RESOLUTION 18-09

A RESOLUTION AUTHORIZING A PROFESSIONAL SERVICES AGREEMENT WITH O'BRIEN AND GERE(OBG) FOR SERVICES RELATED TO THE CITY'S WASTEWATER TREATMENT PLANT

WHEREAS, the City desires to expand its Wastewater Treatment Plant (WTP) from five million gallons per day to seven and half million gallons per day; and

WHEREAS, the cost for this expansion will include capital outlay in the issuance of debt; and

WHEREAS, to be eligible for Clean Water State Revolving Fund Loan Program a facility plan must be prepared by the City; and

WHEREAS, the facility plan must follow a suggested outline by the Tennessee Department of Environment and Conservation; and

WHEREAS, OBG has the experience and knowledge to develop a facility plan for the wastewater treatment plant; and

WHEREAS, by entering into this Agreement, OBG affirms that it has extensive experience in providing engineering services and that it shall provide such services in a professional manner in accordance with the terms and conditions of this Agreement as well as the standard of care practiced by other consultants and professionals performing similar services within the industry.

NOW, THEREFORE, in consideration of the premises and recitals hereinabove set forth, which are incorporated herein by reference, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and the mutual covenants contained herein, the City and OBG agree to the execution of the work.

BE IT FURTHER RESOLVED, that the City of Spring Hill authorizes a professional services agreement with OBG, Inc. for professional engineering services related to preparing a facility plan for the City's Wastewater Treatment Plan that includes the renewal of the city's NPDES Permit and a water quality study of Rutherford Creek in the amount of in the amount of Four-Hundred Twenty-One Thousand, One Hundred One Dollars ($421,101.00) with monies coming from the Sewer Fund Reserve.

Passed and adopted by the Board of Mayor and Aldermen of the City of Spring Hill, Tennessee on the 20th day of February, 2018.

Rick Graham, Mayor

ATTEST:

April Goad, City Recorder

LEGAL FORM APPROVED:

Patrick Carter, City Attorney

Date: January 17, 2018

TO: Victor Lay, City Administrator

FROM: Philip Stuckert, P.E., Infrastructure Director
Travis Massey, Wastewater Treatment Plant Superintendent

SUBJECT: Professional Services Agreement with O'Brien and Gere

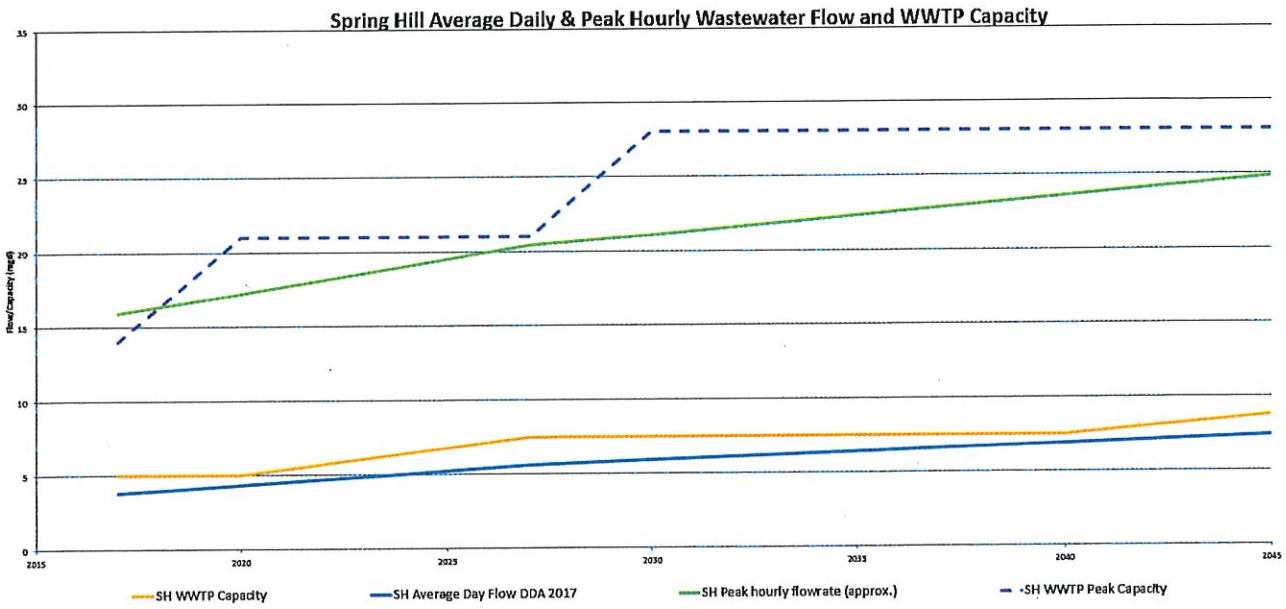
Recommendation:

Request the Board of Mayor and Aldermen to review this memorandum concerning Spring Hill's immediate and future needs for wastewater treatment and then consider authorizing O'Brien and Gere (OBG) along with their subconsultant Dempsey Dilling, Inc. (DDA) to prepare a Wastewater Treatment Plant (WWTP) Facilities Plan report and, to support the City's NPDES Permit reapplication process, which will involve the development of a Rutherford Creek water quality model that will evaluate various flow tiers and stream assimilative capacity in the amount of Four-Hundred Twenty-One Thousand One-Hundred One Dollars ($421,101.00). Monies for this work will come from the Sewer Reserve Fund.

The report will address proposed expansion / re-rating of the Spring Hill WWTP from 5.0 Million Gallons per Day (MGD) (current design capacity) to potentially up to 7.5 MGD facility, also addressing current peak flow capacity restraints, with the understanding that the plant may be expanded in the future up to 10 MGD if TDEC approves the expansion and NPDES Permit for increased discharge to Rutherford Creek. (Spring Hill's current NPDES Permit is for 5.0 MGD average day and peak hourly flow capacity of 14 MGD.) The facility plan and water quality modeling will be coordinated with, and submitted to, TDEC for review and approval consideration.

Summary:

This memo provides an update regarding Spring Hill's wastewater (WW) treatment and disposal options, and a preliminary outline and timeline for activities related to accommodating the projected growth to meet Spring Hill's needs through 2037. The Water & Sewer Capacity Study analysis generated the following wastewater flow and growth projections, tributary to the Spring Hill WWTP:



The above graph shows that Spring Hill requires more than 5 MGD average daily flow (ADF) capacity by 2024, and more than 14 MGD peak hour flow (PHF) capacity in the immediate (2018-2023) and near-term (through 2028).

The WWTP has already experienced peak hour flows in excess of the plant's 14 MGD capacity. The proposed stepping (yellow line) to 7.5-MGD is preliminary, a function of TDEC regulatory approval and review of cost and technical feasibility. To meet projected 2037 needs, further peak capacity would be required, as well as additional ADF capacity if the initial phased expansion is capped based on feasibility and nutrient loading restrictions.

Nutrient loading restrictions are subject to the amount of ammonia, total nitrogen, and total phosphorus discharged into the receiving waters of Rutherford Creek. As the ADF discharges increase, nutrients concentrations must be reduced to prevent additional loadings to the receiving stream – unless new water quality modeling and regulatory approval results in loading cap increases. The 2013 NPDES Permit includes discharge wasteload caps for BOD, Ammonia, Total Nitrogen, and Total Phosphorus, which could limit potential expansion.

The 5-MGD WWTP (5 years old) is performing well for current ADF loads. A portion of the original facilities (20 years old) remains. Older treatment facilities need equipment replacement and asset renewal in the near-term. Actual peak flowrates have, on occasion, reached or exceeded the current WWTP PHF design capacity (14-MGD). The current seasonal average is 3.7-MGD (2015 & 2017). TDEC requires cities to undertake a facility plan when the seasonal average reaches 80 percent of the permitted ADF. The City's WWTP permit expires in September 2018 and its renewal comes into play as the plant reaches this threshold and a facility plan addresses plant expansion.

Further WWTP upgrades are necessary to allow for Immediate & Near-Term growth, subject to successful 2018 NPDES Permit renewal. Further reuse and exporting treated effluent may be required for initial expansion or buildout.

