

**Water Shortage Response Plan  
Warren County, North Carolina  
March 2011**

The procedures herein are written to reduce potable water demand and supplement existing drinking water supplies whenever existing water supply sources are inadequate to meet current demands for potable water.

**I. Authorization**

The Warren County Manager shall enact the following water shortage response provisions whenever the trigger conditions outlined in Section IV are met. In his or her absence, the Public Utility Director will assume this role.

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**II. Notification**

The following notification methods will be used to inform water system employees and customers of a water shortage declaration: employee e-mail announcements, notices at municipal buildings, notices in water bills. Required water shortage response measures will be communicated through *The Warren Record*, PSA announcements on local radio and cable stations and the County website ([http://www.warrencountync.com/.](http://www.warrencountync.com/)) Declaration of emergency water restrictions or water rationing will be communicated to all customers by telephone.

**III. Levels of Response**

Responses are in the attached Kerr Lake Regional Water System Plan (RWS).

**IV. Triggers**

Warren County is provided water solely by purchase from Kerr Lake RWS. When Kerr Lake RWS declares a water shortage Warren County is required to do so as well. During this time Warren County Utility Director will stay in close contact with Kerr Lake Water System and follow their triggers.

Return to Normal

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 or continued so that the community will be in a better position to prevent shortages and respond to recurring water shortage conditions.

V. Enforcement

The provisions of the water shortage response plan will be enforced by Warren County personnel and local law enforcement. Violators may be reported on the County’s phone line. Citations are assessed according to the following schedule depending on the number of prior violations and current level of water shortage.

<b>Water Shortage Level</b>	<b>First Violation</b>	<b>Second Violation</b>	<b>Third Violation</b>
Voluntary Reductions	N/A	N/A	N/A
Mandatory Reductions (Stages 2 and 3)	Warning	\$250	Discontinuation of Service
Emergency Reductions	\$250	Discontinuation of Service	Discontinuation of Service
Water Rationing	\$500	Discontinuation of Service	Discontinuation of Service

VI. Public Comment

Customers will have multiple opportunities to comment on the provisions of the water shortage response plan. First, a draft plan will be available at County Offices for customers to view. A notice will be included on the customer’s water bill notifying them of such. All subsequent revisions to the draft plan will be published at least 30 days prior to an adoption vote by Warren County Commissioners.

VII. Variance Protocols

Applications for water use variance requests are available from the County Office. All applications must be submitted to the County Office for review by the County Manager or his or her designee. A decision to approve or deny individual variance requests will be determined within two weeks of submittal after careful consideration of the following criteria: impact on water demand, expected duration, alternative source options, social and economic importance, purpose (i.e. necessary use of drinking water) and the prevention of structural damage.

### VIII. Effectiveness

The effectiveness of the Warren County water shortage response plan will be determined by comparing the stated water conservation goals with observed water use reduction data. Other factors to be considered include frequency of plan activation, any problem periods without activation, total number of violation citations, desired reductions attained and evaluation of demand reductions compared to the previous year's seasonal data.

### IX. 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 in conjunction with the updating of our Local Water Supply Plan. Further, a water shortage response planning work group will review procedures following each emergency or rationing stage to recommend any necessary improvements to the plan to Warren County's Commissioners. The Warren County Utility Superintendent is responsible for initiating all subsequent revisions.

**Attachment A Resolution 10-110**

**KERR LAKE REGIONAL WATER SYSTEM  
HENDERSON, NORTH CAROLINA  
WATER SHORTAGE RESPONSE AGREEMENT**

This is an agreement authorizing the declaration of Water Shortage Conditions, and Establishing Procedures and Measures for the Essential Conservation of Water Resources. Be It Agreed on behalf of the Kerr Lake Regional Water System by the City of Henderson, the City of Henderson and Warren County all of North Carolina.

**SECTION 1. PURPOSE:**

The purpose of this agreement is to provide for the declaration of official phases of water supply shortage situations and the implementation of voluntary and mandatory water conservation measures in the event a shortage or water emergency is declared by the governing body or an appointed representative of the Kerr Lake Regional Water System. These measures would apply to the bulk customers, being the City of Henderson, the City of Henderson and Warren County. It shall be the responsibility of each of these bulk customer to notify its employees and customers.

