

## Section 1.0 - Purpose

The purpose of this Water Shortage Response Plan (“Plan”) is to maintain and protect the public health, safety and welfare of Union County (“County”) residents by establishing short and long-term demand management strategies to effectively manage the limited resource of the water supply in the County. This Plan aids in effectively managing the water supply in the County by requiring efficient and responsible use of water within the County and by establishing measures and procedures for reducing potable water use during times of water shortage resulting from drought, capacity limitations, and system emergencies.

The water demand management strategies set forth in this Plan reduce the rate of increase in overall water use through year-round water conservation practices that maximize the County’s existing and planned water supply sources and reduce seasonal peak day demands that result in the need for costly expansion of water treatment, storage, and transmission facilities. The implementation of voluntary and mandatory water reduction measures within the Union County water utility service area extends the available water supply with regard for domestic water use, sanitation and fire protection, and minimizes the adverse impacts in the event a water shortage is declared.

This Plan is also designed to be in accordance with the Catawba-Wateree Low Inflow Protocol (“CW-LIP”) for the Catawba-Wateree River Basin. The CW-LIP was developed pursuant to the Comprehensive Relicensing Agreement for the Catawba-Wateree Hydro Project (FERC Project No. 2232) dated December 22, 2006 (the “Relicensing Agreement”), to which Union County is a party. The Relicensing Agreement establishes the CW-LIP as the agreed-upon methodology to deal with water shortages during periods of drought. Thus, Union County, as a signatory to the Relicensing Agreement, is required to comply with the CW-LIP. The CW-LIP establishes a policy for how Duke Energy Carolinas, LLC, regional water users, and other stakeholders will operate water systems during periods of drought by progressing through a series of staged water use restrictions during worsening drought conditions. The goal of the CW-LIP is to delay the point at which the Catawba River’s usable water storage is fully depleted and to provide additional time to allow precipitation to restore stream flow, reservoir levels and groundwater levels to normal ranges.

As a publicly owned water system, the operation of the County’s water utility system is subject to N.C.G.S. § 143-355(l) and N.C.G.S. § 143-355.2, requiring an approved Water Shortage Response Plan as part of the Local Water Supply Plan. A Water Shortage Response Plan must include specific requirements as set forth in rules governing water use during droughts and

water emergencies (15A NCAC § 02E.0607) and Article 38 of Chapter 143 of the North Carolina General Statutes. The Union County Water Use Ordinance (the “Ordinance”) authorizes the implementation of this Plan and incorporates this Plan into the Ordinance.

## Section 2.0 - Applicability

The provisions of this Plan apply to all persons, customers, and property utilizing water supplied through the County’s water system; however, it does not apply to reuse or reclaimed water. This Plan also does not apply to private drinking water wells, as that term is defined in N.C.G.S. § 87-85, or ponds.

## Section 3.0 - Definitions

Bona Fide Farm Use means water uses for the production and activities relating or incidental to the production of crops, grains, fruits, vegetables, ornamental and flowering plants, dairy, livestock, poultry, and all other forms of agriculture, as defined in N.C.G.S. § 106-581.1.

County means Union County, North Carolina

County Manager means, for the purposes of this Plan, the person currently occupying the position of Union County Manager (which includes a County Manager with an acting or interim designation), or in the absence of such a person, the Executive Director of Public Works.

Customer means a person, company, organization, or any other entity (individuals, corporations, partnerships, associations, and all other legal entities) using water supplied by the County’s water utility, or in whose name an account for water utility service is maintained by the County.

CW-LIP means the Catawba-Wateree Low Inflow Protocol for the Catawba River Basin, as developed pursuant to the Relicensing Agreement.

Duke Energy means Duke Energy Carolinas, LLC and any successor in interest entity.

Essential Water Use means the use of water necessary for firefighting, health, and safety, and sustaining human and animal life. Specifically, for certain types of water uses set forth below, the following is considered Essential Water Use:

- a. Domestic Use- Water use necessary to sustain human life and the lives of domestic pets, as well as to maintain minimum standards of hygiene and sanitation.

- b. Commercial Use- Water use integral to the production of goods and/or services by any establishment having profit as its primary aim, except as otherwise specifically prohibited by this Plan.
- c. Industrial Use- Water use in processes designed to convert materials of lower value into forms having greater usability and value, except as otherwise specifically prohibited by this Plan.
- d. Institutional Use- Water use by government; public and private educational institutions; churches and places of worship; water utilities; and other public organizations, except as otherwise specifically prohibited by this Plan.
- e. Health Care Facility Use- Water use in patient care and rehabilitation, including swimming pools used for patient care and rehabilitation, in nursing homes, and other care facilities.
- f. Public Use- Water use for firefighting, including testing and drills by a fire department if performed in the interest of public safety; water system operations; and water necessary to satisfy federal, state, and local public health, safety, or environmental protection requirements.
- g. Correctional Facility Use- Water use necessary to sustain human life and to maintain minimum standards of hygiene and sanitation.

MGD means million gallons per day.

Non-Essential Water Use means any use of water that does not meet the definition of Essential Water Use.

Ordinance means the current Union County Water Use Ordinance.

Plan means this Water Shortage Response Plan.

Rate Ordinance means the Ordinance Setting Charges, Fees, Rates and Deposits for Customers Served by the Union County Water and Sewer System.

