



HISTORIC
FRANKLIN
TENNESSEE

ITEM #4
CIC
02-26-14

MEMORANDUM

February 12, 2014

TO: Board of Mayor and Aldermen

FROM: Eric Stuckey, City Administrator
David Parker, P.E., City Engineer/CIP Executive
Mark Hilty, P.E., Director of Water Management
Paul Holzen, P.E., Director of Engineering
Patricia Proctor, P.E., Utilities Engineer II

SUBJECT: **Professional Services Agreement with CDM Smith for Sanitary Sewer System Model Assistance and Capacity Assurance Tool Program Project COF Contract No. 2014-0045**

Purpose

The purpose of this memo is to provide information to the Board of Mayor and Aldermen (BOMA) for the consideration of the Professional Services Agreement (PSA) with CDM Smith for the Sanitary Sewer System and Model Assistance and Capacity Assurance Tool Program Project.

Background

The current hydraulic model of the City of Franklin's sanitary sewer system collection, which was part of a previous project by CDM Smith, includes all gravity pipe 12 inches in diameter and larger. City Staff has suggested that the model be expanded to include all 10 inch diameter pipe and five (5) lift stations and update the existing model with more current flow data. There is an urgent need for a capacity analysis tool that evaluates the output from the hydraulic model when additional connections to the sewer system are requested. Included with this project will be the development of a permanent flow monitoring program.

Financial Impact

The cost as negotiated with CDM Smith for the design services is a total amount not to exceed \$182,000 (Tasks 1-5). Based on the work involved, the proposed cost appears to be appropriate. This fee will be paid out of the Sewer Operations fund.

Recommendation

Staff recommends approval of the Professional Services Agreement with CDM Smith (COF Contract No. 2014-0045) for an amount not to exceed \$182,000 (Tasks 1-5).

**CITY OF FRANKLIN, TENNESSEE
PROFESSIONAL SERVICES AGREEMENT
COF Contract No 2014-0045**

THIS PROFESSIONAL SERVICES AGREEMENT ("Agreement") is by and between the City of Franklin, Tennessee, hereinafter referenced as City, and CDM SMITH hereinafter referenced as Consultant, who mutually agrees as follows:

**Sanitary Sewer System Model Assistance and
Capacity Assurance Tool Program Project**

DECLARATIONS. City desires to retain Consultant to provide engineering, related technical and other services in connection with City's project hereinafter referenced as Project. The Project is described as follows:

1. **SCOPE OF SERVICES.** Consultant shall provide engineering and related technical services for the Project in accordance with the Proposal. The Proposal as found in Attachment A shall be considered as an integral part hereof.
2. Consultant shall be paid on an hourly basis for work performed for Tasks 1, 2, 3, 4 & 5 based on the Tasks fee as contained in Attachment A in an Amount Not To Exceed **ONE HUNDRED EIGHTY-TWO THOUSAND NO/100 DOLLARS (\$182,000.00)**. The Task Fee Schedule contained in Attachment A shall be considered as an integral part hereof.
3. In event of a conflict between this Agreement and the attached document(s), this Agreement shall supersede conflicting terms and conditions.

The Board of Mayor and Aldermen Approved this Agreement on the _____ Day of _____ 20____.

BY: _____
Consultant's Signature
TITLE: _____
Date: _____

BY: _____
Dr. Ken Moore
Mayor
Date: _____

TERMS AND CONDITIONS FOR PROFESSIONAL SERVICES

ARTICLE 1. SERVICES. Consultant will:

- 1.1 Act for City in a professional manner, using that degree of care and skill ordinarily exercised by and consistent with standards of competent consultants using the standards in the industry:
- 1.2 Consider all reports to be confidential and distribute copies of the same only to those persons specifically designated by the City.
- 1.3 Perform all services under the general direction of a senior professional employee, licensed and/or registered in the State of Tennessee, when appropriate.
- 1.4 Retain pertinent records relating to the services performed for a period of seven (7) years following the completion of the work; during this period the records shall be available for review by City at all reasonable times.

ARTICLE 2. CITY'S RESPONSIBILITIES. City, or its authorized representative, will:

- 2.1 Provide Consultant with all information regarding the Project, which is available to, or reasonably obtainable by, the City.
- 2.2 Furnish right-of-entry onto the Project site for Consultant's necessary field studies and surveys. Consultant will endeavor to restore the site to its original condition and shall remain solely liable for all damages, costs and expenses, including reasonable attorneys' fees, for failure to make such restoration.
- 2.3 Designate, in writing, the sole Project representative to coordinate with and direct the Consultant, including all contact information.
- 2.4 Guarantee to Consultant that it has the legal capacity to enter into this contract and that sufficient monies are available to fund Consultant's compensation.

