

City of Pflugerville
Wastewater Treatment Plant Engineering
Services

SCOPE

I. Project Management

- A. Attend project review meetings.
- B. Prepare monthly invoices.
- C. Provide monthly project status reports.
- D. Provide project tracking data.
- E. Set up and maintain project files.
- F. Coordinate with project team or authorized representatives as needed.
- G. Administrative and coordinate with subcontractors.

II. Regulatory and State Agency Coordination

- A. Review available data and consult with the owner to clarify and define the owner's requirements for the project.
- B. Attend meetings with the Texas Commission on Environmental Quality Texas (TCEQ), Owner, City Operators, and other interested parties regarding the Project.
- C. Conduct file research at TCEQ and obtain requisite documentation to support proposed efforts.
- D. Coordinate with the City to adequately outline the proposed work.
- E. Prepare and submit formal notification to the executive director of the TCEQ of proposed wastewater system improvements.
- F. Prepare and submit notification to TCEQ when construction of a project is complete.
- G. Prepare and submit discharge and disposal permits.
- H. Review and negotiate with TCEQ on contested case permits.
- I. Prepare and submit Chapter 210 Use of Reclaimed Water Authorization to TCEQ.
- J. Prepare application forms and submit to the Texas Water Development Board (TWDB) for funding assistance.

III. Discharge Permitting

- A. Assist the City in securing a Texas Pollutant Discharge Elimination System (TPDES) permit for the planned discharge flow.
- B. Conduct a discharge location evaluation that will involve coordinating with TCEQ on the analysis of the discharge using water quality models to confirm the receiving stream has the capacity to accept the proposed planned discharge volume and confirming the list of potential landowners affected by the project.
- C. Review the approved water quality model to determine if it accurately reflects the conditions of the receiving creek for the proposed discharge and if the water quality standard for dissolved oxygen assumed for the creek is appropriate. If it is determined that the TCEQ model of the assumed water quality standard is not appropriate, Freese and Nichols (FNI) can design a study to obtain data to refine the model to reflect conditions for the proposed discharge or to determine the appropriate water quality standard for the creek. If the results of the review indicate that the TCEQ model is appropriate, proposed discharge flows and concentration limits will be applied to the model to determine discharge conditions necessary to maintain water quality standards for the creek.
- D. Confirm the landowners affected by the proposed project and identify any that may submit objections to TCEQ regarding a permit or permit amendment. Affected landowners are those adjacent to the treatment plant property and the landowners one mile downstream of proposed

- discharge location(s).
- E. Obtain landowner information from County Appraisal District.
- F. Notify potential landowners downstream of the proposed discharge to request access to make observation of the stream characteristics document concerns to the proposed discharge that are expressed by the affected landowners.
- G. Identify the need for publishing the public notices in an alternative language newspaper and coordinate the publications in the required newspapers at the appropriate times. Publications will be required after administrative review and technical review by the TCEQ.
- H. Prepare documents that present the proposed conceptual design to treat the proposed flow, site plans, treatment process description, process flow schematics, number and dimensions of treatment units, design calculations, solids management plans, affected landowner s information and plant boundaries.
- I. Prepare and complete appropriate permit application founs and include required attachments to the application.
- J. Assist the City in preparing a response to any administrative review comments. Once the TCEQ is satisfied that all of the required information has been included, the TCEQ will declare the permit application to be administratively complete.
- K. Provide support during the TCEQ technical review and processing of permit application. Support may include telephone conversations with TCEQ staff during the review process to answer questions regarding the application. When all technical reviews are completed, TCEQ will prepare an initial draft permit and provide a copy to the City for review.
- L. Review the draft permit and, if necessary, assist the City in preparing a written response to the TCEQ.
- M. Communicate with the TCEQ and City staff through the permitting process to discuss the status of the agency's review and, as necessary, to develop strategies for negotiating with TCEQ to obtain appropriate permit provisions in the draft permit.
- N. Other permitting services may include:
 - Field reconnaissance by FNI to collect data or information.
 - Meetings with the required river authority, or with the TCEQ or other regulatory authorities (e.g., the EPA) to discuss the permit.
 - *Meetings* or telephone calls with potential or actual protestants, or the development of public information or strategies to aid in avoiding protests.
 - Services required to respond to a permit protest or a contested case hearing.
 - Laboratory testing for permit applications.

