. Examples of non-essential water use include landscape irrigation and the washing of buildings, parking lots, automobiles, etc.

**Residential Equivalent Unit (REU):** An equivalency unit defined to be equal to one single-family residence. Mount Pleasant Waterworks allocates water capacity equal to **300** gallons per day per REU.

**SC Dept. of Natural Resources (SCDNR):** The State agency with primacy to implement the provisions of the Drought Response Act.

**Water Supply Shortage:** Lack of adequate, available water caused by drought to meet normal demands.

# Section III:

## Drought Management Plan

- A. Introduction:** To ensure that the Mount Pleasant Waterworks adequately manages its water system during drought-related conditions, an organized plan for system operation and reliability, proper communications, effective coordination and ultimate allocation of water use has been developed.
- B. Designation of Water System Drought Response Representative:** The General Manager or his designee will manage the Drought Management and Response Plan and serve as the principal contact for the news media as Mount Pleasant Waterworks' Drought Response Representative.

The Drought Response Representative for the Mount Pleasant Waterworks is Clay Duffie, General Manager: 1619 Rifle Range Road, Mount Pleasant, South Carolina, 29464, and can be reached by telephone at: 843-884-9626 or via e-mail: [clayduffie@mpwonline.com](mailto:clayduffie@mpwonline.com).

- C. Description of Water System Layout, Water Sources, Capacities and Yields:** Mount Pleasant Waterworks is located in the Southern Drought Response Management Area of South Carolina. The system serves the Town of Mount Pleasant (Town) and surrounding areas. There are approximately 40,000 customer accounts serving 90,000 people. The system consists of 3" to 30" diameter water mains. The larger lines exist around the sources (4 treatment plants/ground storage tanks, and the Charleston Water System (CWS) connections) and become smaller radially from those areas. The system is a web-like network with a predominance of mains less than or equal to 8" in diameter.

The water supply sources available to the system are: 6 deep wells into the Charleston Aquifer and two connections to CWS (located at Highway 41 and I-526). Mount Pleasant Waterworks' current groundwater withdrawal permit is limited to 3953 MG/Year = 10.83MGD (pending a regulatory reduction). The following is a list of sources of supply:

***RO1- 2 Trains @ 400 GPM = 1.265 MGD\****  
***RO2- 3 Trains @ 400 GPM = 1.901 MGD\****  
***RO3-4 Trains @ 515 GPM = 3.263 MGD\****  
***RO4-2 Trains @ 450 GPM = 1.426 MGD\****  
***ASR1 = 0.5 MGD***  
***ASR2 = 0.5 MGD***  
***ASR3 = 0.5 MGD***  
***CWS = 6.00 MGD contracted***  
***Total Available Supply = 15.355 MGD***

*\*Includes an assumed 10% blend*

**Effective Storage Volumes**

<b>RO 1 -</b>	<b>833,000 gallons</b>
<b>RO 2 -</b>	<b>2,355,000 gallons</b>
<b>RO 3 -</b>	<b>1,882,000 gallons</b>
<b>RO 4 -</b>	<b>1,867,000 gallons</b>
<b>Wando Park-</b>	<b>2,500,000 gallons</b>
<b><u>HWY 41-</u></b>	<b><u>1,860,000 gallons</u></b>

***Total Available Storage = 11,300,000 gallons***

**Note:** storage volumes noted above can be supplemented by ASR 1, 2, and 3 (currently in a “Standby” status) which each have an effective storage volume of 30-100 MG and recovery rate of 0.5MGD per ASR. An additional source of supply for consideration includes a # of abandoned shallow wells.

**D. Identification of Water System Specific Drought or Water Shortage Indicators:** Operators of every water system must develop historical trends that are valuable indicators of a system’s ability to meet demand when demand begins to outpace supply. Mount Pleasant Waterworks has developed triggers for use during drought or demand water shortages that describe when specific phases of the Drought Response Plan are implemented. Staff will monitor triggers and recommend action. The system triggers are as follows:

**Incipient Drought Phase:**

1. Drought Response Committee declaration (considering droughts can be localized.)

**Moderate Drought Phase:**

1. Drought Response Committee declaration (considering droughts can be localized.)
2. Average system storage levels fall below 60% for 48 hours.
3. Well pumping levels less than 100’ above pump in one or more wells.

**Severe Drought Phase:**

1. Drought Response Committee declaration (considering droughts can be localized.)
2. Average system storage levels fall below 40% for 48 hours, and/or
3. Well pumping levels less than 75’ above pump in one or more wells.

**Extreme Drought Phase:**

1. Drought Response Committee declaration (considering droughts can be localized.)
2. Average system storage levels fall below 20% for 48 hours, and/or
3. Well pumping levels less than 50’ above pump in one or more wells.

**Rationing:**

1. Rationing when water pressure has been reduced to 40 psi and water storage levels drop below 20% for 48 hours.

**Note:** ISF-9 of the Emergency Management Plan establishes a different set of triggers pertaining to non-drought related water shortages.

**E. Cooperative Agreements and Alternative Water Supply Sources:** Successful drought management requires a comprehensive program by the water utility. In many situations, administrative agreements are required with other agencies to fully implement the Plan. Agreements with other water purveyors may be necessary for alternative water supply sources. Other agreements that strengthen conservation efforts by large users may be necessary. To facilitate the implementation of this plan, Mount Pleasant Waterworks has a water purchase agreement with CWS. Current contracted supply is 6 MGD with the provision of an additional Temporary Wholesale purchase in the event MPW needs to replace or renew its groundwater supply or treatment infrastructure that will take more than 3 consecutive contract months to complete. During such project timeframes, the CWS Municipal Wholesale Rate will apply to all metered water in excess of MPW's total contract capacity. This temporary arrangement allows MPW to avoid the requirement of purchasing additional contract capacity.

**F. Description of Pre-Drought Planning Efforts:** Before the occurrence of a water supply shortage and the need to implement the emergency provisions of the Plan, it is important that certain pre-response measures be taken with the aim of conserving the system's source water, as well as the water distributed to the customer. Regarding the conservation measures listed below, Mount Pleasant Waterworks has identified major water users of the system, as shown in the Appendix A.

A vigorous public education program is critical for achieving substantial water use reductions. An effective public outreach program will keep the public informed about the water supply situation, what actions will mitigate drought emergency problems, and how well the public is doing in terms of meeting the program goals. Keeping the public involved, informed, and participating in the decision-making process is key to implementing an effective Drought Management Plan. There is usually a time lag of a few months from when mandatory restrictions are announced and when customers actually reduce their water use thus factor this into timing of actions. Mount Pleasant Waterworks has implemented the following drought-related public education program.

