

**ENGINEERING SERVICES AGREEMENT**  
**FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS**

Updated March 2007

THIS AGREEMENT is made in Douglas County, Kansas, by and between the City of Lawrence, Kansas, hereinafter called the City, and **GEORGE BUTLER ASSOCIATES, INC.** hereinafter called the Consultant. The City intends to construct an improvement project, UT1804 2018 Flow Monitoring Program (hereinafter called the Project) in Lawrence, Kansas, described in Exhibit A.

The City hereby contracts with the Consultant for professional engineering services in connection with the Project, for such engineering services more particularly described herein in consideration of the mutual covenants herein set forth. By executing this Agreement, the Consultant represents to the City that the Consultant is professionally qualified to provide such and is licensed to practice engineering by all public entities having jurisdiction over the Consultant and the Project.

**SECTION I - DEFINITIONS**

As used in this Agreement, the following terms shall have the meanings ascribed herein unless otherwise stated or reasonably required by this contract, and other forms of any defined words shall have a meaning parallel thereto.

“Additional Services” means any services requested by the City which are not covered by Exhibit A of this Agreement.

“Agreement” means this contract and includes change orders issued in writing.

“City” means the City of Lawrence, Kansas.

“Consultant” means the company or individual identified on page 1. Consultant shall employ for the services rendered, engineers, architects, landscape architects, and surveyors licensed, as applicable, by the Kansas State Board of Technical Professions.

“Contract Documents” means those documents so identified in the Contract for Construction of this Project, including Engineering Documents. All terms defined in said General Conditions shall have the same meaning when used in this Agreement unless otherwise specifically stated or in the case of a conflict in which case the definition used in this Agreement shall prevail in the interpretation of this Agreement.

“Engineering Documents” means all plans, specifications, reports, drawings, tracings, designs, calculations, computer models, sketches, notes, memorandums or correspondence related to the work described in Exhibit A attached hereto.

“Engineering Services” means the professional services, labor, materials, supplies, testing and other acts or duties required of Consultant under this Agreement together with Additional Services as City may request and evidenced by a supplemental agreement pursuant to the terms of this Agreement.

“Project” is as described in Exhibit A.

“Subsurface Borings and Testing” means borings, probings and subsurface explorations, laboratory tests and inspections of samples, materials and equipment; and appropriate professional interpretations of all the foregoing.

“Utilities Engineer” means the person employed by the City with the title of Utilities Engineer who is licensed to practice engineering in the State of Kansas.

“Utilities Director” means the person employed by the City with the title of Utilities Director.

## **SECTION II - PAYMENT**

### **A. COMPENSATION.**

1. Maximum Total Fee and Expense: The City agrees to pay the Consultant a fee based on the actual hours expended on the Project at the rates indicated in the attached Fee Schedule; Exhibit B and the actual reimbursable expenses permitted under this Agreement and incurred on this Project, but not to exceed a maximum fee of \$224,506.00 for Study Phase Services. Professional fees are based on the scope of services outlined in Exhibit A of this Agreement and shall be completed in accordance with a mutually agreed to schedule. Payment to Consultant shall not exceed the amounts in each phase as detailed in Exhibit B. Other methods of compensation are allowed only after written approval by the Utilities Director.
2. Hourly Rate: Any Additional Services which are not set forth in this Agreement will be charged on the basis of the hourly rate schedule attached hereto as Exhibit B and reimbursable expenses not contemplated in this

Agreement will be charged at actual cost. No Additional Services or costs shall be incurred without proper written authorization of the City.

3. Reimbursable Expenses: Reimbursable expenses shall be included in the total maximum fee. Reimbursable expenses include expenses of transportation in connection with the Project; expenses in connection with authorized out-of-town travel; long-distance communications; expenses of printing and reproductions, postage and facsimile transmissions; expenses of renderings and models requested by the City and other costs as authorized by the City. Reimbursable expenses will not include overhead costs or additional insurance premiums. Unit rates for reimbursable expenses shall be included in Exhibit B attached.
4. Sales Tax: Compensation as provided for herein is exclusive of any sales, use or similar tax imposed by taxing jurisdictions on the amount of compensation, fees or services. Should such taxes be imposed, the City shall reimburse the Consultant in addition to the contractual amounts provided. The City shall provide tax exempt number if required, and if requested by the Consultant.
5. Billing: Consultant shall bill the City monthly for all services and reimbursable expenses. It is understood by the Consultant that monthly pay requests must be received by the 5th day of the month. The bill submitted by Consultant shall itemize the services and reimbursable expenses for which payment is requested, notwithstanding any claim for interest or penalty claimed in a Consultant's invoice. The City agrees to pay the Consultant

within ten (10) days of approval by the governing body. If the Consultant fails to submit an itemized bill for services and/or reimbursable expenses within sixty (60) days of completion of the services, the City shall have no duty to pay the Consultant for those services.