IV. Conceptual Wastewater Treatment Planning Services

- A. Review relevant studies including Wastewater Master Plan, Reclaimed Water Master Plan, regional plans and in-house City generated information.
- B. Review and analyze last 5 years of wastewater treatment operating data.
- C. Develop wastewater flow projections and treatment plant expansion program through the year 2070.
- D. Compare wastewater flow and expansion projections to previous projections.
- E. Conduct a Condition/Criticality Assessment of the existing wastewater treatment plant.
- F. Develop a risk matrix for the existing facility and prioritize needed renovations.
- G. Develop a conceptual site plan for the wastewater treatment plant expansions through the year 2070.
- H. Develop a permitting strategy through the year 2070 considering potential future regulations and flow requirements.
- I. Review record drawings and specifications of the existing wastewater treatment plant.
- J. Develop three process treatment scenarios for plant expansions.
- K. Develop conceptual budgetary costs for each treatment scenario.
- L. Coordinate a workshop with the City to assess the various options identified in each treatment scenario.

- M. Prepare a Conceptual Wastewater Treatment Planning Report with recommendations, costing information and implementation schedule.

V. Regulatory Compliance Assistance

- A. Perform regulatory compliance assistance including:
 - 1. TPDES permit renewals
 - 2. TPDES permit compliance coordination, studies and meetings with TCEQ
 - 3. Stormwater permit renewals for wastewater treatment plant
 - 4. Risk Management Plan updates
 - 5. Wastewater system compliance coordination, studies and meetings with TCEQ
 - 6. Vulnerability assessment of wastewater treatment plant
 - 7. Toxicity reduction evaluations
 - 8. Biomonitoring assessments
 - 9. Water quality assessments
 - 10. Infiltration/Inflow evaluations
 - 11. Industrial Pretreatment programs
 - 12. Air Quality permitting
 - 13. Composting programs
 - 14. Solid waste management
 - 15. Reclaimed water use programs
- B. Perform wastewater operational assistance including:
 - 1. Trouble shooting wastewater system operational issues
 - 2. Documentation of corrective actions for plant compliance
 - 3. Coordination and meetings with TCEQ for compliance issues
 - 4. Preparing and updating wastewater operation and maintenance manuals
 - 5. Operator training

VI. Special Studies

- A. Perform Special Studies related to the wastewater system development including but not limited to the following:
 - 1. Site study for new wastewater treatment plant location
 - 2. Flood plain delineation and modeling
 - 3. Value engineering
 - 4. Odor control modeling and mitigation
 - 5. Industrial Pretreatment program technical based local limited development and re-evaluations
 - 6. Stream standard revisions
 - 7. Total dissolved solids control assessment
 - 8. Wastewater industrial surcharge
 - 9. Wastewater rate study
 - 10. Energy study
 - 11. Operational cost analysis
 - 12. Comprehensive regulatory compliance evaluation
 - 13. Staffing requirements analysis
 - 14. Wastewater characterization analysis
 - 15. Optimization and efficiency analysis
 - 16. Corrosion control analysis
 - 17. Wetlands delineation
 - 18. Request for variance to the Texas Water Quality Standards
 - 19. Request for less frequent measurement schedule for TPDES permit parameters including bacteria (30 TAC 319.9)
 - 20. Buffer zone assessments

21. Re-Rating (plant capacity increase) of existing treatment plant, including:
 - Development of TCEQ protocol or documentation for re-rating.
 - Full-scale pilot testing of maximum Hydraulic Loading Rates (HLR), maximum Organic Loading Rate (OLR) and unit Hydraulic Detention Time (HDT) performance of selected process units.
 - Preparation of exception request to TCEQ for increase in plant rated capacity.
 - Meetings with TCEQ.
 - Response to TCEQ reviews of exception request for re-rating and plant capacity increase to obtain TCEQ approvals.
 - Updating plant Operations and Maintenance Manual to incorporate TCEQ approved re-rated plant unit capacities.

VII. Develop Capital Improvement Plan

A. Develop Capital Improvement Plan

1. Develop CIP list of projects to address issues identified at the wastewater treatment plant from wastewater master planning efforts including, but not limited to future wastewater treatment, pumping, transmission and storage.
2. Work with the City to prioritize the CIP list. Develop a plan that summarizes the anticipated priority and schedule for future improvements. The plan will include a phased and prioritized schedule for the system improvement sbased on capacity to meet future growth requirements, the improvement's effectiveness at satisfying secondary goals, and the need for the improvement to serve future customers.
3. Develop engineer's opinion of probable construction cost estimates. FNI will generate cost estimates for each project identified. Estimates will utilize bid unit prices for treatment equipment, piping, pumping equipment, and storage tanks; and/or include equipment quotes from suppliers.
4. Prepare a report with a narrative discussion of system assessment results, cost estimates of improvements, priorities and phasing schedule for improvements, exhibits showing location of improvements, and exhibits supporting the findings. The plan will also indicate the requirements for each project and the factors that might be used in a decision to initiate the project.