ARTICLE 3. GENERAL CONDITIONS.

- 3.1 Consultant, by the performance of services covered hereunder, does not in any way assume, abridge or abrogate any of those duties, responsibilities or authorities customarily vested in other professionals or agencies participating in the Project.
- 3.2 Consultant shall be responsible for the acts or omissions of any party involved in concurrent or subsequent phases of the PROJECT acting upon written instruction issued by the Consultant.
- 3.3 Neither City nor Consultant may assign or transfer its duties or interest in this Agreement without written consent of the other party. However, nothing in this Article shall prevent Consultant from

engaging independent consultants, associates, and subcontractors to assist in the performance of the Services at Consultant's cost.

3.4 **ALLOCATION OF RISK AND LIABILITY; GENERAL.** Considering the potential liabilities that may exist during the performance of the services of this Agreement, the relative benefits and risks of the Project, and the Consultant's fee for the services rendered, and in consideration of the promises contained in this Agreement, the City and the Consultant agree to allocate and limit such liabilities in accordance with this paragraph.

3.5 **INDEMNIFICATION.** Consultant agrees to indemnify and hold City harmless from and against legal liability for all judgments, losses, damages, and expenses to the extent such judgments, losses, damages, or expenses are caused by Consultant's negligent act, error or omission in the performance of the services of this Agreement. In the event judgments, losses, damages, or expenses are caused by the joint or concurrent negligence of Consultant and City, they shall be borne by each party in proportion to its own negligence.

3.5.1 **SURVIVAL.** The terms and conditions of this paragraph shall survive completion of this services agreement.

3.6 **LIMITATIONS OF RESPONSIBILITY.** Consultant shall not be responsible for (a) construction means, methods, techniques, sequences, procedures, or safety precautions and programs in connection with the Project unless specifically undertaken in Attachment A, **SCOPE OF SERVICES**; (b) the failure of any contractor, subcontractor, Consultant, or other Project participant, not under contract to Consultant, to fulfill contractual responsibilities to City or to comply with federal, state, or local laws, regulations, and codes; or (c) procuring permits, certificates, and licenses required for any construction unless such procurement responsibilities are specifically assigned to Consultant in Attachment A, **SCOPE OF SERVICES**.

ARTICLE 4. TERMINATION BY THE CITY. The City may terminate this Agreement in accordance with the following terms and conditions:

4.1 **Termination for Convenience.** The City may, when in the interests of the City, terminate performance under this Agreement with the Consultant, in whole or in part, for the convenience of the City. The City shall give written notice of such termination to the Consultant specifying when termination becomes effective. The Consultant shall incur no further obligations in connection with the work so terminated, other than warranties and guarantees for completed work and installed equipment, and the Consultant shall stop work when such termination becomes effective. The Consultant shall also terminate

outstanding orders and subcontracts for the affected work. The Consultant shall settle the liabilities and claims arising out of the termination of subcontracts and orders. The City may direct the Consultant to assign the Consultant's right, title and interest under termination orders or subcontracts to the City or its designee. The Consultant shall transfer title and deliver to the City such completed or partially completed work and materials, equipment, parts, fixtures, information and Contract rights as the Consultant has in its possession or control. When terminated for convenience, the Consultant shall be compensated as follows:

- (1) The Consultant shall submit a termination claim to the City specifying the amounts due because of the termination for convenience together with costs, pricing or other data required by the City. If the Consultant fails to file a termination claim within one (1) year from the effective date of termination, the City shall pay the Consultant the amount the City deems the Consultant is due.
- (2) The City and the Consultant may agree to the compensation, if any, due to the Consultant hereunder.
- (3) Absent agreement to the amount due to the Consultant, the City shall pay the Consultant the following amounts:
 - (a) Contract costs for labor, materials, equipment and other services accepted under this Agreement;
 - (b) Reasonable costs incurred in preparing to perform and in performing the terminated portion of the work, and in terminating the Consultant's performance, plus a fair and reasonable allowance for direct job site overhead and earned profit thereon (such profit shall not include anticipated profit or consequential damages); provided however, that if it reasonably appears that the Consultant would have not profited or would have sustained a loss if the entire Agreement would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss, if any;

The total sum to be paid the Consultant under this Section shall not exceed the total Agreement Price, as properly adjusted, reduced by the amount of payments otherwise made, and shall in no event include duplication of payment.

