

2020-0184

INTRODUCED BY: MATTHEW JEWELL, PARISH PRESIDENT
(DEPARTMENT OF PUBLIC WORKS/WASTEWATER)

ORDINANCE NO. 20-7-8

An ordinance to approve and authorize the execution of a professional service multi-phase project agreement with Meyer Engineering, Ltd. for providing all necessary professional engineering services for the 2020 West Bank Sewer Master Plan, Project No. S200603.

WHEREAS, the landscape and development of the West Bank has changed considerable, and a current functioning model is critical in managing impacts on Parish infrastructure; and,

WHEREAS, the St. Charles Parish Council desires to perform a Sewer Master Plan for the area serviced by the West Bank Sewer Treatment Plant in Hahnville that will improve the services for that area of the Parish; and,

WHEREAS, the attached agreement between the St. Charles Parish and Meyer Engineering, Ltd., describes the details of the proposed services and compensation; and,

WHEREAS, of the complexity of the project, the task(s) will be implemented as follows:

Phase 1: Data Gathering and Evaluation

Task(s):

- Project Kickoff and Data Gap Collection
- Wastewater Flow Projections
- Identify Infiltration and Inflow Problem Areas
- Pump Station Force Main Modeling
- Prepare Technical Memorandum

Phase 2:

Tasks(s):

- Flow Monitoring Data Collection
- Hydraulic Model Development and Calibration
- Capacity Analysis
- Identify and Evaluate Improvement Alternatives
- Sanitary Sewer Design.

THE ST. CHARLES PARISH COUNCIL HEREBY ORDAINS:

SECTION I. That the Professional Services Agreement between St. Charles Parish and Meyer Engineering, Ltd. for services as required by the Department of Public Works/Wastewater is hereby approved and accepted.

SECTION II. That the Parish President is hereby authorized to execute said Professional Services Agreement on behalf of St. Charles Parish.

The foregoing ordinance having been submitted to a vote, the vote thereon was as follows:

YEAS: BENEDETTO, FONSECA, DARENSBOURG GORDON, CLULEE, GIBBS, DUFRENE, BELLOCK, FISHER, FISHER-PERRIER

NAYS: NONE

ABSENT: NONE

And the ordinance was declared adopted this 6th day of July, 2020, to become effective five (5) days after publication in the Official Journal.

CHAIRMAN: [Signature]

SECRETARY: [Signature]

DLVD/PARISH PRESIDENT: July 7, 2020

APPROVED: DISAPPROVED:

PARISH PRESIDENT: [Signature]

RETD/SECRETARY: July 8, 2020

AT: 12:47 pm RECD BY: [Signature]

ENGINEERING SERVICES AGREEMENT

THIS AGREEMENT made and effective as of the 14th day of July, 2020 by and between ST. CHARLES PARISH acting herein by and through its President, who is duly authorized to act on behalf of said Parish, hereinafter called the OWNER, and Meyer Engineers, Ltd. a corporation acting herein by and through its Contracting Officer, hereinafter called ENGINEER. Whereas the Owner desires to employ a professional consulting engineering firm to perform engineering services for the West Bank Sewer Master Plan (Hahnville Plant System) project as described in Ordinance No. 20-7-8 which is attached hereto and made a part hereof.

1.0 GENERAL TERMS

The Owner agrees to employ the Engineer and the Engineer agrees to perform professional services required for the project described above. Engineering will conform to the requirements of the Owner and to the standards of the agencies participating with the Owner in the Project. The Engineer will coordinate all work between the Owner and all participating agencies and regulating agencies, if needed. Written authorization to begin different phases of the project will be given to the Engineer by the Owner. The Owner may terminate the Contract by written notification and without cause per Section 10.0 during any phase of the project.

The Engineer shall at all times during this Agreement maintain a valid Louisiana Engineering License and any other applicable licenses necessary for performance of the Project.

All work shall be under the direction of the Owner, and all plans, specifications, etc. shall be submitted to the Owner and all approvals and administration of this contract shall be through the Owner.