6. City's Right to Withhold Payment: In the event the City becomes credibly informed that any representations of the Consultant provided in its monthly billing are wholly or partially inaccurate, the City may withhold payment of disputed sums then, or in the future, otherwise due to the Consultant until the inaccuracy and the cause thereof is corrected to the City's reasonable satisfaction. In the event the City questions some element of an invoice, that fact shall be made known to the Consultant immediately. The Consultant will help effect resolution and transmit a revised invoice if necessary. The City shall pay the undisputed portion of any invoice as provided in Part 5 of this Section II.
7. Progress Reports: A written progress report, as set out in Exhibit C, must be submitted with each monthly pay request indicating which specific design tasks and their percentage have been completed to date, and tasks that will be performed the following month. This report will serve as support for payment to the Consultant.
8. Timing of Services: Consultant will perform the services in a timely manner; however, if during their performance, for reasons beyond the control of the Consultant, protracted delays occur, the parties agree that they will negotiate

in writing an equitable adjustment of time and compensation, taking into consideration the impact of such delays.

9. Change in Scope: For substantial modifications in authorized Project scope, and/or substantial modifications of drawings and/or specifications previously accepted by the City, when requested by the City and through no fault of the Consultant, the Consultant shall be compensated for time and expense required to incorporate such modifications at Consultant's standard hourly rates per Exhibit B. Provided, however, that any increase in contract price or contract time must be requested by the Consultant and must be approved through a written supplemental agreement prior to performing such services. Consultant shall correct or revise any errors or deficiencies in its designs, drawings or specifications without additional compensation when due to Consultant's negligence, error, or omission.
10. Additional Services: The Consultant shall provide, with the City's concurrence, services in addition to those listed in Exhibit A, when such services are requested, in writing, by the City. Prior to entering into any Additional Services, the Consultant must submit a proposal outlining the Additional Services to be provided, estimation of total hours and a maximum fee based upon the hourly rate schedule attached hereto as Exhibit B. Payment to the Consultant, as compensation for these Additional Services, shall be in accordance with the attached hourly rate schedule attached as Exhibit B. Reimbursable expenses incurred in conjunction with Additional Services shall be paid separately and those reimbursable expenses shall be

paid at actual cost. Records of reimbursable expenses and expenses pertaining to Additional Services and services performed on an hourly basis shall be made available to the City if so requested in writing. Production of these documents shall be made at the Consultant's office during normal business hours within a reasonable time at a date and time mutually convenient to both parties.

11. Supplemental Agreement: This Agreement may be amended to provide for additions, deletions and revisions in the services or to modify the terms and conditions thereof by written amendment signed by both parties. The contract price and contract time may only be changed by a written supplemental agreement approved by the City, unless it is the result of an emergency situation in which case the Utilities Director may give verbal and facsimile approval to be followed by a written and approved supplemental agreement. If notice of any change affecting the general scope of the services or provisions of this Agreement, including but not limited to, contract price or time, is a requirement of any insurance policy held by the Consultant as a requirement of this Agreement, the giving of such notice shall be the Consultant's responsibility.

### **SECTION III - RESPONSIBILITIES OF CONSULTANT**

- A. **SCOPE OF SERVICES:** The Consultant shall furnish and perform the various professional duties and services in all phases of the Project to which this Agreement

applies, as specifically provided in Exhibit A and which are required for the completion of the Project

**B. GENERAL DUTIES AND RESPONSIBILITIES**

1. Personnel: The Consultant shall assign only qualified personnel to perform any service concerning the Project. Gary S. Beck will perform as the Consultant's principal for this Project. As principal on this Project, this person shall be the primary contact with the Utilities Director, Utilities Engineer, or another person so designated, and shall have authority to bind the Consultant. So long as the individual named above remains actively employed or retained by the Consultant, he/she shall perform the function of principal on this Project.
2. Independent Contractor: The Consultant is an independent contractor and as such is not an employee of the City.
3. Special Services: The Consultant may be called on to serve as a Consultant or witness in any litigation, arbitration, legal or administrative proceeding arising out of this Project. The Consultant shall not be paid extra by the City if the appearance is to defend Consultant's professional engineering services. If the Consultant is requested in writing by the City to appear as a witness, the Consultant will be paid its hourly fee as reflected on the hourly rate schedule attached hereto as Exhibit B.
4. Subsurface Borings and Material Testing: If tests additional to those provided in Exhibit A are requested by the City for design, the Consultant shall prepare

specifications for the taking of the additional borings. Such Subsurface Borings and Testing, as defined herein, shall be provided by the Consultant through other contractors. Payment to the Consultant will be negotiated in writing.

5. Service by and Payment to Others: Any work authorized in writing by the City and performed by a third party other than the Consultant, or their subconsultants in connection with the proposed Project, shall be contracted for and paid for by the City directly to the third party or parties. Fees for extra work shall be subject to negotiation between the City and the third party. Fees shall be approved by the City prior to the execution of any extra work. Although the Consultant may assist the City in procuring such services of third parties, the Consultant shall in no way be liable to either the City or such third parties in any manner whatsoever for such services or for payment thereof.
  
6. Subcontracting of Service: The Consultant shall not subcontract or assign any of the architectural, engineering or consulting services to be performed under this Agreement without first obtaining the written approval of the City regarding the services to be subcontracted or assigned and the firm or person proposed to perform the services. Neither the City nor the Consultant shall assign any rights or duties under this Agreement without the prior written consent of the other party. Unless otherwise stated in the written consent to an assignment, no assignment will release or discharge the assignor from any obligation under this Agreement.

