

BRUNSWICK COUNTY PUBLIC UTILITIES

OPERATIONS CENTER

250 GREY WATER ROAD NE
SUPPLY, NORTH CAROLINA 28462

MAILING ADDRESS
POST OFFICE BOX 249
BOLIVIA, NORTH CAROLINA, 28422

November 28, 2017

TELEPHONE
(910) 253-2657
FAX
(910) 253-4305

Re: Water Treatment Evaluation

Dear

Brunswick County is requesting proposals from qualified engineering, environmental, and water resource firms for the services associated with evaluation of water treatment options at the Northwest Water Treatment Plant (WTP). In order to meet future potable water demands, Brunswick County (County) is seeking to expand the Northwest Water Treatment Plant from 24 mgd to 36 mgd. The raw water source for this facility is the Cape Fear River which has recently been shown to contain a number of contaminants that are difficult to remove by existing treatment technologies. Brunswick County is seeking assistance in determining the appropriate level of treatment and associated treatment technologies to affect the removal and/or reduction of contaminants to safe levels. A recent study authored by Mei Sun et al¹, (including Dr. Detlef Knappe), identified multiple perfluoroalkyl (PFAs) substances, including the GENX compound, at elevated levels in the Cape Fear River. Other studies and testing have identified 1-4 Dioxane, Hexavalent Chromium, N-Nitroso-dimethylamine (NDMA), and Pharmaceutical Personal Care Products (EDC/PPCPs) in the Cape Fear River watershed. Based on these recent studies and ongoing concern of these contaminants, most unregulated, appearing within the raw and finished water of various drinking water systems in the Cape Fear region, the North Carolina Legislature enacted House Bill 56 "GENX Response Measures" to assist utilities in monitoring, treating, and studying these contaminants. Cape Fear Public Utility Authority has been designated to take the lead on this endeavor and they have enlisted Black & Veatch to provide engineering services. However, much of these studies focus on CFPUA's Sweeney Water Treatment Plant and Brunswick County requires additional engineering analysis based on the existing treatment methods and layout of its Northwest Water Treatment Plant.

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Mei Sun et al, Legacy and Emerging Perfluoroalkyl Substances Are Important Drinking Water Contaminants in the Cape Fear River Watershed of North Carolina *Environ. Sci. Technol. Lett.*, 2016, 3 (12), pp 415–419. Citing Heydebreck, F. et al. Alternative and Legacy Perfluoroalkyl Substances: Differences Between European and Chinese River/Estuary Systems. *Environ. Sci. Technol.* 2015, 49 (14), 8386–8395.



Firms interested in being considered for this work should submit proposals to:

Post Office Delivery

John Nichols, PE
Director of Public Utilities
Brunswick County
P. O. Box 249
Bolivia, NC 28422

Hand Delivery or Alternate Shipping Service

John Nichols, PE
Director of Public Utilities
Utilities Operations Center
250 Grey Water Road NE
Supply, NC 28462

For consideration, five copies of the response to this request for proposal must be submitted to the County by close of business (4:30 p.m.) on Friday, January 5, 2018. Proposal sections shall be **divided by tabs** that indicate the title of each section. At a minimum, the proposal should include the following information:

1. Qualifications of the employees who will be assigned to the project. The project manager and other key team members should be clearly identified. If subcontractors are to be used for any portion of the work, they should be identified and their qualifications included.
2. Experience on similar projects. The proposal should include a description and contact person for projects that were similar in size and scope as this project.
3. A project schedule including key milestones should be included. The project schedule should start from the Notice to Proceed and include, at minimum, one week intervals for County staff reviews. A project schedule will be included in the contract for this work. Study items may be broken up into multiple deliverables. The target date for a draft report with recommended treatment options, estimated costs, and a public presentation is March 19. The final report target due date is April 16.
4. A description of the project approach to be used by the firm should be included.
5. A brief discussion of the firm's ability to meet the budget constraints on the project should be included. This includes an estimate of man-hours required to complete the various components of the project along with the man-hours for subcontractors. Each task shall be subtotaled in addition to project totals.
6. Firms must disclose any potential conflicts of interest and existing relationships with industrial clients that may be associated with discharges of perfluoroalkyl (PFAs) substances into the Cape Fear River. Brunswick County has filed a complaint for damages against DowDuPont Inc., E.I. du Pont de Nemours and Company, The Chemours Company, The Chemours Company FC, LLC, and others for the discharge of PFAs into the Brunswick County drinking water supply.

