**Water Shortage Response Plan**

**City of Graham, North Carolina**

**June 2009**

**(Revised 3/31/2010)**

The procedures herein are written to reduce potable water demand and supplement existing drinking water whenever they are in danger of being inadequate to meet customer needs.

1. Authorization

The Graham City Manager is authorized by City Ordinance Section 13-47 to enact water shortage response provisions and will enact these measures whenever the trigger conditions outlined in Section 13-49 of the Ordinance are met.

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1. Notification

Section 13-47 of the Ordinance states that notification is made by Public Proclamation.

The following notification methods will be used to inform city employees and customers of a water shortage declaration: employee e-mail announcements, notices at municipal buildings, notices on water bills, and the City of Graham website homepage. Required water shortage response measures will be communicated through The Times News and/or The Alamance News, Public Service Announcements on local radio and cable stations, and the City of Graham website.

1. Levels of Response

There are five levels of water shortage response. The level of severity is determined by specific measurements as outlined in Section 13-48 of the Ordinance. The five levels of water shortage response are Stage 1 voluntary reductions, Stage 2 & 3 mandatory reductions, Stage 4 emergency reductions, and Stage 5 water rationing. Detail descriptions of each response level and corresponding water reduction measures are outlined in Sections 13-49 of the Ordinance. The restrictive measures in effect at each stage are as follows:

1. In the event the usable water storage of the Graham-Mebane Lake declines to a level of one hundred fifty (150) days a **"Voluntary Conservation Stage I"** may be declared in effect, and the following voluntary water restrictions imposed:

 (1) An extensive publicity campaign will be initiated using public media and

 specialized methods to inform the public of an impending water shortage.

 (2) Residential conservation measures will be encouraged and recommended including the following:

 a. Use the shower for bathing rather than the bathtub and limit the shower to no more than four (4) minutes.

 b. Limit flushing of toilets by multiple uses.

 c. Do not leave faucets running while brushing teeth, shaving, or rinsing dishes.

 d. Limit the use of clothes washers and dishwashers and when used, operate fully loaded.

 e. Limit lawn water to that which is necessary for plants to survive.

 f. Water shrubbery the minimum required, reusing household water when possible.

 g. Limit car washing to the minimum.

 h. Do not wash down the outside areas such as sidewalks, patios, etc.

 i. Install water flow restrictive devices in shower heads.

 j. Use disposable and biodegradable dishes.

 k. Install water-saving devices such as a water-filled plastic bottle or commercial units in toilet tanks.

 l. Limit hours of operation of water-cooled air conditioners.

 (3) It is recommended that water supply line pressure-reducing valves be set to the minimum necessary for effective operations of fixtures and equipment.

 (4) Conservation in public buildings, institutions, dormitories, etc. is encouraged by reducing pressure at plumbing fixtures, by the installation of restricting devices and shutting down on water flow control devices, and by only periodic flushing of urinals.

 (5) All residents, businesses, and institutions are requested to temporarily delay new landscape work until the water shortage has ended.

 (b) In the event the usable water storage of Graham-Mebane Lake declines to the level of one hundred twenty (120) days a **"Mandatory Stage II"** may be declared in effect, and in addition to the restrictions heretofore imposed, the following moderate mandatory water restrictions shall be in effect. It shall be unlawful to use water from the public water system supplied by the city for the following purposes:

 (1) To water lawns, grass, shrubbery, trees, flower, and vegetable gardens except on Saturdays between the hours of 6:00 a.m. and 9:00 a.m.

 (2) To fill newly constructed swimming and/or wading pools or refill swimming and/or wading pools that have been drained. A minimal amount of water may be added to maintain the continued operation of pools that are in operation at the time the provisions of a "Mandatory Stage II" are placed into effect.

 (3) To operate water-cooled air conditioners or other equipment that does not recycle cooling water, except when health and safety are adversely affected.

 (4) To wash automobiles, trucks, trailers, boats, airplanes, or any other type of mobile equipment, including commercial washing.

 (5) To wash down outside areas such as streets, driveways, service station aprons, parking lots, office buildings, exteriors of existing or newly constructed homes or apartments, sidewalks, or patios, or to use water for other similar purposes.

 (6) To operate or introduce water into any ornamental fountain pool or pond or other structure making similar use of water.

 (7) To serve drinking water in restaurants, cafeterias, or other food establishments, except upon request.

 (8) To use water from public or private fire hydrants for any purpose other than fire suppression or other public emergencies.

 (9) To use water for dust control or compaction.

 (10) To use water for any unnecessary purpose or to intentionally waste water.

 (c) In the event the usable water storage of the Graham-Mebane Lake declines to the level of ninety (90) days a **"Mandatory Stage III"** may be declared to exist, and in addition to the restrictions heretofore imposed, the following severe mandatory water restrictions shall be in effect. It shall be unlawful:

 (1) To water or sprinkle any lawn.

 (2) To water any vegetable garden ornamental shrubs except during the hours of 6:00 a.m. to 9:00 a.m. on Saturday. Such watering is only to be done by handheld hose or container or drip irrigation system.

 (3) To make any non-essential use of water for commercial or public use, and the use of single service plates and utensils is encouraged and recommended in restaurants.

 (d) In the event the usable water storage of the Graham-Mebane Lake declines to the level of sixty (60) days **"Emergency Stage IV"** may be declared to exist and in addition to the restrictions heretofore imposed, the following stringent mandatory water restrictions shall be in effect. It shall be unlawful:

 (1) To use water outside a structure for any use other than an emergency use involving fire.

 (2) To operate an evaporative air conditioning unit that recycles water except during the operating hours of the business.

 (3) To introduce water into any swimming pool.

 (e) In the event the usable water storage of the Graham-Mebane Lake declines to the level of thirty (30) days a **"Rationing Stage V"** may be declared in effect, and a system of water rationing shall be put in effect in addition to all previously imposed restrictions. In the event of water rationing in which water will be supplied in the minimal quantities required for the health, welfare, and safety of the citizens in accordance with a program determined by the city.

 (1) It shall be unlawful to fail to act in accordance therewith or use water in any manner or attempt to evade or avoid such water rationing restrictions.

 (2) Fire protection will be maintained, but where possible tank trucks shall use raw water.

1. Triggers

The City of Graham’s water source is the Graham-Mebane Lake. The severity of the water shortage shall be determined by the “usable water storage” of the Graham-Mebane lake as outlined above in (a), (b), (c), (d), and (e). Additionally, these triggers are outlined in Sections 13-49 (a), (b), (c), (d), and (e) of the Water Shortage Ordinance. The five triggers are 150, 120, 90, 60, and 30 days of usable water storage respectively. Additionally, evaluation of these five triggers will determine the movement from more restrictive to less restrictive levels of conservation response based on current conditions and circumstances. When water shortage conditions have abated and the situation is returning to normal, water conservation measures employed during each phase should be decreased in reverse order of implementation. Permanent measures directed toward long-term monitoring and conservation should be implemented and continued so that the community will be in a better position to prevent shortages and respond to recurring water shortage conditions.

1. Enforcement

The provisions of the water shortage response plan will be enforced by the City of Graham Police Department. Users receive a warning for the first violation at any stage. Subsequent violations are subject to penalties as outlined in Section 13-50 (b) of the Ordinance which states:

Any person who shall fail to comply with this ordinance and with any of its requirements shall be guilty of a Class 3 misdemeanor and shall be fined not more than five hundred dollars ($500) as provided by North Carolina General Statutes, Section 14-4. Additionally, any violation of this section shall subject violators to a civil penalty in the amount of five hundred dollars ($500) for each violation. Violators shall pay the penalty to the City within ten (10) days of receipt. The failure of such violators to pay the civil penalty within the specified time shall subject such violators to a civil action in the nature of the debt to collect all penalties and costs for said violation, and any civil penalty not timely paid shall carry an additional late payment penalty of one hundred dollars ($100). Repeated violations shall subject violators to separate, distinct, and successive civil penalties and/or criminal citations.

1. Public Comment

In addition to this Water Shortage Response Plan, Water Shortage Response for the City is a part of the City’s Code of Ordinance. The City provides a public review and opportunity to comment at monthly council meetings prior to revision, approval, and/or adoption by the City Council.

1. Variance Protocols

All water use variance requests must be submitted to the City Manager. Within two weeks, the City Manager will decide to approve or deny individual variance requests after consideration of the following criteria: impact on water demand, expected duration, alternative source options, social and economic importance, purpose, and the prevention of structural damage.

1. Effectiveness

The effectiveness of the Graham water shortage response plan will be determined by comparing the daily water use patterns as stated in Section 13-48 of the Ordinance with the conservation stage imposed. The City developed a new Stage Storage Curve for the lake in 2008. A 20-year and 50-year model for safe yield was included with this project. Based on the total lake drainage area, the Days of Storage remaining can be determined by using this Safe Yield Calculator. Consideration is given to lake levels, available/usable storage on hand, draw-down rates, projected supply capability, the outlook for precipitation, daily use patterns, and availability of water from other sources.

1. Revision

The water shortage response plan will be reviewed and revised as needed to adapt to new circumstances affecting water supply and demand, following implementation of emergency restrictions, and at a minimum of every five years, as required by the provisions of G.S. 143-355 (I). The City of Graham Utilities Director is responsible for initiating subsequent revisions.

Updated 4/23/2018

 3/06/2023