ORANGE WATER AND SEWER AUTHORITY

A public, non-profit agency providing water, sewer and reclaimed water services to the Carrboro-Chapel Hill community.

MEMORANDUM

TO: **Natural Resources and Technical Services (NRTS) Committee**
John Young (Chair)
John Morris
Heather Payne
Ruchir Vora
Bob Morgan (*ex officio*)

THROUGH: Ed Kerwin

FROM: Ruth Rouse

DATE: February 9, 2018

SUBJECT: February 26, 2018 NRTS Committee Meeting

The NRTS Committee will meet on Monday February 26, 2018 at 5:00 pm in the OWASA Boardroom. The purpose of the meeting will be to review the existing Drought Response Operating Protocol (DROP) and discuss potential changes that could provide greater flexibility to respond to extended drought conditions.

The enclosed documents provide additional background information and a concept for potential changes to the DROP for consideration by the Committee.

We look forward to seeing you on February 26th and to receiving your questions, comments, and guidance regarding this improtant topic.

Ruth C. Rouse

Ruth Rouse, AICP
Planning and Development Manager

c: OWASA Board of Directors
Robert Epting, OWASA General Counsel

Attachments
Attachment 1: Background Information on Drought Response Operating Protocol
Attachment 2: Conceptual Proposal for Modifying Jan 10, 2013 Drought Response Operating Protocol

ATTACHMENT 1: BACKGROUND INFORMATION ON DROUGHT RESPONSE OPERATING PROTOCOL

February 26, 2018

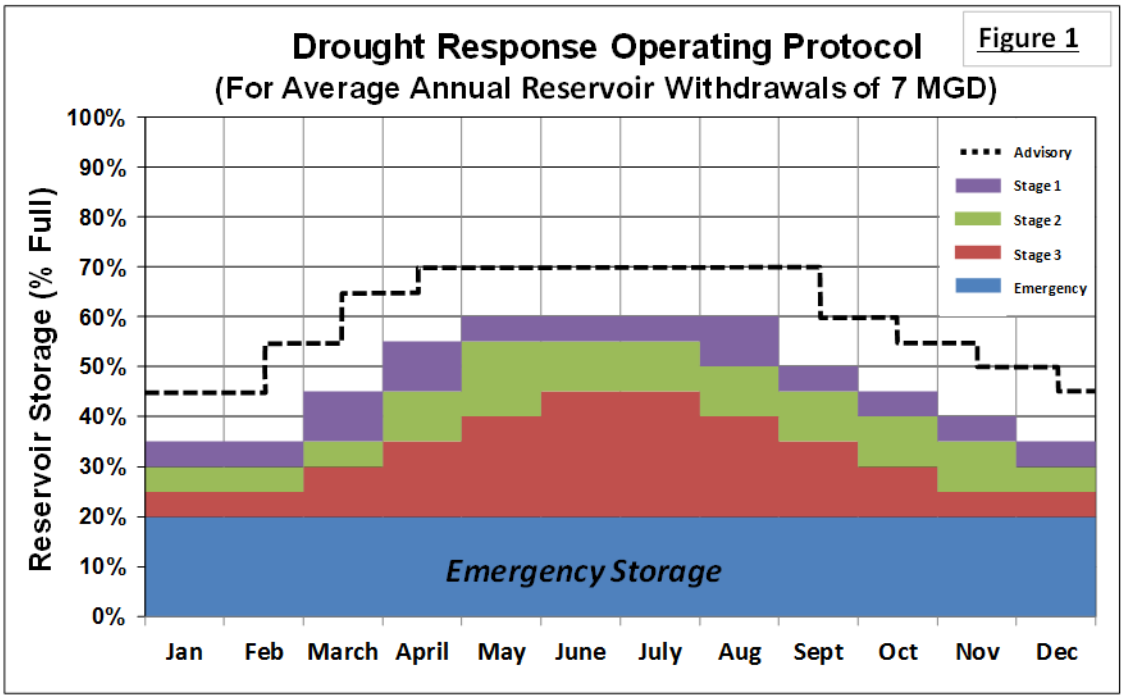
The OWASA Board of Directors adopted its Drought Response Operating Protocol (DROP) on January 10, 2013. The DROP is included in OWASA's Water Shortage Response Plan (WSRP), which is a requirement of the 2008 Drought Bill (Session Law 2008-143). OWASA's WSRP was approved by the North Carolina Division of Water Resources in September 2010 and updated in January 2015, and approved by the Board of Directors. The DROP states that OWASA shall declare a Water Shortage Advisory no later than when the total water storage in the reservoirs drops to within 10 percent of the mandatory Stage 1 triggers specified in the WSRP. Figure 1 (from the existing DROP) illustrates this on the trigger table for our current annual average raw water demand of 7 mgd.