Structural repairs to the Oxidation Ditches & Filter Basins are currently being planned by the City. These repairs do not increase the capacity of the WWTP. Peak capacity increase is needed for current flows and near-term growth. Denitrification treatment is needed to achieve the Total Nitrogen load cap to accommodate growth.

WWTP Facility Plan and NPDES Permit 2018 Reapplication

With respect to accommodating immediate & near-term growth and providing a wastewater management plan for capacity study implementation, City staff recommends the start of a WWTP Facilities Plan for Phase 1 Improvements in conjunction with the City's NPDES Permit 2018 reapplication process. As part of the reapplication process and facility plan the effluent discharge requirements will be refined by developing a new water quality model of Rutherford Creek.

The modeling would be performed by a specialized subconsultant, in a phased approach, and coordinated with representatives from TDEC. TDEC's current model information will be utilized and revised with the new proposed model to determine actual feasible loadings to Rutherford Creek.

As noted above, the findings to-date from the ongoing Water & Sewer Capacity Study indicate that immediate / near-term "Phase 1 Improvements" are needed at the Spring Hill WWTP to handle the planned growth of ADF and PHF wastewater flows, which include wet weather contributions to the sewers. Further discussion of peak flow rates will be part of the facilities planning process, as part of confirming basis-of-design flows and loadings.

Phase 1 Improvements include:

- Peak Hydraulic Improvements (Immediate, 21-MGD PHF Influent)
    - Influent PS new pumps, parallel force main, generator upgrade
    - Headworks third screen, peak bypass of grit removal
    - Consider converting old sludge storage tank to initial Offline Equalization (2-MG)
    - Coagulant Storage & Feed, Modifications to Distribution Boxes
    - New Sludge Storage facilities (2.5-MG)
- Average Day Flow Expansion (Near-Term, by 2022-2024, up to 7.5-MGD ADF Rating,)
    - Oxidation Ditches upgrade, Carbon Storage & Feed, Filters #5-6, UV #3, Piping
        - Sidestream treatment if needed (2018 NPDES)
        - Evaluate feasibility for additional reuse.

Longer-term "Phase 2 Improvements" (2027-2037) will be needed at the Spring Hill WWTP to handle wastewater flows through buildout (8.9 to 10-MGD ADF, up to 28-MGD PHF (forecasted to be the 2028-2045 time period, a function of growth and actual peaks)). Two major alternatives were initially identified: 1) 50-100% expansion of all existing unit processes which may require Public Works Facility relocation; or 2) Plug Flow retrofit of the ditches, 50-100% expansion of remaining unit

processes. These longer-term solutions should be evaluated further in establishing Phase 1 Improvements.

Objectives

The objectives of the proposed WWTP Facilities Plan & Water Quality Modeling project are to:

- Assess the potential limitations of the existing WWTP to accept and treat additional wastewater, both average and peak.
- Provide regulatory assistance to the City regarding the WWTP NPDES Permit renewal (by September 2018), and permit conditions to align with Phase 1 Improvements. This includes assessing potential benefits of an alternative discharge point downstream, impact of applicable TDEC regulations, potential value of producing additional reclaimed water for reuse in the City, and longer-term plans for City growth as part of the Water & Sewer Capacity Study.
- Develop facilities plan-level preliminary engineering, initial process modeling, and conceptual design and layout for the recommended solution, updating the implementation approach schedule and project cost estimates for: Phase 1: up to 7.5-MGD near-term, and future Phase 2 expansion to 8.9 to 10-MGD. Advancing the engineering will include initial inputs from supporting disciplines (civil, structural & architectural, HVAC / plumbing, instrumentation & control, and electrical). Physical survey and geotechnical investigation are not proposed as part of the facility plan.
- Implementation approaches will also be identified for the City's consideration as it advances its water and sewer plans.

PROPOSED TIMELINE

City staff recommends 2018 activities to include supplementing NPDES Permit reapplication with facilities planning, engineering, and water quality modeling – with certain activities completed before the current permit's September 2018 expiration date. The WWTP Facilities Planning & Engineering in 2018 will address peak capacity needs, NPDES Permit renewal, and near-term growth – considering Phase 2 / Buildout needs in the Phase 1 project review and scoping. Rutherford Creek water quality modeling consists of reviewing the stream's assimilative capacity for treated effluent (namely, BOD, Ammonia, Nutrients), given the immediate and near-term growth projections. The City plans to submit the NPDES Permit reapplication package prior to September 2018, with amendments and updates to TDEC before the NPDES Permit is renewed.

It is unclear if water quality modeling can be completed before the permit's expiration date, a function of the start date and the degree of field work and modeling required by TDEC. If the modeling is not completed in time for the September, 2018 renewal, the City can request an administrative extension, or propose to renew the permit as it is written currently and then revise once all associated work is completed.

<u>January 2018</u>

1. Present this summary memo to BOMA addressing the need to prepare a facility plan to summarize existing and future capacity of the WWTP in terms of hydraulic loading and nutrient reduction; waste discharges to Rutherford Creek as part of the WWTP Expansion; and renewal

of the 2018 NPDES Permit Renewal. Request BOMA authorize City staff to seek professional engineering proposals from Dempsey Dilling Associates and O'Brien & Gere to perform the above services.
2. City and DDA/OBG negotiate contract for NPDES Reapplication Work, WWTP Facilities Plan & Water Quality Modeling.

February 2018

1. BOMA considers contract with DDA and OBG to proceed with NPDES Reapplication Work, WWTP Facilities Plan & Water Quality Modeling.
2. Initiate the first phase of water quality modeling assessment, reviewing prior TDEC modeling.

March 2018

1. Complete the first phase of modeling, review second phase modeling options with City and TDEC. Determine the course of action.
2. Initiate aspects of facilities planning not directly tied to water quality assessment.
3. Begin work on NPDES Permit Reapplication.

April - August 2018

1. Initiate second phase modeling, and associated data analysis and field work if or where required.
2. Complete the majority of the facilities plan engineering based on preliminary wasteload allocations and/or certain levels of wastewater and solids treatment.
3. Determine if a NPDES Permit administrative extension request is needed, if not initiated by TDEC itself.

September 2018 - TBD

1. Complete water quality modeling and submit for TDEC review, approval, and use in finalizing the NPDES Permit renewal process.
2. Complete WWTP facilities plan, preparing the City to move forward with immediate / near-term average and peak capacity needs (design, bidding, construction).

2028 – 2045 (TBD)

1. Based on actual growth rates and I&I removal success, assess when a Phase 2 Improvements project is needed to address remaining aging infrastructure as well as average & peak wastewater treatment capacity needs.

AGREEMENT BETWEEN
CITY OF SPRING HILL, TENNESSEE
AND O'BRIEN & GERE, ENGINEERS, INC.

THIS AGREEMENT is made this the 20th day of February, 2018, by and between **CITY OF SPRING HILL, TENNESSEE** (hereinafter "City"), and O'Brien & Gere, Engineers, Inc. located at 4201 Mitchellville Road, Suite 500, Bowie, MD, 20176 (hereinafter "OBG").

WITNESSETH:

WHEREAS, the City desires to expand its Wastewater Treatment Plant (WTP) from five million gallons per day to seven and half million gallons per day; and

WHEREAS, the cost for this expansion will include capital outlay in the form of loans; and

WHEREAS, to be eligible for Clean Water State Revolving Fund Loan Program a facility plan must be prepared by the City; and

WHEREAS, the facility plan must follow a suggested outline by the Tennessee Department of Environment and Conservation; and

WHEREAS, the OBG has the experience and knowledge to develop a facility plan for the wastewater treatment plant; and

WHEREAS, by entering into this Agreement, OBG affirms that it has extensive experience in providing engineering services and that it shall provide such services in a professional manner in accordance with the terms and conditions of this Agreement as well as the standard of care practiced by other consultants and professionals performing similar services within the industry.