2.0 PROJECT

2.1 The Owner hereby contracts with the ENGINEER to perform all necessary professional services in connection with the Project as specified in the attached proposal from Meyer Engineers, Ltd. and all other requirements in this Agreement.

2.2 In general, the Project consists of developing a Sewer Master Plan by developing and modeling the flow to the Hahnville Plant. This effort will be accomplished in the following Phases:

- Phase I – Planning/Data Gathering/Preliminary Evaluation
- Phase II – Infiltration & Inflow (I&I) Analysis and Hydraulic Model
- Phase III – Capital Improvement Program
- Phase IV – Master Plan (Report)

- 2.3 The Engineer agrees to comply with all Federal, State, and Local Laws and Ordinances applicable to the scope of services and work or in entering any other agreement with any another party to complete the work.

3.0 SERVICES OF ENGINEER

- 3.1 Engineer shall provide Owner professional engineering services in all phases of the Project to which this Agreement applies and as hereinafter provided to properly plan and execute the work on the project(s) assigned to the Engineer. These services may include but may not be limited to serving as Owner's professional engineering representative for the Project, providing professional engineering consultation and advice, and furnishing customary civil, surveying, geotechnical, structural, mechanical, electrical, instrumentation and control engineering services and construction engineering and inspection.
- 3.2 Services provided by the Engineer shall be performed in accordance with generally accepted professional engineering practice at the time and the place where the services are rendered.
- 3.3 Engineer shall obtain from Owner authorization to proceed in writing for each phase of the Project.
- 3.4 Engineer shall provide minutes of all meetings with St. Charles Parish regarding any phase of the Project.
- 3.5 Engineer shall provide basic services to complete the project, including all necessary services described herein or usually implied as a prerequisite for the performance of the services whether or not specifically mentioned in this agreement, including attendance by the Engineer at project conferences and public hearings.
- 3.6 Planning Phase
- 3.6.1 Conducting a Planning Meeting Workshop with the Owner.
- 3.6.2 Advising the Owner as to the necessity of providing or obtaining from others additional data or services. These additional services may include photogrammetry, reconnaissance surveys, property surveys, topographical surveys, geotechnical investigations and consultations, compilation of hydrological data, materials engineering, and environmental assessments and impact statements.
- 3.6.3 Identifying and analyzing requirements of governmental authorities having jurisdiction to approve the design of the Project, and participating in consultations with such authorities.
- 3.6.4 Preparing a comprehensive Planning Report presenting multiple solutions to the Owner with the Engineer's findings and recommendations. The Report will contain as a minimum:
- a. Discussion of project background and need.
 - b. Schematic layouts, sketches, or photographs.
 - c. Conceptual design criteria with appropriate exhibits to indicate clearly the considerations involved.

- d. Any special material specifications including major equipment specifications.
 - e. A preliminary cost estimate for each alternative.
 - f. Engineer's conceptual opinion of probable costs for the selected alternative.
 - g. Discussion as to what permits are needed, time to acquire approvals, and potential adjacent landowner authorizations/servitudes that need addressing.
 - h. Discussion of the type of additional services that will be needed.
- 3.6.5 Meeting with the Owner and presenting findings of the Planning Report.
- 3.6.6 The Planning Report and Engineer's documentation and opinion of costs, along with the following documents and files, shall be delivered to Owner within 30 calendar days, or as otherwise stated in the written authorization from Owner to Engineer to proceed with Planning Services.
- a. Two (2) copies of the report for review.
 - b. Once the report has been finalized, submit two (2) copies of the revised report plus one (1) electronic file copy in PDF format.

