City of Columbia

701 East Broadway, Columbia, Missouri 65201

Agenda Item Number: R 141-15
Department Source: Public Works
To: City Council
From: City Manager & Staff
Council Meeting Date: 9/08/2015
Re: Professional Engineering Services Agreement with TREKK Design Group, LLC for Inflow & Infiltration Study of County House Branch Basin D and Flat Branch Basin G

Documents Included With This Agenda Item

Council memo, Resolution/Ordinance, Exhibits to Resolution/Ordinance
Supporting documentation includes: Map

Executive Summary

Authorizing an agreement with TREKK Design Group LLC of Columbia, Missouri for a not to exceed amount of $658,713, to provide professional engineering services related to the Inflow & Infiltration (I&I) Studies of Flat Branch Basin G (FB_G) and County House Basin D (CHB_D). TREKK was selected for this project in accordance with the City's professional consultant procurement guidelines.

Discussion

In October 2010, Council authorized an agreement with TREKK to perform an initial Sanitary Sewer Evaluation Study (SSES) for Flat Branch Basin D. The scope of work for this project included smoke testing, GPS survey of manhole lids, and internal and external inspections of all the buildings in the basin. TREKK Design Group has completed Sanitary Sewer Evaluation Studies for six (6) basins.

As part of the Sewer Utility's citywide I&I reduction program, staff is now proposing to hire TREKK Design Group to perform an SSES for two (2) additional basins (County House Branch D and Flat Branch Basin G). The proposed project will involve smoke testing of approximately 100,000 linear feet of sanitary sewer, GPS surveying of approximately 600 manhole rims, internal and external inspections of approximately 1,400 buildings, and updating the City's GIS data in an area shown on the attached diagram. The scope of services for the I&I study of CHB_D and FB_G is attached.

This project is Phase 5 of a multi-year citywide I&I reduction program. The purpose of the study is to locate the sources of stormwater and groundwater entering the sanitary sewer system so that the City can take the necessary measures to improve the sewer system and reduce I&I. Future I&I study areas will be selected based upon frequency of basement backups, manhole overflows and peak flow ratios in a given sewer basin. If TREKK successfully completes this I&I study, staff will likely pursue additional engineering agreements with TREKK to provide future I&I studies pending budget and Council approval.

TREKK Design Group, LLC has been selected for this project in accordance with the City's professional consultant procurement guidelines based upon their understanding of the project

requirements and their experience with similar projects. The total not to exceed contract amount of $658,713 is within the usual and customary guidelines for this type of project.

Fiscal Impact

Short-Term Impact: The engineering contract is for a not-to-exceed amount of $658,713 and will be paid from the Sewer Line Maintenance Operating account.
Long-Term Impact: Unknown at this time.

Vision, Strategic & Comprehensive Plan Impact

Vision Impact: Environment
Strategic Plan Impact: Infrastructure
Comprehensive Plan Impact: Environmental Management, Infrastructure

Suggested Council Action

Authorize the City Manager to execute an agreement with TREKK Design Group, LLC to provide professional engineering services for I&I Studies of CHB_D and FB_G.

Legislative History

04/20/15 (R66-15) setting a public hearing for May 19, 2015 for construction of the sanitary sewer main and manhole rehabilitation project.
09/02/14 (REP 84-14) Evaluation of Inflow and Infiltration Reduction in Flat Branch Basin D
03/03/14 (R32-14) Setting a public hearing for construction of the sanitary sewer main and manhole rehabilitation project
02/17/14 (REP 17-14) Evaluation of I&I Program
08/06/12 (R130-12) Authorizing an agreement for engineering services with TREKK Design Group, Inc. for completion of an inflow and infiltration study of the sewer collection system.
04/02/12 (R40-12) Public Hearing for Sanitary Sewer Main and Manhole Rehabilitation Project.
08/01/11 (R132-11) Authorizing an agreement for engineering services with TREKK Design Group, Inc. for completion of an inflow and infiltration study of the sewer collection system.
11/01/10 (R228-10) - Authorizing an agreement for engineering services with TREKK Design Group, Inc. for completion of an inflow and infiltration study of the sewer collection system.
07/22/09 - Council Work Session - Inflow & