Drought Management Plan
For

City of Waverly

PWSID: 0000733
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Authority and Status to Plan.
Waverly, Tennessee is a municipal corporation chartered and organized under the laws of the State of Tennessee. The Town of Waverly owns and operates two water treatment plants and distribution system serving the citizens of Waverly and the surrounding area. The mayor of Waverly has the authority to implement a drought management plan and the chief water treatment plant operator has been given the responsibility to complete the plan.

System Characteristics and Risks.
The City of Waverly Water System has approximately 3198 water connections. Using the household factor of 2.66 persons per household for Humphrey's County this is equivalent to approximately 8507 people. The usage is categorized as follows.

Data from previous 12 Months

Water Use Category	Average Water Use MGD	Percent of Total Sold	Peak Water Use MGD	Percent of Total Capacity	Increase in Gallons From MGD (Avg)	Percent Increase (peak over avg)
Entire Customer Base. The City does not have any significant water users.	14,750,325	100%	18,218,500	100%	3,468,175	23.5%
Total	14,750,325	100%	18,218,500	100%	3,468,175	23.5%

The City of Waverly has two water treatment plants. The Duck River plant is a conventional turbidity removal plant with a capacity of approximately 1.5 MGD. The Waverly Wells is a ground water treatment system supplied by three wells with a capacity of approximately 1.3 MGD giving the city a total capacity of 2.8 MGD. Average usage for the system is approximately 1,246,200 gallons per day. The maximum daily pumpage in recent years, which occurred in August 2021, was 1,948,000 gallons. The Duck River Treatment Plant uses the Duck River as its raw water source. The Waverly Wells uses three submersible well pumps as its source. The distribution system contains five water storage tanks with a combined capacity of 1,700,000 gallons.

Purpose of the Drought Management Plan.
The purpose of this plan is to reduce water demand in the event of a drought where existing water supplies are inadequate to meet current demand for potable water. The significance of taking into account water use on average and during peak water demand (though it may not reflect an extreme or exceptional drought) is that system officials can identify water uses that have the potential to be reduced more easily. The point here is to identify potential discretionary or non-essential water uses.
Because water use data reflects a typical peak summer water use but not necessary a moderate, severe or extreme drought, additional water use could be expected by residential

customers on the system to water cattle and other livestock, though they usually rely on ponds and small streams which are likely to be depleted in a severe drought.

During the droughts of 2007 and 2008, the water treatment plants were able to meet customer demand with no restrictions implemented. The City of Waverly has an emergency connection with City of New Johnsonville and Lobelville Water System

Drought Management Plan within the Context of an EOP.
Development of the town's drought management plan and EOP were assigned to the chief water plant operator. He organized a team of individuals, including employees and local officials to help organize and frame the plan. The City of Waverly's EOP addresses line breaks, storms, earthquakes, hazardous material spills and civil disturbances. The EOP is not available for public scrutiny. The drought management plan focuses attention on managing supplies and demand during a declared drought.

The Planning Committee
The City of Waverly drought management plan is a separate component of the Emergency Operation Plan (EOP). It was developed by Water Department staff of the town, but included a focus group in its development and review. Unlike the EOP to which the drought plan is an "annex," the drought plan includes a standby rate structure, restricts some water uses and in some cases bans other water uses at times. The drought management plan was adopted by the mayor and town council. The drought committee met 10/20/23.

Goals – Objectives and Priorities.
The initial goal of the drought management plan was to provide water to all priority uses as established by the water system under worsening drought conditions (three levels). The water uses and levels of water availability take into account the maintenance of public health and safety, sustaining economic activity, preserving critical environmental resources and life activities.

General Water Uses in Order of Priority:

- Hospital and medical facilities
- Nursing homes and elderly care facilities
- Human Consumption (Drinking water, domestic cooking, bathing, toilet use)
- Fire protection (structural facilities, and hazardous situations)
- Pets (animal hospitals, kennels) and livestock
- Environment (Erosion, Aquatic Habitat)
- Commercial Uses (Restaurant, Laundry, Office, Retail)
- Industry and Manufacturing (Sanitation, Process, Cooling)
- Recreation (Pools, Athletic Fields)
- Landscape (shrubbery) watering (Home and Commercial)
- Lawn watering, Vehicle Washing (Home and Commercial)

Ordinances, Policies and Legal Requirements.
The city's drought management plan, rules, ordinances, and policies are available for review. Copies can be examined at the Waverly City Hall.

Agency Coordination and United States Geological Survey (USGS) Information

During periods of drought or impending drought, operators at the Waverly Water Treatment plant will monitor the USGS Surface-Water Monthly Statistics for Tennessee website located at http://waterdata.usgs.gov/nwis/uv?03603000 to determine the flow in the Duck River. US Drought Monitor (http://www.drought.unl.edu/DM/DM_state.htm?TN,S) will be monitored to determine severity of drought. In the event that the river flow begins to approach preset triggerpoints, the Tennessee Division of Water Supply will be contacted to discuss possible actions.

Phased Management.
The drought response plan is broken into four phases: Drought Alert, Voluntary Water Reductions, Mandatory Water Restrictions and Emergency Water Management. The drought management phases and sets of triggerpoints along with their associated goals are described below. Failure to achieve a management phases goal within a reasonable time shall call for the next phase to be implemented. Waverly must notify the Division of Water resources when Waverly activates any stage of the plan and when stages are deactivated.

Drought Alert.
In the drought alert phase, no reduction in water use demand is planned. The City of Waverly Water System will focus on monitoring conditions, prepare for the possible implementation of "Voluntary Reductions," and call its drought task force group together to review the plan and next-step actions.

Voluntary Water Reductions.
Under "Voluntary Reductions" Waverly has established a water use reduction goal of 10 percent. This figure corresponds to approximately 149,800 gallons per day water use judging by peak usage. Among the triggerpoints for implementing this phase would be a decrease in the pumping level at the Waverly Wells to 65 ft or an increase in the usage to 1,576,000 gpd for five consecutive days. The public appeal would consist of news releases to the media (weekly newspaper, local radio and regional television stations). Customers will be encouraged to use efficient water practices, e.g., watering lawns between sunset and sunrise, along with the more careful watering of shrubs and other landscape plantings.

Mandatory Water Restrictions.
The goal of activating a "Mandatory Water Restrictions" phase would be to reduce water demand by customers by 15 percent (from estimated peak demand). This would amount to a reduction of approximately 224,700 gpd. Vehicle washing will be restricted. Restrictions to car/vehicle washing will apply to commercial car washes that do not re-cycle water and to the domestic washing of cars, etc. Lawn and landscape watering will be restricted. To assist in reducing usage, the water system will reduce the amount of flushing where possible. Among the triggerpoints for implementing this phase would be a decrease in the pumping level at the Waverly Wells to 70 ft or an increase in the usage to 1,700,000 gpd for five consecutive days. Restrictions will be provided to the public through the media and posted in public buildings such as libraries, city hall, court house, banks and grocery stores. A $15.00 surcharge will be assessed to all customers using over 4000 gallons per month. System personnel will be utilized to monitor compliance with restrictions. Customers will also be requested to report violators of the restrictions.

The following will be used to enforce restrictions:

- First offense - A written warning will be issued
- Second Offense - A $50.00 fine

- Third Offense - Customer's water service will be discontinued for a minimum of 15 days. A reconnection fee will be required to have service restored.

Emergency Water Management. The "Emergency Water Management" phase of the drought plan would be triggered by severe water pressure or other hydraulic issues, the triggerpoints for implementing this phase would be a decrease in the pumping level at the Waverly Wells to 75ft or an increase in the usage to 2,000,000 gpd for five consecutive days. The purpose of this phase would be to reduce water use to 25 percent of the peak demand. This would be a reduction of approximately 374,500 gpd. The media will be used to strongly encourage all customers to curtail any nonessential usage. A $25.00 surcharge will be assessed to all customers using over 4000 gallons per month. System personnel will be utilized to monitor compliance with restrictions. Customers will also be requested to report violators of the restrictions.

The following will be used to enforce restrictions:

- First offense - A written warning will be issued
- Second Offense - A $50.00 fine
- Third Offense - Customer's water service will be discontinued for a minimum of 30 days. A reconnection fee will be required to have service restored.

Monitor Supply and Demand.
Waverly established 3 drought management phases in addition to a "Drought Alert" Phase. All four phases are described below. In addition, numerous triggerpoints were identified signaling the beginning of a phase.

Triggerpoints to Management Phases.

Drought Alert.
US Drought Monitor includes the service area of city in the "D1" classification (Moderate Drought, resulting in either agricultural or hydrologic impacts). Once an area is included in one of these classifications officials responsible for monitoring drought triggerpoints will initiate monitoring activities.

Voluntary Water Reductions (the triggerpoint for this phase is any one of the following):

- The pumping level at the Waverly Wells falls to 65 ft for five consecutive days
- The system usage reaches 1,600,000gpd for five consecutive days

Mandatory Water Restrictions (the triggerpoint for this phase is any one of the following):

- The pumping level at the Waverly Wells falls to70 ft for five consecutive days
- The system usage reaches 1,750,000gpd for five consecutive days

Water Emergency Management (the triggerpoint for this phase is any one of the following):

- The pumping level at the Waverly Wells falls to 75 ft for five consecutive days
- The system usage reaches 2,000,000 gpd for five consecutive days

The goal of this phase is to bring water use demand to a level where water supplies could be maintained and sufficient time be allowed for filter backwashing and plant maintenance. This phase calls for sacrifices by users, with the expectation that rainfall is not likely to occur) and that extremely limited supplies must be reserved for supporting life and necessary sanitary uses (human consumption). The phase would likely correspond to conditions described by the US Drought Monitor as an exceptional drought.

Management Team.
Waverly has designated the Public Works Director to be the drought plan implementation Manager. He is ultimately in charge of managing the water system. In addition, the mayor of the town, the chief of the fire department, distribution supervisor, chief water plant operator, and City Recorder make up the drought management group responsible for overseeing the implementation of the plan. They advise and assist the Public Works Director in gathering information, assessing the situation and recommend/advise/approve the chief operator's actions. The task group is activated and will meet as necessary, but no less than once a week, once a “Drought Alert” has been initiated. A “Drought Alert” corresponds to the US Drought Monitor’s categorization of the water system’s service area as being characterized as under “Severe” drought conditions. The task group monitors water system conditions, including water demand, water supply, forecasted conditions, hydraulic conditions, water quality issues, impacted communities, public notification, plan modifications, staffing, triggerpoints and other issues related to the implementation of the plan. The task group and Public Works Director must also maintain records of their actions, system conditions at the time of management actions taken, and their effects. Finally, the drought management group and plan implementation manager must also determine and announce the step-down and/or deactivation of the plan.

Review, Evaluation and Up-dating the Management Plan

The drought management plan was adopted on ___Feb 9 2009_____ by the town council. The drought manager will review the plan within 6 months after any phase of the plan has been implemented and/or every 3 years. Refinements to the drought management plan will be made as necessary. The drought manager is responsible for making the review and presenting that review before council.