NOW, THEREFORE BE IT RESOLVED, in consideration of the premises and recitals hereinabove set forth, which are incorporated herein by reference, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and the mutual covenants contained herein, the City and OBG agree as follows:

ARTICLE 1-SCOPE OF SERVICES TO BE RENDERED BY OBG

1. OBG shall perform all necessary professional services in a satisfactory and proper manner, consistent with the City's requirements for the Project and by reference made a part hereof, including, but not be limited to, the following:

a. **See Attached Exhibit A (Scope of Work)**

2. All documents prepared by OBG that form a part of the services rendered hereunder shall, upon completion of the drawings, become the property of the City. Such documents shall not be used by either party on any other project, except as reference materials.

3. The City will furnish all information, data, reports and maps as are existing and identified by OBG as necessary for carrying out the work that are available to the City without cost to OBG.

4. OBG shall have the authority to request work assignments necessary to obtain additional information to prepare the facility plan.

ARTICLE 2-CITY'S RESPONSIBILITIES

The City will provide to OBG all criteria and full information as to the Project's requirements, and shall furnish the following:

1. Provide OBG with all known available information that is pertinent to the Project.

2. Accompany OBG for on-site inspections to determine scope of work, if necessary.

3. Guarantee access to the work so OBG can enter upon public and private lands as required to perform the work essential to the Project.

4. Give thorough consideration to all reports, cost estimates, drawings, specifications and other documents presented by OBG, and inform OBG of all decisions within a reasonable time so as not to delay the work of OBG (i.e. furnish approval or instructions for change).

5. Promptly schedule all required special meetings, serve all public and private notices, and receive and act upon all protests.

6. Give prompt written notice to OBG when it is known that either the Project criteria or conditions have changed, or there is reason to believe OBG work is deficient in intent or technical content.

7. Provide information previously assembled by others, including soil borings, probings, subsurface explorations, hydrographic surveys, laboratory tests and inspections of samples and materials, appropriate professional interpretation of all of the foregoing, environmental assessment, impact statements, approvals and permits from regulatory agencies, and other special data or consultation.

ARTICLE 3-TERM

1. The services of the Consultant shall be undertaken and completed by August 31, 2019.

ARTICLE 4-FEES

1. In consideration of the performance of services rendered under this Contract, OBG shall be compensated for services performed in accordance with Article 1, not to exceed a total fee of $421,101, comprised of a lump sum fee of $276,451, which is inclusive of expenses such as printing, travel, etc., plus up to $144,650 for Water Quality Modeling, which will be invoiced on a Time & Materials basis, based on subcontracted costs of up to $131,500 plus 10% markup.

2. Invoices shall be submitted by OBG to the City in monthly statements for services rendered, if any. The statements shall be based on percent completion of the lump sum amount, and incurred expenses. Each individual invoice shall be due and payable within forty-five calendar (45) days after receipt.

3. If the City disputes any portion of OBG's invoices, the undisputed portion will be paid by the City, and OBG will be notified in writing within ten (10) days of receipt of the exceptions taken to such invoice. The City and OBG will attempt to resolve any payment dispute within sixty (60) days, and both parties agree that no action for collection thereon shall be filed within this time period.

4. If the City delays the Project for more than six (6) months beyond the designated date when work is scheduled to begin, which is more particularly defined as the date this Agreement is executed, then the lump sum as designated in Sub-Paragraph 1 of this Section shall be increased by three percent (3%) per year. The intent of this language is that the increase shall be cumulative, as a delay would cause OBG to have to revisit the plans created in accordance with the designated start date as defined herein.

ARTICLE 5-PRIMARY CONTACT

The primary contact for each party shall be:

If to OBG:	Attn: William Meinert, PE Title: Vice President/Project Manager 4201 Mitchellville Road, Suite 500 Bowie, MD 20716
If to City:	Attn: Philip Stuckert/Travis Massey 199 Town Center P.O. Box 789 Spring Hill, TN 37174

ARTICLE 6-NOTICE

All notices, certificates or other communications hereunder shall be deemed sufficiently given and shall be deemed given when delivered by hand-delivery or mailed by first class, postage prepaid, registered or certified mail and addressed to the following persons who shall be the primary contact for their party.

If to OBG:

Attn: George Rest, PE
Title: Senior Vice President
4201 Mitchellville Road, Suite 500
Bowie, MD 20716

If to City:

Attn: Victor Lay
Title: City Administrator
199 Town Center Parkway
Spring Hill, TN 37174

Copy to:

Patrick M. Carter, Esq.
City Attorney
P.O. Box 1431
Columbia, TN 38402-1431

ARTICLE 7-TERMINATION

1. This Agreement may be terminated by either party upon thirty (30) days' written notice should the other party fail substantially to perform in accordance with the terms outlined herein through no fault of the party initiating the termination.

2. This Agreement may be terminated by OBG in the event that the City permanently abandons the Project.

3. In the event of termination by either party, OBG shall be compensated for all services performed prior to the termination date.

ARTICLE 8-DISPUTE RESOLUTION AND GOVERNING LAW

1. The City and OBG shall attempt to resolve conflicts or disputes under this Agreement in a fair and reasonable manner, and agree that if an informal resolution cannot be achieved, the parties shall submit the matter to a mutually agreed upon mediator in an attempt to resolve the dispute through the mediation process. Such mediation process shall be initiated by a request in writing by either party.

2. The mediation provision can be waived by the mutual consent of the parties or by either party if such party's right would be irrevocably prejudiced by a delay in initiating a legal proceeding.

3. Venue and jurisdiction for any legal proceeding hereunder shall be the Circuit Court for Maury County, Tennessee.

ARTICLE 9-BREACH

1. The term "breach of agreement" specifically includes, but is not limited to, failure to comply with any applicable federal, state or local laws or regulations.

2. One or more waivers of breach of any provision of this Agreement by any party shall not be construed as a waiver of subsequent breach of the same provision, nor shall it be considered a waiver of any other then existing or subsequent breach of a different provision.

3. The substantially prevailing party in any legal proceeding hereunder by and between the parties shall in addition to their damages be entitled to attorney's fees and court costs incurred in said legal proceeding.

ARTICLE 10-MODIFICATION

This Agreement shall not be modified unless such modifications are evidenced in writing in the form of a written Amendment, which is signed by both the City and OBG. Should any changes in the Project be necessary, the City's designee shall report such change to OBG in writing. If the City determines that any changes in work are necessary to complete the Project, then OBG shall be allowed compensation in accordance with ARTICLE 19-CHANGES.

ARTICLE 11-INDEMNITY AND HOLD HARMLESS

1. OBG shall agree to indemnify and hold City, its officers, agents and/or employees, harmless from and against any and all lawsuits, damages and expenses, including court costs and attorneys' fees, by reason of any claim and/or liability imposed, claimed and/or threatened against the City, its officials, agents and/or employees, for damages because of bodily injury, death and/or property damages arising out of or in consequence of the performance of services under this Agreement to the extent that such bodily injuries, death and/or property damages are attributable to the negligence of OBG, its agents, employees, or any other entity for which OBG may be found to be legally liable. This provision shall survive the completion of all services, obligation and duties provided pursuant to the Project, or the termination of this Agreement for any reason.

ARTICLE 12-INSURANCE

OBG shall maintain, during the term of this Agreement, or any extension hereof, the following insurance policy, written by an insurance company authorized to do business within the State of Tennessee, and furnish City, in duplicate, Certificates of Insurance as evidence thereof:

1. Worker's Compensation: Providing coverage in compliance with the laws of the state in which any part of the work is to be performed, and Employer's Liability Coverage in the minimum amount of the statutory limit for each occurrence.

2. Comprehensive (Commercial) General Liability Insurance: Bodily injury and property damage combined single limit in the minimum amount of $1,000,000.00 for each occurrence.

3. Automobile (Business) Liability Insurance: Bodily injury and property damage combined single limit in the minimum amount of $1,000,000.00 for each occurrence, $1,000,000.00 aggregate.

4. Professional Liability Insurance: Professional liability insurance covering claims arising from errors, omissions or negligent acts committed in the performance of professional services under this Agreement with limits of $1,000,000.00.

