



**Request for Qualifications
Town of Pittsboro, NC
Wastewater Treatment Plant Improvements**

ENGINEERING DESIGN SERVICES

March 28, 2016

PURPOSE AND BACKGROUND:

The Town of Pittsboro, NC (<http://www.pittsboronc.gov>) requires Engineering Design Services by a qualified Engineering Firm licensed to do business in the State of North Carolina. A request for qualifications (RFQ) is hereby submitted for interested firms to respond to.

The Town of Pittsboro WWTP is 39 years old, and has undergone several up-grades as described below. The Town has obtained a Final NPDES Permit Modification, Permit Number NC0020354 from NCDENR to discharge up to 1.249 MGD into Robeson Creek, at the existing outfall. The Town also has obtained a Conjunctive Reclaimed Water System Permit, Permit Number WQ0024838 to treat and pump up to 300,000 gallons per day of conjunctive reclaimed water. Future development in the area will necessitate additional and more advanced treatment capability.

The anticipated design services shall include, but not be limited to the following major work items:

1. Influent headworks for screening and grit removal
2. New pump station and associated appurtenances to transmit wastewater from the Town of Pittsboro WWTP to the City of Sanford Big Buffalo Creek WWTP.
3. Improvements to the WWTP shall generally include:
 - a. Plant design capacity shall remain at 0.75 MGD
 - b. Improvements to influent flow measurement, totalization and recording and provision of a centralized SCADA System
 - c. Improvements to existing activated sludge basins including coating, concrete repairs, clarifier up-grades and sandblasting and repainting, aeration system rehabilitation and other related improvements
 - d. Nutrient removal capability through operational and/or process changes in order to meet the year 2022 nutrient removal requirements
 - e. New aeration blowers, acoustical sound enclosures, adjustable speed drives and aeration header modifications
 - f. Return Activated Sludge (RAS) pumping system improvements.
 - g. Tertiary filter improvements
 - h. Waste Activated Sludge (WAS) pumping system improvements
 - i. New bio-solids dewatering and handling facility
 - j. Additional UV disinfection system
 - k. New administrative offices
4. Other improvements include an off-site bulk reclaimed water loading station. Location to be determined.

5. Other anticipated services include land survey, geotechnical, architectural, preparation of permit application documents, preparation of Plans and Specifications for submittal to the NC Department of Environmental Quality, Division of Water Infrastructure and other required regulatory agencies, preparation of bid documents and bidder selection process, construction contract administration, construction inspection, WWTP start-up and other services as deemed required by the Town.

A Preliminary Engineering Report (PER) has been completed and delivered to the NC Division of Environmental Quality. The PER includes WWTP improvements and a 2 MGD force main to Sanford. The 2 MGD force main project will be designed under a separate but parallel RFQ process. The PER determined that an improvements to the WWTP (remaining at 0.75MGD treatment capacity), coupled with a 2 MGD raw sewer force main to the City of Sanford Big Buffalo WWTP as the most viable and cost-effective alternative. State Revolving Loan Funds have been approved for this project.

The Town experiences significant wet weather flows and have completed engineering design for an inflow and infiltration (I&I) rehabilitation project. This project is anticipated to take place in late 2016.

BACKGROUND INFORMATION:

1. Location: Town of Pittsboro, Chatham County
2. Present Population: approximately 4,100
3. Number of Water Customers: 1,918
4. Number of Sanitary Sewer Customers: 1,647
5. Sanitary Sewer System (when applicable):
 - a. Collection Mains: 153,014 linear feet
 - b. Number of Lift Stations: 6
 - c. Treatment Process: Activated sludge, extended aeration, clarification, upflow deep bed sand filtration, UV disinfection, aerobic digestion for Class B biosolids land application.

Current Condition - The Pittsboro Wastewater Treatment plant was originally constructed in 1977 followed by upgrades in 1988 and 2010. The influent channel, influent wet well, and aeration basins #1 are from the original construction date. In 1988 an additional aeration basin, clarifiers, filters, mechanical bar screen, and UV system were added. In 2010, EQ basins and a new UV system were added. The original concrete structures are showing signs of deterioration (aeration basins, junction boxes) as well as the steel and mechanical structures (clarifiers, sweep arms, air lifts, etc.). The EQ basins and UV system are in good condition. Also, in 2011 the mechanical bar screen was rebuilt, and in 2013 a new generator installed for the entire plant emergency power needs.