7. Endorsement: The Consultant shall sign and seal all final plans, specifications, estimates and engineering data furnished by the Consultant. The Consultant warrants to the best of its knowledge, information and belief that its performance will be done in a professional manner. Any review or approval by the City of any documents prepared by the Consultant, including but not limited to the plans and specifications, shall be solely for the purpose of determining whether such documents are consistent with the City's construction program and intent. No review of such documents shall relieve the Consultant of their responsibility for the accuracy. It will be the Consultant's responsibility to verify the existence of any and all rights-of-way and easements, including temporary construction easements, that are necessary for the Project construction. Rights-of-way and easements shown on the construction plans shall have proper legal verification to prove their existence.
8. Professional Responsibility: The Consultant will exercise reasonable skill, care and diligence in the performance of its services as is ordinarily possessed and exercised by a licensed professional performing the same services under similar circumstances.
9. Inspection of Documents: The Consultant shall maintain all Project records for inspection by the City during the contract period and for three (3) years from the date of final payment.

## **SECTION IV - CITY OF LAWRENCE RESPONSIBILITIES**

### **A. GENERAL DUTIES AND RESPONSIBILITIES**

1. Communication: The City shall provide to the Consultant information and criteria regarding the City's requirement for the Project; examine and timely respond to the Consultant's submissions; and give notice to the Consultant, who shall respond promptly, whenever the City observes or otherwise becomes aware of any defect in the services.
2. Access: The City will provide access agreements for the Consultant to enter public and private property when necessary.
3. Duties: The City shall furnish and perform the various duties and services in all phases of the Project which are outlined and designated in Exhibit A as the City's responsibility.
4. Program and Budget: The City shall provide full information stating the City's objectives, schedule, budget with reasonable contingencies, and necessary design criteria.
5. Other consultants: The City may contract with "specialty" consultants when such services are requested by the Consultant.
6. Testing: Any tests required to supplement the scope of services or tests required by law shall be furnished by the City.
7. Legal, Insurance, Audit: The City shall furnish all legal, accounting and insurance counseling services as may be necessary at any time for the Project. The City shall furnish all bond forms required for the Project.

8. Project Representative: The Utilities Director, or the Utilities Director's designee, shall represent the City in coordinating this Project with the Consultant, with authority to transmit instructions and define policies and decisions of the City.

## **SECTION V - GENERAL PROVISIONS**

### **A. TERMINATION**

1. Notice: The City reserves the right to terminate this Agreement for either cause or for its convenience and without cause or default on the part of the Consultant, by providing written notice of such termination to the Consultant. Upon receipt of such notice from City, the Consultant shall, at City's option as contained in the notice: Immediately cease all services and meet with City to determine what services shall be required of the Consultant in order to bring the Project to a reasonable termination in accordance with the request of the City. The Consultant shall also provide to the City digital and mylar copies of all drawings and documents completed or partially completed at the date of termination. The Consultant is entitled to terminate this agreement by providing thirty (30) days written notice.
2. Compensation for Convenience Termination: If City shall terminate for its convenience, as herein provided, City shall compensate Consultant for all services completed to date prior to receipt of the termination notice. Compensation shall not include anticipatory profit or consequential damages, neither of which will be allowed.

3. Compensation for Default Termination: If the City shall terminate for cause or default on the part of the Consultant, the City shall compensate the Consultant for the reasonable cost of services completed to date of its receipt of the termination notice. Compensation shall not include anticipatory profit or consequential damages, neither of which will be allowed. The City also retains all its rights and remedies against the Consultant including but not limited to its rights to sue for damages, interest and attorney fees.
4. Incomplete Documents: Neither the Consultant, nor its subconsultant, shall be responsible for errors or omissions in documents which are incomplete as a result of an early termination under this section, the Consultant having been deprived of the opportunity to complete such documents and certify them as ready for construction.

**B. DISPUTE RESOLUTION**

City and the Consultant agree that disputes relative to the Project should first be addressed by negotiations between the parties. If direct negotiations fail to resolve the dispute, the party initiating the claim that is the basis for the dispute shall be free to take such steps as it deems necessary to protect its interests provided, however, that notwithstanding any such dispute the Consultant shall proceed with the services as per this Agreement as if no dispute existed.

**C. OWNERSHIP OF ENGINEERING DOCUMENTS**

All Engineering Documents prepared in connection with this Project shall be the property of the Consultant, whether the Project for which they are made is executed

or not; however, the Consultant shall provide the City a copy of all Engineering Documents as requested by the City and related to services for which the consultant has been compensated.

Reports, plans, specifications and related documents are the Consultant's copyrighted instruments, and the Consultant, at its option, may so identify them by appropriate markings. Provided that the Consultant is paid in full for its services, then the City may reuse these final documents without any additional compensation. However, such reuse shall be for City use and the Consultant shall have no liability for City alteration to the documents or for any use other than as intended pursuant to the terms hereof.

#### **D. INSURANCE**

Unless otherwise specified, the City shall be shown as an additional insured on all applicable insurance policies except professional liability and worker's compensation. All general and automobile liability insurance shall be written on an occurrence basis unless otherwise agreed to in writing by the City. The City shall be given written thirty (30) days notice of any insurance policy cancellation.

1. Professional Liability: The Consultant shall maintain, throughout the duration of this Agreement, Professional Liability Insurance in an amount not less than one million dollars (\$1,000,000), per claim and annual aggregate, and shall provide the City with certification attached to this Agreement.