VIII. Preliminary Design Services

A. Perform topographic and control surveying

1. Control surveys shall include the establishment of horizontal and vertical control points. Horizontal control shall be on the Texas State Grid Coordinate System carried to second-order accuracy.
2. All topographic features will be tied to the control survey, including, but not limited to, the following:
 - Locations of property and easement irons to the extent necessary to overlay and verify legal descriptions of property and easement lines.
 - Horizontal locations of any overhead and underground utilities.
 - Locations, sizes, and types of trees over 6" in diameter.
 - Locations of other physical features that may affect site planning and/or future construction such as access driveways, fences, buildings, sheds, creek banks, rock outcroppings, ponds, etc.
 - Sufficient ground elevation data to determine the approximate 100-year floodplain location on the plant property.
 - Sufficient ground elevation data to establish one—foot contour s in the area identified area for a project.
- B. Provide Subsurface Utility Engineering. The horizontal and vertical locations of subsurface utilities will be determined to prevent conflicts during construction.

- C. Determine the 100-year floodplain across the site utilizing current FEMA flood plain maps.
- D. Review existing geotechnical report(s) conducted on behalf of the City. FNI will make recommendations for obtaining additional geotechnical information if needed based on the facilities to be constructed.
- E. Make preliminary structural evaluations using existing or preliminary geotechnical investigation results. This evaluation shall include preliminary foundation requirements as needed for development of cost opinions for structures.
- F. Schedule and attend equipment tours of existing facilities with City operations staff. These equipment tours will be scheduled based on operator input on equipment they want to evaluate and the tour locations. FNI will coordinate the tours to assure that City staff will have the opportunity to meet with other operators regarding the operation and maintenance of the equipment.
- G. Review and/or develop wastewater projections. The demands will be projected by month and establish when plant capacity will be reached. The projections will be used to evaluate the need to construct additional plant.
- H. Develop process flow schematics and hydraulic profile for the wastewater treatment plant.
- I. Review existing reports or coordinate environmental evaluations required for the site related to site assessment, Section 404 permitting, endangered species, and archeology.
- J. Review or coordinate with subconsultants to determine the impacts and regulatory permitting requirements as a result of a proposed project. A pedestrian investigation may be required to complete a jurisdictional determination for the presence and possible impact to waters of the U.S. regulated under Section 404 of the Clean Water Act. The purpose of the jurisdictional determination is to identify waters of the U.S. as outlined in the U.S. Army Corps of Engineers' (USACE) Regulatory Program Regulations Section 33 C1'R 328.2 that may be impacted by the project.
- K. Review or coordinate with subconsultant providing a letter report of an assessment for any potential threatened or endangered species as listed by the U.S. Fish and Wildlife Service and the Texas Parks and Wildlife Department.
- L. Review or coordinate with subconsultant performing archeological investigation in accordance with Texas Historical Commission requirements.
- M. Perform field reconnaissance to collect data or information not otherwise provided by the City.
- N. Provide coordination with other regulatory agencies or private utilities.
- O. Perform water hammer and surge analysis for pressurized pipelines.
- P. Develop conceptual layout and design of the project.
- Q. Prepare preliminary plans and a preliminary Engineer's Opinion of Probable Construction Cost.

IX. Design Services

- A. Conduct project kickoff meeting with the City for critical aspects of the project.
- B. Provide monthly project status updates.
- C. Advise the City of special testing or investigations which in the opinion of the Engineer may be required for proper execution of the project.
- D. Update the engineer's opinion of most probably cost of construction and advise the City of any changes to this cost through the design process.
- E. Perform field surveys to collect information, which in the opinion of the Engineer, is required in the design of the project.
- F. Prepare specifications and contract drawings, foil construction authorized by the City and submit to the applicable local and state agencies for approval.
- G. Furnish the City all necessary copies of review sets and final approved plans, specifications, notices to bidders, and proposals.
- H. Design services may include but not be limited to the following:
 - 1. Wastewater treatment plant design, expansion, and rehabilitation
 - 2. Chemical treatment including: chlorine and ultra-violet (UV) disinfection, dechlorination and polymer feed systems