Relicensing Agreement means the Comprehensive Relicensing Agreement for the Catawba-Wateree Hydro Project (FERC Project No. 2232) dated December 22, 2006.

Spray Irrigation System means a system of application of water to landscaping by means of a device, other than a hand-held hose or watering container, which projects water through the air in the form of particles or droplets.

UCPW means the Union County Public Works Department.

US Drought Monitor means a website hosted and maintained by the National Drought Mitigation Center that indicates what parts of the country are in a drought and the severity of such droughts.

## Section 4.0. - Declaration and Implementation

The County Manager, upon notification from the Executive Director of Public Works of a water shortage as described in this Plan and the Ordinance, is authorized by the Ordinance to declare a water shortage, designate a water shortage stage, and implement the water use reduction measures or restrictions corresponding with such a stage, as such measures and restrictions are outlined in this Plan and the Ordinance. The County Manager, the Executive Director of Public Works, and UCPW are responsible for the implementation of this Plan.

Current Contact Information:

County Manager

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Executive Director of Public Works

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## Section 5.0. - Notification

When a water shortage has been declared, and whenever the water shortage stage changes, the County Manager will notify the Board of County Commissioners at its next regular meeting. At a minimum, the following notification options will be used to notify Customers of required response measures when a water shortage stage is declared or changed (based upon the new stage):

Stages 0 and 1

- County website ([www.co.union.nc.us](http://www.co.union.nc.us))
- County employee email announcements
- Social media
- Utility bill inserts

Stage 2

- County website ([www.co.union.nc.us](http://www.co.union.nc.us))
- County employee email announcements

- Social media
- Utility bill inserts
- Press releases to local television, radio, and/or print media

#### Stages 3 and 4

- County website ([www.co.union.nc.us](http://www.co.union.nc.us))
- County employee email announcements
- Social media
- Utility bill inserts
- Press releases to local television, radio, and/or print media
- Reverse 911 Notification System, if such system is currently available to UCPW

Additional means of notification may be used including, but not limited to,:

- Independent mailings to Customers outside of utility bills
- Take-home fliers at Union County Public Schools
- County vehicle magnets

## **Section 6.0 - Determination of a Water Shortage**

A water shortage is a condition that exists when the demands and requirements of water Customers served by the Union County water system cannot be satisfied without depleting the available supply of treated water or the available water supply to or below a critical level; i.e., the level at which water is available for Essential Water Use.

Providing a reliable supply of water requires being prepared for water shortages of varying severity and duration, which may be caused by conditions such as drought, exceeding plant capacity, water quality problems, or disruptions in facility operations. For this Plan, water shortage conditions specific to the County have been categorized into three types: Resource Limitations, Capacity Limitations, and System Emergencies.

Prescribed indicators determine the severity or stage of a water shortage. These indicators are based on the ability of the County to meet water demands and are influenced by several components of the County's water supply system: the water source, raw water intake and pipeline, treatment plant, storage tanks, and distribution system. When a specific indicator's criterion is met, the corresponding water shortage stage is recommended and declared.

In determining a water shortage stage and the corresponding restrictions, consideration will be given, as applicable, to water shortage levels and available sources of supply, available usable

storage on hand, draw-down rates, the projected supply capability, outlook for precipitation, daily water use patterns, and availability of water from other sources.

A summary of indicators for five water shortage stages, from a Stage 0 Water Shortage (year-round water conservation) to a Stage 4 Water Shortage (water shortage emergency), are summarized for each type of water shortage in the following sections. These water shortage stages are intended to achieve system-wide water use reductions. If multiple indicators are met for more than one type of water shortage stage, the more severe of the indicators provided will determine the stage to be declared. For example, if Duke Energy, through the CW-LIP, declares a Stage 1 Water Shortage and other conditions cause the County to be in a Stage 2 Water shortage, then a Stage 2 Water Shortage will be declared until the County recovers from the Stage 2 Water Shortage or a more severe stage is declared.

It is possible that water shortage stages may not necessarily be implemented sequentially if water supply and/or demand conditions worsen rapidly. Likewise, recovery of water shortage stages may not always occur sequentially, depending on how quickly supply and/or demand conditions improve.

### **Section 6.1 - Resource Limitations**

The County receives approximately 80% of its water from the Catawba River, which is dependent primarily on rainfall for replenishment. This leaves the County vulnerable to extended deficiencies in precipitation, known as drought, which can deplete the reservoirs along the Catawba River and impact the amount of water available for the County to withdraw. Drought can also have a significant impact on the lifestyle, ecology, and agriculture of a region. It is important in times of drought, when Customers often use more water than average, for the County to more closely monitor and control water usage to ensure the adequate short-term availability of water as well as to protect the environment.

#### **CW-LIP**

As a joint-owner of a large water intake located on the main stem of the Catawba River, Union County participated in Duke Energy's Federal Energy Regulatory Commission (FERC) relicensing process for the Catawba River and became a signatory stakeholder for the Relicensing Agreement. The Relicensing Agreement established rules and guidelines for how the Catawba-Wateree River system will be operated for the next fifty years, ending in year 2058. One major element of the Relicensing Agreement is the implementation of the CW-LIP, which establishes a policy for how Duke Energy and other Catawba River stakeholders will operate during periods of drought. This CW-LIP requires regional water users to move through a series of staged water use restrictions during worsening drought conditions. The goal of the CW-LIP is to delay the

point at which the Catawba-Wateree River system's usable water storage is fully depleted and provide additional time to allow precipitation to restore stream flow, reservoir levels, and groundwater levels to normal ranges. As a signatory stakeholder, Union County has agreed to comply with the prescribed requirements defined in the CW-LIP.