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Brunswick County reserves the right to select the firm that best meets its needs and negotiate a final Scope of Work that reflects the work to be done. All firms submitting a proposal will receive notification once the contract has been awarded.

A more detailed description of the work to be performed is contained in the enclosed Scope of Work. Firms submitting proposals should use the enclosed scope as a guide but **should develop their own Scope of Work based upon their experiences on similar projects**. The County will negotiate and refine a final Scope of Work with the selected consultant. The consultant's final contract shall be based on a lump sum amount, inclusive of any application fees and other expenses (printing, mileage, per diem, etc.). No additional compensation shall be made for reimbursable items. Brunswick County Public Utilities standard consulting contracts shall be used.

If you have any questions, please call us at (910) 253-2653.

Sincerely,

A handwritten signature in black ink, appearing to read "John Nichols", is written over the printed name.

John Nichols, PE, CPESC
Director of Public Utilities

/khw

Enclosure

SCOPE OF WORK

Water Treatment Evaluation

1. Review House Bill 56, the ongoing UNC-Wilmington contaminant identification study and testing results, Black & Veatch's technical memoranda (1 & 2 currently complete, others ongoing), the Mei Sun et al technical bulletin "Legacy and Emerging Perfluoroalkyl Substances Are Important Drinking Water Contaminants in the Cape Fear River Watershed of North Carolina", Brunswick County's Annual Water Quality Reports, EPA's Unregulated Contaminant Monitoring Rules (all), NCDEQ's 1,4 Dioxane Study, and any other studies or documents that may be useful in determining contaminants, whether regulated or not, that exist in the raw water now, or are likely to exist in the future, that pose a health risk or potential health risk. The County's Web site lists many of the studies that are ongoing at <http://www.brunswickcountync.gov/genx/>. Evaluate and group contaminants indicating those persistent contaminants that are not likely to be sufficiently removed or reduced by the current Northwest Water Treatment Plant technologies.
2. For each contaminant provide the Maximum Contaminant Level (MCL) or Health Advisory Level if available. Many contaminants will not have an MCL or Health Advisory established and may not have any established for the foreseeable future. For the persistent unregulated contaminants identified in (1) above, provide a discussion and recommendations of potential treatment goals that may be used in the evaluation of treatment methods.
3. Develop a list of additional treatment additions or modifications (Carbon Filtration, Reverse Osmosis, Nano-filtration, Oxidation, Ion Exchange, etc.) that may be successful in removing persistent contaminants. Perform high-level evaluation of treatment alternatives, including advantages and limitations. Meet with regulatory agencies to provide specific guidance on permitting issues. Permitting requirements for the wasting of spent carbon containing contaminants should be assessed. Also, permitting requirements for the disposal of the reject concentrate stream of Reverse Osmosis should be evaluated. Any potential long-term liabilities due to contaminant disposal should be evaluated. Based on this information, provide workshop with County and provide recommendations for treatment options that may be eliminated from consideration and those that should be evaluated further through pilot testing.
4. Provide testing strategy and perform testing that simulates full-scale drinking water treatment system. Discuss laboratory services and how they may be integrated into the overall evaluations. Evaluate testing and provide analysis and treatment recommendations for each technology evaluated.

5. For promising treatment alternatives, develop implementation strategies indicating required size, placement, and integration of new processes within the Northwest WTP. Consideration should be given for an ultimate expansion to 48 mgd at the Northwest WTP. Prepare a high level cost opinion for each selected alternative that includes lifecycle costs inclusive of O&M, electricity, media/filter replacement, etc. Carbon costs shall include any necessary disposal/recycling costs to ensure proper disposal of contaminants. Provide recommendation and conduct a workshop with Owner to discuss recommendations. Work products shall be sufficient to provide Brunswick County direction on the best treatment options available for installation at the Northwest WTP along with the estimated costs and effectiveness of those treatment technologies.