ARTICLE 13-SUBCONSULTANTS

OBG shall not subcontract all or a portion of the Project without the prior written approval of the City which consent will not be unreasonably withheld. OBG must state in all subcontracts that services performed by any such subconsultant will be subject to the terms of this Agreement. All subconsultants must certify in writing that they are qualified to perform the services to be rendered for the Project and have no financial or other interests in the outcome of the Project. OBG shall remain fully responsible for the performance of subconsultant and its personnel pursuant to this Agreement. The entry into any subcontract shall not relieve OBG of any of its obligations under the terms of this Agreement

ARTICLE 14-SEVERABILITY

In the event any provision of this Agreement or any instrument delivered in connection herewith shall be held invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provisions hereof or thereof.

ARTICLE 15-BINDING EFFECT

This Agreement shall inure to the benefit of and shall be binding upon the parties and their respective heirs, administrators, successors and assigns.

ARTICLE 16-INDEPENDENT CONTRACTOR RELATIONSHIP

It is specifically understood that OBG's relationship with City shall be that of independent contractor and OBG shall in no sense be considered an agent or employee of City, nor shall OBG be, as a result of the relationship established by this Agreement, entitled to or eligible to participate in any benefits or privileges extended or given by City to its employees, notwithstanding this Agreement.

ARTICLES 17-HEADINGS AND EXHIBITS

The paragraph headings in this Agreement are for convenience only, and they form no part of this Agreement and shall not affect its interpretation.

ARTICLE 18-FORCE MAJEURE

OBG shall not be liable to City or be deemed to be in breach of this Agreement for any failure or delay in rendering performance arising out of causes beyond OBG's reasonable control and without its fault or negligence. Such causes may include, but are not limited to, acts of God or the public enemy, terrorism, significant fires, floods, earthquakes, epidemics, quarantine restrictions, strikes, freight embargoes, or Governmental Authorities approval delays which are not caused by any act or omission by OBG, and unusually severe weather. OBG agrees to notify City of the existence and nature of any delay.

ARTICLE 19-CHANGES

The City may, from time to time, request changes in the scope of the services of OBG to be performed hereunder. OBG may from time to time request changes based on differing or changed conditions or City directed changes. Such changes, including any increase or decrease in the amount of OBG compensation, or time for performance, which are mutually agreed upon between the City and OBG shall be incorporated in written amendments to this Agreement. There shall be no increase in the amount of OBG's compensation, as set forth above, unless approved by Resolution adopted by City.

ARTICLE 20-OWNERSHIP OF PROJECT MATERIALS

It is agreed that all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, films, duplicating plates, and reports prepared by OBG under this Agreement shall be considered the property of the City and upon completion of the services to be performed, they will be turned over to the owner provided that, in any case, OBG may, at no additional expense to the City, make and retain such additional copies thereof as OBG desires for its own use; provided further, that in no event may any of the documents, data, studies, surveys, drawings, maps, models, photographs, films, duplicating plates, or other reports retained by OBG be released to any person, agency, corporation, or organization without the written consent of the City.

ARTICLE 21-CONFIDENTIALITY

All reports, information, data, etc., given to, or prepared or assembled by OBG under this Agreement, shall be deemed confidential and none shall be made available to any individual or organization by OBG without the prior written consent of the City.

ARTICLE 22-ASSIGNMENT

OBG shall not assign, sublet or transfer or otherwise dispose of this Agreement in whole or in part to any individual, firm or corporation without the prior written consent of the City.

ARTICLE 23-ENTIRE AGREEMENT

This Agreement and accompanying documents contain the entire agreement between the parties with respect to the subject matter hereof and all prior or contemporaneous written or oral agreements with respect to the subject matter hereof are superseded hereby. The Agreement may be amended only by written instrument signed by both the City and OBG.

IN WITNESS WHEREOF, the City has caused this Agreement to be signed by its authorized representative, and OBG has caused this Agreement to be signed in its corporate name by its authorized representative as of the day and year first written above.

CITY OF SPRING HILL, TENNESSEE

By:_____
Rick Graham, Mayor

O'BRIEN & GERE, ENGINEERS, INC.

By:_____
George Rest, Senior Vice President

LEGAL FORM APPROVED:

_____
Patrick Carter, City Attorney

Exhibit A-1

January 30, 2018

Mr. Philip R. Stuckert, PE, Infrastructure Director
City of Spring Hill
199 Town Center Parkway
P.O. Box 789
Spring Hill, TN 37174

RE: Professional Engineering Services – Spring Hill WWTP Upgrade – Facilities Planning, Permit Reapplication Assistance, and Water Quality Modeling (1/29/18 rev.)

FILE: \City of Spring Hill.11796\ BD \

Dear **Mr. Stuckert,**

O'Brien & Gere Engineers, Inc., (OBG) submits this proposal in response to various water and wastewater planning discussions and recommendations, and, specifically, as follow-up to our 11/30/17 scope outline memo (and 1/29/18 update), 1/17/18 Wastewater Treatment Plant (WWTP) timeline memo, 12/4/17 and 1/18/18 meetings (City, TDEC), and your 1/22/18 request for proposal. OBG, with support from Dempsey Dilling & Associates (DDA) and LimnoTech, will provide professional engineering services to advance planning-level analyses to WWTP Facilities Planning stage for potential treatment upgrades, along with related NPDES Permit Reapplication (Regulatory Assistance) and Rutherford Creek Water Quality Modeling (WQM) review and development.

Figure 1 - Existing Spring Hill WWTP Site

It is proposed that the Facilities Plan (FP) consist of certain Clean Water SRF-Planning Recommended Outline and TDEC Design Criteria for Sewage Works engineering report elements, preparing the City to move forward with the Phase 1 upgrade project design and funding if it so elects. This proposed engineering report approach was recommended as part of the DDA/OBG Water and Sewer Capacity Study (Study) (November 2017 briefing) to address projected Immediate & Near-Term growth and wastewater capacity needs – both influent loadings and effluent discharge limitations – in parallel with the City's WWTP NPDES Permit reapplication process (current Permit's expiration date is September 30, 2018). Based on the 1/18/18 TDEC meeting discussion, it is anticipated that the current NPDES Permit would be renewed for 5-MGD utilizing current information, and a NPDES Permit Modification Request would follow completion of FP and WQM.

This project proposal is organized to consist of the following components:

- Objectives & Project Approach

- Scope of Services
- Project Schedule
- Fee Estimate

OBJECTIVES & PROJECT APPROACH

The objectives of this project are to:

- Provide regulatory assistance to the City regarding the SHWWTP NPDES Permit 2018 Reapplication process.
- Assess the potential limitations of the existing SHWWTP to accept and treat additional wastewater, both average and peak, developing a process basis-of-design and plant layout for: Phase 1 5.3 to 7.5-MGD (average daily flow (ADF)) ENR near-term (21-MGD peak), and future Phase 2 expansion to 8.9 to 10-MGD ADF (up to 28-MGD peak).
- Conduct a two-phase approach to Rutherford Creek water quality modeling, first assessing past and current environmental data and TDEC modeling, then developing a new WQM for existing and potential future plant ratings. Produce a WQM for TDEC and City use in future Permit renewals or modifications, submitting to TDEC for review and approval.
- Complete a reclaimed water / reuse survey.
- Develop facilities plan-level preliminary engineering, initial process modeling, and conceptual design and layout for the recommended solution, updating the implementation approach schedule and project cost estimate.
- Wastewater management and project implementation approaches will also be identified for the City's consideration as it advances its water and sewer plans.

Based on planning-level Study investigations, a preliminary WWTP Phase 1 Improvements scope was developed for CIP budgeting purposes. Preliminary Phase 1 Improvements include:

- Peak Hydraulic Improvements (Immediate, 21-MGD PHF Influent)
  - Influent PS new pumps, parallel force main, generator upgrade
  - Headworks third screen, peak bypass of grit removal
  - Consider converting old sludge storage tank to initial Offline Equalization (2-MG)
  - Coagulant Storage & Feed, Modifications to Distribution Boxes
  - New Sludge Storage facilities (2.5-MG)
- Average Day Flow Expansion (Near-Term, by 2022-2024, up to 7.5-MGD ADF Rating,)
  - Oxidation Ditches upgrade, Carbon Storage & Feed, Filters #5-6, UV #3, Piping
    - Sidestream treatment if needed (2018 NPDES)
    - Evaluate feasibility for additional reuse.