The CW-LIP describes indicators defined by worsening hydrologic conditions. These indicators use specific measurements to determine the various water shortage stages of low inflow conditions or water shortages. A summary of indicators for the various water shortage stages is provided in the table below. When Duke Energy declares a water shortage stage based on the CW-LIP indicators, the County shall also declare the same stage, or a more severe stage if other conditions apply in the County.

### CW-LIP Indicators

Stage	Storage Index <sup>1</sup>		US Drought Monitor 3-Month Numeric Average		Stream Gage 6-Month Rolling Average as a percent of the Historical Average <sup>2</sup>
0 <sup>3</sup>	90% < SI < 100% TSI		DM ≥ 0		≤ 85%
1	75% < SI ≤ 90% TSI	<b>and</b>	DM ≥ 1	<b>or</b>	≤ 78%
2	57% < SI ≤ 75% TSI	<b>and</b>	DM ≥ 2	<b>or</b>	≤ 65%
3	42% < SI ≤ 57% TSI	<b>and</b>	DM ≥ 3	<b>or</b>	≤ 55%
4	SI ≤ 42% TSI	<b>and</b>	DM ≥ 4	<b>or</b>	≤ 40%

<sup>1</sup> The ratio of Remaining Usable Storage to Total Usable Storage at a given point in time.

<sup>2</sup> The sum of the rolling 6-month average for the Monitored United States Geological Survey ("USGS") Streamflow Gages as a percentage of the period of record rolling average for the same historical 6-month period for the Monitored USGS Streamflow Gages.

<sup>3</sup> Stage 0 is triggered when any two of the three indicator points are reached.

During recovery from a water shortage stage, the progression of stages will be reversed. All three indicator points identified on the above table for the lower water shortage stage must be met or exceeded before returning to that lower stage (except as indicated in the table above regarding a Stage 0 Water Shortage).

### North Carolina Drought Management Advisory Council

The North Carolina Drought Management Advisory Council ("NCDMAC") has statutory authority and is responsible for issuing drought advisories tailored to local conditions. The NCDMAC can issue drought classification and response actions by county. If the US Drought Monitor of North

Carolina shows more than one drought designation in a county, the drought classification for the county is the highest drought designation that applies to at least twenty five percent (25%) of the land area of the county.

The NCDMAC may recommend a drought designation for a county that is different from the designation based on the U.S. Drought Monitor of North Carolina if the depiction of drought does not accurately reflect localized conditions. In recommending a drought designation that differs from the U.S. Drought Monitor designation, NCDMAC will consider stream flows, ground water levels, the amount of water stored in reservoirs, weather forecasts, the time of year and other factors that are relevant to determining the location and severity of drought conditions. The NCDMAC makes recommendations that the County will take into consideration. When the NCDMAC declares a water shortage stage, the County shall also declare the same stage, or a more severe stage, if other conditions apply in the County.

### **Section 6.2 - Capacity Limitations**

A water treatment plant's capacity is designed to meet the distribution system's anticipated maximum daily demand at a relatively constant flow rate with storage tanks in the distribution system intended to handle fluctuations in demand throughout the day. Customer demand for potable water will also fluctuate seasonally, often using more water in the spring and summer to promote lawn and other plant growth. Sometimes a combination of dry weather and high temperatures occurring during the summer can lead to unexpectedly high Customer demand. For example, during the drought of record in 2007, the County's demand exceeded the treatment capacity at the Catawba River Water Treatment Plant for several days during a two-week period.

The County continues to grow and connect new Customers to the water distribution system; however, adding additional capacity to a water treatment plant is a slow and expensive process. To ensure the County's ability to meet Customer demand for both Essential Water Use and Non-Essential Water Use, the County must declare water shortage stage if the water demand is nearing available treatment capacity on a regular basis.

The water shortage stage, and duration of such a stage, will depend on the extent to which Customer water demands approach or exceed Union County's capacity to meet those demands and how much the water use restrictions successfully reduce short-term demands. If the daily demands of the water system exceed a specified percentage of total available capacity for a specified period of time as described in the table below, the corresponding water shortage stage shall be declared.

### Capacity Limitation Indicators

Stage	Union County Designation	Daily Demand
0	Year-Round Water Conservation	
1	Moderate Water Shortage	Demand > 80% of available capacity for the average of a 7 day period
2	Severe Water Shortage	Demand > 90% of available capacity for the average of a 7 day period
3	Extreme Water Shortage	Demand > 100% of available capacity for the average of a 7 day period
4	Exceptional Water Shortage	If demand continues to exceed available capacity such that an Extreme Water Shortage (Stage 3) is in effect due to such capacity limitations for thirty (30) consecutive days

When the recovery criteria shown in the table below for that water shortage stage have been met, the Public Works Executive Director will advise that the County Manager declare a reduced stage with the corresponding water use restrictions. It may be possible to reduce by more than one water shortage stage if the necessary recovery criteria have been met for intermediate stages.