Liquid Treatment Train - The raw wastewater enters the WWTP, (100% domestic), at the influent channel and is screened with a mechanical bar screen. The wastewater gravity flows to the influent wet well supplying water to the influent pumps for delivery to the plant, as well as EQ pumps for delivery to the EQ basins. The water enters the treatment train via a splitter box providing equal flow to two parallel biological and clarification units. Excess peak flow is diverted to the EQ basins for storage and returned to the plant supplementing diurnal flow. The clarified water from both units is chemically treated for phosphorus removal and gravity flows to a three cell filtration unit followed by UV disinfection. The treated effluent is then either pumped to the 3M manufacturing facility as reclaimed water, or receives post cascade aeration and discharged to Robeson Creek.

Solids Treatment Train - Biological solids are removed from the plant on a daily basis via the WAS pumps, treated with polymer, and thickened with a rotary drum thickener. The solids are stored in two aerobic digesters until land applied.

Average Daily Flow (ADF)

The influent flow to the WWTP in 2015 was an average daily flow of .522 MGD. This reflects a steady increase from the 2013 average of .467 and 2014 of 0.515 MGD respectively. In addition to increased development, an excessive amount of wet weather flows contribute to the collection system.

The Town of Pittsboro has a permitted total discharge of 3.22MGD. The current treatment plant is designed to treat up to 0.75MGD. There is no planned expansion at the current location at this time, however, the plant may be permitted to treat and discharge up to 1.249MGD at outfall #001, Robeson Creek. If this were to occur, the balance of 1.971MGD remains for future expansion and discharge to outfall #002, Haw River.

The effluent limits page(s) are found in the Appendix reflecting current (0.75MGD), expansion capability to 1.249MGD, and future (1.971MGD) permitted flow to Haw River.

Existing Studies for evaluation (see website):

1. Environmental Impact Statement – Proposed WWTP and Discharge into Robeson Creek and Haw River, January 26, 2010
2. Wastewater Alternatives Evaluation, August 8, 2012
3. Chatham Park Planned Development District Master Plan – Approved June 9, 2014
4. 2011 Water and Sewer Planning Up-date
5. Planning Report – Sewer Collection System Master Plan, 2007
6. Wet Weather Flow Improvements Project – August 2009
7. WWTP Operational Effectiveness Analysis Report, June 2008
8. PER Addendum to: Reclaimed Water Transmission and Storage Facility, November 2006
9. PER for WWTP Improvements and 2.0 MGD Design force main to City of Sanford Big Buffalo Creek WWTP, February, 2016

SCOPE OF WORK:

The Scope of Work will be as outlined in the Agreement for Engineering Services.

Interaction and input from Town staff and other stakeholders will be required during the design and construction process. Stakeholder interviews and/or meetings will include Town staff and elected officials, Chatham County, Town of Sanford, and the local economic development community.

ESTIMATED DESIGN PROJECT SCHEDULE:

- ✓ April 29, 2016 –RFQ's due to Town
- ✓ May 30, 2016 – Selection committee reviews RFQ's and makes final recommendation or conducts interviews
- ✓ June/July, 2016 – Interviews and selection and recommendation to the Town Board of Commissioners (BOC)
- ✓ July/August, 2016 – Contract negotiations with selected engineer (alternative if necessary), contract execution and issuance of Notice to Proceed

- ✓ March/April, 2017– WWTP design substantially complete, documents submitted to NCDEQ

RFQ CONTACT PERSON(S):

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Town Engineer
635 East Street
PO Box 759
Pittsboro, NC 27312
(919) 542-2063
Fax (919) 542-2310
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Randy Heard
WWTP Superintendent
485 Small Street
PO Box 759
Pittsboro, NC 27312
(919) 542-2444
rheard@blast.com

SUBMITTAL OF QUALIFICATIONS:

Qualifications must be submitted to the Town Engineer by 5:00 p.m. on April 29, 2016, at 635 East Street or mailed to: PO Box 759, Pittsboro, NC 27312. The packet shall be placed in a sealed envelope marked clearly, "*Response to RFQ for WWTP DESIGN.*"

EVALUATION CRITERIA:

All responses will be evaluated on the following:

1. Technical and environmental qualifications.
2. Past experience with this type and scale of project: describe up to 4 previous projects.
3. Recommendations and references of previous clients.
4. Experience in working with local and state permitting and funding agencies.
5. Experience in working with innovative technologies, including reclaimed water systems.
6. Experience in designing facilities that reflect modest design, simple operational requirements, and economical cost of operation.
7. Evidence of experience with the design of similarly sized WWTP, Town of Pittsboro size, financial strength, and ability to repay loan funds and operation and maintenance cost.

RFQ SUBMITTALS:

RFQ's shall be bound documents, double-sided, with font text size no smaller than 11. Total number of pages (not including binder cover and back page) submitted shall not exceed 25.

SELECTION PROCESS:

Out of the qualifications received by the Town of Pittsboro, a firm may be selected for final consideration or interviews may be conducted in order for the selection committee to ask questions of each candidate and evaluate their responses. The engineering firm and engineer under consideration will be notified of the time, date, and location of these interviews (if required).