2. Commercial General Liability

Each Occurrence      \$500,000

General Aggregate \$500,000

The policy must also include personal injury; products/completed operations; contractual liability and independent contractors.

3. Worker's Compensation: The Consultant shall retain Worker's Compensation Insurance in the statutory amounts.

4. Employer's Liability:

Bodily Injury by Accident \$100,000 (each accident)

Bodily Injury by Disease \$500,000 (policy limit)

Bodily Injury by Disease \$100,000 (each employee)

5. Automobile Insurance: The Consultant shall maintain a policy in the minimum amounts as required for general liability to protect against claims for bodily injury and/or property damage arising out of the ownership or use of any owned, hired and/or non-owned vehicle.

6. Industry Ratings: City will only accept coverage from an insurance carrier which offers proof that it:

- a) Is licensed to do business in the State of Kansas;
- b) Carries a Best's Policyholder rating of A or better; and
- c) Carries at least a Class X financial rating; or is a company mutually agreed upon by the City and Consultant.

7. Subconsultant's Insurance: If a part of this Agreement is to be sublet, the Consultant shall either:

- a) Cover all subconsultants in its insurance policies; or
- b) Require each subconsultant not so covered to secure insurance which will protect against all applicable hazards or risks of loss in the amount so designated.

Whichever option is chosen, the Consultant shall indemnify and hold harmless the City as to any and all damages, claims, or losses, including attorney's fees, arising out of the negligent acts or omissions of its subconsultants.

## **E. INDEMNITY**

1. Indemnify and Hold Harmless: For purposes of this Agreement, the Consultant hereby agrees to indemnify and hold harmless the City and its employees and officials from any and all loss to the extent caused or incurred in whole or in part as a result of the negligence or wrongful acts of the Consultant, its officers, subsidiaries, employees and subconsultants/assignees and their respective officers and employees, in the performance of services pursuant to this Agreement.

In the case of any claims against the City or its employees and officials indemnified under this Agreement, by an employee of the Consultant, its officers, subsidiaries, or subconsultant/assignees, the indemnification

obligation contained in this Agreement shall be limited to those losses caused by the negligence of the Consultant but shall not be limited by any limitation on amount or type of damages, compensation or benefits payable by or for the Consultant, its officers, subsidiaries, or subconsultant/assignees, under workers' compensation acts, disability benefit acts, or other employee benefit acts, as allowed by law. The Consultant's obligation hereunder shall not include amounts attributable to the fault or negligence of the City or any third party for whom the Consultant is not responsible.

**F. ENTIRE AGREEMENT**

This Agreement constitutes the entire agreement between the parties and supersedes all prior agreements, whether oral or written, covering the same subject matter. This Agreement may not be modified or amended except in writing mutually agreed to and accepted by both parties to this Agreement.

**G. APPLICABLE LAW**

This Agreement is entered into under and pursuant to, and is to be construed and enforceable in accordance with, the laws of the State of Kansas.

**H. ASSIGNMENT OF AGREEMENT**

This Agreement shall not be assigned or transferred by either the Consultant or the City without the written consent of the other.

**I. NO THIRD PARTY BENEFICIARIES**

Nothing contained herein shall create a contractual relationship with, or any rights in favor of, any third party.

**J. FEDERAL LOBBYING ACTIVITIES (Only applies to projects receiving federal funds via the City): N/A**

**K. COVENANT AGAINST CONTINGENT FEES**

The Consultant warrants that they have not employed or retained any company or person, other than a bona fide employee working for the Consultant, to solicit or secure this Agreement, and that they have not paid or agreed to pay any company or person, other than a bona fide employee, any fee, commission, percentage, brokerage fee, gifts, or any other consideration contingent upon or resulting from the award or making of this Agreement. For breach or violation of this warranty, the City may terminate this Agreement without liability or may, in its discretion, deduct from the contract price or otherwise recover the full amount of such fee, commission, percentage, brokerage fee, gift or contingent fee.

**L. COMPLIANCE WITH LAWS**

Consultant shall abide by all applicable federal, state and local laws, ordinances and regulations applicable to this Project until the Engineering Services required by this Agreement are complete. Consultant shall secure all occupational and professional licenses, permits, etc., from public and private sources necessary for the fulfillment of its obligations under this Agreement.

**M. TITLES, SUBHEADS AND CAPITALIZATION**

Title and subheadings as used herein are provided only as a matter of convenience and shall have no legal bearing on the interpretation of any provision of the

Agreement. Some terms are capitalized throughout the Agreement but the use of or failure to use capitals shall have no legal bearing on the interpretation of such terms.

**N. SEVERABILITY CLAUSE**

Should any provision of this Agreement be determined to be void, invalid unenforceable or illegal for whatever reason, such provisions shall be null and void; provided, however, that the remaining provisions of this Agreement shall be unaffected thereby and shall continue to be valid and enforceable.

**O. HAZARDOUS MATERIALS**

The Consultant and the Consultant's subconsultants shall have no responsibility for the discovery, presence, handling, removal, or disposal or exposure of persons to hazardous materials in any form at the Project site.

**P. AFFIRMATIVE ACTION**

The Consultant agrees to comply with the provisions of K.S.A. 44-1030, in the Kansas Acts Against Discrimination, and Section 10-113 eq seq of the Code of the City of Lawrence, Kansas, Affirmative Action in Public Contracts.