### Recovery from Capacity Limitations

Stage	Union County Designation	Recovery
0	Year-Round Water Conservation	
1	Moderate Water Shortage	Below 80% of available capacity for 90 consecutive days
2	Severe Water Shortage	Below 85% of available capacity for 60 consecutive days
3	Extreme Water Shortage	Below 90% of available capacity for 30 consecutive days
4	Exceptional Water Shortage	Below 95% of available capacity for 30 consecutive days

### Section 6.3 - System Emergencies

The integrity of the water supply, treatment facilities, and distribution system are critical to meeting the potable water demands of the County. If there are major disruptions to any of

these components, it may be necessary to initiate water restrictions to ensure that basic needs are met. Such events include, but are not limited to:

- Water source contamination
- Water treatment plant disruptions
- Water distribution system disruptions

System emergencies typically require an immediate response and may require a major reduction of water use in a short period of time. Because each emergency event is different and varies in degree of severity and duration, no pre-determined water shortage stage can be identified for every event.

If the Executive Director of Public Works determines a system emergency condition exists that warrants the need to implement a water shortage stage, he/she will recommend to the County Manager a stage and associated water use restrictions that are deemed necessary and appropriate given the nature, extent, and expected duration of the emergency condition. The County Manager may declare a water shortage stage and associated water use restrictions that are deemed necessary and appropriate for the emergency condition.

As additional information becomes available regarding the system emergency, the water shortage stage initially declared may be quickly modified or resolved. When the factors determining the water shortage conditions have improved, the Executive Director of Public Works will recommend that the County Manager declare a reduced water shortage stage. The County Manager may then declare a reduced water shortage stage and associated water use restrictions that are deemed necessary and appropriate for the changed conditions.

As joint-owners of the Catawba River Water Treatment Plant, Union County and Lancaster County Water & Sewer District are developing the “Raw Water Intake Contingency Plan for the Union-Lancaster Catawba River Water Treatment Plant”. The purpose of the raw water intake contingency plan is to mitigate disruptions in the quality or quantity of available source water or integrity of the raw water intake structure with minimal impacts to both distribution systems. These measures will reduce the County’s vulnerability to raw water concerns and also reduce raw water-related incidents requiring a declaration of a system emergency water shortage.

## **Section 7.0 - Water Shortage Stage Measures and Restrictions**

To ensure that water demand is reduced to a sustainable level after the declaration of a water shortage stage, water use measures and restrictions need to be enforced. Regardless of the

type of water shortage, each stage requires the same estimated reduction in demand so each stage has one set of corresponding actions that will be taken to conserve water. The water use measures and restrictions corresponding to each water shortage stage are set forth in the sections below.

### **Section 7.1 - Year-Round Water Conservation (Stage 0 Water Shortage)**

This water shortage stage is intended to manage the County's long-term water resources by promoting water use efficiency. In the past, the County water system has experienced a high water demand peaking factor, measured as a ratio between the highest demand day of the year and the average demand over the entire year. This is reflective of the County's above average proportion of residential users and high irrigation use when compared with other utilities.

In 2008, the County's peaking factor exceeded 2.0. While Customers were under no water restrictions and had unlimited water use available, the County experienced several days in May 2007 with the daily demand exceeding the maximum capacity of 18 million MGD from the Catawba River Water Treatment Plant. The highest daily usage measured was 21.3 MGD. A water treatment plant is designed to meet an anticipated maximum day demand; however, this volume should only be needed or approached a few days per year. By reducing the maximum day demand, the County can push back the time frame when additional source water is needed and the water treatment plant needs to be expanded. Developing a new water source and the construction of new treatment process units or a new water treatment plant are very expensive, so rate increases corresponding with financing new infrastructure can be reduced by delaying their development.

As a part of the 2011 Comprehensive Water & Wastewater Master Plan, the County determined that steps would need to be taken to limit this water demand peaking factor to 1.7 to ensure adequate water supply in the future and to bring the County in line with peer water system utilities in North Carolina. Without water use restrictions, the County's water system will continue to have days where the maximum day demand exceeds the water treatment plant capacity, especially during periods of hot and dry weather. Additionally, these high demands place stress on the distribution system.

Therefore, this Plan and the Ordinance establish the implementation of mandatory and voluntary year-round water use restrictions and water conservation measures. These water use restrictions and water conservation measures are in effect under normal conditions and will serve as Stage 0 Water Shortage restrictions (Stage 0 Water Shortage is the minimum water shortage stage that will always be in effect in the County if there is no declaration of a

heightened stage). When a Stage 0 Water Shortage is in place, all Customers shall be required to adhere to the following mandatory water use restrictions:

### **Mandatory Water Use Restrictions**

- Customer Spray Irrigation System use shall be limited to three (3) days per week.
- Customers shall at all times comply with the Spray Irrigation System schedule for use set forth in Section 7.7 of this Plan.

Limiting Spray Irrigation System use to 3 days per week is sufficient to meet the irrigation needs of lawns and other plants and reduces the likelihood of accidental over-watering. Those Customers using drip irrigation or any handheld watering methods are still allowed to water any day and time. Customers regularly engaged in the sale of plants, shrubbery, trees and flowers are permitted to use water by any method at any time for irrigation of their commercial stock.