**SECTION 2. DEFINITIONS:**

- (a) "Any Water," as the term is used in this agreement, shall mean any person using water, including fresh water, wastewater, or reclaimed water.
- (b) "Customer," as the term is used in this agreement, shall mean any person using water for any purpose from the Kerr Lake Regional Water Supply System and for which either a regular charge is made or, in this case of bulk sales, a cash charge is made at the site of delivery.
- (c) "Emergency," as the term is used in this agreement, shall mean that water supplies are below the level necessary, to meet normal needs and that serious shortages exist in the area.
- (d) "Excess Use," as the term is used in this agreement, shall mean the usage of water by a water customer in excess of water allotment provided under the water rationing provisions of this agreement for that customer, over any applicable period.
- (e) "Fresh Water," as the term is used in this agreement, shall mean water withdrawn from surface or groundwater that has not been previously used.
- (f) "Mandatory Conservation," as the term is used in this agreement, shall mean that raw water supplies reservoir levels are consistently below seasonal averages, and if they continue to decline, may not to be adequate to meet normal needs.
- (g) "Rationing," as the term is used in this agreement, shall mean procedures established to provide for the equitable distribution of critically-limited water supplies, in order to balance demand and limited available supplies, and to assure that sufficient water is available to preserve public health and safety.

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- (h) “Voluntary Conservation,” as the term is used in this agreement, shall mean that conditions exist which indicate the potential for serious water supply shortages.
- (i) “Waste of Water,” as the term is used in this agreement, includes, but is not limited to (1) permitting water to escape down a gutter, ditch, or other surface drain, or (2) failure to repair a controllable leak of water due to defective plumbing.
- (j) “Water,” as the term is used in this agreement, shall mean water available to the City of Henderson, the City of Henderson and Warren County from the Kerr Lake Regional Water System by virtue of its contract, for introduction into their respective water distribution systems, including water offered for sale.
- (k) “Water Use Classes,” as the term used in this agreement, shall be established as follows:

CLASS 1 ESSENTIAL WATER USES:

Domestic Use:

- Water necessary to sustain human life and the lives of domestic pets, and to maintain minimum standards of hygiene and sanitation.

Health Care Facilities:

- Fire Hydrants
  1. Firefighting.
  2. Certain testing and drills by the fire department if performed in the interest of public safety and if approved by the municipal governing body.
- Flushing of Sewers and Hydrants: As needed to ensure public health and safety and if approved by the governing body.

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CLASS 2 SOCIALLY OR ECONOMICALLY IMPORTANT USES OF WATER:

All Domestic Uses Other Than Those Included in Classes 1 and 3:

- Home water use including kitchen, bathroom and laundry use.
- Minimal watering of vegetable gardens.
- Watering of trees where necessary to preserve them.

Commercial, Agricultural, Industrial and Institutional Uses

- Outdoor commercial watering (public or private) using conservation measures and to the extent that sources of water other than fresh water are not available to use.
- Irrigation for commercial vegetable gardens and fruit orchards or the maintenance of livestock.
- Watering by commercial nurseries at a minimum level necessary to maintain stock.
- Water use by arboretums and public gardens of national, State, or regional significance where necessary to preserve specimens.
- Use of fresh water at minimum rate necessary to implement vegetation following earth moving, where such vegetation is required by law or regulation.
- Watering of golf course greens.
- Filling and Operation of Swimming Pools:
  1. Residential pools which serve more than 25 dwelling units.
  2. Pools used by health care facilities for patient care and rehabilitation.
  3. Municipal pools.
- Commercial car and truck washes.
- Commercial Laundromats.
- Restaurants, clubs, and Eating Places.
- Air Conditioning:
  1. Refilling for start up at the beginning of the cooling season.
  2. Make-up of water during the cooling season.
  3. Refilling specifically approved by health officials and the municipal governing body, where the system has been drained for health protection or repair purposes.
- Schools, Churches, Motels/Hotels and Similar Commercial Establishments.

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**CLASS 3 NON-ESSENTIAL USES OF WATER:**

Ornamental Purposes:

- Fountains, reflecting pools, and artificial waterfalls.

Outdoor Non-Commercial Watering (public or private):

- Gardens, lawns, parks, golf course (except greens), playing fields and other recreational areas.
- Filling and operation of recreational swimming pools which serve fewer than 25 dwellings.
- Non-commercial washing of motor vehicles.
- Serving water in restaurants, clubs, or eating places except by specific request.
- Air Conditioning: refilling cooling towers after draining except as specified in Class 1.