4.0 OWNERSHIP OF DOCUMENTS

- 4.1 Documents including but not limited to plans, specifications, maps, basic survey notes, sketches, charts, computations and all other data prepared or obtained under the terms of this authorization shall become the property of the Owner and shall be made available for Owner's inspection at any time during the Project and, shall be delivered to the Owner prior to termination or final completion of the Contract.
- 4.2 Engineer may retain a set of documents for its files.
- 4.3 Reuse of Documents. Any reuse of documents or materials without written authorization or adaptation by Engineer to the specific purpose intended will be at Owner's sole risk and without liability or legal exposure to Engineer or to Engineer's independent professional associates, subcontractors, and consultants.
- 4.4 No materials, to include but not limited to reports, maps or other documents produced as a result of this Contract, in whole or in part, shall be available to Engineer for copyright purposes. Any such materials produced as a result of this Contract that might be subject to copyright shall be the property of the Owner and all such rights shall belong to the Owner, and the Owner shall be sole and exclusive entity who may exercise such rights.

5.0 SUPPLEMENTARY SERVICES

The Engineer shall provide, when requested in writing by the Owner, supplementary services not included in the basic services.

The compensation to the Engineer for the supplemental services, when performed by the Engineer, shall be in the form of a lump sum, billable hours, or "not to exceed" hourly rate which is mutually agreeable to the Owner and the Engineer in writing.

Such supplementary services may include the following:

- A. Soil investigations
- B. Laboratory inspection of materials and equipment
- C. Right-of-Way, easement and property acquisition surveys, plats, maps and documents
- D. Any major revisions for which the Engineer is not responsible, that are authorized by the Owner after the completion and approval of either the preliminary or final plans and specifications
- E. Services concerning replacement of any work damaged by fire or other causes during construction
- F. Services made necessary by the default of the contractor in the performance of the construction contract
- G. Services as an expert witness in connection with court proceedings
- H. Traffic Engineering if necessary
- I. Topographic Survey
- J. Preparation of Environmental Assessment documents and/or Environmental Permits
- K. If all or part of the work is to be financed by a Federal or State Grant, the Engineer shall assist the Owner in the preparation of the Grant application and with the Grant Administration, unless otherwise specifically agreed upon previously herein.

6.0 DEFECTIVE WORK

During such visits and on the basis of such observations, Engineer may disapprove of or reject Contractor's work while it is in progress if Engineer believes that such work will not produce a completed Project that conforms generally to the Contract Documents or that it will prejudice the integrity of the design concept of the Project as reflected in the Contract Documents.

7.0 NOTICE TO PROCEED

The Owner shall notify the Engineer in writing to undertake the services stated in this Agreement, and the Engineer shall commence the services within ten (10) days after receipt of such notification. The work necessary for the completion of each individual project/work task shall be completed within a time period agreed upon (in writing) between the Owner and the Engineer, following the notice to proceed.

If the Owner desires to divide the Project into various parts, a Notice to Proceed shall be issued for each part, and the Owner and the Engineer shall mutually agree upon the period of time within which services for each part of the Project shall be performed.

The Engineer will be given time extensions for delays beyond their control or for those caused by tardy approvals of work in progress by various official agencies, but no additional compensation shall be allowed for such delays.

8.0 PAYMENTS

- 8.1 For performance of Basic Engineering, the Owner shall authorize and pay the Engineer a not-to-exceed fee, based on the hourly rates in the Proposal and actual time worked and charges incurred. For the various phases the Engineer shall be paid as follows:

Phase I – Planning/Data Gathering/Preliminary Evaluation	\$96,000.00
Phase II – Infiltration & Inflow (I&I) Analysis and Hydraulic Model	TBD*
Phase III – Capital Improvement Program	TBD
Phase IV – Master Plan (Report)	TBD

* Scope and cost to be negotiated between parties and authorized by mutual written amendment to the contract.