3. Preliminary Treatment units
4. Biological Treatment units
5. Solids processing units
6. Hydraulic profiles
7. Pumping stations
8. Site design, grading and drainage
9. Ventilation and odor control
10. Backup power generation
11. Sludge dewatering and disposal facilities
12. Reclaimed water facilities
13. Outfall and discharge piping

X. Bidding Services

- A. Assist the City in advertising for and obtaining proposals or negotiating proposals for the prime contract for construction materials, equipment and services to be performed by a contractor for a project.
- B. Maintain a record of prospective bidders to whom Contract documents have been issued, attend pre-bid conference and receive and process checks for Contract Documents.
- C. Issue addenda as appropriate to interpret, clarify or expand the Contract Documents.
- D. Consult with the City to determine the acceptability of substitute materials and equipment proposed by potential contractor(s) when substitution prior to the award of contracts is allowed by the Contract Documents.
- E. Attend and conduct a bid opening and prepare bid tabulation sheets.
- F. Evaluate bids or proposals; prepare bid tabulation sheets and letter recommending award of contract to the lowest and most qualified bidder.
- G. Assist the City in assembling and awarding contracts for construction materials, equipment and services.

XI. Construction Administration

- A. Consult with and advise City through the duration of Construction.
- B. Make periodic on-site visits to observe the progress and quality of the executed work and to determine in general if the work is proceeding in accordance with the Contract Documents. In performing this service, the Engineer will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the work or material; he will not be responsible for the techniques and sequences of construction or the safety precautions incident thereto, and he will not be responsible or liable in any degree for the contractors' failure to perform the construction work in accordance with the Contract Documents. During visits to the construction site, and on the basis of the Engineer's on-site observations as an experienced and qualified design professional, he will keep the City informed of the extent of the progress of the work, and advise the City of material and substantial defects and deficiencies in the work of contractors which are discovered by the Engineer or otherwise brought to the Engineer's attention in the course of construction, and may, on behalf of the City, exercise whatever rights the City may have to disapprove work and materials as failing to conform to the Contract Documents.
- C. Make recommendations to City concerning the disapproval or rejection of Contractors' 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. Engineer shall have access to the Work at all times wherever it is in preparation or progress.
- D. Consult and advise with the City; issue all instructions to the contractor requested by the City; and prepare routine change orders as required.
- E. Evaluate and determine the acceptability of substitute materials and equipment proposed by

Contractor.

- F. Make recommendations to the City regarding the advisability of requiring special inspections or testing of the Work and have the City, for the purposes of this paragraph, receive and review all certificates of inspections, testing and approvals required by laws, rules, regulations, ordinances, codes, orders or the Contract Documents to determine generally that their content complies with the requirements of, and the results certified indicate compliance with, the Contract Documents.
- G. Act as initial interpreter of the requirements of the Contract Documents, judge the acceptability of the Work and make decisions on all claims of the City and Contractor relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the execution and progress of the Work. Engineer shall not be liable for the results of any such interpretations or decisions rendered in good faith.
- H. Review samples, catalog data, schedules, shop drawings, laboratory, shop and mill tests of materials and equipment and other data which the contractor is required to submit, only for conformance with the design concept of the Project and compliance with the information given by the Contract Documents; and assemble written guarantees which are required by the Contract Documents.
- I. Determine the amount owing to Contractor based on Engineer's observations at the site and the data comprising the Application for Payment, and recommend in writing payments to Contractor in such amounts. Such recommendations of payment will constitute a representation to the City that the Work has progressed to the point indicated and that, to the best of Engineer's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections of others, to minor deviations from the Contract Documents correctable prior to completion and to specific qualifications expressed by Engineer. The issuance of a recommendation will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a recommendation for payment will not be a representation that the Engineer has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences or procedures; (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the City to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Price.
- J. Receive and review maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection and tests and approvals of equipment, which are to be provided by Contractor in accordance with the Contract Documents. Determine that their content complies with the requirements of the Contract Documents and transmit them to the City with written comments.
- K. Conduct, in company with the City, a preliminary and a final inspection of the Project for assessing conformance with the design concept and compliance with the Contract Documents, determining the substantial completion date for the Project, and recommending final payment to the contractor in writing.
- L. Revise contract drawings, with the assistance of the City's representative, to provide record drawings of the completed Project. Furnish full size paper drawings, and PDF of drawings on CD ROM of the record drawings to the City. Because data Stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the party delivering the electronic files. Engineer shall not be responsible to maintain documents stored in electronic media format after acceptance by the City, when transferring documents in electronic media format, Engineer makes no representations as to long term compatibility,

usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by Engineer at the beginning of this Project. The City may make and retain copies of Documents for information and reference in connection with use on the Project by the City. Such Documents are not intended or represented to be suitable for reuse by the City or others on extensions of the Project or on any other project. Any such reuse or modification without written verification or adaptation by Engineer, as appropriate for the specific purpose intended, will be at the City's sole risk and without liability or legal exposure to Engineer or to Engineer's subconsultants. The City shall indemnify and hold harmless Engineer and Engineer's subconsultants from all claims, damages, losses, and expenses, including attorneys' fees arising out of or resulting there from. If there is a discrepancy between the electronic files and the hard copies, the hard copies will govern.

- M. Compile, review, and comment on operation and maintenance manuals, which will be provided by Contractor in accordance with the Contract Documents.
- N. Assist the Operator and/or the City's representatives during start-up of the project. The Engineer shall provide technical support and professional advice regarding any unforeseen problems with the operation and maintenance of the Project for a period of 1 year to the City.

XII. Resident Project Representation

- A. Provide periodic inspection of the construction or implementation of a project when City Inspectors are not utilized or specialized inspection is required due to the nature of the work.

XIII. Consultation and Troubleshooting Services

- A. Meet with the City on an as needed basis to discuss general operation and maintenance of the City's wastewater system.
- B. Provide guidance and counsel regarding proposed improvements and repairs based on experience and institutional knowledge of the City's facilities.
- C. Provide field engineering.
- D. Review of plans and specifications submitted to the City.
- E. Provide expert witness testimony.

XIV. Additional Services Provided by FNI or through Subconsultants

- A. Geotechnical engineering
- B. Hydrogeological investigations
- C. Electrical engineering
- D. Traffic impact studies
- E. Environmental assessments
- F. Topographic and boundary surveys
- G. Easements
- H. Subsurface Utility Engineering

XV. Hourly Rates for Professional Services

We propose to provide the services described above on a time and material basis; or lump sum fee basis using the rates attached in Attachment CO. Support staff will be billed separately per the rates shown in Attachment CO and utilized as needed. In addition, expenses and technology charges will be billed as shown in Attachment CO. For lump sum assignments, expenses will be included in the lump sum cost and will not be billed separately. FNI may submit adjusted hourly rates, when needed, on February 1st of each year to account for changes in labor and operation costs over time. The City shall review and approve any new hourly rates prior to those rates being applied by FNI.

COMPENSATION

Compensation to Freese and Nichols shall be based on the following Schedule of Charges.

Schedule of Charges:

<u>Position</u>	<u>Rate</u>
Professional - 1	113
Professional - 2	137
Professional - 3	156
Professional - 4	178
Professional - 5	209
Professional - 6	240
Construction Manager - 1	91
Construction Manager - 2	117
Construction Manager - 3	138
Construction Manager - 4	173
CAD Technician/Designer - 1	96
CAD Technician/Designer - 2	126
CAD Technician/Designer - 3	153
Corporate Project Support - 1	92
Corporate Project Support - 2	111
Corporate Project Support - 3	148
Intern/ Coop	57

Rates for In-House Services**Technology Charge**

\$8.50 per hour

Travel

Standard IRS Rates

Bulk Printing and Reproduction

	<u>B&W</u>	<u>Color</u>
Small Format (per copy)	\$0.10	\$0.25
Large Format (per sq. ft.)		
Bond	\$0.25	\$0.75
Glossy / Mylar	\$0.75	\$1.25
Vinyl / Adhesive	\$1.50	\$2.00
Mounting (per sq. ft.)	\$2.00	
Binding (per binding)	\$0.25	

OTHER DIRECT EXPENSES:

Other direct expenses are reimbursed at actual cost times a multiplier of 1.15. They include outside printing and reproduction expense, communication expense, travel, transportation and subsistence away from the FNI office and other miscellaneous expenses directly related to the work, including costs of laboratory analysis, test, and other work required to be done by independent persons other than staff members. For Resident Representative services performed by non-FNI employees and CAD services performed In-house by non-FNI employees where FNI provides workspace and equipment to perform such services, these services will be billed at cost times a multiplier of 2.0. This markup approximates the cost to FNI if an FNI employee was performing the same or similar services.

These rates are subject to annual adjustment. Last Updated February 2015.

2022015

FNI _____
OWNER _____