**SECTION 3 DECLARATION OF VOLUNTARY CONSERVATION:**

Whenever the governing body of the Kerr Lake Regional Water System, finds the water level in Kerr Lake is nearing elevation 294, it shall declare that Voluntary Conservation conditions exist, and that the Director of the Kerr Lake Regional Water System shall, on a daily basis, monitor the lake level and the water use demand.

In addition, the Kerr Lake Regional Water System shall call upon its bulk customers to employ voluntary water conservation measures within 48 hours of receiving notice (see Addendum) to limit water use (especially Class 3 uses) and eliminate the waste of water. It shall be the responsibility of each of the bulk customers to employ voluntary water conservation measures on their water customers. The goal for water reduction shall be 5%.

**SECTION 4. DECLARATION OF MANDATORY CONSERVATION:**

Whenever the governing body of the Kerr Lake Regional Water System finds the water level in Kerr Lake is nearing elevation 289, it shall declare that Mandatory Conservation conditions exist. This implies that lake level is nearing a level where insufficient water can enter the raw water intake.

The Kerr Lake Regional Water System shall continue to encourage voluntary water conservation measures for the bulk customers of the Kerr Lake Regional Water System as defined under the Voluntary Conservation declaration, and shall further require mandatory measures be put in place, such as a ban be imposed on all Class 3 uses for the duration of the shortage. The goal for water reduction shall be 10%. Official notice shall be given to the City of Henderson, the City of Henderson, and Warren County.

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**SECTION 5. DECLARATION OF A WATER SHORTAGE EMERGENCY:**

Whenever the governing body of the Kerr Lake Regional Water System finds that water level in Kerr Lake has dropped to elevation 284 or below, and/or that a serious shortage exists due to other reasons it shall declare that a water shortage Emergency exists. It would be the recommendation of the Regional Water System that the City of Henderson, the City of Henderson and Warren County identify all Class 1, Essential Uses, in specific, and make them targets for voluntary conservation initiatives.

The Kerr Lake Regional Water System shall require mandatory measures be put in place, such as a ban be imposed on all Class 2 and Class 3 uses for the duration of the shortage. The goal for water reduction shall be 40%. These restrictions should be continued until the emergency is declared ended.

Official notice shall be given to the City of Henderson, the City of Henderson and Warren County of the emergency situation. It shall be the responsibility of each separate bulk water user, the City of Henderson, the City of Henderson and Warren County, to employ water restrictions on their water customers.

**SECTION 6. DECLARATION OF RATIONING:**

Whenever the governing body of the Kerr Lake Regional Water System finds that water level in Kerr Lake has dropped to elevation 280, declared a Water Shortage Emergency, and finds a need to provide for the equitable distribution of critically-limited water supplies, in order to balance demand on limited available supplies, and to assure that sufficient water is available to preserve public health and safety, it shall call for mandatory rationing by all three (3) of the members and their water users until the emergency is declared ended.

It shall be the responsibility of each of the three (3) members to employ water restrictions on their water customers.

During this emergency situation, the amount of water to each member could be reduced by fifty percent (50%) or more. This amount shall be determined by the governing body of the Kerr Lake Regional Water System. Official notice shall be given to the City of Henderson, City of Henderson and Warren County.

**SECTION 6A. OBJECTIVES OF RATIONING:**

It is imperative that water customers achieve an immediate further reduction in water use in order to extend existing water supplies and at the same time, assure that sufficient water is available to preserve the public health and sanitation and to provide fire protection service.

Hospitals and health care facilities should comply with all restriction imposed on residential and non-residential water customers as may be applicable to each individual institution, to the extent compliance will not endanger the health of the patients or residents of the institution.

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**SECTION 6B. ENFORCEMENT OF WATER RATIONING**

Each of three (3) members has primary responsibility for monitoring of compliance with the water-rationing measures. There are no enforcement provisions associated with this agreement.

**SECTION 7. ENFORCEMENT**

In order to effectuate compliance with this plan, enforcement of water conservation restrictions shall be the responsibility of each of the three (3) bulk customers. Each customer shall employ measures not limited to written notices, administrative and civil penalties, and service disruption.