- 8.2 Payment for basic engineering services on projects that do not require construction services, such as feasibility studies or drainage studies, shall be made based upon Engineer's estimate of the proportion of the services actually completed at the time of billing and shall be made in partial payments at monthly intervals.
- 8.3 If the Project, or any portion thereof, is not completed for any reason, the final fee for basic engineering services shall be negotiated between Owner and Engineer.
- 8.4 If authorized in writing by Owner, for the performance of, or for obtaining from others Additional Services which are not considered normal or customary Basic Engineering, the Owner shall pay Engineer based on monthly invoices submitted by the Engineer, within sixty (60) days of receipt of Engineer's invoice.
- 8.5 For Additional Authorized Services provided by the Engineer such as, but not limited to, wetlands permitting, land and right-of-way acquisition, surveying, NPDES and LADEQ permit renewal or acquisition work, etc. Owner shall pay Engineer based on an agreed upon hourly rate(s) between the Owner and Engineer. Payment shall be not-to-exceed based on hourly rates and actual hours worked.
- 8.6 The following documentation shall be required for payment to Engineer and shall be attached to the monthly invoice.
- A copy of the Owner's written authorization to perform the service.
 - Timesheets for all hours invoiced.
 - Invoice copies, logs or other substantiation of non-salary expenses.
- 8.7 For Additional Authorized Services that Engineer acquires from subcontractors and/or subconsultants, Owner shall pay Engineer a fixed sum previously agreed upon by Owner and Engineer, such sum to be established in each case when the scope of the work involved has been determined and before any of the Additional Services are provided. The use of subcontractors and/or subconsultants shall be subject to the provisions set forth in this Agreement. The following documentation shall be required for payment to Engineer and shall be attached to the monthly invoice:

- a. A copy of the Owner's written consent for the subcontractor and/or subconsultant to perform the service stating the Owner's and Engineer's agreed upon fixed sum established for the service performed.
- b. Evidence that the subcontractor and/or subconsultant is insured as required by this Agreement.

8.8 For *Additional Engineering* described in Section 5, Owner shall pay Engineer for the fee negotiated at the time the work is assigned by the method stipulated in the contract amendment.

9.0 FUNDS

No work shall be authorized until funds are established for each individual task.

10.0 TERMINATION OR SUSPENSION

- 10.1 This Agreement may be terminated for any reason by either party upon thirty (30) days written notice.
- 10.2 The Engineer, upon receipt of such notice, shall immediately discontinue all services in connection with the performance of this Agreement and shall proceed to cancel promptly all existing orders and contracts insofar as such orders or contracts are chargeable to this Agreement.
- 10.3 The Engineer shall, as soon as practicable after receipt of notice of termination, submit a statement showing in detail the services performed and payments received under this Agreement to the date of termination.
- 10.4 The Owner shall then pay the Engineer promptly that portion of the prescribed fee to which both parties agree.
- 10.5 Engineer fully acknowledges that no payment will be made for any work performed or expenses incurred after receipt of the termination by either party unless mutually agreed upon in writing.
- 10.6 Failure to meet agreed delivery dates or authorized extensions are considered substantial failures and breach of this contractual agreement by Engineer.

11.0 INSURANCE

- 11.1 The Engineer shall secure and maintain at his expense such insurance that will protect him and the Owner, from claims under Workmen's Compensation Acts and from claims for bodily injury, death or property damage which may arise from performance of services under this Agreement. Insurance for bodily injury or death shall be in the unencumbered amount of \$1,000,000.00 for one person and not less than \$1,000,000.00 for all injuries and/or deaths resulting from any one occurrence. The insurance for property damage shall be in the unencumbered amount of \$1,000,000.00 for each accident and not less than \$1,000,000.00 aggregate.
- 11.2 The Engineer shall also secure and maintain at his expense professional liability insurance in the unencumbered sum of \$1,000,000.00.

- 11.3 All certificates of insurance SHALL BE FURNISHED TO THE OWNER and shall provide that insurance shall not be cancelled without ten (10) days prior written notice to the Owner. The Owner may examine the policies.
- 11.4 Engineer shall include all subcontractors and/or subconsultants as insured under its policies or shall furnish separate certificates for each. All coverages for subcontractors and/or subconsultants shall be subject to all the requirements stated herein.
- 11.5 St Charles Parish shall be named as an additional insured on general liability insurance policies.
- 11.6 For all purposes under Louisiana law, the principals of this Contract shall be recognized as the statutory employer of all contract employees as provided in LSA-R.S. 23:1061.