- 4.2 Termination for Cause. If the Consultant does not perform the work, or any part thereof, in a timely manner, supply adequate labor, supervisory personnel or proper equipment or materials, or if it fails to timely discharge its obligations for labor, equipment and materials, or proceeds to disobey applicable law, or otherwise commits a violation of a material provision of this Agreement, then the City, in addition to any other rights it may have against the Consultant or others, may terminate the performance of the Consultant, in whole or in part at the City's sole option, and assume possession of the Project Plans and materials and may complete the work.

In such case, the Consultant shall not be paid further until the work is complete. After Completion has been achieved, if any portion of the Contract Price, as it may be modified hereunder, remains after the cost to the City of completing the work, including all costs and expenses of every nature incurred, has been deducted by the City, such remainder shall belong to the Consultant. Otherwise, the Consultant shall pay and make whole the City for such cost. This obligation for payment shall survive the termination of the Agreement.

In the event the employment of the Consultant is terminated by the City for cause pursuant to this Section and it is subsequently determined by a Court of competent jurisdiction that such termination was without cause, such termination shall thereupon be deemed a Termination for Convenience under this Section and the provisions of Section 4.1 shall apply.

- 4.3 Termination for Non-Appropriation. The City may also terminate this Agreement, in whole or in part, for non-appropriation of sufficient funds to complete or partially complete the Project, regardless of the source of such funds, and such termination shall be on the terms of Section 4.1.
- 4.4 The City's rights under this Section shall be in addition to those contained elsewhere herein or provided by law.

ARTICLE 5. SCOPE OF SERVICES. Consultant shall provide the Services as described in Attachment A, SCOPE OF SERVICES.

5.1 By mutual agreement, this contract and scope can be amended by the parties. The scope and fee for any additional tasks or services under such amendment shall be mutually negotiated and agreed to in writing prior to beginning such additional tasks or services.

5.2 **ENVIRONMENTAL RESPONSIBILITY.**

Where drilling/sampling services are involved, the samples obtained from the Project site are the property of the City. Should any of these samples be recognized by the Consultant to be contaminated, the City shall remove them from the Consultant's custody and transport them to a disposal site, all in accordance with applicable government statutes, ordinances, and regulations. For all other samples, the Consultant shall retain them for a sixty (60)-day period following the submission of the drilling/sampling report unless the City directs otherwise; thereafter, the Consultant shall discard the samples in accordance with all federal, state and local laws.

ARTICLE 6. SCHEDULE.

6.1 **TIME OF THE ESSENCE.** The parties agree that TIME IS OF THE ESSENCE with respect to the parties' performance of all provisions of the Agreement.

6.2 **FORCE MAJEURE.** Neither party will be liable to the other for any delay or failure to perform any of the services or obligations set forth in this Agreement due to causes beyond its reasonable control, and performance times will be considered extended for a period of time equivalent to the time lost because of such delay plus a reasonable period of time to allow the parties to recommence performance of their respective obligations hereunder. Should a circumstance of force majeure last more than ninety (90) days, either party may by written notice to the other terminate this Agreement. The term "force majeure" as used herein shall mean the following: acts of God; strikes, lockouts or other industrial disturbances; acts of public enemies; orders or restraints of any kind of the government of the United States or of the State or any of their departments, agencies or officials, or any civil or military authority; insurrections, riots, landslides, earthquakes, fires, storms, tornadoes, droughts, floods, explosions, breakage or accident to machinery, transmission pipes or canals; or any other cause or event not reasonably within the control of either party.

6.3 Should City request changes in the scope, extent, or character of the Project, the time of performance of Consultant's services as indicated in Attachment A shall be adjusted equitably.

ARTICLE 7. USE OF DOCUMENTS, DATA.

- 7.1 All Documents, including, but not limited to, reports, drawings, specifications, and computer software prepared by Consultant pursuant to this Agreement are instruments of service in respect to the Project. Consultant shall retain an ownership and property interest therein (including the right of reuse at the discretion of the Consultant) whether or not the Project is completed.
- 7.1.1 USE OF DATA SYSTEMS: Ownership, property interests and proprietary rights in data systems used by Consultant do not extend to the data created by or supplied to Consultant by the City; all rights to that data (including derivative or hidden data such as metadata) shall vest solely in City at the moment of creation.
- 7.1.2 DISCLOSURE OF DOCUMENTS/DATA. City may be required to disclose documents or data under state or federal law. City shall notify Consultant if a request for data or documents has been made and shall give Consultant a reasonable opportunity under the circumstances to respond to the request by redacting proprietary or other confidential information. Consultant waives any right to confidentiality of any document, e-mail or file it fails to clearly mark on each page as confidential or proprietary. In exchange, Consultant agrees to indemnify, defend, and hold harmless City for any claims by third parties relating thereto or arising out of (i) the City's failure to disclose such documents or information required to be disclosed by law, or (ii) the City's release of documents as a result of City's reliance upon Consultant representation that materials supplied by Consultant (in full or redacted form) do not contain trade secrets or proprietary information, provided that the City impleads Consultant and Consultant assumes control over that claim.
- 7.2 City-furnished data that may be relied upon by Consultant is limited to the printed copies that are delivered to the Consultant pursuant to Article 2 of this Agreement. Any copyrighted electronic files furnished by City shall be used by Consultant only for the Project as described herein. City's posting or publication of such documents created by Consultant for City shall constitute fair use and shall not constitute an infringement of Consultant's copyright, if any.
- 7.3 Documents that may be relied upon by City are limited to the printed copies (also known as hard copies) that are signed or sealed by the Consultant. Files in electronic media format of text, data, graphics, or