**Q. EXECUTION OF CONTRACT**

The parties hereto have caused this Agreement to be executed in duplicate this

\_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

**CONSULTANT**

By: \_\_\_\_\_

Gary S. Beck

Vice President

**CITY OF LAWRENCE, KANSAS**

By: \_\_\_\_\_

Thomas M. Markus

City Manager

APPROVED AS TO FORM:

\_\_\_\_\_

Toni Ramirez Wheeler

City Attorney

# Exhibit A

## Scope of Services for Flow Monitoring Program 2018 Flow Monitoring City of Lawrence, Kansas

### Background

The City of Lawrence has adopted a Rapid Inflow and Infiltration (I/I) Reduction Program. The objective of the Rapid I/I Program is an overall 35% reduction of I/I within the project area. In addition, flow monitoring will be conducted for other City monitoring initiatives. The other project initiatives will be to provide flow monitoring data for computer modeling and to provide metering sites for the City's Real Time Decision Support System (RTDSS).

This flow and rainfall monitoring and related data analysis project will be conducted to supplement the Rapid I/I Program and other City flow monitoring initiatives. Metering sites have been designated as temporary and permanent sites.

Temporary flow monitoring will be conducted at 20 locations for 90 days (Approximately from 3/15/2018 to 6/15/2018) with option to extend the flow monitoring for an additional 30 days at the following locations:

- Two locations will provide flow data for total project area surveillance; (Sites 2 & 3).
- Eight locations will isolate specific sub areas within the I/I reduction area; (Sites 4, 5, 7/8, 10, 11A, 12/13).
- Ten locations will be used to help calibrate a flow model for the City; (M1A/B/C, M2, M3, M4, M6A/B, M7A/B).

Permanent flow monitoring will be conducted at eight locations for 365 days (Approximately from 1/1/2018 to 12/31/2018) at the following locations:

- One location will monitor a pump station for KDHE bypass overflow reporting; (Site 1).
- Seven locations will be used for RTDSS monitoring; (R1, R2, R3, R4, 6, 9, 11).

Permanent rainfall monitoring will be conducted at five rain gauge locations for 365 days (Approximately from 1/1/2018 to 12/31/2018) at the following locations:

- Kaw Water Treatment Plant, Stratford Water Tower, Pump Station #44, Pump Station #9, and Pump Station #5

<u>Meter Purpose</u>	<u>Number of Sites</u>	<u>Temporary or Permanent</u>	<u>Duration</u>
Total Area Surveillance	2	Temporary	90 days
I/I Project Area Isolation	8	Temporary	90 days
Model Calibration	10	Temporary	90 days
KDHE Bypass Reporting	1	Permanent	365 days
RTDSS	7	Permanent	365 days
Rainfall	5	Permanent	365 days

*The data will be manually downloaded bi-weekly during the 90 day period for all thirty three (33) locations including the twenty (20) temporary flow monitors, eight (8) permanent and long term flow monitors, and five (5) rain gauges. Outside of this period the long term and permanent meters and rain gauges will be downloaded monthly for the remainder of their respective monitoring periods.*

*Letter reporting will be conducted on a bi-annual basis as a data submittal memorandum which will include equipment servicing records, performance summaries, and adjustments made. In addition, the characteristics of storm events that occurred during the reporting period will be described and a comparison to 2017, 2016, 2015, and 2014 data sets will be evaluated.*

*One data report will be developed following the culmination of the temporary flow monitoring session that will summarize the data collected. The report will include yearly comparisons, site descriptions, site maps, surcharge summaries, overflow summaries, rainfall summaries, scattergraphs, hydrographs, and site setup sheets.*

### **Task A – Project Management**

- 1. Administration.** Administration will include scheduling, invoicing and resource allocation of personnel and equipment.
- 2. Kickoff Meeting.** A kickoff meeting will be held with CITY personnel to discuss the scope, flow monitoring sites, schedule, and coordination of the project.
- 3. Project Status Meetings (2 Meetings).** Project status meetings will be held with City personnel to discuss the progress of data collection and other project items. The meetings will include site data reviews, quality control report reviews, data analysis reviews and general progress of the project.

### **Task B – 2018 Flow Monitoring Site Plan (28 Metering Sites)**

- 1. Preliminary Site Visits and Planning.** Flow monitoring will occur at a twenty six (26) previously monitored locations as a combination of I/I reduction area, isolation locations, and project area surveillance sites. Two (2) new monitoring sites will be added to the monitoring plan for M7A and M7B as part of the Model Calibration Sites.

The sites are summarized below:

- I/I reduction project area isolation at eight (8) sites.
- Model calibrations outside the I/I reduction area at ten (10) sites.
- RTDSS monitoring throughout the City at ten (10) sites.

Preliminary site visits will be conducted to develop a metering plan and to determine the appropriate monitoring equipment and setup for each site. If a proposed location is not considered suitable, CONSULTANT will investigate and recommend alternate locations. At sites determined to be used for flow monitoring, data will be collected for each site location and recorded. This data will include manhole depth and pipe diameter measurements, notations of manhole surcharge evidence and a measurement of depth and velocity of the flow stream. In addition, schematics and pictures of the flow monitoring sites' "in" and "out" piping will be made.