12.0 INDEMNIFICATION

Engineer shall indemnify and hold harmless the Owner, its employees, agents and representatives, against any and all claims, demands, suits or judgments for sums of money to any party for loss of life or injury or damages to person or property growing out of, resulting from or by any reason of any negligent act by the Engineer, its employees, agents, servants or representatives, while engaged upon or in connection with the services required or performed hereunder.

13.0 WARRANTY

- 13.1 Engineer warrants that it will perform its design services with the degree of skill and to the standard of care required of the engineering profession to meet all Federal, State and Local requirements.
- 13.2 If Engineering Services for project designed by Engineer does not meet those requirements noted herein above, then to the extent that this occurs as a direct result of Engineer's failure to meet the standard of care in its design services, Engineer will indemnify the Parish for Engineer's share of the costs incurred to bring Engineering Services for project to the limitations mandated.
- 13.3 The obligations expressed in Section 13 above in no way limit the Engineer's obligations expressed elsewhere in this Contract.

14.0 EXCLUSIVE JURISDICTION AND VENUE

For all claims arising out of or related to this agreement, ENGINEER hereby consents and yields to the exclusive jurisdiction and venue of the Twenty-Ninth Judicial District Court for the Parish of St. Charles, State of Louisiana, and expressly waives any (a) pleas of jurisdiction based upon Engineer's residence and (b) right of removal to Federal Court based upon diversity of citizenship.

15.0 OTHER

This Agreement constitutes the entire agreement between the parties. There are no understandings, agreements, or representations, oral or written, not specified withing this Agreement. This Agreement may not be modified, supplemented or amended in any manner, except by written agreement signed by both parties.

IN WITNESS WHEREOF, the parties to these presents have hereunto caused these presents to be executed the day, month and year first above mentioned.

WITNESSES:

Reidell Champagne

Billy Raymond

WITNESSES:

Jessamy Fisher

Krystal Bisset

ST. CHARLES PARISH

Matthew Jewell

By: Matthew Jewell
Parish President

7/7/2020
Date:

ENGINEER

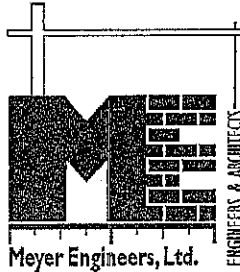
Richard Meyer

By: Richard Meyer
President

7-14-2020
Date:

Richard C. Meyer, P.E.
President
David H. Dupré, P.E.
Vice President

Mark A. Schutt, P.E.
Arrn M. Theriot, P.E.
Eric M. Colwart, P.E.
Kenneth J. Belou, P.E.
Raymond G. Hartley, P.E.
Robert W. Klare, P.E.
Donovan P. Duffy, P.E.
Randall G. Oustalet, P.E.
Christopher Rowan, P.E.



Charles E. Meyer, P.E.
Executive Vice President
Jitendra C. Shah, P.E.
Vice President

James J. Papia, AIA, NCARB, CSI
Adrianna G. Eschete, LEED, AP
June Y. Tran, AIA
Don P. Murras, Architect
Elena G. Anderson, NCIDQ, IIDA
Jennifer M. Wickham, AIA, NCARB
Raymond Brown, AIA

June 11, 2020

VIA EMAIL

Mr. Miles Bingham, Director
St. Charles Parish Public Works
100 River Oaks Drive
Destrehan, LA 70047
EMAIL: mbingham@stcharlesgov.net

Re: St. Charles West Bank Sewer Master Plan
A/E Project No. 20-2033

Dear Mr. Bingham:

Enclosed is Exhibit A to the Agreement between Owner and Engineer for Professional Services for the above referenced project.

Should you have any questions or concerns, please advise.

Sincerely,

Meyer Engineers, Ltd.

Donovan P. Duffy

Donovan P. Duffy, P.E.