of other types that are furnished by Consultant to City are only for convenience of City, unless the delivery of the Project in electronic media format has been dictated in Attachment A, SCOPE OF SERVICES. Any conclusion or information obtained or derived from electronic files provided for convenience will be at the user's sole risk.

- 7.4 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. Unless stated otherwise herein, Consultant shall not be responsible to maintain documents stored in electronic media format after acceptance by City.
- 7.5 When transferring documents in electronic media format, Consultant 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 that as required of, and used by, Consultant at the beginning of this Project.
- 7.6 City may make and retain copies of Documents for information and reference in connection with use on the Project by the City, or his authorized representative. Such Documents are not intended or represented to be suitable for reuse by City or others on extensions of the Project or on any other project. Any such reuse or modifications without written verification or adaptation by Consultant, as appropriate for the specific purpose intended, will be at City's sole risk and without liability or legal exposure to the Consultant or to Consultant's Consultants.
- 7.7 If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- 7.8 Any verification or adaptation of the Documents for extensions of the Project or for any other project will entitle Consultant to further compensation at rates to be agreed upon by City and Consultant.

ARTICLE 8. INSURANCE.

- 8.1 During the performance of the Services under this Agreement, Consultant shall maintain the following minimum insurance:
- a) General Liability Insurance with a combined single limit of \$1,000,000 per occurrence and \$2,000,000 annual aggregate.
 - b) Automobile Liability Insurance with a combined single limit of \$1,000,000 for each person and \$1,000,000 for each accident.

- c) Workers' Compensation Insurance Coverage A in accordance with statutory requirements and Coverage B, Employer's Liability Insurance, with a limit of \$500,000 for each occurrence.
 - d) Professional Liability Insurance with a limit of \$1,000,000 annual aggregate.
- 8.2 Consultant shall add the City an additional insured on all policies unless otherwise prohibited.
- 8.3 Consultant shall, upon execution of this Agreement, furnish City certificates of insurance, which shall include a provision that such insurance shall not be canceled without at least thirty days' written notice to City.
- 8.4 No insurance, of whatever kind or type is to be considered as in any way limiting other parties' responsibility for damages resulting from their activities in the execution of the Project. City agrees to include, or cause to be included, in the Project's construction contract, such requirements for insurance coverage and performance bonds by the Project's construction contractor as City deems adequate to indemnify City, Consultant, and other concerned parties against claims for damages and to insure compliance of work performance and materials with Project requirements.

ARTICLE 9. PAYMENT.

- 9.1 City will pay Consultant for services and expenses in accordance with the Fee Schedule proposal submitted for the Project as part of the Scope Of Services. Consultant's invoices will be presented at the completion of the work or monthly and will be payable upon receipt. Payment is due upon presentation of invoice and is past due thirty (30) days from invoice date. City shall give prompt written notice of any disputed amount and shall pay the remaining amount.
- 9.2 Consultant shall be paid in full for all services under this Agreement, including City-authorized overruns of the Project budget or unforeseen need for Consultant's services exceeding the original Scope Of Services.
- 9.3 **TRAVEL; EXPENSES**
The City shall reimburse reasonable expenses, including travel and meals, when specified in the Scope Of Services, but only in accordance with the City's Travel and Expense Policy and Procedures Manual. The maximum amount will be applied as of the date of travel and as listed in the per diem reimbursement rates on the "CONUS" website developed by the United States General Services Administration, located at www.gsa.gov [click on 'per diem rates' under the 'etools' category].

ARTICLE 10. MISCELLANEOUS PROVISIONS

10.1 EQUAL EMPLOYMENT OPPORTUNITY. In connection with this Agreement and the Project, the City and the Consultant shall not discriminate against any employee or applicant for employment because of race, color, sex, national origin, disability or marital status. The City and Consultant will take affirmative action to ensure that contractor used for the Project does not discriminate against any employee and employees are treated during employment without regard to their race, age, religion, color, gender, national origin, disability or marital status. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination, rates of pay or other forms of compensation; and selection for training, including apprenticeship.