The DROP provides our customers and the community with timely notice of potential water shortages and provides an opportunity to reduce demands on a voluntary basis before mandatory conservation measures are initiated (beyond year-round requirements) and drought surcharges are imposed. However, the DROP approved by the OWASA Board of Directors in January 2013 prohibits OWASA from proactively purchasing water from neighboring utilities or from using water originating from our Jordan Lake water supply allocation before a Stage 1 (or more severe stage) water shortage has been declared by OWASA.

Before deciding on this policy approach, the Board of Directors considered the option of obtaining water from Jordan Lake in advance of declaring a Stage 1 shortage. Such an approach offered a way of deferring or perhaps even eliminating the need for declaration of mandatory water shortage stage, imposition of drought surcharges on our customers, or declaration of Stage 2 or more severe water shortage conditions which would impose greater impacts on customers and the community. Ultimately, following consideration of comments from local governing boards, the OWASA Board decided that customers and the community should at least be required to meet Stage 1 water shortage restrictions before OWASA begins using supplemental sources of water, including OWASA's Jordan Lake water supply allocation.

Following approval of the DROP, in May 2014 the Natural Resources and Technical Service (NRTS) Committee received a presentation on a major regional water supply reliability modeling and analysis project being led by Dr. Greg Characklis at UNC-Chapel Hill. Dr. Characklis noted that the highest reliability of our water supply systems is when there is a combination of proactive transfers of water, conservation measures, and financial reserves in place.

In its December 5, 2017 meeting, the NRTS Committee unanimously agreed to work with staff to consider alternative approaches and develop a specific recommendation to the Board regarding the DROP.



These responses are based on the risk of depleting OWASA's existing Cane Creek/ University Lake/Quarry Reservoir system to the Emergency Storage level and are consistent with the Response Triggers of OWASA's State-approved Water Shortage Response Plan. Those risks do not consider Jordan Lake to be part of OWASA's existing or primary water supply (University Lake, Cane Creek, and Quarry Reservoirs), but only as an "insurance policy" for use during extended drought or emergency conditions.

Water Shortage Advisory: Aggressive public awareness/education effort, including direct communication with the Carrboro, Chapel Hill, and Orange County elected boards and the University of North Carolina at Chapel Hill. A Water Shortage Advisory may be initiated earlier at OWASA's discretion.

Stage 1 Shortage: Mandatory use restrictions -- with or without rate surcharges -- may be initiated earlier at OWASA's discretion, but not later. The OWASA Board may authorize purchases of water from other utilities and/or obtain water through its Jordan Lake allocation only when total water storage in University Lake, Cane Creek Reservoir, and the Quarry Reservoir is below this Mandatory Stage 1 trigger, but not sooner. Board approval for such a declaration or purchase decision shall not be required, however, during an operational emergency as determined by the Executive Director per OWASA's *Water Shortage Response Plan.*

Stage 2 Shortage: May be initiated earlier at OWASA's discretion, but not later.

Stage 3 Shortage: May be initiated earlier at OWASA's discretion, but not later.

Water Supply Emergency: Emergency actions will be taken to obtain supplemental water to ensure the protection of public health, safety and welfare. If Cane Creek/University Lake/Quarry Reservoir storage declines to this level, such actions would likely include the installation of temporary facilities to pump water from the Haw River to the Cane Creek Reservoir.

In follow-up, staff has drafted a concept to modify the DROP to allow the flexibility to access our Jordan Lake allocation or transfer water from neighboring utilities prior to declaring a Stage 1 water shortage, should that be determined advantageous based on specific circumstances at the time. That proposal is included as Attachment 2.