The City is proceeding with concrete rehabilitation of process tankage, in advance of a Phase 1 project, and may also adjust the elevation of the clarifier effluent junction box.

As part of Study, two major alternatives were initially identified: 1) 50-100% expansion of all existing unit processes which may require Public Works Facility relocation; or 2) Plug Flow retrofit of the ditches, 50-100% expansion of remaining unit processes. These longer-term solutions will be evaluated further in establishing Phase 1 Improvements. Additional alternatives will be identified, screened, and potentially evaluated further during FP.

Summarizing the activities related to this proposal's scope of services and assistance to the City, recommended 2017-8 activities include supplementing NPDES Permit reapplication with facilities planning, engineering, and water quality modeling – with certain activities completed before the current September 2018 expiration date. WWTP Facilities Planning & Engineering in 2018-9 would specifically address peak capacity needs, NPDES Permit renewal, and near-term growth – considering Phase 2 / Buildout needs in the Phase 1 project review and scoping. Rutherford Creek water quality modeling would review the stream's assimilative capacity for treated effluent (namely, BOD, Ammonia, Nutrients), given the projected immediate & near-term growth projections. It is anticipated that the City will submit the NPDES Permit reapplication package by March 2018, and assumed that amendments and updates would be furnished to TDEC before the NPDES Permit is renewed.

SCOPE OF SERVICES

Regulatory Assistance

Provide preliminary guidance (planning-level) regarding NPDES Permit impacts (expansion, upgrade), relevant TDEC regulatory activities, TN reclaimed water / reuse program, and future planning. As follow-up to the 1/18/18 pre-planning meeting with TDEC, request the TDEC reasonable potential analysis spreadsheet (offered by TDEC) and clarify the discussion with TDEC regarding the existing outfall and the environmental conditions and data that would be utilized for 2018 NPDES Permit renewal.

Provide assistance to the City in its NPDES Permit reapplication process. Assist the City (permittee) with completing the NPDES Permit reapplication forms, provide supplemental information from 2013 Permit information, 2012 Project records, and/or Study where updated. Information would include both effluent discharge and reuse historical information. Review the expanded influent / effluent expanded testing protocol. Review City expanded influent / effluent testing results for Winter, Spring, and (early) Summer 2018, where Winter results would be submitted with the initial reapplication package (by March 2018) and subsequent Spring and Summer would be supplements when available. The scope does not include influent / effluent sampling or analysis, permit fees, or related reapplication activities by the permittee (City). Refer to FP scope and RFIs regarding DMR data, updated data compilations and trending would be produced for use in the reapplication process.

WWTP Facilities Planning

In parallel with WQM, a FP would be prepared. Some of the FP analysis will be completed before the 2018 NPDES Permit renewal. The FP and WQM would be completed before a subsequent (future task) Permit Modification Request to address capacity flow tier(s) higher than 5-MGD rating.

1. As follow-up to capacity study evaluation, advance the data-gathering and understanding of the existing WWTP and its current and forecasted influent loadings – including average daily flows, seasonal averages, and peak instantaneous / hourly / daily flowrates; and any City-identified non-domestic loadings (planned or prospective).
    a. Review current NPDES Permit and Fact Sheet details further, discuss with City. Meet with TDEC and City representatives as part of coordinating permitting, facilities planning, and WQ modeling efforts. Review wastewater treatment, reclaimed water, and biosolids management requirements – current and near-term anticipated.

2. After screening options, review the up to three main alternatives, potentially identify sub-alternatives before or after the NPDES renewal process and associated phased WQ modeling. Canvass with City staff the available proven treatment technologies and regional installations for similar circumstances or needs.

    a. Consider short-term construction requirements and long-term operability / reliability as part of identifying alternatives.

3. Review floodplain, wetlands, land use, domestic potable well, and local tax maps; and buffering requirements. It is assumed that physical survey and property information update to supplement record drawing information is not needed for FP. No additional geotechnical investigation is proposed as part of facilities planning, would instead be recommended as an initial step in (future phase) final design.

4. Survey and update potential effluent reuse / reclaimed water demands within the immediate WWTP vicinity. Prepare a memo to identify current as well as potential immediate & near-term and buildout reuse demands, considering seasonality. Characterize in general the water quality and quantity needs of these current and potential points-of-use. After City review and input, submit the information to TDEC as a supplement to the NPDES Permit reapplication if requested.

Conduct a more detailed existing conditions assessment of the 5-MGD WWTP facilities, including Influent Pump Station, Treated Effluent Outfall, and Reclaimed Water System.

Prepare a facilities plan report that includes certain elements of an eventual Engineering Report required for TDEC approval before Final Design and Construction.

- Report will include executive summary, overview and background information, design criteria (codes, standards, guidelines) and assumptions. Reference and highlight applicable portions of the capacity study. Update and expand discussion of current and forecasted regulatory requirements.
    - It is assumed that there will be no further change in WW projections in order to advance the engineering evaluation and regulatory review.
    - Influent and effluent wastewater characteristics compiled and trended during the Study will be updated and expanded to include recent months (Fall 2017 – Winter 2017/8).
- Alternatives will be evaluated, offering process-by-process and overall integrated liquid and solids treatment conclusions and recommendations.
    - Based on capacity study assessment and knowledge of current TDEC regulatory activities, it is likely that either Phase 1 or Phase 2 effluent requirements for expanded ADF flows will require Enhanced Nutrient Removal (ENR) / limit of technology WW treatment (better than current WWTP technologies), possibly with additional reclaimed water use to meet current or adjusted wasteload allocations for the Rutherford Creek watershed.
- Complete preliminary treatment process modeling (utilizing Hydromantis GPS-X software, or equal) for each alternative (influent loading, effluent requirement, biosolids treatment level) with summary process flow diagrams and input / output information for treatment elements and effluent.
- Develop (update) hydraulic profile, providing supporting calculations. No stress testing or field demonstration is anticipated as part of facilities planning.
- Complete basic life-cycle cost analyses and process energy model outputs as part of the engineering evaluation.

- The City has requested that an overview of longer-term Biosolids Management options be included in the FP development. The WWTP currently landfills its sludge, following liquid sludge storage and dewatering. The landfill's remaining capacity may be less than the expected life of Phase 1 or Phase 2 WWTP facilities. There is a prospective 100-AC (approx..) site in the vicinity that may be suitable for Class B-stabilized land application. Further, there may be a need in the future to produce a Class A / "Exceptional Quality" (EQ) biosolids product. The technical evaluation will identify current Class B and Class A treatment technologies, assess the prospective land application site (planning-level review), consider current operations, and identify where sludge handling facilities may change as part of a Phase 1 project or a future phase to achieve Class B or A – producing a planning-level project cost estimate where not incorporated into the Phase 1 scope. No field testing or soil scientist evaluation of the prospective site is proposed to be part of this FP.
- Prepare an appendix of existing conditions (photo gallery).
- It is anticipated that two regional WWTP visits will occur as part of treatment technology review with City staff.
- Present mass balance and overall basis-of-design in text, figures, and tables. Present main treatment process equipment system information, rudimentary layouts, and control approaches. Review and update electrical one-line with respect to main power distribution and stand-by power needs.
- Summarize supporting trade work for main alternatives.
- Update and refine planning-level budgets to "10%-design" project cost estimates.
- Discuss recommended alternative / plan selection, project financing, and other planning elements. Draft the Phase 1 Improvements project implementation schedule. Recommendations will include procurement strategy with respect to major equipment and schedule acceleration, if needed. Preliminarily identify local, state, and federal permitting and approvals needed for project implementation.

It is anticipated that facilities planning will include one (1) kickoff meeting and five (5) progress workshops, as well as monthly status calls with City staff.