In addition to the mandatory maximum of three (3) days per week for Spray Irrigation System use schedule, voluntary water conservation practices are also encouraged year-round at this water shortage stage. These voluntary measures, which are encouraged, but not required, are described below:

### **Voluntary Water Conservation Measures**

- a. Use flow-restrictive, water-saving devices and methods. Faucets should not be left running while shaving, brushing teeth, or washing dishes. Showers should be limited to no more than five (5) minutes and baths should be avoided if not medically necessary. Toilets should be flushed after multiple usages.
- b. Limit the use of clothes and dish washing machines to running only full loads.
- c. Inspect and repair all leaks and defective components of water delivery systems in any structures (faucets, toilets, equipment, etc.) in a timely manner.
- d. Reuse household water to water plants.

## **Section 7.2 - Moderate Water Shortage (Stage 1 Water Shortage)**

At this water shortage stage, the County has concern about the available water supply and Customers are encouraged to adopt water saving measures intended to reduce overall water use. The primary purpose of this water shortage stage is to increase education and awareness of the limited water resources and to encourage additional voluntary water conservation measures to reduce the need for further mandatory restrictions. In the event a Stage 1 Water Shortage is declared, all Customers shall comply with the following mandatory water use restrictions:

### **Mandatory Water Use Restrictions**

- Comply with all Stage 0 Water Shortage Mandatory Water Use Restrictions.
- The transport of water from within the County to outside of the County where such water has been drawn by tanker truck from a hydrant of the County water utility system is prohibited; provided, however, that transport outside of the County shall be allowed for emergency fire protection and Bona Fide Farm Uses.

Customers using drip irrigation or any handheld watering methods are still allowed to water any day and time. Customers regularly engaged in the sale of plants, shrubbery, trees and flowers are permitted to use water by any method at any time for irrigation of their commercial stock.

In addition to the mandatory water use restrictions, additional voluntary water conservation measures are also encouraged at this water shortage stage. These voluntary measures, which are encouraged, but not required, are described below:

### **Voluntary Water Conservation Measures**

- a. Implement all Voluntary Water Conservation Measures set forth for a Stage 0 Water Shortage.
- b. Limit Spray Irrigation System use to no more than two (2) days per week, using the designated schedule as set forth in Section 7.7 of this Plan.
- c. Use spring-activated nozzles when watering lawns and gardens by hand with a hose.
- d. Limit residential vehicle, or any other type of mobile equipment, washing to the designated Spray Irrigation System use days set forth in Section 7.7 of this Plan.

## **Section 7.3 – Severe Water Shortage (Stage 2 Water Shortage)**

This water shortage stage reflects an increase in concern over water supply leading to additional mandatory restrictions. Moving to this water shortage stage is intended to bring Customers' and UCPW employees' attention to the increasing severity of the water shortage. Additional mandatory restrictions are necessary when voluntary measures are not effective in the previous water shortage stages in reducing water system demand. In the event a Stage 2 Water Shortage is declared, all Customers shall comply with the following mandatory water use restrictions:

### **Mandatory Water Use Restrictions**

- Comply with all Stage 1 Water Shortage Mandatory Water Use Restrictions.

- Limit Spray Irrigation System use to no more than two (2) days per week and only between the hours of 12:00 a.m. until 8:00 a.m. and 8:00 p.m. until 12:00 a.m., on the days identified in Section 7.7 of this Plan.
- Eliminate personal vehicle washing unless using a commercial carwash.
- Eliminate the filling of new swimming pools and fountains (unless considered Essential Water Use as defined herein).
- Eliminate public building, sidewalk, and street washing activities (unless considered Essential Water Use as defined herein).
- Limit construction uses of water (e.g. dust control).
- Limit flushing and hydrant testing programs, except as necessary to maintain water quality or in other special circumstances.

Customers using drip irrigation or any handheld watering methods are still allowed to water any day and time. Customers regularly engaged in the sale of plants, shrubbery, trees, and flowers are permitted to use water by any method at any time for irrigation of their commercial stock.

Unless otherwise declared as mandatory at this state, Customers are encouraged, but not required, to implement voluntary water conservation measures set forth in this Plan for a Stage 1 Water Shortage.

### **Section 7.4 - Extreme Water Shortage (Stage 3 Water Shortage)**

This water shortage stage is a point at which the County is greatly concerned about the current and future supply of water. Immediate additional water conservation measures and water use restrictions are essential to avoid major restrictions or water rationing. This can be of particular concern during a severe drought with no significant predicted rainfall. It is important for UCPW employees and Customers to understand the rare nature of the situation and to react accordingly. At this water shortage stage, mandatory requirements become more restrictive in an effort to lessen the impacts of worsening conditions and delay or prevent a water shortage emergency. In the event a Stage 3 Water Shortage is declared, all Customers shall comply with the following mandatory water use restrictions:

#### **Mandatory Water Use Restrictions**

- Comply with all Stage 2 Water Shortage Mandatory Water Use Restrictions, unless a more stringent requirement is imposed below.

- Limit Spray Irrigation System use to no more than one (1) day per week and only between the hours of 12:00 a.m. until 8:00 a.m. and 8:00 p.m. until 12:00 a.m., on the day identified in Section 7.7 of this Plan.
- Eliminate the filling of all swimming pools, hot tubs, fountains, and decorative ponds (except when necessary to support aquatic life or considered Essential Water use as defined herein).
- Eliminate construction uses of water (e.g. dust control).
- Eliminate flushing and hydrant testing programs, except as necessary to maintain water quality or in other special circumstances.
- Eliminate the serving of drinking water from the County water system in restaurants, cafeterias, and other food establishments (except upon patron request).
- Eliminate variances for landscape irrigation.