Staff continues to believe that barring an unforeseen disaster (such as total failure of one of our reservoirs), it is unlikely there would be a need for OWASA to use Jordan Lake water on a permanent daily basis.

Some key advantages and disadvantages of leaving the DROP as written are summarized in Table 1.

Table 1: Advantages and Disadvantages of Accessing our Jordan Lake Allocation or Purchasing Water Only When Supply Drops below Stage 1 Water Supply Shortage Trigger

Advantages	Disadvantages
• Makes maximum use of OWASA's locally-controlled reservoirs (Cane Creek Reservoir, University Lake, and Quarry Reservoir) • Provides maximum incentive for OWASA customers to conserve • Reduces drought-related costs to OWASA customers in the event drought is of short duration, as less money is spent on supplementing the local supply	• More likely to result in more severe water shortages • More likely to result in earlier implementation of mandatory conservation measures and related drought surcharges • More likely to result in mandatory restrictions and drought surcharges being in effect for longer periods • More likely to result in more frequent, earlier, more severe, and more extended periods of adverse impacts to customers due to enactment of water use restrictions and drought surcharges • More likely to constrain our ability to obtain supplemental water supply in the amounts we need and when we need it later on during a severe drought, as regional interconnection capacities may not be adequate to meet our needs while also meeting needs of other utilities also affected by that drought • Implementation of more frequent, more severe, and more prolonged water use restrictions has potential to reduce water and sewer operating revenues (however, our drought surcharges and reserve fund policies help reduce the adverse effects of restrictions on our revenues)

ATTACHMENT 2: CONCEPTUAL PROPOSAL FOR CONSIDERATION BY NRTS – FEBRUARY 26, 2018

Background and Introduction

At its December 5, 2017 meeting, OWASA's Natural Resources and Technical Services (NRTS) Committee expressed interest in considering modifying OWASA's January 10, 2013 Drought Response Operating Protocol (DROP) to provide greater flexibility in responding to extended drought conditions. The Committee informed the Board of Directors that it would continue to work with staff to evaluate the DROP.

As a starting point for further discussion by the Committee, following are staff suggestions for potential modifications to the DROP. These suggestions include larger discussion points and do not include minor edits or wording changes.

DROUGHT RESPONSE OPERATING PROTOCOL
JANUARY 10, 2013

Purpose

To describe the procedures and criteria that OWASA will use for making water supply and demand management decisions during an extended drought, including provisions for public notice of potential Water Supply Shortage declarations, water purchases, and/or use of OWASA's Jordan Lake water supply storage allocation. The protocol outlined below will provide OWASA's customers, local elected boards, and the overall Carrboro-Chapel Hill-UNC community with timely notice of a potential water shortage due to extended drought and the opportunity to reduce water consumption in order to avoid and/or minimize the need for more severe water use restrictions or emergency actions.

The statistically derived drought responses described below were based on the risk of depleting OWASA's existing Cane Creek/University Lake/Quarry Reservoir system to the Emergency Storage level. Those risks do not assume that Jordan Lake is part of OWASA's existing or primary water supply portfolio (University Lake, Cane Creek Reservoir, and Quarry Reservoir); instead, Jordan Lake is only an "insurance policy" for use during extended drought or operational emergencies.

Staff Suggestions: Overall staff agree with the purpose statement.

Protocol

1. OWASA shall monitor OWASA's water supply and demand conditions, short-and long-term weather forecasts, regional water supply conditions, and other factors which may affect the risk of a water supply shortage due to drought.

   Staff Suggestions: Overall staff agree with this paragraph.

2. The attached graph, which is a modified version of the 7 million gallon per day (mgd) "trigger table"* in OWASA's State-approved *Water Shortage Response Plan*, shall guide OWASA's drought response decisions when raw water demands are at an annual average of 7 mgd.