10.1.1 The Consultant shall insert the foregoing provision in all contracts relating to this Project.

10.2 TITLE VI – CIVIL RIGHTS ACT OF 1964. The City and the Consultant shall comply with all the requirements imposed by Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d), 49 C.F.R., Part 21, and related statutes and regulations.

10.2.1 The Consultant shall insert the foregoing provision in all contracts relating to this Project.

10.3 NO THIRD PARTY RIGHTS CREATED. City and Consultant each binds itself and its successors, executors, administrators, permitted assigns, legal representatives and, in the case of a partnership, its partners, to the other party to this Agreement and to their successors, executors, administrators, permitted assigns, legal representatives and partners of such other party in respect to all provisions of this Agreement. The Services provided for in this Agreement are for the sole use and benefit of City and Consultant. Nothing in this Agreement shall be construed to give any rights or benefits to anyone other than the City and the Consultant.

10.4 WARRANTIES/LIMITATION OF LIABILITY/WAIVER. The City reserves all rights afforded to local governments under law for all general and implied warranties. The City does not waive any rights it may have to all remedies provided by law and therefore any attempt by Consultant to limit its liability shall be void and unenforceable.

ARTICLE 11. EXTENT OF AGREEMENT:

11.1 APPLICABLE LAW/CHOICE OF FORUM AND VENUE. This Agreement is made under and will be construed in accordance with the laws of the State of Tennessee without giving effect to that state's

choice of law rules. The parties' choice of forum and venue shall be exclusively in the courts of Williamson County, Tennessee. Any provision of this Agreement held to violate a law or regulation shall be deemed void, and all remaining provisions shall continue in force.

- 11.2 **ENTIRE AGREEMENT.** This Agreement, including these terms and conditions, represent the entire Agreement between City and Consultant for this Project and supersedes all prior negotiations, representations or agreements, written or oral. This Agreement may be amended only by written instrument signed by City and Consultant.

ARTICLE 12. DISPUTE RESOLUTION, BREACH.

12.1 If a dispute should arise relating to the performance of or payment for the services under this Agreement, the aggrieved party shall notify the other party of the dispute within a reasonable time after such dispute arises. During the pendency of any dispute, the parties shall continue diligently to fulfill their respective obligations hereunder. No arbitration or mediation shall be required as a condition precedent to filing any legal claim arising out of or relating to the Contract. No arbitration or mediation shall be binding.

12.2 **BREACH.** Upon deliberate breach of the Contract by either party, the non-breaching party shall be entitled to terminate the Contract with notice, with all of the remedies it would have in the event of termination, and may also have such other remedies as it may be entitled to in law or in equity.

ARTICLE 13. SURVIVAL.

The provisions contained in this Professional Services Agreement shall survive the completion of or any termination of the Contract, agreement or other document to which it may accompany or incorporate by reference or which subsequently may be modified, unless expressly excepted from this Article upon consent of both parties.



210 25th Avenue North
Suite 1102
Nashville, Tennessee 37203
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fax: 615-320-6560

December 31, 2013

Mr. Paul Holzen, P.E.
Franklin City Hall
109 3rd Avenue South
Franklin, TN 37064

Subject: Sanitary Sewer System Model Assistance and Capacity Assurance Program

Paul:

CDM Smith is pleased to present this proposal to support the City of Franklin with the expansion of the existing sanitary sewer collection system model and development of a capacity assurance tool for assistance with evaluation and approval/disapproval of sewer customer and system expansion applications.

Background

As part of a previous project performed by CDM Smith, a hydraulic model of the City's sewer collection system was developed. The existing model includes all gravity pipe 12-inches in diameter and larger and was calibrated to monitored flow data collected in 2011 during the IWRP. As indicated during recent discussions, the City staff wishes to expand the model to include all infrastructure with a diameter of 10-inches and larger and to refine some parts of the modeled system with additional flow data.

The City of Franklin also desires to develop a more consistent approach to analyzing and certifying capacity of the existing system when considering the permitting of additional connections to the sewer collection system. In support of this need, the proposed capacity assurance approach proposed herein is based on quickly and easily evaluating the information output from the hydraulic model.