Customers using drip irrigation or any handheld watering methods are still allowed to water any day and time. Customers regularly engaged in the sale of plants, shrubbery, trees, and flowers are permitted to use water by any method at any time for irrigation, but only in amounts necessary to prevent the loss of their commercial stock.

In addition to the mandatory water use restrictions, additional voluntary water conservation practices are also encouraged at this water shortage stage. These voluntary measures, which are encouraged, but not required, are described below:

#### **Voluntary Water Conservation Measures**

- a. Implement all Voluntary Water Conservation Measures set forth for a Stage 2 Water Shortage.
- b. Encourage industrial/manufacturing process changes that reduce water use.

#### **Section 7.5 - Exceptional Water Shortage (Stage 4 Water Shortage)**

This water shortage stage involves severe water use restrictions and is reserved for situations where the public water supply is threatened and the County must act to ensure there is an adequate supply for Essential Water Use. This water shortage stage brings attention to the exceptionally serious nature of the water shortage and includes rapid notifications listed in Section 5.0 of this Plan. UCPW and other County staff will prepare to implement emergency plans to respond to water outages according to the County's Emergency Response Plan. In the event a Stage 4 Water Shortage is declared, all Customers shall comply with the following mandatory water use restrictions:

#### **Mandatory Water Use Restrictions**

- Comply with all Stage 3 Water Shortage Mandatory Water Use Restrictions, unless a more stringent requirement is imposed below.
- Prohibit all Non-Essential Water Use (including the prohibition of all residential irrigation, irrigation of commercial stock, and filling of ponds to sustain aquatic life).
- Prohibit the use of water outside a structure for any use other than a fire emergency.
- Require the use of disposable utensils and plates at all restaurants, cafeterias, and other food establishments.

In addition to the mandatory water use restrictions, additional voluntary water conservation practices are also encouraged at this water shortage stage. These voluntary measures, which are encouraged, but not required, are described below:

#### **Voluntary Water Conservation Measures**

- a. Implement all Voluntary Water Conservation Measures set forth for a Stage 3 Water Shortage.
- b. Continue to encourage industrial/manufacturing process changes that reduce water use. The County will prioritize and meet with large commercial and industrial/manufacturing large water customers to discuss strategies for water use reduction measures.

#### **Section 7.6- Additional Water Use Regulation Authority**

Pursuant to the Ordinance, the County Manager, acting in the best interests of the health, safety, and welfare of the citizens of Union County, may further regulate water usage on the following bases: (i) time of day; (ii) day of week; (iii) Customer type, including, without limitation, residential, commercial, industrial, and institutional uses; and (iv) physical attribute, such as address.

#### **Section 7.7 - Irrigation Schedules**

A Customer is only permitted to use a Spray Irrigation System on the designated irrigation day(s) assigned to them as set forth in the table below. The Customer's billing cycle number (corresponding with the table below) can be found on the Customer bill.

Billing Cycle	Stages 0 and 1	Stage 2	Stage 3
	3-day per week	2-day per week	1-day
1	Mon-Wed-Sat	Mon-Wed	Wed
2	Sun-Tue-Thu	Sun-Thu	Sun
3	Mon-Thu-Sat	Mon-Thu	Thu
4	Tue-Thu-Sat	Tue-Thu	Tue
5	Sun-Wed-Fri	Sun-Wed	Sun
6	Mon-Wed-Sat	Mon-Wed	Mon
7	Sun-Wed-Fri	Sun-Wed	Wed
8	Sun-Tue-Fri	Tue-Fri	Tue
9	Sun-Tue-Fri	Tue-Fri	Fri
10	Mon-Thu-Sat	Mon-Thu	Mon

### Section 7.8- Water Conservation Rates

During a declared water shortage due to resource or capacity limitations, water rates increase to ensure adequate operating revenue and to encourage conservation. Rate increases are not utilized in response to a system emergency water shortage condition.

The County utilizes an increasing block rate structure for residential and irrigation water usage. The rates for all user types are defined in the Rate Ordinance. The Rate Ordinance increases all water usage rates during certain water shortage stages. The current rates are shown in the table below; however, the rates are only shown to be illustrative. Customers will be charged the rates established in the then current Rate Ordinance corresponding to the water shortage stage in effect at the time bills are rendered. If a system emergency occurs while in a water shortage situation, the rates applied shall be those corresponding to the current water shortage response due to resource or capacity limitations.