The report will include interim (draft) technical memos, as part of workshop facilities plan development for the particular areas of focus. Anticipated TMs:

- Overview
    - Existing
    - Design Loadings, Basis of Design
        - Preliminary process modeling, Unit sizing
    - Proposed / New
    - Implementation Approach & Schedule
    - FP SRF Outline Summaries
- Preliminary and Primary Treatment
    - Influent Pumping, Screening, Grit Removal, Flow Measurement, Sampling, Equalization
- Biological Treatment
    - Bioreactors

- Secondary Clarification, RAS / WAS Pumping

- Effluent Polishing & Reuse
  - Filtration / DN
  - Disinfection
  - Post Aeration
  - Reuse
  - Flow Measurement, Sampling

- Biosolids Management
  - Current and Potential Future Disposal Methods
    - Landfilling
    - Class B
    - Class A
  - Sludge Holding / Stabilization, Thickening, Dewatering
    - Phase 1 plan
    - Potential future or Phase 2 facilities
  - Liquid and Solids Treatment Chemical Storage & Feed Provisions

- Ancillary Facilities (Summaries), Supporting Systems (Chemical Feed, PCS / SCADA), & Recycle Streams Management
  - Structural & Architectural Systems
  - Mechanical (HVAC, Plumbing, Fire Protection) Systems
  - Electrical and I&C Systems

An initial building codes and design standards review (versions in effect at time of contracting) will occur for the recommended alternative as well as for each area of focus (TM list above). This review will include planning-level NFPA 820 (Standard for Fire Protection in Wastewater Treatment & Collection Facilities) analysis of the existing and recommended facilities.

Certain preliminary drawings will be developed, including: existing & proposed (recommended alternative, as a minimum) site plans, Phase 1 and preliminary Phase 2. Liquid and solids treatment process and schematic flow diagrams for major unit processes will be prepared. Overall, anticipate the following:

- Plant Civil Layout (Phases 1 & 2)
- Process Flow Diagrams (2 – Liquid, Solids)
- Phase 1 Detailed Plan Views (4)

A (10%-design) FP project cost estimate will be developed for the recommended alternative, organized by Unit Process or Area.

Preliminarily review detailed information in the TDEC Wastewater Discharge Checklist.

Conduct an official Pre-Planning Conference with TDEC (done, 1/18/18). Conduct an official Pre-Engineering Conference with TDEC after the completion of the draft Facilities Plan and initial findings of WQ modeling Phase 2 efforts (see below), as a means to collect TDEC review comments and questions. Discuss the potential and timeline for a Permit modification to address additional flow tier(s). Update the Phase 1 Improvements project implementation plan and schedule.

No environmental assessment or hazardous materials survey is anticipated. No public outreach / participation program or assistance with any City adoption / public hearing is proposed as part of facilities planning. It is anticipated that 2018 NPDES Permit renewal regulatory assistance will include attending and presenting at a public hearing. No user rate impacts analysis or financial management services are anticipated as part of facilities planning. Future funding application, Permit modification request assistance, or preliminary engineering / final design are not included in this FP scope.

Capital Improvement Plan (CIP) Assistance –after FP conclusions and recommendations are reviewed with City staff, updates to project descriptions, budgetary cost estimates (construction, project), and year-by-year cash-flow projections will be provided to City staff along with the final FP report.

On-call services specific to the Water & Sewer Capacity Study will be conducted under the Study task order(s).

Rutherford Creek Water Quality Modeling

Provide regulatory services related to water quality modeling to the City before, during, and after the NPDES Permit reapplication process. Notify TDEC of the City's intent to complete Phase 1 improvements to its WWTP. Request existing TDEC model and input / output data for review (done). Indicate a desire and willingness to evaluate the existing and develop a new water quality model meeting City and TDEC permitting needs (done), utilizing updated information and inputs. Manage subcontracted (LimnoTech) water quality modeling to support the 2018 NPDES Permit renewal (where needed) and subsequent (future task) NPDES Permit Modification Request, coordinating activities with the associated facilities planning.

Meet with TDEC and City representatives as part of submitting the reapplication package, and during the renewal process to review phased modeling efforts and associated City facilities plan developments. Coordinate closely regarding facilities planning interactions with TDEC.

The proposed scope includes two phases of work, with two options presented for the second phase of work that are dependent on the outcome of Phase 1 and the desired direction:

- Phase 1:
    - Review Available Model & Data, and Develop Modeling Recommendations
- Phase 2:
    - Option 1: Perform Modeling for Permit Renewal using Existing Model
    - Option 2: Develop Work Plan for Alternative Model, Collect Stream Data to Support, Develop and Apply the New Model

Each phase is described further in the attached information. The exact requirements for WQM will be identified through completing Phase 1 and, if a new model is desired, developing the Phase 2 work plan for City and TDEC review and approval. The location of the outfall discharge point for the 2018 Permit renewal and future Permit Modification Request will be clarified for modeling purposes. Option #2 involves an estimated range. For purposes of this proposal and initial authorization (refer to fee breakdown sheet for estimate), it is assumed that

a new model will be developed (Option #2, no longer utilize existing model for the future modification request) with limited stream data collection, preliminarily applying the new model for three flow tiers in order to forecast effluent limitations / levels-of-treatment – in preparation for a (future task) Permit Modification Request by the City. WQM budget allowances will be reviewed once the Phase 2 work plan is approved. Note that the Phase 2 work plan and approach may need to be revised based on Winter, Spring, and Summer expanded testing results, when made available, and the subsequent reasonable potential analysis that identifies potential parameters of concern.

Schedule and Budget

As the City of Spring Hill decides to move forward with one or another option for the Phase 2 work, the schedule and budget may need to be adjusted accordingly. The refined schedule and budget will be submitted for review and approval before commencing the Phase 2 work ("options" beyond the work plan). Depending on the amount of interaction needed with TDEC to resolve technical and permitting issues, the level of effort for the Phase 1 and Phase 2 work may vary and may need modification. The City has noted that it may elect to authorize up to $50,000 of any additional modeling effort, defined when TDEC reviews the proposed Phase 2 work plan (anticipated May-June 2018), during this current Fiscal Year to advance the Phase 2 according to the current schedule.

Requests For Information (RFIs)

RFIs include, where not already provided as part of the Study, the following: 1) complete information regarding the existing SHWWTP property, record drawings, and O&M manual(s); 2) current permits, last three years (36 months) of DMRs / MORs (electronic, supplement prior information with recent months), additional information regarding representative existing peak loading conditions, and immediate / near-term growth wastewater characteristics and potential reuse demand (where available); 3) remaining past engineering reports including basis of design, survey, property plat & rights-of-way, and geotechnical report; 4) further information about prospective growth in the vicinity as it becomes available; 5) property / tax map & GIS-based information regarding the watershed, sewershed, and WWTP location; 6) proposed Class B biosolids disposal site (100-AC property purchased by City) information.

PROJECT SCHEDULE

Based on discussions, the task order schedule is as follows:

Activity	Completion
Assumed Notice-To-Proceed	2/20/18
Kickoff Meeting, RFI material received	2/28/18
RA - City inputs to Permit Reapplication (draft, including 1st expanded testing results)	3/9/18
RA – Permit Reapplication Package, Submitted by City	3/30/18
WQM - Phase 1 Complete	4/21/18
WQM – Phase 2 Work Plan	5/11/18
FP – Reuse Survey Complete (for WWTP FP, and future use with WTP)	6/22/18
RA – Permit Reapplication Package Supplement (allowance)	6/22/18
FP – Biosolids Management Overview	7/20/18
FP - Draft Technical Memos	8/24/18

FP - Draft Drawings & Cost Estimate	9/14/18
RA - Permit Renewal Regulatory Assistance	10/5/18
WQM – Phase 2 Field Work Complete (assumed, weather-dependent)	10/5/18
WQM - Phase 2 Complete (assumed)	12/15/18
FP – Final (estimated)	2/23/19

FEE ESTIMATE

We propose to perform the work in accordance with the pending City Agreement, where as this proposal and its attachments serve as the Agreement Article 1's Exhibit A. The fee for services as set forth and described above shall be invoiced (monthly) on a fixed-fee, Lump Sum (LS) basis, as %-complete by major task, for Regulatory Assistance and Facilities Planning tasks, totaling $276,451. The Water Quality Modeling will be invoiced (monthly) on a Time & Materials basis, estimated as 144,650 (Option #2, lower end of range, $131,500 plus 10% markup). This proposal fee estimate totals **$421,101**, as detailed in the attached.