DPD/tmt

Enclosures

cc: Mr. Michael Palamone, St. Charles Parish CAO
Mr. L.J. Brady, St. Charles Parish Director of Wastewater

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**EXHIBIT A to AGREEMENT
BETWEEN OWNER AND ENGINEER
FOR PROFESSIONAL ENGINEERING SERVICES**

FURTHER DESCRIPTION OF CONSULTING AND RELATED MATTERS

This is an exhibit attached to and made part of the Standard Form of Agreement dated _____, 20___, between St. Charles Parish ("OWNER") and Meyer Engineers, Ltd. (ENGINEER) for the provision of the **Westbank Sanitary Sewer Master Plan**, referred to as "the Project."

- 1.0 The Basic Services of ENGINEER as described in Item 1 "Basic Agreement" of said Agreement are amended and supplemented as follows:

Scope of Work

St. Charles Parish (SCP) has directed Engineer develop a master plan and capital improvements plan for their sanitary sewer system on the Westbank. The project limits can be found on Exhibit 1. The goals of this project are as follows:

- 1) To develop a master plan of the Westbank sanitary sewer system for which the basis and assumptions are clear and well-documented.
- 2) To identify and prioritize capital improvements to address capacity limitations through system upgrades or rehabilitation projects to address infiltration and inflow (I/I).
- 3) Identify and prioritize capital improvements required at the lift stations and treatment plants to handle the current, 5-year and 20-year expected flows. (Preliminary Results to be validated in future phases of contract.)

The following tasks have been developed to describe the scope of work for this project:

Phase 1: Data Gathering and Evaluation

Task 1- Kickoff Meeting and Data Collection

Task 1.1- Project Kick-off Meeting - Engineer will conduct a meeting with Parish staff including representatives from appropriate departments. The purpose of the workshop will be to clearly define the goals, objectives, and priorities to help focus the work effort to be accomplished in this project. The meeting will identify the primary objectives of the wastewater collection system master plan so that the methodology described under subsequent tasks may be tailored to achieve those objectives. During the meeting, Engineer will facilitate a discussion to identify criteria and available information that will be utilized through the future development of the hydraulic model and Sewer System Master Plan Report.

Task 1.2 - Review of Data - Engineer will review existing studies, pump station data, GIS data, overflow records, complaint logs and other available documentation. Engineer will spend up to 2 days interviewing Parish staff to obtain required information and answer questions on information received. Engineer will also perform multiple site visits to assess the condition of the existing lift stations (approximately 103).

Task 2 - Wastewater Flow Projections

Engineer will review available information (planning reports, water use records, etc.) on the basin service areas to understand the basis for available population/flow projections and determine if additional information is necessary for project accuracy. Engineer assumes that the information will be sufficient and that no additional data collection effort for flow/population projections will be necessary.

Future populations and base wastewater flows will be projected by using local land use and population projections in conjunction with unit flow factors. Engineer will apply unit flow factors developed from the flow monitoring data and industry averages with flow factor development for other area utilities. Wastewater flow projections will be developed for a 5-year planning period to capture known or anticipated growth areas and a 20-year planning period.

Task 3 Identify Infiltration and Inflow Problem Areas

Engineer will identify the areas of I&I using the existing lift station run times and overflow data provided by the Owner. Engineer's report shall include approximate dry and wet weather flows for each lift station in the study area. The report shall also make suggestions as to which areas should be prioritized and the necessary process to determine the I&I in those specific areas (level gauges, flow meters, smoke testing, etc.).

Task 4: Preliminary Modeling

Engineer will create a dynamic hydraulic model of the Parish's Westbank sanitary sewer system for all lift stations and gravity system for pipes greater than 8-inches in diameter using the Parish's existing GIS information. **The full model will be created in Phase 2 of the project; however, Engineer will coordinate model parameters and setup with Owner in Phase 1.** It is assumed that the GIS data provided by Owner will include adequate pipe information, manhole invert elevations, and manhole rim elevations for the gravity sewer infrastructure to be included in the model. All pump stations will be included in the model. Available information regarding these modeled stations, including pump curves, hydraulic capacity information, wet well volumes or drawings, pump on/off settings, and force main information, will be provided by the Parish for use in the model. It is assumed that the information provided will be adequate to describe the stations' operation. This model will serve as the basis for future project phases and capital improvement decisions.