	Standard Rates / Water Shortage Stage I			Water Shortage Stage II			Water Shortage Stage III			Water Shortage Stage IV		
	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017
<b><u>Residential</u></b>												
<b>Tier 1</b> 0 - 3,000 gallons	\$ 1.95	\$ 2.10	\$ 2.20	\$ 1.95	\$ 2.10	\$ 2.20	\$ 1.95	\$ 2.10	\$ 2.20	\$ 2.62	\$ 2.80	\$ 2.99
<b>Tier 2</b> 3,001 - 7,000 gallons	2.65	2.80	3.00	2.65	2.80	3.00	2.65	2.80	3.00	3.95	4.25	4.53
<b>Tier 3</b> 7,001 - 10,000 gallons	3.75	4.00	4.25	3.75	4.00	4.25	7.76	8.16	8.50	8.39	9.15	9.52
<b>Tier 4</b> 10,001 - 15,000 gallons	5.85	6.05	6.20	9.44	9.73	9.91	16.11	16.62	16.90	17.40	17.99	18.28
<b>Tier 5</b> > 15,000 gallons	10.10	10.10	10.10	16.35	16.16	16.15	27.94	27.62	27.60	30.20	29.90	29.85
<b><u>Irrigation</u></b>												
<b>Tier 1</b> 0 - 3,000 gallons	\$ 3.75	\$ 4.00	\$ 4.25	\$ 3.75	\$ 4.00	\$ 4.25	\$ 7.76	\$ 8.16	\$ 8.50	\$ 8.39	\$ 9.04	\$ 9.52
<b>Tier 2</b> 3,001 - 7,000 gallons	3.75	4.00	4.25	3.75	4.00	4.25	7.76	8.16	8.50	8.39	9.04	9.52
<b>Tier 3</b> 7,001 - 10,000 gallons	3.75	4.00	4.25	3.75	4.00	4.25	7.76	8.16	8.50	8.39	9.04	9.52
<b>Tier 4</b> 10,001 - 15,000 gallons	5.85	6.05	6.20	9.44	9.73	9.91	16.11	16.62	16.90	17.40	17.99	18.28
<b>Tier 5</b> > 15,000 gallons	10.10	10.10	10.10	16.35	16.16	16.15	27.94	27.62	27.60	30.20	29.90	29.85
<b><u>Non-Residential</u></b>												
Flat Rate	\$ 2.70	\$ 2.90	\$ 3.05	\$ 2.86	\$ 3.06	\$ 3.22	\$ 3.12	\$ 3.33	\$ 3.50	\$ 3.74	\$ 3.97	\$ 4.18
<b><u>Wholesale</u></b>												
Flat Rate	\$ 2.25	\$ 2.40	\$ 2.55	\$ 2.38	\$ 2.53	\$ 2.69	\$ 2.60	\$ 2.76	\$ 2.93	\$ 3.12	\$ 3.29	\$ 3.49

### Section 8.0 - Enforcement and Penalties

Compliance with the provisions of this Plan is required and authorized by the Ordinance and enforced by personnel of UCPW, independent contractors engaged by UCPW for such purpose, and such other personnel as designated by the County Manager. Enforcement measures and procedures, issuance of violations, and penalties for violation of the water restrictions put in place are further prescribed in the Ordinance. Customers are responsible for any use of water that passes through their service connection. Knowledge of the prevailing restrictions and proper functioning of an automatic Spray irrigation System is the responsibility of the property owner and resident. Any Customer who violates, or permits the violation of, any mandatory water restriction set forth in this Plan or the Ordinance is subject to civil penalties and/or termination of service. Civil penalties for such violations are set forth in the table below. Customers who violate conditions of a variance are also subject to the enforcement penalties.

Stage	Union County Designation	1st Violation	2nd Violation	3rd Violation	4th Violation	5th and Additional Violations
0	Year-Round Water Conservation	Warning	Warning	\$250	\$500*	\$1000*
1	Moderate Water Shortage	Warning	\$100	\$500	\$500*	\$1000*
2	Severe Water Shortage	Warning	\$200	\$500	\$500*	\$1,000*
3	Extreme Water Shortage	\$100	\$500	\$750	\$1000*	\$1,500*
4	Exceptional Water Shortage	\$200	\$500	\$1,000	\$1,000*	\$2,000*

\*Includes termination of service

Each day that a violation of a mandatory water restriction occurs or continues to occur after delivery of notice will be considered a separate and distinct violation. Violations will be accumulated by Customers on a calendar year basis for purposes of accrual of civil penalties. The Customer shall remain liable for payment of all civil penalties regardless of when accrued. Violations of any mandatory water use restrictions of any water shortage stage shall accumulate with violations of other stages. Should a Customer move, or cease and renew service, during a calendar year, the Customer's violations shall continue to accumulate as if such move or cessation had not occurred.

Further information and detail regarding enforcement of civil penalties, termination of service, and procedures related thereto are contained in the Ordinance.

### Section 9.0 - Appeals

A Customer who receives a notice of violation indicating that the Customer is subject to a civil penalty or the Customer's water service is subject to termination may appeal the violation or pending termination by filing a written notice of appeal in accordance with the procedures and requirements set forth in the Ordinance. The consideration and resolution of all appeals will also be in accordance with the Ordinance.

## Section 10.0 - Variances

UCPW is authorized to issue variances in accordance with this Plan and the Ordinance, permitting any Customer satisfying the requirements of this Plan and the Ordinance to use water for a purpose that would otherwise be prohibited by water use restrictions then in effect.

UCPW may issue variances during Stage 0, Stage 1 and Stage 2 provided that each of the following conditions is satisfied: (i) the Customer applies for a variance using forms provided by UCPW; (ii) the Customer pays a variance registration fee in such amount as determined by the Executive Director of Public Works, not to exceed fifty dollars (\$50.00); (iii) the application pertains to a new lawn and/or landscape installed incident to new construction, or to newly installed replacement sod, complete reseeding, or natural ground cover within the parameters of an established lawn; (iv) if pertaining to new lawn and/or landscape installed incident to new construction, the Customer applies for a variance either before issuance of a certificate of occupancy or within ninety (90) days after issuance of a certificate of occupancy relative to this new construction; and (v) the Customer submits with the application such supporting documentation as required by UCPW to substantiate that these conditions have been satisfied.