RESPONSIBILITIES OF THE TOWN OF PITTSBORO:

1. Make available to the firm all associated existing studies, reports, and other available data pertinent to the assignment via the Town website. Obtain or authorize the Engineer to obtain or provide additional reports and data as required, and furnish to Engineer services of others as required for the performance of Engineer's services.
2. The Town of Pittsboro will bear all costs related to its responsibilities described herein.

NPDES PERMIT EFFLUENT LIMITS:

NPDES Permit No. NC0020354

A.(1.) EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Outfall 001

Beginning upon the effective date of this permit and lasting until expiration or expansion to 1.249 MGD, the Permittee is authorized to discharge treated wastewater from Outfall 001 to Robeson Creek. Such discharges shall be limited and monitored¹¹ by the Permittee as specified below:

EFFLUENT CHARACTERISTICS	EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS		
	Monthly Average	Weekly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location ¹
Flow	0.75 MGD			Continuous	Recording	Influent or Effluent
Total Monthly Flow (MG)	Monitor & Report			Monthly	Recording or Calculated	Influent or Effluent
BOD, 5-day, (20°C) ² (April 1 – October 31)	5.0 mg/L	7.5 mg/L		3/Week	Composite	Influent & Effluent
BOD, 5-day, (20°C) ² (November 1 – March 31)	10.0 mg/L	15.0 mg/L		3/Week	Composite	Influent & Effluent
Total Suspended Solids ²	30.0 mg/L	45.0 mg/L		3/Week	Composite	Influent & Effluent
NH ₃ as N	2.0 mg/L	6.0 mg/L		3/Week	Composite	Effluent
Total Residual Chlorine ⁴			17 µg/L	3/Week	Grab	Effluent
pH ⁵				3/Week	Grab	Effluent
Temperature (°C)				Daily	Grab	Effluent
Temperature (°C)				3/Week	Grab	Upstream & Downstream
Dissolved Oxygen ³				3/Week	Grab	Effluent, Upstream & Downstream
Fecal Coliform (geometric mean)	200/100 mL	400/100 mL		3/Week	Grab	Effluent, Upstream & Downstream
Conductivity				3/Week	Grab	Effluent, Upstream & Downstream
TKN	Monitor & Report (mg/L)			Weekly	Composite	Effluent
NO ₃ -N + NO ₂ -N	Monitor & Report (mg/L)			Weekly	Composite	Effluent
Total Nitrogen, TN ⁶	Monitor & Report (mg/L)			Weekly	Composite	Effluent
TN Load ^{7,8}	Monitor & Report (lb/mo) Monitor & Report (lb/yr)			Monthly Annually	Calculated	Effluent
Total Phosphorus, TP	Monitor & Report (mg/L)			Weekly	Composite	Effluent
Total Phosphorus, TP ⁹	2.0 mg/L Quarterly Average			Weekly	Composite	Effluent
TP Load ^{7,8}	Monitor & Report (lb/mo) 322 lb (Apr. 1-Oct. 31)			Monthly Seasonally	Calculated	Effluent
Total Nickel		25 µg/L	261 µg/L	Weekly	Composite	Effluent
Total Copper				Monthly	Composite	Effluent
Total Zinc				Monthly	Composite	Effluent
Chronic Toxicity ¹⁰				Quarterly	Composite	Effluent

NPDES Permit No. NC0020354

A.(2.) EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Outfall 001

Beginning upon expansion above 0.75 MGD and lasting until expiration, the Permittee is authorized to discharge treated wastewater from Outfall 001 to Robeson Creek. Such discharges shall be limited and monitored by the Permittee as specified below:

EFFLUENT CHARACTERISTICS	EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS		
	Monthly Average	Weekly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location ¹
Flow	1.249 MGD			Continuous	Recording	Influent or Effluent
Total Monthly Flow (MG)	Monitor & Report			Monthly	Recording or Calculated	Influent or Effluent
BOD, 5-day, (20°C) ² (April 1 – October 31)	5.0 mg/L	7.5 mg/L		3/Week	Composite	Influent & Effluent
BOD, 5-day, (20°C) ² (November 1 – March 31)	10.0 mg/L	15.0 mg/L		3/Week	Composite	Influent & Effluent
Total Suspended Solids ²	30.0 mg/L	45.0 mg/L		3/Week	Composite	Influent & Effluent
NH ₃ as N (April 1 – October 31)	1.0 mg/L	3.0 mg/L		3/Week	Composite	Effluent
NH ₃ as N (November 1 – March 31)	2.0 mg/L	6.0 mg/L		3/Week	Composite	Effluent
Total Residual Chlorine ⁴			17 µg/L	3/Week	Grab	Effluent
pH ⁵				3/Week	Grab	Effluent
Temperature (°C)				Daily	Grab	Effluent
Temperature (°C)				3/Week	Grab	Upstream & Downstream
Dissolved Oxygen ³				3/Week	Grab	Effluent, Upstream & Downstream
Fecal Coliform (geometric mean)	200/100 mL	400/100 mL		3/Week	Grab	Effluent, Upstream & Downstream
Conductivity				3/Week	Grab	Effluent, Upstream & Downstream
TKN	Monitor & Report (mg/L)			Weekly	Composite	Effluent
NO ₃ -N + NO ₂ -N	Monitor & Report (mg/L)			Weekly	Composite	Effluent
Total Nitrogen, TN ⁶	Monitor & Report (mg/L)			Weekly	Composite	Effluent
TN Load ^{7,8}	Monitor & Report (lb/mo) Monitor & Report (lb/yr)			Monthly Annually	Calculated	Effluent
Total Phosphorus, TP	Monitor & Report (mg/L)			Weekly	Composite	Effluent
Total Phosphorus, TP ⁹	2.0 mg/L Quarterly Average			Weekly	Composite	Effluent
TP Load ^{7,8}	Monitor & Report (lb/mo) 322 lb (Apr. 1-Oct. 31)			Monthly Seasonally	Calculated	Effluent
Total Nickel		25 µg/L	261 µg/L	Weekly	Composite	Effluent
Total Copper				Monthly	Composite	Effluent
Total Zinc				Monthly	Composite	Effluent
Chronic Toxicity ¹⁰				Quarterly	Composite	Effluent
Effluent Pollutant Scan	Monitor and Report			Footnote11	Footnote 11	Effluent

NPDES Permit No. NC0020354

A.(3.) EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Outfall 002

Beginning upon expansion above 1.249 MGD and lasting until expiration, the Permittee is authorized to discharge treated wastewater from Outfall 002 to the Haw River. Such discharges shall be limited and monitored by the Permittee as specified below:

EFFLUENT CHARACTERISTICS	EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS		
	Monthly Average	Weekly Average	Daily Maximum	Measurement Frequency	Sample Type	Sample Location ¹
Flow (MGD)	1.971 MGD			Continuous	Recording	Influent or Effluent
Total Monthly Flow (MG)	Monitor & Report			Monthly	Recording or Calculated	Influent or Effluent
BOD, 5-day, (20°C) ² (April 1 – October 31)	5.0 mg/L	7.5 mg/L		Daily	Composite	Influent & Effluent
BOD, 5-day, (20°C) ² (November 1 – March 31)	10.0 mg/L	15.0 mg/L		Daily	Composite	Influent & Effluent
Total Suspended Solids ²	30.0 mg/L	45.0 mg/L		Daily	Composite	Influent & Effluent
NH ₃ as N (April 1 – October 31)	1.0 mg/L	3.0 mg/L		3/Week	Composite	Effluent
NH ₃ as N (November 1 – March 31)	2.0 mg/L	6.0 mg/L		3/Week	Composite	Effluent
Total Residual Chlorine ⁴			28 µg/L	3/Week	Grab	Effluent
pH ⁵				Daily	Grab	Effluent
Temperature (°C)				Daily	Grab	Effluent
Temperature (°C)				3/Week	Grab	Upstream & Downstream
Dissolved Oxygen ³				3/Week	Grab	Effluent, Upstream & Downstream
Fecal Coliform (geometric mean)	14/100 mL	25/100 mL		Daily	Grab	Effluent, Upstream & Downstream
Conductivity				3/Week	Grab	Effluent, Upstream & Downstream
TKN	Monitor & Report (mg/L)			Weekly	Composite	Effluent
NO ₃ -N + NO ₂ -N	Monitor & Report (mg/L)			Weekly	Composite	Effluent
Total Nitrogen, TN ⁶	Monitor & Report (mg/L)			Weekly	Composite	Effluent
TN Load ^{7,8}	Monitor & Report (lb/mo) Monitor & Report (lb/yr)			Monthly Annually	Calculated	Effluent
Total Phosphorus, TP	Monitor & Report (mg/L)			Weekly	Composite	Effluent
TP Load ^{7,8}	Monitor & Report (lb/mo) Monitor & Report (lb/yr)			Monthly Annually	Calculated	Effluent
Total Nickel				Monthly	Composite	Effluent
Total Copper				Monthly	Composite	Effluent
Total Zinc				Monthly	Composite	Effluent
Chronic Toxicity ⁹				Quarterly	Composite	Effluent
Effluent Pollutant Scan	Monitor and Report			Footnote 10	Footnote 10	Effluent

END OF REQUEST FOR QUALIFICATIONS