The EPA SWMM5 computational engine, the modeling platform in which the current system is modeled, will be used for performing model simulations. Capacity will be determined by comparing peak depth of flow in each pipe relative to the full-pipe vertical dimension and associated capacity. A GIS-based tool will be developed in ESRI ArcGIS to provide the user with functionality developed specifically for the City of Franklin capacity assurance and will allow the City to rapidly evaluate additional requested flow loadings. This tool will provide a consistent means for evaluating and managing additional flows, and the results will have the ability to be reported graphically within GIS, as well as allow for printable reports and graphics.



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Task 1 – Flow Monitoring Program Development

The City of Franklin has expressed interest in developing a permanently maintained flow monitoring program. CDM Smith will aid the City with the selection of locations of these permanent flow monitors, which can be added to the system as the City staff desires and as the collection system flow monitoring budget allows. No scope of work outside of assistance with the selection of permanent flow monitoring locations is part of this project, and all purchase of permanent flow monitors and installation and management of the data is outside of this project scope.

Task 2 – Infrastructure Compilation and Development

Task 2.1: Verify, and if necessary correct, existing model connectivity, elevations, and pipe sizes.
A large portion of the existing hydraulic model infrastructure information came from the City's GIS data. The City staff has expressed a desire to verify the infrastructure data in the existing GIS system with as-built drawings where available and with field surveying where drawings are unavailable. The City will provide CDM Smith with all available drawings for the specified areas for expansion of the collection system model, as well as the existing infrastructure currently within the model. CDM Smith will review and update the model, as necessary, for all modeled infrastructure.

Task 2.2: Hydraulic Model Expansion.

CDM Smith will add all 10-inch diameter and larger gravity sewer infrastructure within the collection system to the existing model. An additional 5 lift stations will also be added to the hydraulic model as directed by the City staff. Best available information, as provided by Franklin staff, will be utilized for input of the pump stations or will allow for estimates for sizing and operations to be made, where necessary. CDM Smith will utilize existing drawdown test results if available; however, this scope does not include new drawdown tests to be conducted by CDM Smith as part of this project. If the City prefers to complete additional field drawdown tests, CDM Smith will work with staff to define the needed data.

Task 2.3: Additional Sewer Infrastructure Data Collection.

CDM Smith will collect the updated GIS infrastructure data from the City's existing database as well as collect, as part of Task 2.1, all relevant and available as-built drawings. For the infrastructure without any associated as-built information, CDM Smith will work with Civil Infrastructure Associates (CIA), local small business subcontractor, to perform additional field surveying work as directed by the City of Franklin. CIA worked with CDM Smith on the original field survey for the modeling work and will therefore allow for consistency in deliverables for the model. CDM Smith has included an allowance of \$50,000 for the potential field surveying work. Specific scopes of surveying and associated costs will be defined and approved by the City staff prior to moving forward with use of the allowance budget. If additional surveying is required above the included allowance, an amendment for the additional services will be negotiated and agreed to by both parties.

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Task 2.4: Model Flow Loading Redistribution

The dry-weather and wet-weather flows loaded to the existing version of the calibrated model will be reallocated in the expanded model based on factors such as contributing land area and linear foot of pipe. The calibration will be verified, but the model will not undergo a recalibration as part of this task. The model will be recalibrated in Task 7 as part of this proposal and scope of work.

Task 3 - Tools Development

CDM Smith will develop a capacity assurance tool utilizing an interface with the existing and updated model. The tool will have the following specific functionality and abilities:

- Load analyzed model results.
- Graphically report capacity and flow.
- Allow user to create reports and mapping on new development capacity and system wide capacity issues.
- Allow user to create sewer profiles.

Task 3.1: GIS Database Reader Development

CDM Smith will compile all of the data sets that are required input(s) for the tool to the proposed application and review them for accuracy and completeness. The GIS tool will read the spatial modeled infrastructure and model results from the SWMM5 software for analysis of system capacity.

Task 3.2: CAP Application Development and Testing

CDM Smith will develop the Capacity Assurance Program (CAP) application using a Rapid Application Development (RAD) environment. The RAD process is an interactive process where CDM Smith and Franklin staff will meet frequently and work together, through an on-line environment, to review and comment on prototypes of the application as they are developed. Throughout this process, CDM Smith will communicate frequently with Franklin staff through memos and conference calls, and demonstrations of prototypes using on-line presentation tools. The tool will ultimately be developed to meet the needs of the Franklin Engineering staff and will function to lessen the time required for the review of sewer capacity requests.

CDM Smith anticipates the following functionality to be part of the application:

- **Reporting** – This module will allow the user to generate maps and reports as needed based on the analysis completed. The exact format of the maps and reports will be determined in the design phase of the project with the City staff.
- **CAP Profiling Tool** - This module will allow users to select a section of adjacent sewer pipes and quickly display a station and profile schematic diagram of the profile

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including features such as manholes, pump stations and pipes. These features will also have labels showing feature IDs, rim elevations, invert elevations, diameters and materials.