Upon receipt of a variance from UCPW, the Customer may be permitted to water such newly installed lawn and/or landscape, or such newly installed replacement sod, complete reseeding, or natural ground cover, for a period not to exceed forty-five (45) days from the date of issuance of the variance. During the period that the variance is in effect, the Customer shall post signage provided by UCPW to signify the Customer's temporary exempt status from water use restrictions otherwise in effect. The Customer shall post such sign within two (2) feet of the driveway entrance. In any variance issued, UCPW may impose such conditions and restrictions as are appropriate to require that water used from the County water system be minimized to the extent practical.

Variances issued shall terminate upon the earlier occurrence of the following: (i) forty-five (45) days from the date of issuance; or (ii) declaration by the County Manager of a Stage 3 or State 4 Water Shortage. In addition, the County Manager may, upon the recommendation of the Executive Director of Public Works, direct that UCPW cease issuance of new variances in the event it is determined that further issuance will likely result in increased demand that will equal or exceed the treatment and/or transmission capacity of the system or portions thereof.

Any Customer receiving a variance who violates the terms thereof shall be subject to a civil penalty set forth in this Plan and the Ordinance and to revocation of the variance. Any person who has violated the terms of any variance or any mandatory water use restrictions imposed

pursuant to this Plan or the Ordinance may be denied a variance, notwithstanding any provision of this Plan or the Ordinance to the contrary.

### **Section 11.0- Maintenance of Spray Irrigation Systems**

The County recognizes that irrigation systems utilizing water from the County water system should be properly maintained in order to maximize efficiency and prevent waste. Additionally, the County recognizes that such maintenance may occur on days and at such times as would otherwise be prohibited under the Ordinance and this Plan. However, during the period that a Stage 2 or Stage 3 Water Shortage is in effect, an existing Spray Irrigation System may be operated on such days and at such times as would otherwise be prohibited, provided that the requirements for such irrigation system maintenance set forth in the Ordinance are met. The allowance for such operations, issuance of violations and penalties, and appeals are provided for in the Ordinance.

### **Section 12.0- Plan Evaluation and Effectiveness**

The effectiveness of this Plan will be determined by measuring system-wide water use reductions during declared water shortage stages. In addition to water supply and usage, the frequency of implementing water shortage stages within the parameters set forth in the Plan will also be evaluated. If the frequency of implementation of water shortage stages is found to be too great, or if the duration is found to be excessive, then modifications to the Plan, or adjustments to the water supply infrastructure will be considered and proposed. The number of citations issued during a water shortage may also be used to determine if the level and severity of citations is sufficient to achieve the water usage reductions necessary.

All mandatory drought response activities undertaken by the participating members of the Catawba Wateree Drought Management Group, as written in the CW-LIP, will also serve as an expansive and detailed examination of the effectiveness of measures enacted. The table below indicates the potential expected reduction from normal use, or the amount that would otherwise be expected, for each water shortage stage as defined in the CW-LIP in effect as of the adoption date of this Plan.

**Water Use Reduction Goals from the CW-LIP**

Stage	Percent Reduction Goals
0	
1	3-5%
2	5-10%
3	10-20%
4	30% or more

For the purposes of determining “normal water use”, consideration may be given to one or more of the following:

- Historical maximum daily, weekly, and monthly flows during drought conditions.
- Increased customer base (e.g. population growth, service area expansion) since the historical flow comparison.
- Changes in major water users (e.g. industrial shifts) since the historical flow comparison.
- Climatic conditions for the comparison period.
- Changes in water use since the historical flow comparison.
- Other system specific considerations.

The County has implemented a more aggressive approach than the CW-LIP by implementing a year-round, three (3) days per week Spray Irrigation System use schedule (Stage 0 Water Shortage restriction). The reduction goals listed above are compared to unrestricted water use and are not in addition to the reductions expected from year-round water conservation measures.

### **Section 13.0 - Public Review and Revisions of Plan**

This Plan, as well as the Ordinance, will be reviewed and revised as needed to adapt to new circumstances affecting water supply and demand, following implementation of emergency restrictions. Review will be conducted at a minimum of every five years in conjunction with updating the County’s Local Water Supply Plan.

Adoption of this Plan, or revisions thereto, will follow the normal processes for approval at a meeting of the Union County Board of Commissioners. The proposed Plan, or revisions thereto, will be publicized in advance on the County’s website, as well as be publicized online as part of the meeting agenda at which adoption of this Plan, or revisions thereto, will be considered for

adoption. The public will then have the opportunity to comment on revisions to the Plan through written comment submitted to UCPW or during the public comment period at the Board of Commissioners' meeting.

The public will also have the option to review and comment on the provisions of the Plan at any time. The Plan will be available online through the County's website for the public to view, as well as on file in the Clerk to the Board of Commissioners' office. The public may send comments to the contact person as set forth on the County's website along with this Plan.

### **Section 14.0 - Effective Date**

This Water Shortage Response Plan is effective upon adoption by the Union County Board of Commissioners on this the 4<sup>th</sup> day of May, 2015.