Note that the upper range for Option #2 modeling represents a potential increase of $99,000 ($90,000 plus 10%). If TDEC indicates with WQM Phase 2 work plan review that additional field or modeling services will be required, the City may elect to authorize up to $50,000 of this amount during the current Fiscal Year.

We very much appreciate the opportunity to provide further engineering services to the City. Should you have questions or concerns about the information in this proposal, please contact me at (301) 731-1130 or Bill.Meinert@obg.com. Thank you.

Very truly yours,
O'BRIEN & GERE ENGINEERS, INC.

William J. Meinert, PE
Vice President

Attachments
Fee Breakdown Sheet
Subconsultant Proposal – WQM (LimnoTech)

cc, w/att: OBG – George Rest, Thomas Dumm, file
DDA – Jerome Dempsey, Brad Dilling
City – Chuck Downham, Travis Massey

\City of Spring Hill.11796 \ BD \ SH WW FP WQM letter proposal final.docx

Exhibit A-2

City of Spring Hill, TN
Professional Engineering Services
Cost Proposal - Spring Hill WWTP Upgrade - Facilities Planning, Permit Reapplication Asst, Water Quality Modeling
O'Brien & Gere Engineers, Inc.

File No.: 11796 \ BD \
Prepared By: WJM
Reviewed By: GBR
Rev, Last Update: 3, 1/30/18

Wastewater Conveyance & Treatment - Facilities Planning & Engineering

	Technical Specialist, Officer 2	Program Director, Officer 1	Mng Egr, Mng Sci, Proj Mgr 2; Sr Tech Director	Mng Egr, Mng Sci, Proj Mgr 1; Tech Director	Mng Assoc, Proj Assoc, Tech Assoc; E / S / Arch 3	Sr Proj Engr, Sr Proj Dsg, Sr Proj Sci, Sr Sci, Sr Dsg, Sr Engr	Proj Egr, Proj Sci, Proj Dsgnr; Eng / Sci / Arch 2	Dsg Egr, Designer, Scientist; Eng Tech 3	Staff Egr, Staff Sci, Staff Dsg; E / S / A 1; Admin 3	Dsg Draft, Technician, Sr/D Sec/OA	Tech Drft, Reg/Of Sec, Proj Cont Adm
Hr Rate (2018)	$300	$227	$202	$185	$168	$157	$128	$119	$96	$82	$68

Project Management, Civil / Site, Process / Mechanical

Engineering Services	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Total
Add'l Info Gathering, Data Review		8					24			4	2	38
Regulatory Assistance		32					20				2	54
NPDES Permit Reappl (5-MGD) Asst		32					24				4	60
FP Alternatives Analysis		24				24	60	28		8		144
FP Process, Engineering		40		4		24	60			24		152
Reclaimed Water / Reuse Survey (Asst)		8		4			12			2	2	28
Biosolids Management Overview		32		2		16	60	60		16	12	198
FP Tech Memos (5)		24		16		16	100	80			20	256
Preliminary Drawings (8)		32	4	40	4	12	80	32	32	60		296
Cost Estimate, Implementation Apph		16	2	2	2	2	20					44
Draft Report (& Outline Sum), Final Rpt		24					24		8		20	76
Total Hours	0	272	6	68	6	94	484	200	40	114	62	1346
Labor	$0	$61,744	$1,212	$12,580	$1,008	$14,758	$61,952	$23,800	$3,840	$9,348	$4,216	$194,458
Avg Rate $144												

Notes: Estimate based on Hourly Billing Rates (2018), based on schedule - February 2018 through December 2018 (FP Final February 2019)

Direct Expenses		Markup	Unit	Unit Cost	Qty	Cost	Notes
							DDA - Teaming partner, local support, permit-related & FP assistance
Routine Directs - phone, fax, postage, mileage, photos, copies		2%	LS		$1,000	$1,020	LimnoTech - WQ Modeling, two phases, Phase 2 allowance
Other Direct Expenses - travel, reproduction, shipping		5%	LS		$8,250	$8,663	
Equipment	CAD, GIS		Hours	$15	154	$2,310	
	Field	5%	LS		$0	$0	
Technical Services	Others	10%	LS		$131,500	$144,650	
	Affiliates*	0%	LS		$70,000	$70,000	
	* incl. DDA						
Direct							$226,643

DDA Summary (in L.S.)	
RA, NPDES	$27,000
Reuse Survey	$10,000
FP Asst,Gen Consult.	$30,000
WQM Asst	$3,000
Total	$70,000

LimnoTech Sum (T&M)	
Phase 1	$26,500
Ph. 2 est.	$105,000
Total	$131,500

Total Fee - Task Proposal (LS) (Water Quality Modeling task (Phases 1 & 2) as T&M) **$421,101**

Exhibit A-3

LimnoTech
Water Environment | Scientists Engineers

1015 18th Street, NW
Suite 900
Washington, DC 20036
202.833.9140
www.limno.com

January 24, 2017

Mr. William J. Meinert, P.E.
Vice President
O'Brien & Gere
4201 Mitchellville Road, Suite 500
Bowie, MD 20716

Subject: Proposed Scope and Budget for Water Quality Modeling to Support NPDES Permit Application for City of Spring Hill, TN

Dear Bill:

As requested, this letter provides a summary of the proposed scope and budget for LimnoTech's role in the project referenced above. The proposed scope includes two phases of work, with several options presented for the second phase of work that are dependent on the outcome of Phase 1 and the desired direction that the City of Spring Hill and O'Brien and Gere would like to take:

- Phase 1:
  - Review Available Model & Data, and Develop Modeling Recommendations
- Phase 2, Option 1:
  - Perform Modeling for Permit Renewal using Existing Model
- Phase 2, Option 2:
  - Develop Work Plan for Alternative Model
  - Stream Data Collection to Support an Alternative Model
  - Develop and Apply an Alternative Model

A proposed scope of work and budget for each phase is provided following this letter. Please do not hesitate to contact me if you have any questions or concerns related to the scope of work or budget.

Sincerely,
LimnoTech

Anouk Savineau, P.E.
Senior Project Engineer

LimnoTech

Hans Holmberg, P.E.
Associate Vice President

Introduction

The City of Spring Hill, TN is in the process of finalizing a master plan for expansion of its sewage treatment plant (STP). The current capacity is 5 MGD, with a projected 10-year flow of 6.0 to 7.5 MGD and a full build-out flow of 8.9 MGD. The current NPDES permit for its existing STP will expire on October 1, 2018; hence, the renewal application will need to be submitted by April 1, 2018. It is anticipated that the renewed permit will reflect expanded capacity, and so it is important that effluent limits be developed consistent with the City's projected future needs. Currently, the City meets its limits but has concerns about CBOD5, Ammonia and Total Nitrogen at higher flows.

As discussed in the rationale for permit limits (NPDES Permit TN0075868), the State used a water quality model to determine a CBOD5 waste load allocation (WLA) that maintains a minimum dissolved oxygen concentration of 5.0 mg/L under 7Q10 flow conditions. The model also accounted for the oxygen demand exerted by the facility's ammonia discharge, although the concentration limits for ammonia appear to have been derived from in-stream toxicity criteria. It is expected that this model will be used to develop the WLA for the permit renewal, and it is therefore in the City's interest to obtain this model and be able to comment on its suitability. Refinements to the model may be to the City's advantage.

The City's NPDES permit also includes effluent limitations for nutrients that were not determined with the same modeling framework used for the CBOD5 WLA, but were instead derived by procedures consistent with the State's current nutrient reduction strategy. Evaluation of nutrient limits would require development of a more sophisticated water quality model, for example QUAL2K.

This document presents LimnoTech's proposed scope of work for use of a water quality model to assist in the development of effluent limits for the expanded STP. The proposal is divided into three sections, including:

- Technical Approach
- Schedule and Budget
- Project Staffing

Technical Approach

LimnoTech proposes a two-phased approach to evaluating effluent limits for the expanded STP.