If additional pump station data (excluding data collected in conjunction with the flow monitoring task) or surveying data to describe the sewer system infrastructure is required to meet project objectives, these needs will be discussed with the Parish. These services are not included in this initial scope of work.

The model will be created using software agreed upon by Engineer and the Owner. Model files will be provided to Owner, but software license will not be provided to the Parish as part of this initial scope of work.

Engineer will provide a list of information required from Owner and proposed model assumptions in the phase 1 report.

Task 5 Prepare Technical Memorandum

Engineer will prepare a draft technical memorandum that will present the results of the study and the recommended path forward. The report will serve as a reference document that the Parish can use as a guide to focus future sewer collection system improvements. Comments received from the Parish on the draft memorandum will be incorporated into a final memorandum, which will be electronically submitted in pdf format. In addition to a CD of the report, two (2) hard copies of the draft and final report will be given to the Parish.

2.0 The Responsibilities of OWNER as described in Section _ of said Agreement are amended and supplemented as follows:

The Responsibilities of OWNER are as follows:

OWNER will make available any information required to complete this project.

3.0 The Time for Rendering Services as described in _ of said Agreement are amended and supplemented as follows:

The Time for Rendering Services shall be four (4) months from the notice to proceed.

4.0 Compensation to ENGINEER

Partial payments are to be made monthly in proportion to the percentage of work completed.

Total lump sum payments are not to exceed the fee amounts in the following table.

Task	Lump Sum Fee
Task 1 - Project Kickoff and Data Collection	\$22,000
Task 2 - Wastewater Flow Projections	\$15,000
Task 3 - Identify Infiltration and Inflow Problem Areas	\$35,000
Task 4 - Pump Station Force Main Modeling	\$14,000
Task 5 - Prepare Technical Memorandum	\$10,000
Lump Sum Fee Total	\$96,000

Tasks Not Included in Phase 1 (Fees and final scope to be determined at a later date):**PHASE 2:****Task 2.1 - Flow Monitoring Data Collection –**

Engineer will develop a flow monitoring plan to collect pertinent flow and rainfall data for the Parish's Westbank service area. Engineer will make recommendations regarding flow monitor locations, pump station monitoring locations, rain gauge locations, duration of monitoring, and criteria for completion of the monitoring study including suggestions regarding minimum number of rainfall events required for wet weather flow analysis.

This scope of work will include an allowance for a flow-monitoring program based on the estimated cost for mobilization and planning of temporary flow monitors, pump station monitors, and rain gages installed for 60 days. Should the flow monitoring require a time extension due to lack of rainfall, additional weeks may be added to the contract at an additional cost.

Engineer intends to subcontract the field flow monitoring. The temporary flow monitoring equipment will be capable of measuring the depth and velocity of wastewater flows at synchronized time intervals of 5 minutes. Pressure sensors will be installed with the capability of measuring depth of surcharging at flow monitoring locations. Temporary depth monitors will be capable of measuring depth of flow at 5-minute time intervals. Temporary pump station monitors will be installed at select stations to provide a continuous record of pump starts and stops during the monitoring period. Pump drawdown tests will be conducted at these stations in order to calibrate the pump station monitor and translate pump run times into estimated flow rates to the nearest 1 gallon per minute. Up to eight (8) additional drawdown tests will be conducted at unmonitored stations to support the development of the hydraulic model. The rain gage equipment shall be capable of measuring rainfall depth in increments of 0.01 inches at preset synchronized time intervals of 5 minutes.

Engineer will review the raw data from all temporary meters at the start date of the flow monitoring period to ensure that the flow monitor site hydraulics are conducive to collection of quality data and that the equipment is functioning properly. During the flow monitoring period, Engineer will also review data bi-weekly thereafter to monitor any potential change in conditions.