**SECTION 8. VARIANCE PROTOCOL**

Kerr Lake Regional Water System understands that water restrictions can cause economic hardships on certain portions of their water customers: additionally, the restriction could be infeasible for others that have implemented water use reduction strategies into their daily practices prior to drought conditions being in place. Each of the three (3) bulk customers has the authority to consider variances for those showing proof of economic hardship, public health care facilities, or those that have previously implemented and documented water use reduction strategies such that achieving further water reduction goals may not be achievable. Each of the three (3) bulk customer shall adopt a protocol for accepting and ruling on a variance request. A copy of each variance request and decisions shall be forwarded to the governing body of the Kerr Lake Regional water System for record keeping.

**SECTION 9. EFFECTIVENESS**

The effectiveness of the Kerr Lake Regional Water System WSRP will be determined by comparing the stated water conservation goals with observed water use reduction data for each of the three (3) bulk customers. Data will be compared against the previous non-water restrictions year's data to determine effectiveness of its actions. Tracking will be conducted using a spreadsheet, updated monthly, which compares water use against the baseline time period seasonal data. Other factors to be considered include use of a shortage water rate structure, frequency of plan activation, notification procedures, any problem periods without activation, and total number of enforcement actions.

**SECTION 10. REVISION PROTOCOL**

This WSRP 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 in conjunction with the update in of the Local Water Supply Plans of each of the three (3) bulk customers. Further, the governing body of the Kerr Lake Regional Water System will review procedures following each emergency or rationing stage to recommend any necessary improvements to the plan. Each of the three (3) bulk customers shall also conduct a review of their plan and actions on this cycle and provide comments or suggestions to the Kerr Lake Regional Water System. If revisions are not recommended following a review, a memo will be filed documenting the effectiveness of the WSRP. The governing body of the Kerr Lake Regional Water System is responsible for initiating all subsequent revisions.

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**SECTION 11. EFFECTIVE DATE**

This agreement shall take effect immediately upon adoption or passage by the governing body of the Kerr Lake Regional Water System.

**SECTION 12. EFFECTIVE PERIOD**

This agreement will remain in effect until terminated by action of the governing body of the Kerr Lake Regional Water System.

**CITY OF HENDERSON** Date

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James D. O'Geary, Mayor

**CITY OF OXFORD** Date

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Alvin Woodlief, Jr., Mayor

**WARREN COUNTY** Date

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Barry Richardson, Chairman

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CONSERVATION MEASURES

Direct users to adopt the following conservation measures:

INDOOR RESIDENTIAL USE:

CONSERVATION FOR VOLUNTARY AND MANDATORY CONSERVATION PHASES:

- Use dishwashers only when they are full. Washing dishes by hand (don't let the tap run!) Saves about 25 gallons.
- Adjust water level on clothes washing machines, if possible. Use full load only, if not adjustable.
- Turn off faucets while brushing teeth, etc. Saves about 5 gallons per day.
- Reduce water used per flush by installing toilet tank displacement inserts. A plastic jug may often be used as an alternative. DO NOT USE BRICKS – they disintegrate when soaked and the resulting grit hinders closing of the flap valve.
- Do not use the toilet as a trash can.
- Use sink and tub stoppers to avoid wasting water.
- Keep a bottle of chilled water in the refrigerator for drinking.
- Find and fix leaks in faucets and water-using appliances. Faucets can usually be fixed cheaply and quickly by replacing washers.
- Adapt plumbing with flow restricting or other water-saving devices. These are usually inexpensive and easy to install. See attached list of devices. (Need list.)
- Learn to read your water meter so you can judge how much water you use and what difference conservation makes.
- Take shorter showers and shallow baths. Saves about 25 gallons.
- Reduce the number of toilet flushes per day. Each flush uses about 5 gallons (2-3 if you have water saving toilets).
- Don't use a garbage disposal.
- Use non-phosphate detergent and save laundry water for lawns and plants.

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CONSERVATION FOR EMERGENCY CONSERVATION OR RATIONING PHASE (In addition to measures listed above).

- Turn off shower while soaping up.
- Use disposable eating utensils.