* *The graph is based on an average daily raw water demand of 7 mgd. Trigger levels for greater or lesser demands will be correspondingly higher or lower than those depicted here.*

(When annual average demands are greater than 7 mgd, the corresponding trigger table graphs from the *Water Shortage Response Plan* shall be used.) Any drought-related Water Supply Shortage declaration at storage levels above those indicated on the trigger table, and/or any decision to purchase water from a neighboring jurisdiction (and/or to use OWASA's Jordan Lake allocation) during a drought, shall be made only upon approval by the OWASA Board of Directors.

Staff Suggestions: We agree with this overall paragraph. The NRTS Committee may want to consider including the need for Board approval for declaration of a water shortage advisory prior to reaching the level on the trigger table as the paragraph requires for a Water Supply Shortage.

3. OWASA shall declare a Water Shortage Advisory no later than when the total water stored in the reservoirs drops to within 10% of the mandatory Stage 1 trigger. (This Advisory stage is represented by the black dashed line on the attached graph). At or around that time, OWASA will initiate communications with the Carrboro Board of Aldermen, Chapel Hill Town Council, Orange County Board of Commissioners, and the University of North Carolina at Chapel Hill – and shall give public notice to customers and other stakeholders – regarding the likelihood that Stage 1 water use restrictions will go into effect, and that it may be necessary to begin purchasing water from the City of Durham and/or Town of Cary if current drought conditions continue or worsen. OWASA will carefully consider the advice and feedback from the elected boards. The OWASA Board of Directors will continue to exercise its sole responsibility and authority for decisions about water shortage declarations and water purchases, consistent with this Protocol. As in the past, OWASA will expand its standard conservation messaging before declaring the Water Shortage Advisory in order to encourage and to give the community as much opportunity as possible to intensify its water saving practices.

   Staff Suggestions: Staff suggests including a new paragraph that would provide the Board of Directors the flexibility to authorize purchases of water or transfers from our existing Jordan Lake Water Supply Allocation concurrent with or after declaring a Water Shortage Advisory should conditions warrant.

4. When total water storage in OWASA's reservoirs system declines to the purple block on the attached graph, OWASA must declare a Stage 1 Shortage as required by its State-approved *Water Shortage Response Plan*. OWASA may, at its own discretion, initiate Stage 1 use restrictions – with or without corresponding drought rate surcharges – earlier than indicated on the graph, but not later. The OWASA Board may authorize purchases of water from other utilities and/or obtain water through its Jordan Lake allocation only when total water storage in University Lake, Cane Creek Reservoir, and the Quarry Reservoir is below the Mandatory Stage 1 Shortage trigger, but no sooner. Board approval for such a declaration or purchase decision shall not be required, however, during an operational emergency as determined by OWASA's Executive Director per OWASA's *Water Shortage Response Plan*. Operational emergencies are typically characterized by the need for rapid response and may require the curtailment of water use and/or purchases in a short period of time. Examples of such emergencies include, but are not limited to:

- Production problems at the Jones Ferry Road Water Treatment Plant
- Failure of pumps, storage tanks, or pipelines
- Raw or treated drinking water quality problems
- Planned or unplanned maintenance events
- Natural disasters.

Staff Suggestions: This is the main paragraph that staff believe should be modified. If the Committee agrees with including the new suggested paragraph in Protocol 3, much of the language in this item can be eliminated. In addition, staff believes that the information on Operational emergencies should be included in a new protocol item.

5. During an extended drought, OWASA staff will initiate discussions with the Board of Directors regarding the need and timing of commencing water purchases or other prudent actions as total water in storage approaches the mandatory Stage 1 trigger levels shown on the attached graph; however, no purchase or use of OWASA's Jordan Lake allocation shall be made without explicit approval by the Board of Directors (except during Operational Emergencies as described above in Paragraph 4). Restrictions shall, and purchases may, continue until storage returns to levels above the mandatory Stage 1 trigger. Water use restrictions shall continue until storage returns to the "rescission" levels specified in the *Water Supply Shortage Response Plan*.

   Staff Suggestions: Much of this information is duplicative to language in current paragraphs 3 and 4 and could be removed or moved to those paragraphs. The rescission language in the last sentence should remain here.