Task 2.2: Hydraulic Model Development and Calibration

Engineer will create a dynamic hydraulic model of the Parish's Westbank sanitary sewer system for pipes greater than 8-inches in diameter using the Parish's existing GIS information. It is assumed that the GIS data includes adequate pipe information, manhole invert elevations, and manhole rim elevations for the gravity sewer infrastructure to be included in the model. Critical pump stations will be included in the model; these stations will be selected in conjunction with the Parish. Available information regarding these modeled stations, including pump curves, hydraulic capacity information, wet well volumes or drawings, pump on/off settings, and force main information, will be provided by the Parish for use in the model. It is assumed that the information provided will be adequate to describe the stations' operation.

Engineer will breakdown wastewater flow meter data (collected in Task 6) into base flow, groundwater infiltration, and rainfall dependent infiltration and inflow (RDI/I) components for up to 3 storm events observed during the monitoring period. This decomposition will reveal the relative RDI/I contributions of various portions of the service area. Engineer will then develop a hydrologic model using a unit hydrograph approach (RTK approach). RDI/I hydrographs will be developed that are calibrated to actual flow monitoring data and used to project the system response from design storm events.

Existing dry weather wastewater flows generated from the observed flow monitoring data will be input into the model at a "load point" based on sewershed delineations. This task will include calibrating the hydraulic model to both dry weather and wet weather existing flows. The model will be calibrated to a minimum of one storm event from the flow monitoring period and verified using 1-2 other storm events, depending on the number of events captured during the flow monitoring period.

Task 2.3: Capacity Analysis

Engineer will perform a rainfall-frequency analysis of historical rainfall records to determine the appropriate rainfall intensity, duration, and distribution for planning conditions. The unit hydrograph parameters determined in Task 7 will be applied to up to two design storm events (e.g. 2-year and 5-year storm events) and the resulting hydrographs input at each load point on the hydraulic model for the wet weather analysis.

For each model scenario, the calibrated hydraulic model from Task 7 will be used to determine available sewer capacity and potential areas needing additional capacity. Model scenarios will include existing and future dry and wet weather flows. The sewer capacity analysis will result in maps illustrating the percent of full pipe capacity that is used under existing and future conditions. Engineer will also analyze modeled lift stations and force mains to understand capacity limitations with these facilities under the design storm conditions. Maps illustrating the capacity analysis will guide development of the sewer system improvement alternatives that will be evaluated under future project tasks. The sewer capacity analysis will also identify hydraulic restrictions in the system that may lead to capacity problems under wet-weather or future flow conditions.

Engineer will meet with the Parish to discuss the results of the capacity analysis and discuss improvement alternatives.

Task 2.4: Identify and Evaluate Improvement Alternatives

The hydraulic model will be used to evaluate planning level improvement alternatives needed to meet existing and future sewer requirements. The improvements will focus on addressing sewer system capacity concerns identified in Phase 1. Improvements may consist of increased system capacity (relief sewers and/or pump stations), I/I reduction through sewer rehabilitation, flow equalization storage, or various combinations of these improvements. Maps illustrating the resulting percent of full pipe capacity and level of surcharging from the various improvement alternatives will be prepared. Planning level conceptual cost estimates will be developed as a means of comparing viable alternatives under consideration.

Engineer will identify potential implementation problems or other non-cost related factors for improvement alternatives, such as permitting, constructability, operational flexibility, etc. A meeting will be held with Parish staff to review the results of the alternatives analysis. With Parish staff member input, Engineer will select and recommend appropriate improvement alternatives to meet overall planning objectives.

Planning level recommendations for sewer system improvements will include preliminary routing, pipe lengths, and diameters of gravity sewer alternatives, capacities of pump station alternatives, and length of sewers to be rehabilitated.

Task 2.5: Sanitary Sewer Design

Engineer will provide final design of recommended improvements on an as-needed basis.