**To: Yadkin-Pee Dee Water Management Group**

**From: Warren Miller/Fountainworks**

**Date: March 2017**

**Subject: Yadkin-Pee Dee Water Management Group – Proposal for Drought Response Plan Summary**

Purpose

The Yadkin-Pee Dee Water Management Group (YPDWMG), made up of 17 governmental, public water utility and reservoir operator parties providing service, has the goal to enhance the welfare of Yadkin-Pee Dee residents by jointly planning for the sustainable use of water from the Yadkin-Pee Dee River Basin. One initial objective of the group is to develop a coordinated regional drought response plan incorporating actions by the water utilities through their Water Shortage Response Plans (WSRP) and the reservoir operators through their Low Inflow Protocol (LIP – Cube Hydro and Duke Energy) and the Drought Contingency Plan (US Army Corps of Engineers (USACE)). The results of this project will prepare the group to embark on that much larger project through development of a summary of key features of and inter-relationships between existing plans, and documenting the State’s water quantity modeling plan and schedule. This project will include formulating an approach for developing the coordinated regional drought response plan.

Project Description

This project will include collecting and reviewing existing plans – State-required WSRPs, the LIP used by Cube Hydro and Duke Energy and the Drought Contingency Plan used by the USACE. A summary of the triggers, resulting actions (such as lake level maintenance or water use restrictions) and other major features of the plans, and their potential inter-relationships, will be developed. The State’s plan and schedule for water quantity modeling will be discussed with State staff. The project objective will be to use these findings, and input from the YPDWMG, to give the members an overview of the existing plans and an outline-level approach to moving forward with a coordinated regional plan.

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| **Member** | **WSRPs on File with DWR** | **Reservoir Drought Protocols** |
| City of Albemarle | Yes (Yadkin) | NA |
| Cube Hydro Carolinas (formerly Alcoa) | NA | Yes (LIP) |
| Cabarrus County Water & Sewer Authority | Yes (Rocky) (2) | NA |
| City of Charlotte | Yes (Catawba) | NA |
| City of Concord | Yes (Rocky) | NA |
| Davidson County | No | NA |
| Davidson Water, Inc. | Yes (Yadkin) | NA |
| Davie County | Yes (South Yadkin) | NA |
| Duke Energy | NA | Yes (LIP) |
| City of Kannapolis | Yes (Rocky) | NA |
| City of Monroe | Yes (Rocky) | NA |
| Rowan County | No | NA |
| City of Salisbury | Yes (Yadkin) | NA |
| City of Statesville | Yes (South Yadkin) | NA |
| Union County | Yes (Catawba) | NA |
| Town of Wilkesboro | Yes (Yadkin) | NA |
| City of Winston-Salem | Yes (Yadkin) | NA |

Scope of Work

1. Collect and review Information
   1. Review WSRPs downloaded from DWR website. Follow up with any questions.
   2. Obtain operating rules for USACE reservoir from DWR or USACE; review and follow up with any questions.
   3. Obtain Low Inflow Protocol (LIP) from Cube Hydro (formerly Alcoa) and Duke Energy; review and follow up with questions (note: LIP is coordinated with DWR).
   4. Meet with DWR to
      1. go over WSRPs and reservoir drought management plans
      2. to review basin water quantity modeling plan and schedule
      3. review drought coordination efforts staff are aware of in other basins
2. Summarize plans
   1. Develop summary of WSRPs and reservoir drought management plans. The primary focus will be on summarizing water use/withdrawal reduction triggers and resulting actions.
   2. Identify and summarize inter-relationships between WSRPs and drought management plans. Check with DWR to see how WSRPs and reservoir drought management plans have/have not been coordinated in other river basins in the Carolinas and summarize.
   3. Summarize information from DWR on other basin’s drought coordination efforts, as well as efforts by the Jordan Lake Partnership and the Catawba-Wateree groups.
3. Document water quantity modeling approach/schedule and key issues related to using the model to evaluate coordinated regional drought management.
4. Develop outline-level approach and work plan for moving forward to a) work with State on water quantity modeling and b) develop a coordinated regional drought response plan.
5. Write and finalize report
6. Meet with YPDWMG
   1. One meeting with technical group to review initial summaries and findings
   2. One meeting with full group to present draft report

Assumptions

1. If any WSRPs on DWR website are not the latest version, members will provide the latest version digitally.
2. Cube Hydro (formerly Alcoa), Duke Energy, and the USACE will provide drought management documents for the relevant reservoirs.
3. If it appears that development of a map would be useful, City of Salisbury staff will develop and produce GIS-based maps. Pdf format and email will be used for development/review.
4. Draft report will be revised one time.
5. Computer usage, printer (8.5x11) usage for task work, and mileage are included in hourly rate; any unusual expenses would be charged at actual cost (e.g., printing of larger formats).
6. Salisbury meetings include 4 hours round-trip travel time, each.
7. Work will be invoiced monthly at $125 per hour for senior associate and $75 per hour for associate. The total cost will be $12,800. If it appears more than 10 percent over the estimated time will be required, Fountainworks will immediately consult with YPDWMG to agree on the approach to finishing the work.

Deliverables

1. Reports
   1. One draft report
   2. One final report
2. Meetings
   1. One meeting with DWR in Raleigh
   2. Technical team meeting, including presentation, in Salisbury
   3. YPDWMG meeting, including presentation, in Salisbury

Estimated Level of Effort

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|  | **Senior Associate hours** | **Associate hours** |
| Collect and Review Information | 28 | 8 |
| Summarize plans | 12 | 16 |
| Document state’s modeling approach and key issues | 12 |  |
| Develop approach for modeling and development of coordinated regional WSRP | 8 |  |
| Write and finalize report | 12 |  |
| Meet with YPDWMG (2) | 16 |  |
| **TOTAL** | **88** | **24** |

Estimated Schedule

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|  | Estimated Schedule |
| Collect and Review Information | April-June 2017 |
| Summarize plans |
| Document state’s modeling approach and key issues |
| Develop draft approach for modeling and development of coordinated regional WSRP |
| Technical team meeting with YPDWMG | Mid-late June 2017 |
| Refine approach for modeling and development of coordinated regional WSRP | July 2017 |
| Draft report | (3 weeks) Late July/Early August 2017 |
| Full YPDWMG meeting | August 2017 |
| Final report | (2 weeks) Late August/Early September 2017 |

Qualifications of Fountainworks Staff

Leila Goodwin, PE, joined Fountainworks as a Senior Associate in 2016. Leila has over 30 years of experience in water resources engineering, as a consultant, working primarily with local governments and public utilities, and as Water Resources Manager at the Town of Cary, NC. Her technical background includes engineering, planning and regulatory projects related to potable and reclaimed water supply, wastewater management, and stormwater management. While at the Town of Cary, Ms. Goodwin played a key role in partnering initiatives and regional projects such as the Jordan Lake Partnership; interconnection implementation with Raleigh, Durham and OWASA; Western Wake Regional Wastewater Management Facilities development; and the Upper Cape Fear and Middle Cape Fear basin associations. She has extensive service and leadership experience with professional organizations, technical committees, civic organizations, stakeholder groups, and appointed boards; currently she serves as a member of the State Water Infrastructure Authority. Ms. Goodwin holds a B.S. and M.S. in Civil Engineering, is a registered NC Professional Engineer, and completed the UNC School of Government Municipal Administration course.