- 1) The Commission has many tools and channels to promote conservation measures, monitor drought situations and educate customers. The Communications Manager will lead communication efforts.
- 2) The Commission operates on a monthly customer billing cycle, which necessitates that each customer's water meter be "read" once every month. Our Advanced Metering Infrastructure (AMI) transmits hourly meter reads to provide water usage data to both customers and utility staff in near real time. This system allows the utility to contact the customer in a timely manner regarding excessive water use. This enhances conservation efforts by enabling the Commission: 1) to more frequently determine the existence of unknown

and wasteful leaks in the customer's plumbing system and the distribution system; 2) to more quickly discover and take appropriate action against excessive water users; and 3) to keep the customers more closely apprised of the degree of their success in conserving water. AMI has a number of advantages over traditional meter reading methods. The major advantage of implementing AMI is to reduce wasted water. With AMI, water usage is checked far more frequently, which means that leaks can be found and fixed early, rather than waiting until a large bill arrives to start investigating. In addition, because customers will have a much more accurate picture of their water usage, they will be able to adjust their usage as needed or desired.

- 3) The Commission established an inverted block rate structure to encourage conservation of water and to require those customers using more than the monthly allocation of 9,200 gallons per residential equivalent unit (REU) to pay more. The rate doubles above 9,200 gallons per REU, triples above 18,400 gallons per REU, and quadruples above 27,600 gallons per REU.
- 4) The Commission has strict guidelines on use of water for construction. This includes charges for water flushing when not done in accordance with the Commission's instructions.
- 5) The Commission coordinates fire hydrant flushing and testing with the fire departments to ensure that adequate water supplies are available. The normal time for flushing is in April.
- 6) The Commission provides reclaimed water to two Town ball fields and provides signs to describe the water conservation aspect of reclaimed water.
- 7) The Commission constructed three Aquifer Storage and Recovery Facilities to allow water to be injected in the aquifer during low seasonal demands and off-peak hours. Each well can store 30 to 100 million gallons with an observed recovery as high as 95%. The effective withdrawal rate of each is approximately .5 MGD which assists in meeting high seasonal demands.
- 8) The Commission provides a free water conservation audit at the request of any customer. Commission personnel, trained in water conservation, review the customer's water usage, inspect the customer's water fixtures and recommend water saving techniques.
- 9) The Commission provides conservation tips and drought alerts via the Mount Pleasant Waterworks website, phone calls, text messages, emails and social media outlets including Facebook, Twitter, and Nextdoor.
- 10) The Commission established a water loss control program, continuously monitors and reports non-revenue water losses as well as an Infrastructure Leak Index Score, and performs periodic 3<sup>rd</sup> party formal Water Audits based on industry standards in an effort to ensure that the health of our water distribution system is maintained and water losses are kept to a minimum thereby preserving this precious resource.

#### **G. Description of Capital Planning and Investment for System Reliability and Demand**

**Forecasting:** Water utilities routinely find that capital improvements to the system strongly enhance their ability to get through times of drought. It is important that every water utility aggressively plans and builds for future needs. The utility must continue to provide for system operation flexibility, improved pumping and storage capacity and new technologies to meet

the demands of tomorrow. Mount Pleasant Waterworks monitors water demands versus capacity available annually. The Mount Pleasant Waterworks Capital Improvements Plan calls for additional capacity purchases from CWS as demands increase.

In order to prepare for future droughts and increasing water demands, Mount Pleasant Waterworks plans to include a 4<sup>th</sup> ASR well in the northern service area, drill 2 new higher efficiency deep wells and establish a 3<sup>rd</sup> connection to CWS at Sullivan's Island.

# Section IV:

## Drought Response Plan

- A. Declaration of Policy and Authority:** The objective of this Drought Response Plan is to establish authority, policy and procedure by which the Mount Pleasant Waterworks will take the proper actions to manage water demand during a drought-related shortage. The Plan satisfies the requirements of the Drought Response Act of 2000 and has the goal of achieving the greatest public benefit from limited supplies of water needed for domestic water use, sanitation, fire protection and of allocating water for other purposes in an equitable manner.

This Plan outlines the actions to be taken for the conservation of water supplied by the Mount Pleasant Waterworks. These actions are directed both toward an overall reduction in water usage and the optimization of supply. To satisfy these goals, Mount Pleasant Waterworks hereby adopts the following requirements and restrictions on the delivery and consumption of water. This Plan is hereby declared necessary for the protection of public health, safety and welfare and shall take effect upon its adoption by Mount Pleasant Waterworks.

If it becomes necessary to conserve water in its service area due to drought, Mount Pleasant Waterworks is authorized to issue a proclamation (a “Proclamation”) that existing conditions prevent fulfillment of the usual water-use demands. The Proclamation is an attempt to prevent depleting the water supply to the extent that water-use for human consumption, sanitation, fire protection, and other essential needs becomes endangered.

Immediately upon issuance of such a Proclamation, requirements and restrictions set forth under this Plan shall become effective and remain in effect until the water supply shortage has ended and the Proclamation rescinded.

Water uses that are regulated or prohibited under this Plan are considered to be non-essential and continuation of such uses during times of water supply shortages is deemed to constitute a waste of water, subjecting the offender(s) to penalties as outlined in Town of Mount Pleasant Ordinance [§51.018](#) PENALTY. Reference Water Conservation Ordinance [§51.058](#) for MPW’s authority to require customers to follow guidelines established in this Plan.

- B. Implement Emergency Management Plan:** Mount Pleasant Waterworks’ Emergency Management Plan will be implemented once drought conditions are declared and the initial trigger(s) are met. The Emergency Management Plan establishes the core procedures by which Mount Pleasant Waterworks will coordinate all planning, preparation, response and recovery. It also establishes how Mount Pleasant Waterworks will coordinate with other entities during an event, including county, state, and federal agencies. The following shall be used as guidance in setting the emergency management plan Activation Levels:

Declared "Drought Level"	Corresponding MPW Emergency Management Plan "Activation Level"
Incipient	3
Moderate	2
Severe	2
Extreme	1

**C. Coordination with State Agencies:** SC Department of Natural Resources (SCDNR) has created a website designed to make reporting water restrictions and/or conservation efforts easier. In an effort to reduce mailings and streamline the notification process, the website will facilitate communication between SCDNR and the water systems of SC.

<http://www.dnr.sc.gov/water/climate/sco/Drought/login.php>

**MPW Username: MOUNT\_PLEASANT\_WATERWORKS**

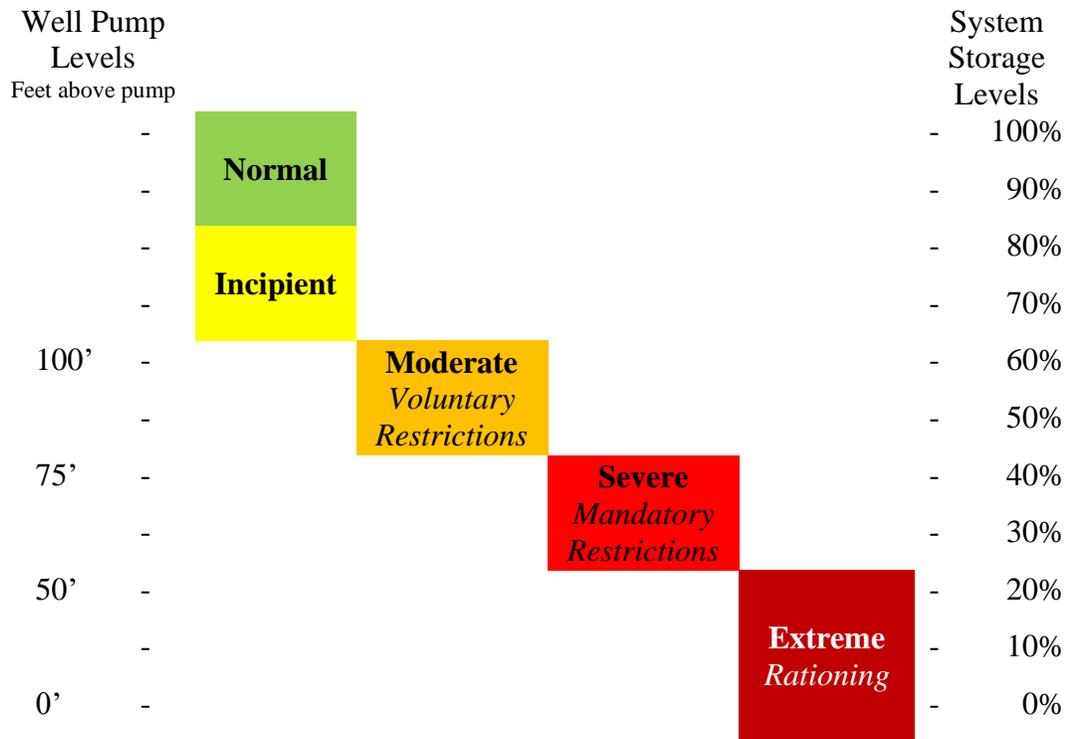
**Password: 1080032**

**D. External Resources.** The following resources may be available from the listed agencies. Note that requests for resources from State Emergency Management Division (SCEMD) generally should be made at the local level (County EMD).

<i>Resource Item</i>	<i>Agency</i>
Water Buffaloes	State EMD
Temporary Well Installation	State EMD
Bottled Water Distribution	State EMD
Living Water Treatment Systems	Water Mission

**E. Drought Response Phases and Activities.** The following activities will be implemented at each phase of Drought. The associated triggers from Section III - Drought Management Plan are incorporated here as reference.

The following chart summarizes the local MPW triggers for various drought phases and usage restrictions.



**F. Concept of Operations.** Managing water shortages involves temporarily reducing demand and finding alternative water sources to temporarily meet demand. Initial and on-going focus areas should be irrigation and Top 25 water users. Irrigation is the typical culprit causing increased demand. For example, a substantial number of customer shallow wells were reported to have gone dry during the 2019 Drought causing additional irrigation demand on residential services. The activities described in the four drought phases below will guide these activities.

## Incipient Drought Phase

*Typically, the Emergency Management Plan will not be activated at this Phase, but the Management Team will monitor conditions and focus on awareness communications. Our Emergency Activation level will remain at Level 3.*

**Triggers:**

1. Drought Response Committee declaration

**Goals:**

1. Awareness communications to customers

**Actions:**

	<i>Task</i>	<i>Primary</i>	<i>Alternate</i>
<input type="checkbox"/>	Management Team monitors situation and adds as agenda item to biweekly meeting.	Tech Svcs Mgr	Ops Manager
<input type="checkbox"/>	Educate customers to be water conservation minded and to make smart water choices to conserve. Suggested key messaging to include throughout MPW’s response include: “Preservation of our water resources is our top priority” and “Use your water and money wisely.”	Communications Manager	Communications Specialist
<input type="checkbox"/>	Contact the Water Managers Coalition to share information throughout the drought and coordinate activities.	General Manager	TBD

## Moderate Drought Phase

**Triggers:**

1. Drought Response Committee (DRC) declaration, OR
2. Average system storage levels fall below 60% for 48 hours.
3. Well pumping levels less than 100’ above pump in one or more wells.

**Goals:** *To be implemented at Trigger #2 or #3 above*

1. **20% Reduction** of all water use
2. Voluntary reductions from customers in the use of water for all purposes
3. Voluntary reductions on using water during certain peak water demand periods

**Note:** Actions may be time-based to prescribe certain activities. For example, the request for 20% reduction in water usage may only be necessary after 30 or 45 days within this drought stage depending on other factors.

**Actions:**

	<i>Task</i>	<i>Assignee (ICS Position*)</i>
☐	Upon Trigger #2 (above), activate Emergency Management Plan with Crisis Communications Plan and set Emergency Activation Level to Level 2. Schedule regular meetings (see schedule below).	Incident Commander or Planning Section Chief
☐	Issue a Proclamation to be released to local media, MPW customers, and to the South Carolina Department of Natural Resources Drought Information Center that Moderate drought conditions are present.	General Manager
☐	Provide written notification to the South Carolina Department of Natural Resources Drought Information Center.	General Manager
☐	Communicate with the Southern Drought Management Area (DMA) DRC representative on MPW’s drought conditions, impacts, and actions taken so DRC has this information when setting drought levels for the Southern DMA.	General Manager
☐	Analyze AMI and other data to determine actual water usage reduction vs. goal. Determine customers not meeting 20% goal and generate customized notification to encourage.	Customer Services Manager
☐	Follow communication guidelines outlined in Mount Pleasant Waterworks Crisis Communications Plan to inform MPW customers of the water system condition and encourage voluntary conservation measures that the customers are requested to follow during Moderate drought conditions. See Appendix G for voluntary conservation guidelines. Water savings from public information campaigns alone can range from 5% - 20% depending on time, money, and effort spent.	PIO
☐	Report to the public the actual water usage reduction vs. goal.	PIO
☐	Collaborate and communicate with other water utilities and entities within the Southern Drought Management Area to ensure consistent messaging.	PIO
☐	Email and update all staff on current drought stage and conservation measures.	Planning Section Chief
☐	Keep staff updated with current conditions on Canteen display board.	Planning Section Chief

	<i>Task</i>	<i>Assignee (ICS Position*)</i>
<input type="checkbox"/>	Report drought-related conditions and impacts weekly to the National Drought Mitigation Center: <a href="http://bit.ly/droughtreport19">http://bit.ly/droughtreport19</a>	Planning Section Chief
<input type="checkbox"/>	Attend DRC conference calls for updates.	Planning Section Chief
<input type="checkbox"/>	Maintain regular (at least weekly) contact with CWS to receive updates on their assets and operational conditions. Provide updates to MPW staff during regular team meetings.	Operations Branch Director
<input type="checkbox"/>	Monitor usage, storage levels, and operation status of critical assets and report to regular management meetings.	Operations Branch Director
<input type="checkbox"/>	Measure & report water levels in each of the deep wells weekly.	Water Supply Group Supervisor

\* See Table 13.5 of the MPW Emergency Management Plan for the ICS Positions referenced above.

**Meeting Schedule (Moderate Drought):**

<i>Day of Week</i>	<i>Time</i>	<i>Location</i>	<i>Attendees</i>
Thursdays, as determined by DRC	TBD	Conference Call	Drought Response Committee, MPW IC, Planning Section Chief & Operations Branch Director
Fridays	10:00 AM	MPW Conference Room	MPW ICS Team MPW Commissioners Town Staff (e.g., Public Services) CWS representatives

## Severe Drought Phase

### Triggers:

1. Drought Response Committee (DRC) declaration, OR
2. Average system storage levels fall below 40% for 48 hours, OR
3. Well pumping levels less than 75' above pump in one or more wells.
4. Rationing when water pressure has been reduced to 40 psi and water storage levels drop below 20% for 48 hours.

### Goals: *To be implemented at Trigger #2 or #3 above*

1. **40% Reduction** of all water use
2. Voluntary reductions from customers in the use of water for all purposes
3. Mandatory restrictions on non-essential usage and restrictions on times when certain water usage is allowed

**Note:** Actions may be time-based to prescribe certain activities. For example, the request for 40% reduction in water usage may only be necessary after 30 or 45 days within this drought stage depending on other factors.

### Administrative Actions:

	<i>Task</i>	<i>Assignee (ICS Position*)</i>
<input type="checkbox"/>	Issue a Proclamation to be released to the local media, MPW customers, and to the South Carolina Department of Natural Resources Drought Information Center that Severe drought conditions are present.	General Manager
<input type="checkbox"/>	Provide written notification to the South Carolina Department of Natural Resources Drought Information Center.	General Manager
<input type="checkbox"/>	Communicate with the Southern Drought Management Area (DMA) DRC representative on MPW's drought conditions, impacts, and actions taken so DRC has this information when setting drought levels for the Southern DMA.	General Manager
<input type="checkbox"/>	Consider offering incentives to customers for finding and repairing leaks and/or for complying with voluntary restrictions.	General Manager
<input type="checkbox"/>	Communicate financial impacts of drought to Commissioners and customers.	General Manager
<input type="checkbox"/>	Provide written notification monthly to the South Carolina Department of Natural Resources Drought Information Center regarding the outcomes of the voluntary and mandatory restrictions.	General Manager
<input type="checkbox"/>	Encourage all residential water customers to voluntarily reduce overall monthly water usage to 60% of the customer's monthly average. If voluntary reduction of usage is not successful, the Mount Pleasant Waterworks may, at its option, implement the excessive use rate schedule for water, included at the bottom of this table. (Note: this rate modification is based on a reduction from actual average usage/REU vs. allocated capacity/REU.)	General Manager
<input type="checkbox"/>	Analyze AMI and other data to determine actual water usage reduction vs. goal. Determine customers not meeting 40% goal and generate customized notification to encourage.	Customer Services Manager

	<i>Task</i>	<i>Assignee (ICS Position*)</i>
<input type="checkbox"/>	Monitor and track daily/weekly call volume in Call Center. Consider invoking Emergency Call Takers to work in Contact Center to handle increased call volume.	Customer Services Manager
<input type="checkbox"/>	Suspend cut-offs.	Customer Services Manager
<input type="checkbox"/>	Activate new tier charges in CIS when decision to implement is made by General Manager. When modified rate structures are implemented, a comparison of actual usage vs. target of modified tier structure should be included in customer bills.	Customer Services Manager
<input type="checkbox"/>	Follow communication guidelines outlined in Mount Pleasant Waterworks Crisis Communication Plan to inform Mount Pleasant Waterworks' customers of the water system condition and voluntary and mandatory conservation measures that the customers are requested to follow during Severe drought conditions. See Appendix G for guidelines. Encourage self-policing by residents to alert the utility of system leaks.	PIO
<input type="checkbox"/>	Add bill inserts with conservation measures and updates on actual water usage reduction vs goal.	PIO
<input type="checkbox"/>	Collaborate and communicate with other water utilities and entities within the Southern Drought Management Area to ensure consistent messaging.	PIO
<input type="checkbox"/>	Work with CWS for consistent messaging to customers and public.	PIO
<input type="checkbox"/>	Develop and update ongoing list of Frequently Asked Questions (and answers) from Contact Center calls and Marketing/Communications.	PIO
<input type="checkbox"/>	Conduct regular (at least weekly) communications meetings between dispatch, customer service, and communications to review FAQ and develop consistent messaging.	PIO
<input type="checkbox"/>	Communicate to customers in advance when to expect higher water bills.	PIO
<input type="checkbox"/>	Publicize widely the penalties to be imposed for violations of mandatory restrictions and the procedures to be followed if a variance in the restrictions is requested.	PIO
<input type="checkbox"/>	Expand the use of education and public relations efforts and emphasize the penalties associated with violating the mandatory restrictions.	PIO
<input type="checkbox"/>	Conduct financial analysis of capacity buy-in vs. wholesale rates from CWS to determine the most cost-effective way to purchase additional water.	Finance Section Chief
<input type="checkbox"/>	Track and report billed revenues vs. collected revenues.	Finance Section Chief
<input type="checkbox"/>	Email and update all staff on current drought stage and conservation measures.	Planning Section Chief
<input type="checkbox"/>	Keep staff updated with current conditions on Canteen display board.	Planning Section Chief
<input type="checkbox"/>	Report drought-related conditions and impacts weekly to the National Drought Mitigation Center: <a href="http://bit.ly/droughtreport19">http://bit.ly/droughtreport19</a>	Planning Section Chief
<input type="checkbox"/>	Adjust regular meeting schedule (see schedule below).	Planning Section Chief
<input type="checkbox"/>	Attend DRC conference calls for updates.	Planning Section Chief

**Severe Drought Phase Excessive Use Rate Schedule**

Tier I                      0 – 3,000 gallons/REU                      regular rate

Tier II	3,001 –6,000 gallons/REU	2 times regular rate
Tier III	6,001 – 9,000 gallons/REU	3 times regular rate
Tier IV	Greater than 9,000 gallons/REU	4 times regular rate

***Meeting Schedule (Severe Drought):***

<i>Day of Week</i>	<i>Time</i>	<i>Location</i>	<i>Attendees</i>
Mondays	10:00 AM	MPW Conference Room	MPW ICS Team MPW Commissioners Town Staff (e.g., Public Services) CWS representatives
Thursdays, as determined by DRC	TBD	Conference Call	Drought Response Committee, MPW IC, Planning Section Chief & Operations Branch Director
Fridays	3:00 PM	Conference Call	MPW ICS Team MPW Commissioners Town Staff (e.g., Public Services) CWS representatives

**Operations Actions:**

	<i>Task</i>	<i>Assignee (ICS Position*)</i>
<input type="checkbox"/>	Utilize AMI and field inspections to identify water leaks and intensify maintenance efforts to correct water leaks in the distribution system.	Field Service Branch Director
<input type="checkbox"/>	Cease installation of new irrigation taps on the water system.	Field Service Branch Director
<input type="checkbox"/>	Contact all permitted hydrant users to cease using water until further notice. Notify all hydrant metered customers that meters will be pulled for the duration. Restoration of the meters will commence once conditions are favorable for normal use.	Field Service Branch Director
<input type="checkbox"/>	Communicate to all fire stations the reduction in pressures and procedure to follow to increase pressures during firefighting.	Field Service Branch Director
<input type="checkbox"/>	Adjust auto blowoffs to maintain minimum water quality goals.	Field Services Branch Director
<input type="checkbox"/>	Consider making provisions for emergency cooling/improved ventilation of critical machinery due to the stress increased demand and/or elevated environmental temperatures may place on the machinery.	Field Services Branch Director
<input type="checkbox"/>	Coordinate with Town, utilities and their associated contractors to enact/enforce restrictions on directional drilling to minimize damage risk to water lines during severe and/or extreme drought.	Field Services Branch Director

	<i>Task</i>	<i>Assignee (ICS Position*)</i>
<input type="checkbox"/>	Maintain regular (at least weekly) contact with CWS to receive updates on their assets and operational conditions. Provide updates to MPW staff during regular team meetings.	Operations Branch Director
<input type="checkbox"/>	Monitor usage, storage levels, and operation status of critical assets and report to regular management meetings.	Operations Branch Director
<input type="checkbox"/>	Consider increase in blending of raw water to increase production as needed.	Operations Branch Director
<input type="checkbox"/>	Reduce distribution pressures to ~40 psi. Per the AWWA M60 manual, lower water pressures typically result in an average of 6% reduction in water usage.	Operations Branch Director
<input type="checkbox"/>	Backfill storage tanks at night from CWS.	Operations Branch Director
<input type="checkbox"/>	Consider recycled water from wastewater treatment plants for commercial companies to collect and distribute to customers for irrigation.	Operations Branch Director
<input type="checkbox"/>	Consider increasing the frequency of monitoring and testing of water quality.	Operations Branch Director
<input type="checkbox"/>	Measure & report water levels in each of the deep wells weekly.	Water Supply Group Supervisor
<input type="checkbox"/>	Monitor fluoride levels for potential public notification.	Water Supply Group Supervisor

*\* See Table 13.5 of the MPW Emergency Management Plan for the ICS Positions referenced above.*

## Extreme Drought Phase

### Triggers:

1. Drought Response Committee declaration, OR
2. Average system storage levels fall below 20% for 48 hours, OR
3. Well pumping levels less than 50' above pump in one or more wells.
4. Rationing when water pressure has been reduced to 40 psi and water storage levels drop below 20% for 48 hours.

### Goals: *To be implemented at Trigger #2 or #3 above*

1. **60% Reduction** of all water use
2. Mandatory restrictions in the use of water for all purposes and on the times when certain water usage is allowed

**Note:** Actions may be time-based to prescribe certain activities. For example, the request for 60% reduction in water usage may only be necessary after 30 or 45 days within this drought stage depending on other factors.

### Administrative Actions:

	<i>Task</i>	<i>Assignee (ICS Position*)</i>
<input type="checkbox"/>	Set MPW Emergency Activation Level to Level 1.	Incident Commander or Planning Section Chief
<input type="checkbox"/>	Issue a Proclamation to be released to the local media, MPW customers, and to the South Carolina Department of Natural Resources Drought Information Center that Extreme drought conditions are present.	General Manager
<input type="checkbox"/>	Provide written notification to the South Carolina Department of Natural Resources Drought Information Center.	General Manager
<input type="checkbox"/>	Communicate with the Southern Drought Management Area (DMA) DRC representative on MPW's drought conditions, impacts, and actions taken so DRC has this information when setting drought levels for the Southern DMA.	General Manager
<input type="checkbox"/>	Consider offering incentives to customers for complying with voluntary restrictions	General Manager
<input type="checkbox"/>	Communicate financial impacts of drought to Commissioners and customers.	General Manager
<input type="checkbox"/>	Provide written notification monthly to the South Carolina Department of Natural Resources Drought Information Center regarding the outcomes of the voluntary and mandatory restrictions.	General Manager
<input type="checkbox"/>	Encourage all residential water customers to voluntarily reduce overall monthly water usage to 40% of the customer's monthly average. If voluntary reduction of usage is not successful, the Mount Pleasant Waterworks may, at its option, implement the excessive use rate schedule for water, included at the bottom of this table. (note: this rate modification is based on a reduction from actual average usage/REU vs. allocated capacity/REU)	General Manager

	<i>Task</i>	<i>Assignee (ICS Position*)</i>
<input type="checkbox"/>	Consider implementing this additional conservation measure: Place a moratorium on the issuance of all new water service connections and contracts for all new water main extensions. As part of the public information process, provide notice to developers of the moratorium.	General Manager
<input type="checkbox"/>	If the conservation measures of the Plan prove inadequate to mitigate the effects of the drought conditions or water supply availability, the Mount Pleasant Waterworks may take additional actions including, but not limited to: <ul style="list-style-type: none"> <li>➤ Decreasing the gallon/REU limits in the different tiers.</li> <li>➤ Reduction of water system pressure as needed.</li> <li>➤ Reduce water quality, increase blend or raw water to system.</li> </ul>	General Manager
<input type="checkbox"/>	Analyze AMI and other data to determine actual water usage reduction vs. goal. Determine customers not meeting 60% goal and generate customized notification to encourage compliance.	Customer Services Manager
<input type="checkbox"/>	Monitor and track daily/weekly call volume in Call Center. Consider invoking Emergency Call Takers to work in Contact Center to handle increased call volume.	Customer Services Manager
<input type="checkbox"/>	Activate new tier charges in CIS when decision to implement is made by General Manager. When modified rate structures are implemented, a comparison of actual usage vs. target of modified tier structure should be included in customer bills.	Customer Services Manager
<input type="checkbox"/>	Discontinue irrigation service for customers that do not comply and who are using > 450 gallons per week.	Customer Services Manager
<input type="checkbox"/>	Follow communication guidelines outlined in Mount Pleasant Waterworks Crisis Communication Plan to inform Mount Pleasant Waterworks' customers of the water system condition and voluntary and mandatory conservation measures that the customers are requested to follow during Extreme drought conditions. See Appendix G for guidelines. Encourage self-policing by residents to alert the utility of system leaks.	PIO
<input type="checkbox"/>	Add bill inserts with conservation measures and updates on actual water usage reduction vs goal.	PIO
<input type="checkbox"/>	Collaborate and communicate with other water utilities and entities within the Southern Drought Management Area to ensure consistent messaging.	PIO
<input type="checkbox"/>	Work with CWS for consistent messaging to customers and public.	PIO
<input type="checkbox"/>	Develop and update ongoing list of Frequently Asked Questions (and answers) from Contact Center calls and Marketing/Communications.	PIO
<input type="checkbox"/>	Conduct regular (at least weekly) communications meetings between dispatch, customer service, and communications to review FAQ and develop consistent messaging.	PIO
<input type="checkbox"/>	Communicate to customers in advance when to expect higher water bills.	PIO
<input type="checkbox"/>	Publicize widely the penalties to be imposed for violations of mandatory restrictions and the procedures to be followed if a variance in the restrictions is requested.	PIO
<input type="checkbox"/>	Expand the use of education and public relations efforts and emphasize the penalties associated with violating the mandatory restrictions.	PIO
<input type="checkbox"/>	Conduct financial analysis of capacity buy-in vs. wholesale rates from CWS to determine the most cost-effective way to purchase additional water.	Finance Section Chief

	<i>Task</i>	<i>Assignee (ICS Position*)</i>
<input type="checkbox"/>	Track and report billed revenues vs. collected revenues.	Finance Section Chief
<input type="checkbox"/>	Email and update all staff on current drought stage and conservation measures.	Planning Section Chief
<input type="checkbox"/>	Keep staff updated with current conditions on Canteen display board.	Planning Section Chief
<input type="checkbox"/>	Report drought-related conditions and impacts weekly to the National Drought Mitigation Center: <a href="http://bit.ly/droughtreport19">http://bit.ly/droughtreport19</a>	Planning Section Chief
<input type="checkbox"/>	Attend DRC conference calls for updates.	Planning Section Chief

### **Extreme Drought Phase Excessive Use Rate Schedule**

Tier I	0 – 2,000 gallons/REU	regular rate
Tier II	2,001 –4,000 gallons/REU	2 times regular rate
Tier III	4,001 – 6,000 gallons/REU	3 times regular rate
Tier IV	Greater than 6,000 gallons/REU	4 times regular rate

### **Meeting Schedule (Extreme Drought):**

<i>Day of Week</i>	<i>Time</i>	<i>Location</i>	<i>Attendees</i>
Mondays	10:00 AM	MPW Conference Room	MPW Emergency Team MPW Commissioners Town Staff (e.g., Public Services) CWS representatives
Thursdays, as determined by DRC	TBD	Conference Call	Drought Response Committee Call MPW IC, Planning & Ops Section Chiefs
Fridays	3:00 PM	Conference Call	MPW Emergency Team MPW Commissioners Town Staff (e.g., Public Services) CWS representatives

### **Operations Actions:**

	<i>Task</i>	<i>Primary</i>
<input type="checkbox"/>	Utilize AMI and field inspections to identify water leaks and intensify maintenance efforts to correct water leaks in the distribution system.	Field Service Branch Director
<input type="checkbox"/>	Continue to cease installation of new irrigation taps on the water system.	Field Service Branch Director
<input type="checkbox"/>	Contact all permitted hydrant users to cease using water until further notice. Notify all hydrant metered customers that meters will be pulled for the	Field Service Branch Director

	<i>Task</i>	<i>Primary</i>
	duration. Restoration of the meters will commence once conditions are favorable for normal use.	
<input type="checkbox"/>	Communicate to all fire stations the reduction in pressures and procedure to follow to increase pressures during firefighting.	Field Service Branch Director
<input type="checkbox"/>	Adjust auto blowoffs to maintain minimum water quality goals.	Field Services Branch Director
<input type="checkbox"/>	Consider making provisions for emergency cooling/improved ventilation of critical machinery due to the stress increased demand and/or elevated environmental temperatures may place on the machinery.	Field Services Branch Director
<input type="checkbox"/>	Coordinate with Town, utilities and their associated contractors to enact/enforce restrictions on directional drilling to minimize damage risk to water lines during severe and/or extreme drought.	Field Services Branch Director
<input type="checkbox"/>	Maintain regular (at least weekly) contact with CWS to receive updates on their assets and operational conditions. Provide updates to MPW staff during regular team meetings.	Operations Branch Director
<input type="checkbox"/>	Monitor usage, storage levels, and operation status of critical assets and report to regular management meetings.	Operations Branch Director
<input type="checkbox"/>	Consider increase in blending of raw water to increase production as needed.	Operations Branch Director
<input type="checkbox"/>	Reduce distribution pressures to ~40 psi. Per the AWWA M60 manual, lower water pressures typically result in an average of 6% reduction in water usage.	Operations Branch Director
<input type="checkbox"/>	Backfill storage tanks at night from CWS.	Operations Branch Director
<input type="checkbox"/>	Consider recycled water from wastewater treatment plants for commercial companies to collect and distribute to customers for irrigation.	Operations Branch Director
<input type="checkbox"/>	Consider increasing the frequency of monitoring and testing of water quality.	Operations Branch Director
<input type="checkbox"/>	Measure & report water levels in each of the deep wells weekly.	Water Supply Group Supervisor
<input type="checkbox"/>	Monitor fluoride levels for potential public notification.	Water Supply Group Supervisor

*\* See Table 13.5 of the MPW Emergency Management Plan for the ICS Positions referenced above.*

**G. Rationing**

If a drought threatens the protection of public health and safety, the Mount Pleasant Waterworks is hereby authorized to ration water as needed per the trigger noted above. Tasks associated with rationing water service include but are not limited to the setup and establishment of point of use stations (buffalos, dispensers, bottled water, treatment systems, etc. that are available and at our disposal) at strategic locations in our service area including shallow wells.

**H. Enforcement of Restrictions**

If any customer of the Mount Pleasant Waterworks fails to comply with the mandatory water use restrictions of this Plan, the customer shall be given a written notice of such failure to comply, which cites the date of said violation, and shall be assessed surcharges in accordance with the following schedule.

**First violation** - \$100.00 surcharge shall be added to the customer's water bill.

**Second violation** - an additional \$300.00 surcharge shall be added to the customer's water bill.

**Third violation** - the customer's water service shall be terminated and restored only after payment of a surcharge of \$500.00 in addition to all previously assessed surcharges.

Law enforcement agencies and other authorized agencies or designated employees in the respective jurisdiction which is being supplied water by the Mount Pleasant Waterworks, shall diligently enforce the provisions of the Drought Response Plan. Water uses that are regulated or prohibited under this Plan are considered to be non-essential and continuation of such uses during times of water supply shortages is deemed to constitute a waste of water, subjecting the offender(s) to penalties in addition to those noted above and as outlined in Town of Mount Pleasant Ordinance [§51.018](#) PENALTY.

**I. Variances**

Customers, who in their belief are unable to comply with the mandatory water use restrictions of this Drought Response Plan, may petition for a variance from restrictions by filing a petition with the Mount Pleasant Waterworks within ten (10) working days after the issuance of the Proclamation requiring water use restrictions. All petitions for variance shall contain the following information (see Variance Request Form in Appendix E):

- 1) Name and address of the petitioner;
- 2) Purpose of water usage;
- 3) Special provision from which the petitioner is requesting relief;
- 4) Detailed statement as to how the curtailment declaration adversely affects the petitioner;
- 5) Description of the relief desired;
- 6) Period of time for which the variance is sought;
- 7) Economic value of the water use;

- 8) Damage or harm to the petitioner or others if petitioner complies with the Drought Response Plan;
- 9) Restrictions with which the petitioner is expected to comply and the compliance date;
- 10) Steps the petitioner is taking to meet the restrictions from which the variance is sought and the expected date of compliance; and
- 11) Other information as needed.

In order for the variance to be granted, the petitioner must demonstrate clearly that compliance with the Plan cannot be technically accomplished during the duration of the water supply shortage without having an adverse impact upon the best interests of the community. The Mount Pleasant Waterworks is authorized to grant the request for variance.

In addition, the General Manager is authorized to grant temporary variances for existing water uses otherwise prohibited under the Plan if it is determined that failure to grant such variances could cause an emergency condition adversely affecting health, sanitation and fire protection for the public. No such variance shall be retroactive or otherwise justify any violation of this Plan occurring prior to the issuance of the variance. Variances granted by the Mount Pleasant Waterworks shall include a timetable for compliance and shall expire when the water supply shortage no longer exists, unless the petitioner has failed to meet specified requirements.

**J. Status of the Plan**

- 1) If any portion of this Plan is held to be unconstitutional for any reason, the remaining portions of the Drought Response Plan shall not be affected.
- 2) The provisions of this Plan shall prevail and control in the event of any inconsistency between this Plan and other rules and requirements of the Mount Pleasant Waterworks.
- 3) Nothing in this Plan shall be deemed to invalidate or be interpreted in a manner inconsistent with any covenants now in effect and given as security to holders of bonds secured by revenues of the system.

# Appendix

## A. Top 25 Largest Customers: Calendar Year 2019

<u>Customer</u>	<u>Customer Name</u>	<u>Water REU</u>	<u>Irrigation REU</u>	<u>Water Gallons</u>	<u>Irrigation Gallons</u>	<u>Total Gallons</u>
00103000	TOWN OF MOUNT PLEASANT	153	86	7,901,600	42,365,500	50,267,100
00103854	THE FRANKE HOME	206	3	14,326,000	8,744,100	23,070,100
00056605	EAST COOPER REGIONAL MEDICAL CENTER	218	3	8,884,600	11,619,800	20,504,400
00098772	CHARLESTON COUNTY SCHOOL DISTRICT	283	15	13,574,800	5,548,800	19,123,600
00139512	ROPER SAINT FRANCIS MOUNT PLEASANT HOSPITAL	67	0	18,017,900	0	18,017,900
00042302	HARBOR POINTE APTS	344	1	16,796,000	0	16,796,000
00042026	S C STATE PORTS AUTHORITY	125	0	14,470,900	0	14,470,900
00149329	RIVERS WALK	184	0	12,192,500	0	12,192,500
00146535	FIVE STAR QUALITY CARE DBA PALMS AT MT PLEASANT	122	2	7,632,200	4,445,000	12,077,200
00165487	MID AMERICA APARTMENTS LP DBA 1201 MIDTOWN	157	1	9,260,000	2,551,800	11,811,800
00175749	CARROLL USPF VI CHARLESTON III HIBBEN FERRY OWNER	304	1	11,410,900	305,600	11,716,500
00084643	BROTHERS PROPERTY MANAGMENT	84	3	6,959,100	3,980,800	10,939,900
00156918	WINDWARD LONG POINT LLC	146	3	8,141,800	2,310,900	10,452,700
00172660	MID-ATLANTIC APARTMENT MANAGEMENT LLC	130	3	9,472,900	903,500	10,376,400
00101832	SANDPIPER REHAB & NURSING LLC	76	0	9,326,500	0	9,326,500
00161964	OYSTER POINTE HOA	0	11	0	9,293,900	9,293,900
00163145	ML BRIDGESIDE APARTMENTS LLC	149	2	8,236,700	961,600	9,198,300
00152850	THE BOULEVARD APARTMENTS	181	1	8,098,300	733,400	8,831,700
00018299	RUNAWAY BAY APTS	208	0	8,752,400	0	8,752,400
00171618	THE HAVEN AT HAYMARKET LLC	232	0	8,464,400	0	8,464,400
00111246	EAST BRIDGE TOWN LOFTS HOA	84	0	8,161,600	0	8,161,600
00040460	MONTCLAIR ASSOC LIMITED	180	0	8,038,500	0	8,038,500
00161528	KETTLER MANAGEMENT	86	1	7,941,400	88,700	8,030,100

00172752	LEGACY MOUNT PLEASANT	166	2	5,643,400	2,242,400	7,885,800
00040158	SNEE FARM LAKES HOA	148	0	7,846,500	0	7,846,500

- B. Map of Facilities:** see VTScada for vertical assets and GIS for linear assets.
- C. Crisis Communication Plan:** see Appendix 13 of the Emergency Management Plan.  
<http://pipeline.mpwonline.com/Pages/Default.aspx>
- D. CWS Water Supply Contract:** see current contract managed by Operations.

## Appendix E: Variance Request Form

### Mount Pleasant Waterworks Drought Variance Request Form

#### Instructions

Please complete all information below when requesting a variance from Mount Pleasant Waterworks (MPW) mandatory water use restrictions or other drought provision. To comply with the variance provisions within MPW's Drought Response Plan, this form should be submitted to MPW within 10 days following a Proclamation requiring mandatory water use restrictions. In order for the variance to be granted, the petitioner must demonstrate clearly that compliance with the restrictions cannot be technically accomplished during the duration of the water supply shortage without having an adverse impact upon the best interests of the community. For variance requests made after 10 days following a Proclamation requiring mandatory water use restrictions, MPW's General Manager is authorized to grant temporary variances for existing water uses otherwise prohibited under the mandatory restrictions if it is determined that failure to grant such variances could cause an emergency condition adversely affecting health, sanitation and fire protection for the public. No such variance shall be retroactive or otherwise justify any violation of a Proclamation occurring prior to the issuance of the variance. Variances granted by the Mount Pleasant Waterworks shall include a timetable for compliance and shall expire when the water supply shortage no longer exists, unless the petitioner has failed to meet specified requirements.

**Customer Number:** \_\_\_\_\_ **Account Type:** \_\_\_ **Business/Commercial** \_\_\_ **Residential**

**Business Name** (if applicable): \_\_\_\_\_

**Property Owner/Contact Name:** \_\_\_\_\_

**Phone Number:** \_\_\_\_\_ **Email Address:** \_\_\_\_\_

**Physical Address of Property:** \_\_\_\_\_

**Billing Address** (if different): \_\_\_\_\_

#### Please attach typewritten/printed pages with your answers to each of the following:

1. Description/Purpose of Water Usage
2. From which provision or restriction are you requesting relief?
3. What date did the above provision or restriction become effective?
4. Detailed statement describing how the provision or restriction described above (question #2) adversely affects you
5. Description of the relief desired
6. Start date/time and days of week for requested variance
7. End date/time for requested variance
8. Describe the economic value of the requested water use
9. Describe the damage or harm to you or others if you were to comply with the provision or restriction described above (question #2)
10. Describe the steps that are you are taking to meet the provision or restriction described above (question #2), and your expected date of compliance with this provision or restriction
11. Please provide other information as necessary. You may attach additional pages and documentation as required.

## Appendix F: Drought Indices

South Carolina uses the following drought indices and indicators to determine the current drought conditions. (Source: <http://www.scdrought.com/current.html>)

1. United States Drought Monitor for South Carolina  
Updated weekly, drought areas mapped by intensity  
<https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?SC>
2. Crop Moisture Index  
Updated weekly, agricultural growing season short-term (up to 4 weeks) drying or wetness  
<http://dnr.sc.gov/climate/sco/Drought/CMI.png>
3. Palmer Drought Severity Index  
Updated monthly, depicts prolonged (months, years) abnormally dry or wet conditions  
<http://dnr.sc.gov/climate/sco/Drought/PDSI.png>
4. Streamflow Levels  
Updated as needed for the DRC meetings, using USGS streamflow data  
[http://www.scdrought.com/images/status\\_update\\_images/streamflow\\_status\\_14day\\_avg.jpg](http://www.scdrought.com/images/status_update_images/streamflow_status_14day_avg.jpg)
5. Lake/Reservoir Levels  
Updated as needed for the DRC meetings, lake and reservoir levels data  
[http://www.scdrought.com/images/status\\_update\\_images/lake\\_levels\\_status.jpg](http://www.scdrought.com/images/status_update_images/lake_levels_status.jpg)
6. Groundwater Levels  
Updated as needed for the DRC meetings, groundwater level data from monitoring wells  
[http://www.scdrought.com/images/status\\_update\\_images/groundwater\\_status.jpg](http://www.scdrought.com/images/status_update_images/groundwater_status.jpg)
7. Keetch-Byrum Drought Index  
Updated daily, forest fire potential  
<https://www.wfas.net/images/firedanger/kbdi.png>

Other drought indicators and forecasts are provided on the South Carolina Drought website maintained by the SC State Climate Office: <http://www.scdrought.com/current.html>

## Appendix G: Drought Response Restriction Guidelines

During drought conditions, water restrictions are generally prioritized between essential and non-essential use categories. The following table depicts the priorities for these two categories.

Essential Water Use Categories <i>* Highest Priority Water Uses</i>	Non-essential Water Use Categories
Firefighting purposes	Agricultural operations for non-food production ➤ Irrigation
Health and medical purposes	Industrial use ➤ Industrial domestic use ➤ Once through cooling ➤ Industrial process use
Agricultural operations for food production	Commercial use ➤ Commercial domestic use ➤ Commercial process use
Minimum streamflow requirements	Domestic use ➤ Inside use ➤ Outside use
* Water levels in the potable drinking water supplies above and below groundwater tables	Electric Power Generation
* Use of water to satisfy federal, state, or local public health and safety requirements	Institutional use
	Recreational use

The program elements table below is meant to be a guide to water uses under various levels of drought restrictions. The Drought Response Committee (DRC) reviews and determines which non-essential water uses should be restricted during a drought. MPW reserves the right to modify these program elements as needed to meet changing water supply conditions and to comply with DRC recommendations and requirements.

Element	Normal/ Incipient	Moderate <i>Voluntary Conservation measures</i>	Severe <i>Mandatory Restrictions for non-essential usage</i>	Extreme <i>Mandatory Restrictions on all usage</i>
<b><i>Outdoor watering and irrigation</i></b>				
<b>Turf grass</b>	Allowed	Allowed with recommendation to limit watering to three days/week during off-peak hours (early morning).	Not allowed for all customers, unless MPW provides certain watering days staggered for customers.	No watering allowed.
<b>New seed and sod</b>	Allowed	Allowed with recommendation to limit watering to three days/week during off-peak hours (early morning).	Not allowed for all customers, unless MPW provides certain watering days staggered for customers.	No watering allowed.

<b>Element</b>	<b>Normal/ Incipient</b>	<b>Moderate</b> <i>Voluntary Conservation measures</i>	<b>Severe</b> <i>Mandatory Restrictions for non-essential usage</i>	<b>Extreme</b> <i>Mandatory Restrictions on all usage</i>
<b>New plantings</b>	Allowed	Allowed with recommendation to limit watering to three days/week during off-peak hours (early morning).	Not allowed for all customers, unless MPW provides certain watering days staggered for customers.	No watering allowed.
<b>Trees, shrubs and perennials</b>	Allowed	Allowed with recommendation to limit watering to three days/week during off-peak hours (early morning).	Not allowed for all customers, unless MPW provides certain watering days staggered for customers.	No watering allowed.
<b>Flowers, vegetables, and community gardens</b>	Allowed	Allowed with recommendation to limit watering to three days/week during off-peak hours (early morning).	Not allowed for all customers, unless MPW provides certain watering days staggered for customers.	No watering allowed.
<b>Athletic and playing fields</b>	Allowed	Allowed with recommendation to limit watering to three days/week during off-peak hours (early morning).	Not allowed for all customers, unless MPW provides certain watering days staggered for customers.	No watering allowed.
<b>Golf courses</b>	Allowed	Allowed with recommendation to limit watering to three days/week during off-peak hours (early morning).	Not allowed for all customers, unless MPW provides certain watering days staggered for customers.	No watering allowed.
<b>Daytime irrigation of high-traffic areas (parks, golf courses)</b>	Allowed	Allowed but discouraged. Recommendation to limit watering to early morning hours.	Not allowed for all customers. May be allowed only by variance request.	No watering allowed.
<b>Irrigation taps not covered by other rules</b>	Allowed	Allowed with recommendation to limit watering to three days/week during off-peak hours (early morning).	Not allowed for all customers. May be allowed only by variance request.	No watering allowed.
<b><i>Water Features</i></b>				
<b>Unlined ponds</b>	Allowed to be filled using approved backflow.	Allowed to be filled using approved backflow.	No filling allowed unless approved by variance.	Not allowed.

<b>Element</b>	<b>Normal/ Incipient</b>	<b>Moderate</b> <i>Voluntary Conservation measures</i>	<b>Severe</b> <i>Mandatory Restrictions for non-essential usage</i>	<b>Extreme</b> <i>Mandatory Restrictions on all usage</i>
<b>Swimming pools</b>	Allowed to be filled	Allowed but recommended to fill during off-peak hours (nights and early morning).	No filling allowed unless approved by variance.	No filling of pools.
<b>Other water features (fountains, waterfalls etc.)</b>	Allowed	Allowed but discouraged	Customers are discouraged from operating any existing outdoor fountain or waterfall that sprays water into the air.	No filling of water features.
<b>Misting devices</b>	Allowed	Allowed but discouraged	Not allowed.	Not allowed.
<b><i>Washing / Events</i></b>				
<b>Cars – washing at home</b>	Allowed	Discouraged, but allowed with recommendation to use bucket or hand-held hose with shut-off nozzle.	Not allowed.	Not allowed.
<b>Cars – commercial car washes</b>	Allowed	Allowed	No waste of water	Not allowed.
<b>Fleet vehicle washing</b>	Allowed	Allowed	No waste of water	Not allowed.
<b>Charity events (e.g. car washes)</b>	Allowed	Allowed	Not allowed.	Not allowed.
<b>Street cleaning equipment</b>	Allowed	Allowed	Obtain water from designated locations only.	Extreme health and safety issues only; high efficiency equipment only.
<b>Pressure Washing Buildings and Other Structures</b>	Allowed	Discouraged, but allowed	Not allowed unless approved by variance.	Not allowed.
<b><i>Commercial-Industrial Processes</i></b>				
<b>Restaurants</b>	Allowed	Recommendation to only serve water on request.	Water served only on request.	Water for customers restricted to bottled water only.
<b>Lodging</b>	Allowed	Allowed	Laundry restricted to high efficiency machines.	Laundry restricted to high efficiency machines.

<b>Element</b>	<b>Normal/ Incipient</b>	<b>Moderate</b> <i>Voluntary Conservation measures</i>	<b>Severe</b> <i>Mandatory Restrictions for non-essential usage</i>	<b>Extreme</b> <i>Mandatory Restrictions on all usage</i>
<b>Construction water</b>	Allowed	Allowed	No waste of water.	Not allowed unless approved by variance.
<b>Fire Hydrants</b>	Allowed	Voluntary restrictions on uses other than firefighting.	Restricted to firefighting only.	Restricted to firefighting only.

## **Appendix H: Communication Templates**

*Reserved*