Task 4 – Capacity Assurance Guidance Document and Training

CDM Smith will prepare a brief guidance document with instructions for use of the capacity assurance tool provided for capacity assurance. CDM Smith will develop the document with sufficient flexibility to change as regulatory agencies and/or other factors may require.

Task 4.1: Capacity Assurance Guidance Document

Based on the scope of work presented, a preliminary table of contents for the guidance document is as follows:

1. Introduction
2. Quick Start Tutorial
3. Reporting
4. Conclusions and Recommendations

A draft document will be submitted for review and comment by the City staff, updated based on comments and resubmitted as a final copy.

Task 4.2: On-Site Capacity Assurance Tool Training

At the final Capacity Assurance Tool deployment and roll-out, CDM Smith will plan to be on-site with Franklin staff for installation and training on tool functionality and operation. Additional assistance and on-call technical support is not currently included in the scope of work, but may be added in the future by City staff as needed based on staffing and support needs.

Task 5 – Project Meetings

CDM Smith will meet with the City project team at key points throughout the project. For the purpose of scope and budgeting, the project shall consist of up to six (6) review and update meetings on the model updates and capacity tool development.

Task 6 – Flow Monitoring Data Collection and Analysis

Task 6.1: Manage flow data and rainfall data collection

In addition to the permanent flow monitoring program developed in Task 1, flow monitors will be installed for a temporary period during the dormant season, defined as December through May, to gather additional flow information on the existing system to allow for updated, more detailed calibration. The monitors should be in place for no fewer than 60 days, with an option to extend to 90 days, if needed, to capture multiple significant rain events. Approximately 35 flow monitors will be installed and maintained by a flow monitoring company to gather the

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data, with the exact final number and locations to be defined during discussions between the City staff and CDM Smith. The flow monitoring work will be contracted by CDM Smith on behalf of the City of Franklin. During the same monitoring time period, approximately 10 rain gauges will also be installed to monitor the rainfall for corresponding storms; and will be included as part of the flow monitoring contract for continuity. In addition, radar rainfall data will also be collected for the period of temporary flow monitoring. A company providing radar rainfall data will be selected and contracted by CDM Smith.

If preferred, the implementation of the flow monitoring and rain gauge work and employing of the third party company for the service may be completed directly by the City of Franklin and conducted outside of this contract. If this is the preference of the City staff, CDM Smith will assist with the determining and definition of the locations of the monitors and development of the RFP for services as directed. This assistance will be covered by a \$10,000 lump sum cost should the City decide to pursue the monitoring as a separate contract. The current allowance for temporary flow and rainfall monitoring within this proposal is \$200,000 and is based on past costs of similar work and experience with multiple monitoring services for projects within the region. This cost will be further defined as competitive proposals are taken from qualified firms to perform the work. Adjustments to the costs and/or numbers of flow monitors and rainfall gauges will be made based on the cost of the work in conjunction with the City staff.

Task 6.2: Analyze data for input into hydraulic model

Following the data collection, the data will be analyzed in order to load into the hydraulic model for calibration. This process involves performing a quality check on all the data collected, then breaking the flow data down into dry-weather and wet-weather flow components.

Task 7 – Model Recalibration

Following the update of the system infrastructure data and analysis of the additional flow data collected, CDM Smith will recalibrate the model to reflect the model expansion and updates in accordance with industry standards and best management practices. Sewer flow rates, depths, and rain data will be the principal sources of data for calibrating the model and will be supplemented with field observations, as appropriate. Care will be exercised to ensure that the representation of the sewer network system corresponds to the conditions of the actual sewer system at the time of the selected calibration events. The model will be calibrated to both dry-weather and wet-weather events.

Schedule and Budget

CDM Smith proposes to complete the work under Tasks 1 through 7 above for a not-to-exceed budget of \$466,000. Tasks 1 through 5 will be completed for \$182,000 and Tasks 6 and 7 will be completed for \$284,000. The details of this cost estimate are shown on the table below and included in the task breakdown. CDM Smith will bill the project on a monthly basis based on



Sanitary Sewer System Model Assistance and Capacity Assurance Program
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the attached task breakdown and attached billing rate table. For each monthly invoice, CDM Smith will submit a monthly progress report and update on project status and deliverables.

CDM Smith proposes to complete the project, Tasks 1 through 7, and deliver the updated model and capacity assurance tool based on the following schedule and budget.