The first phase would involve obtaining the existing Streeter-Phelps model from the Tennessee Department of Environmental Conservation (TDEC), compile and review supporting data, and develop recommendations for a modeling approach to help negotiate CBOD5 and Ammonia-N effluent limits that are protective of the beneficial uses of the receiving stream (Rutherford Creek and the more downstream Duck River), yet are not based on overly conservative assumptions. The first phase would also include an assessment of the nutrient limits based on the State recommended approach and a review of TDEC's anti-degradation policy as it pertains to water quality.

The second phase would consist of performing water quality modeling, which may vary in scope depending on the need for a new model and the collection of additional data to support the development of such a model.

Work will be conducted in two phases as presented below. Note that the phase 2 work is dependent on the outcome of Phase 1, so a few different options are presented at this time. The proposed phases are as follows:

Phase 1: Review Model & Data and Develop Modeling Recommendations

Phase 2:

- Option 1:
  - Perform Modeling for Permit Renewal using the Existing TDEC Model
- Option 2:
  - Develop Work Plan for an Alternative Model
  - Stream Data Collection to Support the Alternative Model
  - Develop and Apply the Alternative Model

Each phase is further described below.

Phase 1: Review Model & Data and Develop Modeling Recommendations

LimnoTech will obtain the Streeter-Phelps model used by TDEC to develop existing limits, along with available supporting data from Rutherford Creek. We will evaluate the appropriateness of the model parameters, in particular those affecting reaeration and sediment oxygen demand, and conduct trial model runs to determine the sensitivity of the model's dissolved oxygen predictions to STP discharge characteristics.

We will assess ammonia limits based on the EPA recommended criteria issued in 2013.

We will also conduct a more detailed review of the State's approach to developing the nutrient limits in the existing permit, in conjunction with instream data collected by the STP in accordance with their permit. We will also review TDEC's anti-degradation rules as it pertains to water quality and the proposed increases to the STP discharges.

LimnoTech will prepare a memorandum summarizing our review of the existing model and data, and outlining a recommended approach for modeling to support negotiation of permit limits. This may range from use of the existing model, which would be limited to CBOD5 and Ammonia-N limits, to development of a more sophisticated alternative model that would support development of nutrient limits. As the schedule for permit renewal does not provide time for development of an enhanced model, this option would potentially require reopening the renewed permit to accommodate results and findings with the enhanced model.

This phase includes project management and coordination activities. In addition to the preparation of monthly status reports, three meetings via conference call are planned for the first phase of this project as follows:

- Kick-off meeting with the City of Spring Hill, to review project objectives and approach.
- Meeting with the City of Spring Hill to present recommended modeling approach.
- Meeting with TDEC and the City of Spring Hill to present recommended modeling approach.

Phase 2, Option 1

Perform Modeling for Permit Renewal using Existing Model

Under this option, LimnoTech will apply the existing Streeter Phelps model as needed to support development of appropriate limits for CBOD5 and Ammonia-N for the permit renewal. We will provide documentation of the modeling evaluation in a format suitable for inclusion with the

permit renewal. This option includes project management and coordination activities, as well as up to 2 meetings.

Phase 2, Option 2

Develop Work Plan for an Alternative Model

If the outcome of Phase 1 is a recommendation for development of an enhanced water quality model (using, for example, the QUAL2K framework), LimnoTech will prepare a work plan for the model development, including data collection, and submit to O'Brien and Gere (OBG), the City of Spring Hill, and TDEC for review, comment and approval. This option includes project management and coordination activities.

Stream Data Collection to Support the Alternative Model

The scope for this option will be developed as needed based on the outcome of Phase 1 and Phase 2, Option 2. A placeholder budget is provided, based on previous sampling programs of similar scope. This option would include project management and coordination activities.

Develop and Apply the Alternative Model

Under this option, LimnoTech will develop, calibrate and apply the enhanced water quality model consistent with the work plan as approved by TDEC. The full scope for this phase will be developed based on the outcome of Phase 1 and Phase 2, Option 2. A placeholder budget is provided, based on previous efforts of similar scope. This option would include project management and coordination activities.

Schedule and Budget

The estimated level of effort for the Phase 1 and Phase 2 work is based on our past experiences. While Phase 1 work can be estimated with reasonable accuracy, the Phase 2 work is highly dependent on the outcome of Phase 1, and therefore only represents a best estimate at this point. If the City of Spring Hill decides to move forward with one or several options for the Phase 2 work, LimnoTech will refine the schedule and budget accordingly. The refined schedule and budget will be submitted to OBG and the City of Spring Hill for review and approval before commencing the Phase 2 work.

Depending on the amount of interaction needed with TDEC to resolve technical and permitting issues, the level of effort for the Phase 1 and Phase 2 work may vary and may need modification. LimnoTech will coordinate closely with OBG on all interactions with TDEC.

The proposed schedule and budget for this work are provided in the table below.

Phase	Option 1 - Use Existing Model			Option 2 - Develop Enhanced Model		
	Task	Budget	Weeks	Task	Budget	Weeks
Phase 1	Review Model & Data	$26,500	6	Review Model & Data	$26,500	6
Phase 2	Perform Modeling for Permit Renewal using Existing Model	$29,500	8	Develop Work Plan for Enhanced Model	$15,000	4
				Stream Data Collection	$40,000 – $80,000 (tbd)	tbd
				Develop and Apply Enhanced Model	$50,000 – $100,000 (tbd)	tbd
Total		**$56,000**	**14**		**$131,500 - $221,500 (tbd)**	**tbd**

Project Staffing

LimnoTech will provide three senior staff to conduct this project. Hans Holmberg will serve as LimnoTech's Project Officer, and ensure the quality and timeliness of all project deliverables. Anouk Savineau will serve as Project Manager, directing day-to-day project activities and communicating directly with the client as needed. Peter Klaver will serve as Senior Engineer responsible for all modeling activities. Junior staff will also be used to assist with the modeling activities. Short biographies are included below for Hans, Anouk, and Peter.

Hans Holmberg, P.E., is an Associate Vice President with LimnoTech. He has been with LimnoTech for over 21 years serving municipal clients across the country facing complex technical and regulatory challenges related to water quality and permitting issues. He works closely with his clients to develop innovative, efficient, and cost-effective solutions for compliance with Clean Water Act, Water Quality Standards, and National Pollutant Discharge Elimination System (NPDES) requirements. Mr. Holmberg focuses his efforts on client service, technical expertise, communication of clear, understandable, and transparent science and engineering, and a cooperative approach to regulatory negotiations.

Anouk Savineau, P.E., is a senior project engineer with 15 years of experience. Ms. Savineau provides technical support and project management direction to a variety of water quality and quantity modeling projects, including most recently for the Delaware County Regional Authority (PA), Spotsylvania County (VA), the DC Department of the Environment (DC), the City of Alexandria (VA), and DC Water (DC).

Peter Klaver, P.E. is a senior project engineer at LimnoTech's Ann Arbor location, with over 25 years of experience in a wide variety of pollution control issues. He has extensive experience in the NPDES permitting process, including the application of a variety of regulator-approved models for waste load allocations and other impacts, the preparation of permit applications, and negotiation of permit limits.

City of
SPRING HILL
TENNESSEE

February 22, 2012

Mr. George Rest
Senior Vice President
4201 Mitchellville Road, Suite 500
Bowie, MD 20716

Re: Professional Services Agreement for Services Related to the City of Spring Hill Wastewater Treatment Plant.

Dear Mr. Rest:

Please sign the executed agreement and return the original to our office. Thanks. If you have any questions, please do not hesitate to call or contact me via email. Please also accept this letter as Notice of Award and Notice to Proceed. Please provide me with a bar chart showing major work tasks and completion dates with milestones. This will help keep us on track to complete this project is a timely manner. Thanks.

Sincerely,

Philip Stuckert, P.E.
City of Spring Hill Infrastructure Director

199 Town Center Parkway
P. O. Box 789
Spring Hill, TN 37174

Phone 931.486.2252
Fax 931.486.0516
www.springhilltn.org