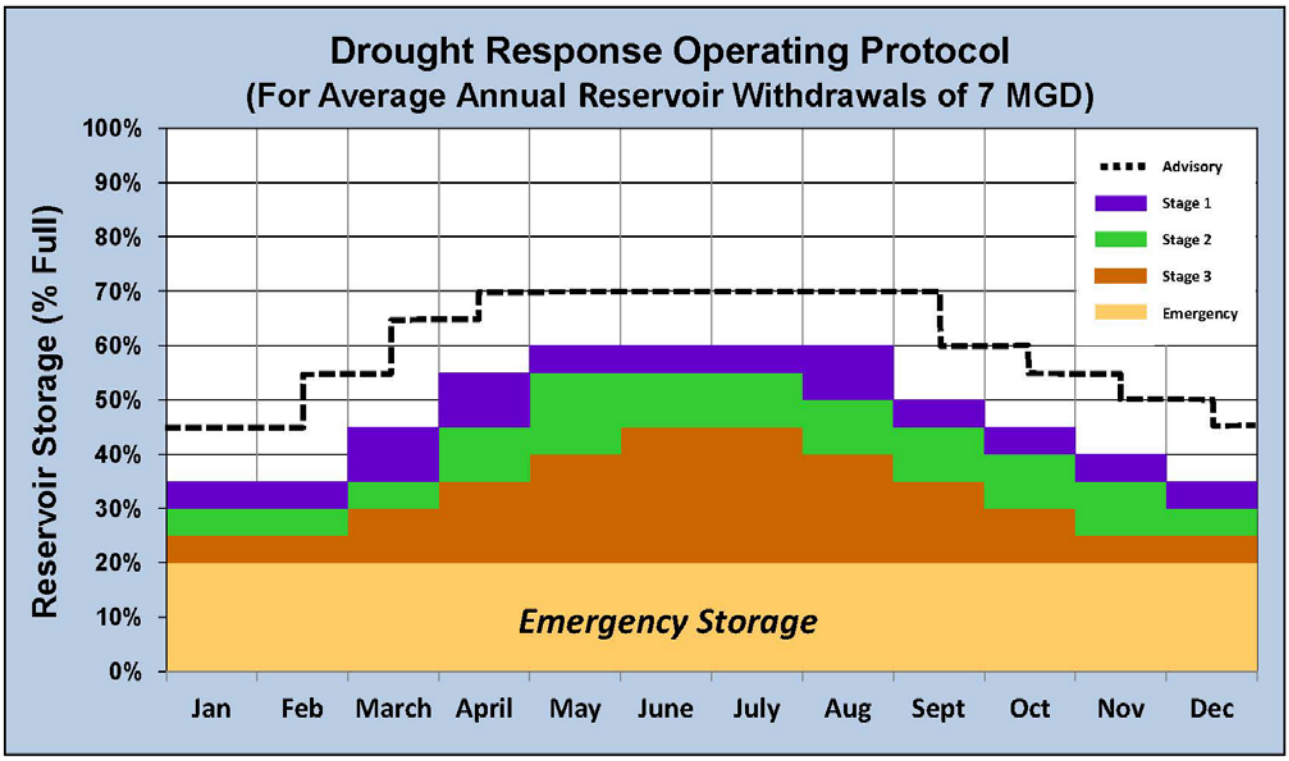
6. OWASA shall provide regular updates to the community and to the local elected boards throughout the drought as described in Paragraph 3 above. The OWASA Board and staff shall be available to attend meetings of the local governments to provide information about supply and demand conditions and to provide any information or answer questions elected officials may have.

   Staff Suggestions: Overall staff agree with this item.

7. The OWASA Board shall review this protocol (a) concurrently with its review of OWASA's State-approved *Water Shortage Response Plan* (as required in conjunction with Local Water Supply Plan updates that must be submitted to the NC Division of Water Resources at least once every five years); (b) following any drought during which mandatory water use restrictions were implemented; and/or (c) at any time deemed necessary to reflect changes in water supply and demand conditions or other new information, such as when the expanded Quarry Reservoir comes on line.

   Staff Suggestions: Overall staff agree with this item.

   Staff Suggestions on Graphic: The notes should be modified to be consistent with any revised DROP language; no changes suggested to the graph itself.



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