City of Franklin - Sanitary Sewer System Model Expansion and Capacity Assurance Program

Task	Description	Total Hours	Estimated Cost
Tasks 1 - 5			
Task 1	Flow Monitoring Program Development		
	Develop long term flow monitoring plan	80	\$12,000
Task 2	Information Compilation and Development		
2.1	Verify, and if necessary correct, existing model connectivity, elevations, and pipe sizes	100	\$13,000
2.2	Hydraulic model expansion	80	\$11,000
2.3	Additional sewer infrastructure data collection	40	\$5,000
2.4	Model flow loading redistribution	40	\$6,000
	Surveying Allowance	-	\$50,000
	Task 2 Subtotal		\$85,000
Task 3	Tools Development		
3.1	GIS Database Reader Development	80	\$10,000
3.2	CAP Application Development and Testing	420	\$55,000
	Task 3 Subtotal		\$65,000
Task 4	Capacity Assurance Guidance Document and Training	116	\$15,000
Task 5	Project Meetings (up to six)	24	\$5,000
Tasks 1 - 5 Subtotal			\$182,000



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Tasks 6 - 7			
Task 6	Flow Monitoring		
6.1	Manage flow data and rainfall data collection	40	\$6,000
6.2	Analyze data for input into hydraulic model	240	\$31,000
	Flow Monitoring and Rainfall Data Collection Allowance	-	\$200,000
	Task 6 Subtotal		\$237,000
Task 7	Model Recalibration	360	\$47,000
Tasks 6 - 7 Subtotal			\$284,000
TOTAL			\$466,000

CDM Smith appreciates the opportunity to provide these services to the City of Franklin. If you have any questions about this proposal, please do not hesitate to contact us. We are ready to initiate this work upon your notice to proceed.

Very truly yours,

Zack Daniel, PE
Principal Engineer/Client Service Manager
CDM Smith Inc.

- cc: Katie Rubush, P.E. – City of Franklin
- Paul Holzen, P.E. – City of Franklin
- Patricia Proctor, P.E. – City of Franklin
- Leeann Williams, P.E. – CDM Smith

City of Franklin
Wastewater Collection System Model Expansion and Update &
Development of a Capacity Assurance Tool
Budget Estimate

Task	Senior Technical Specialist	Technical Specialist	Senior Engineer	Engineer	Junior Engineer	Admin	Senior GIS Technician/ Designer/ Drafting	GIS Technician/ Designer/ Drafting	ODC	Subcontractors	Totals
Billing Rate	\$200	\$185	\$150	\$125	\$100	\$70	\$135	\$110			
1 Flow Monitoring Program											
Develop long term flow monitoring plan	0	24	40	0	16	0	0	0	\$0	\$0	\$12,000
2 Information Compilation and Development											
2.1 Verify, and if necessary correct, existing model connectivity, elevations, and pipe sizes	0	24	16	0	60	0	0	0	\$0	\$0	\$13,000
2.2 Hydraulic Model Expansion	0	8	18	56	0	0	0	0	\$0	\$0	\$11,000
2.3 Additional Sewer Infrastructure Data Collection	0	0	0	40	0	0	0	0	\$0	\$0	\$5,000
2.4 Model Flow Loading Redistribution	0	0	40	0	0	0	0	0	\$0	\$0	\$8,000
Surveying Allowance									\$0	\$50,000	\$60,000
3 Capacity Assurance Tools Development											
3.1 GIS Database Reader Development	0	16	0	24	40	0	0	0	\$0	\$0	\$10,000
3.2 CAP Application Development and Testing	24	40	40	0	0	16	120	180	\$0	\$0	\$55,000
4 Capacity Certification Guidance Document and Training											
	8	20	0	0	0	24	24	40	\$500	\$0	\$15,000
5 Project Meetings											
	0	12	12	0	0	0	0	0	\$500	\$0	\$5,000
Subtotal	32	144	164	120	116	40	144	220	\$1,000	\$50,000	\$182,000
6.1 Manage flow data and rainfall data collection	0	8	24	0	8	0	0	0	\$0	\$0	\$6,000
6.2 Analyze data for input into hydraulic model	0	40	40	60	100	0	0	0	\$0	\$0	\$31,000
Flow Monitoring and Rainfall Data Collection Allowance									\$0	\$200,000	\$200,000
7 Model Recalibration	24	60	60	80	120	16	0	0	\$0	\$0	\$47,000
Subtotal	24	108	124	140	228	16	0	0	\$0	\$200,000	\$284,000
Total Hours	56	252	288	260	344	56	144	220	\$1,000	\$250,000	\$465,000

City of Franklin
Wastewater Collection System Model Expansion and Update &
Development of a Capacity Assurance Tool
Proposed Schedule