2. **Flow Monitoring Plan Report.** Following the site investigations, CONSULTANT will prepare a monitoring plan report for the spring 2018 Flow Monitoring. The monitoring plan will include a discussion about each site that includes site issues and/or concerns and includes the recommended monitoring equipment for the site. The monitoring plan will be discussed and reviewed with the CITY prior to installation.

#### **Task C – Temporary Flow Monitoring**

Temporary flow monitoring will include installation, servicing and removal of flow meters. Field servicing visits will be done on a bi-weekly basis for the 90 day monitoring period. Unplanned site visits to address meter malfunctions will be performed within two days of the identification of failure. During each site visit, sensors will be cleaned to ensure proper accuracy of measurement and manual level and velocity readings will be collected to confirm calibration of each flow meter. If it is found that velocity readings are not recorded between services, then velocity profiling will be done using the Manning's "n" calculations. All services will include confined space entry to conduct the service. Throughout the monitoring period, battery voltage levels and meter desiccant conditions will be monitored and replaced as needed to ensure proper function of the flow meters.

The flow monitoring will be conducted with Area Velocity (AV) flow meters set to log data at 5-minute intervals. Adjustments to the data will be made prior to analysis to account for level drifts and missing velocity data confirmed by manual measurements taken during each site visit.

1. **Spring 2018 - Total Surveillance.** Temporary flow monitoring will be conducted at two (2) sites for a 90 day period (3/15/2018 – 6/15/2018). Flow monitoring will provide total project surveillance of the entire collection system.
2. **Spring 2018 – I/I Project Area Isolation.** Temporary flow monitoring at eight (8) sites for a 90 day period (3/15/2018 – 6/15/2018). Flow monitoring will provide specific isolation of sub-basins in the Rapid I/I reduction area for pre and post construction comparison of flows from previously monitored years and tracking the progress of reduction results.
3. **Spring 2018 – Model Calibration.** Temporary flow monitoring will be conducted at ten (10) sites for a 90 day period (3/15/2018 – 6/15/2018). Flow monitoring will provide data for calibration of the City's computer hydraulic modeling of the collection system.

#### **Task D – Permanent Flow Monitoring**

Permanent flow monitoring will include installation of equipment, servicing and if necessary, removal or replacement of the flow meter. Flow monitoring equipment will be area-velocity meters. Field servicing visits will be done on a bi-weekly basis during the 90 day temporary monitoring period and on a monthly basis throughout the rest of the 365 day monitoring period. Unplanned site visits to address meter malfunctions will be performed within two days of the identification of failure. During each site visit, sensors will be cleaned to ensure proper accuracy of measurement and manual level and velocity readings will be collected to confirm calibration of the flow meter. If it is found that velocity readings are not recorded between services, then velocity profiling will be done using the Manning's "n" calculations. All services will include confined space entry to conduct the service. Throughout the monitoring period, battery voltage levels and meter

desiccant conditions will be monitored and replaced as needed to ensure proper function of the flow meters.

1. **Pump Station Overflow Bypass Reporting.** Flow monitoring will be conducted at one (1) site located at Pump Station 16. Flow monitoring will provide overflow data used for KDHE bypass reporting. The flow monitoring will be conducted with an AV flow meter set to log data at 5-minute intervals. The site will be monitored for 365 days (1/1/2018 – 12/31/2018). Site service visits will be monthly.

Permanent cell based telemetry and alarming will be conducted for Pump Station Overflow Bypass Site using a Teledyne Isco 2105ci remote telemetry unit.

2. **Real Time Decision Support System (RTDSS).** Flow monitoring will be conducted at seven (7) flow monitoring sites. The permanent flow monitoring will be used to support the City's RTDSS. The flow monitoring will be conducted with GBA Area Velocity (AV) flow meters set to log data at 5-minute intervals and will tie into the City's telemetry equipment. Each location will be monitored for 365 days (1/1/2018 – 12/31/2018). Services will be made on a bi-weekly basis during the 90 day temporary monitoring period and monthly for the remaining 275 days.

#### **Task E – Permanent Rainfall Monitoring**

Permanent rainfall monitoring will include servicing of the previously installed rain gauges. Field servicing visits will be done on a monthly basis throughout the 365 day monitoring period. Unplanned site visits to address meter malfunctions will be performed within two days of the identification of failure. During each site visit, sensors will be cleaned to ensure proper accuracy of measurement. All services will include an inspection of the equipment and a manual download of the rainfall data. Throughout the monitoring period, battery voltage levels and meter desiccant conditions will be monitored and replaced as needed to ensure proper function of the rain gauges.

1. **Total Project Area Rainfall Surveillance – 5 Sites for 365 Days.** Permanent rainfall monitoring will be conducted at five (5) sites for a 365 day period (1/1/2018 – 12/31/2018). The rainfall monitoring will provide rainfall coverage for the entire project area. The monitoring will be conducted with Teledyne Isco Tipping Bucket Rain Gauges previously installed in 2014 and set to log data at 5-minute intervals.

Permanent cell based telemetry and alarming will be conducted for the rain gauge sites using a Teledyne Isco 2105ci remote telemetry unit..