OUTDOOR RESIDENTIAL USE

CONSERVATION FOR NORMAL CONDITIONS AND VOLUNTARY CONSERVATION PHASE:

Lawns:

- Water before 10:00 a.m. to prevent evaporation that occurs during the hottest part of the day. Morning is better than evening, when the dampness encourages growth of fungus.
- Water only when lawn shows signs of wilt. Grass that springs back when stepped on does not need water.
- Water thoroughly, not frequently: long enough to soak roots. A light sprinkling evaporates quickly and encourages shallow root systems. Water slowly to avoid runoff.
- Don't let the sprinkler run any longer than necessary. In an hour, 600 gallons can be wasted.
- Allow maximum of one inch of water per week on your lawn. To measure, place cake tins outside to collect rain and water from sprinklers.
- Use pistol-grip nozzles on hoses to avoid waste when watering flowers and shrubs.
- Aerate lawns by punching holes 6 inches apart. This allows water to reach roots rather than run off surfaces.
- Position sprinklers to water the lawn, not the pavement.
- Avoid watering on windy days when the wind not only blows water off target, but also causes excess evaporation.
- Keep sprinkler heads clean to prevent uneven watering.
- Adjust hose to simulate gentle rain. Sprinklers that produce a fine mist waste water through evaporation.
- Know how to turn off an automatic sprinkler system in case of rain.
- Use an alarm clock or stove timer to remind you to shut off sprinklers that don't have timers.

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Vegetables and Flower Gardens:

- Water deeply, slowly and weekly. Most vegetables require moisture to a depth of 6 to 8 inches.
- Keep soil loose so water can penetrate easily.
- Keep weeds out to reduce competition for water.
- Put the water where you want it and avoid evaporation by using soil-soakers or slow running hoses, not sprinklers.

Trees and Shrubs:

- Water deeply using a soil-soaker or drip-irrigation.
- Water only when needed. Check the depth of soil dryness by digging with a trowel.
- Mulch to reduce evaporation. A 2" to 3" layer of wood chips, pine needles, grass clippings, or straw keeps the soil cool in summer.
- Dig troughs around plants to catch and retain water.
- Water trees growing in full sun more often than those in shade.
- Do not use sprinklers. Apply water directly at base.
- Do not fertilize during the summer. Fertilizing increases a plant's need for water.
- Postpone planting until fall or spring when there is generally less need for water.
- Install trickle-drip irrigation systems close to the roots of your plants. By dripping water slowly, the system doesn't spray water in to the air. Use soil probes for large trees.
- Water when cloudy, at night, or even when a light rain is falling.

OUTDOOR RESIDENTIAL USE CONSERVATION FOR VOLUNTARY CONSERVATION PHASE  
(in addition to measures listed above).

- Do not allow children to play with hose or sprinklers.
- Limit car washing.
- Be ready to catch rainfall that occurs. Place containers under drain sprouts.
- Use leftover household water if available.
- Consider delaying the seeding or sodding of new lawns.
- Determine the amount of water being used outdoors by comparing water bills for summer and winter.

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CONSERVATION FOR MANDATORY CONSERVATION PHASE (In addition to measures listed above).

- Vegetable gardens and food trees should be given minimal amounts of water on an individual basis only.
- Do not water lawns and inedible plants.
- Do not use sprinklers.

*Most outdoor watering is prohibited under Emergency Conservation conditions.*

HOSPITAL AND HEALTH CARE FACILITY USE:

- Reduce laundry usage or services by changing the linens, etc. only when necessary to preserve the health of patients or residents.
- Use disposable food service items.
- Eliminate, postpone, or reduce, as they may be appropriate, elective surgical procedures during the period of emergency.

INDUSTRIAL USE

- Identify and repair all leaky fixtures and water-using equipment. Give special attention to equipment connected directly to waterlines, such as processing machines, steam-using machines, washing machines, water-cooled air conditioners, and furnaces.
- Assure that valves and solenoids that control water flows are shut off completely when the water-using cycle is not engaged.
- Adjust water-using equipment to use the minimum amount of water required to achieve its stated purpose.
- Shorten rinse cycles for laundry machines as much as possible; implement lower water levels wherever possible.
- For processing, cooling, and other uses, either re-use water or use water from sources that would not adversely affect public water supplies.
- Advise employees, students, patients, customers, and other users not to flush toilets after every use. Install toilet tank displacement inserts; place flow restrictors in showerheads and faucets; close down automatic flushes overnight.
- Install automatic flushing valves to use as little water as possible or to cycle at longer intervals.
- Place water-saving posters and literature where employees, students, patients, customers', etc. will have access to them.
- Check meters on a frequent basis to determine consumptive patterns.
- Review usage patterns to see where other savings can be made.