### **Task F – Online Data Access and Alarming**

Permanent cell-based equipment for remote data collection to provide access to real time data and meter alarming This will be achieved through remote access to the CONSULTANT'S FlowLink Pro database server that will enable meters to call in using Teledyne Isco 2105ci telemetry units installed at the eight (8) permanent flow metering sites and the five (5) permanent rainfall monitoring sites. In addition, all monitoring data including data from the temporary flow monitoring sites will be uploaded to the Web-based data server after collection for immediate client access. Online data access will enable the CONSULTANT and CITY to monitor data between services and for meters with modems to monitor reactions to rainfall events without having to service the meter.

1. **Maintenance of CITY Data on GBA Server.** GBA will maintain real time data as well as upload flow monitoring data to the GBA FlowLink Pro Telemetry Website for CITY access.

### **Task G - Data Adjustments.**

1. **Data Adjustments.** Flow meter data will be adjusted based on the specific site's manual measurements review and overall data review. Adjustments will be made to correct level and velocity drift. If velocity readings are not recorded between services then a Manning's curve will be used to estimate the velocities. Flow data will be adjusted on a monthly basis and included with data submittals. Adjusted and raw flow data will be included in flow data submittals.
2. **Mass Flow Balance.** A mass flow balance will be conducted at selected sites at the end of flow monitoring sessions. The flow balance is used to further determine the accuracy of the flow data by comparing flow site data of interconnected sites. The flow balance compares daily flows recorded. Adjustments to flow data for networks that do not balance will be weighted on the confidence level for each site.

### **Task H – QA/QC Reporting and Data Submittals**

1. **Bi-annual Reporting.** The bi-annual QA/QC report is important to verify that quality monitoring data is being collected. The QA/QC report will provide the flow and rainfall data. The bi-annual submittals will only contain data from the eight permanent monitoring sites; the pump station overflow and seven RTDSS sites. If the pump station overflow has activated, an overflow summary will be provided with the rainfall data.

Site issues experienced will be noted. A summary table of the manual measurements taken in the field and the corresponding monthly level and velocity graphs will be developed and continued throughout the project. The manual measurement table will be included in all formal data submittals. This table will provide confirmation of meter accuracy and a record of meter malfunctions or down-time.

A total of two QA/QC Reports with corresponding data will be submitted during the course of the project. Each report will build upon the previously submitted report and include a running total and new totals for number of metered days. The approximate schedule of QA/QC submittals is presented below:

QA/QC Report	Data Period		Approximate Submittal
	Start	Stop	
1	1/1/2018	6/30/2018	7/15/2018
2	7/1/2018	12/31/2018	1/15/2018

2. **Data Submittals.** The raw and the adjusted data for the level, velocity, and flow rate will be included in all QA/QC reports provided to the CITY. The QA/QC reports and data submittals will be uploaded to the FTP site for the CITY to download.

### Task I – Data Analysis

1. **Data Analysis.** Analysis of the flow data will be conducted using methods and procedures proven to be accurate and commonly used in the industry. These methods include determination of base flow (ADDF) and infiltration, peak I/I flow calculation and I/I volumetric calculation for each significant storm event. A correlation will be established for multiple storm events that can be used to project I/I for specific storm return intervals. A correlation factor will also be calculated to provide a confidence level for the established relationship. Daily and monthly totals will be determined at each site to provide further data analysis. These totals will be used to ultimately determine the success of the repairs that have been completed in order to reduce peak flows at the wastewater treatment plant.
2. **Pre and Post-Rehabilitation Flow Data Summary.** For monitoring sites that will be evaluated for I/I reduction levels after improvements, a method for comparison will be established through meetings with the CITY. Once the method is established, pre-rehabilitation data will be processed using this methodology. A summary of the comparison between pre and post-rehabilitation data will be provided with estimates of I/I removal levels.

### Task J – Flow Monitoring Reports

Project data reports will be submitted along with corresponding flow data. The front end summary of the report will include but is not limited to:

- A listing of meter locations
- A monitoring plan figure
- A basin flow schematic with tributary acres
- General monitoring procedures and discussion of issues experienced
- Tabulation of rainfall events
- Flow adjustments resulting from mass balance checks
- A summary of sub-basin flow parameters and the evaluation of excessive I/I in each sub-basin (*optional*)
- A comparison of 2018 flow data to the 2017, 2016, 2015 and 2014 flow data results to estimate reduction in I/I levels

The appendices of each report will include but are not limited to:

- Site sections with information on each site including estimated pipe capacities, evidence of downstream conditions, and the flow curve used to supplement data points with missing velocity or depth measurements
- Site sheets for each site with dimensions, pictures, and a site map accompanied by monthly flow hydrographs, depth and velocity graphs, and an overall scatter plot
- A tabulated summary of manual and recorded measurements from each site visit

1. **Draft Temporary Flow Monitoring Summary Report.** A draft temporary flow monitoring summary report will be developed for the temporary flow monitoring. The report will summarize work completed and present flow monitoring results. A review meeting will be held following the submittal of the temporary draft report in order to discuss comments from the CITY.
2. **Final Temporary Flow Monitoring Summary Report.** The final temporary flow monitoring summary report will be updated based on comments and direction provided in the review meeting. The final report and data will be submitted digitally with 2 hard copies and digital data included.

#### **Task K – Optional Services**

Optional services shall be provided only if approved by CITY. Compensation for these services will be at the given rates for this Task K. Authorization to proceed, if these services are requested, shall be in writing specifying CONSULTANT to perform these Optional Services.

1. **Extend Temporary Flow Monitoring for 30 Days - Field.** Flow monitoring will be conducted at the same twenty (20) temporary flow monitoring sites for an additional 30 days.
2. **Extend Temporary Flow Monitoring for 30 Days - Office.** Additional flow monitoring will require additional data review, adjustments, and analyses not accounted for in the initial 90 day flow monitoring data review. This will all be performed if flow monitoring is to be extended 30 days for the temporary flow monitoring.

**EXHIBIT B**  
**GEORGE BUTLER ASSOCIATES, INC.**  
**ENGINEERS/ARCHITECTS**  
**STANDARD HOURLY RATES – EFFECTIVE JULY 1, 2017**

<b>Employment Classification</b>	<b>Hourly Rate</b>
Principal	\$268.00
Senior Associate	219.00
Director of AES	219.00
Associate	188.00
Senior Lead AES	188.00
Senior Specialist	160.00
Project Leader	165.00
Lead AES	165.00
Specialist	145.00
Senior AES	155.00
Senior Technician	130.00
Project AES	130.00
Project Technician	100.00
Design AES	110.00
Design Technician	82.00
Staff AES	102.00
Staff Technician	70.00
Senior Construction Inspector	130.00
Construction Inspector 4	105.00
Construction Inspector 3	100.00
Construction Inspector 2	90.00
Construction Inspector 1	80.00
Senior Field Technician	110.00
Field Technician 3	90.00
Field Technician 2	80.00
Field Technician 1	70.00
Senior Professional Land Surveyor	130.00
Professional Land Surveyor	120.00
Survey Technician 3	100.00
Survey Technician 2	70.00
Survey Technician 1	52.00
2-Man Survey Party	170.00
Training Coordinator	93.00
Senior Administrative Assistant	93.00
Administrative Assistant	70.00
General Office 2	75.00
General Office 1	54.00

## **Equipment**

(CAD and Total Station Survey Equipment expenses are included in the above hourly rates unless otherwise stipulated by contract.)

Real Time Kinematic Global Positioning System Equipment (RTK)	60.00 per hour
Nuclear Density/Soil Testing Equipment	50.00 per day
Traffic Counters	20.00 per day

## **Expenses**

Reimbursable expenses (travel, vehicle mileage, vehicle rental, printing and plotting, meals, etc.) incurred will be charged at cost plus 10% to cover administrative overhead.

The following items will be charged as shown:

Company Pick-up Truck	0.53 per mile
Personal and Company Cars	0.53 per mile

**EXHIBIT C**  
**PROGRESS REPORT**

When requested by the City, Consultant will provide a written Progress Report in general accordance with Section II-A-7 of the Agreement. The progress report will generally follow the outline provided below.

**PROGRESS REPORT**  
**Month, Year**

Following is a report on progress by the Consultant in accordance with the Agreement:

- 1. Status of Work:**
- 2. Tasks to be Performed in the Next Month(s):**
- 3. Issues Which Need Direction from the City:**
- 4. Issues Which May Present a Problem for Meeting the Time Schedule:**
- 5. Out of Scope Work Performed / Additional Services:**

Exhibit D - Project Schedule

Work Tasks	2017												2018		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
<b>Task A - Project Management</b>															
1 Administration	[Solid black bar]														
2 Kickoff Meeting	▲														
3 Project Status Meetings (2 Meetings)				▲					▲						
<b>Task B - Flow Monitoring Site Plan (28 Sites)</b>															
1 Preliminary Site Visits and Planning	[Solid black bar]														
2 Flow Monitoring Plan Report		[Solid black bar]	▲												
<b>Task C - Temporary Flow Monitoring (20 Sites, 90 days)</b>															
1 Total Surveillance (2 Sites, 90 Days)															
2 I/I Project Area Isolation (8 Sites, 90 Days)															
3 Model Calibration (10 Sites, 90 Days)															
<b>Task D - Permanent Flow Monitoring (8 Sites, 365 Days)</b>															
1 Pump Station Overflow Bypass Reporting (1 Site, 365 Days)	[Solid black bar]														
2 Real Time Decision Support System (RTDSS) Monitoring (7 Sites, 365 Days)	[Solid black bar]														
<b>Task E - Permanent Rainfall Monitoring (5 Sites, 365 Days)</b>															
1 Total Project Area Rainfall Surveillance (5 Sites, 365 Days)	[Solid black bar]														
<b>Task F - Online Data Access and Alarming</b>															
1 Maintenance of CITY Data on GBA Server	[Solid black bar]														
<b>Task G - Data Adjustments (28 Sites)</b>															
1 Data Adjustments															
2 Mass Flow Balance															
<b>Task H - QA/QC and Operational Reporting</b>															
1 Bi-annual reporting															
2 Data Submittals															
<b>Task I - Data Analysis</b>															
1 Data Analysis															
2 Pre and Post-Rehabilitation Flow Data Summary															
<b>Task J - Flow Monitoring Reports</b>															
1 Draft 90 Day Temporary Report															
2 Final 90 Day Temporary Report															
<b>Task K - Optional Services</b>															
1 Extend Temporary Flow Monitoring for 30 days (20 Sites)															
3 Extend Temporary Flow Monitoring Office Activities															

▲ = Meetings  
▲ = Submittals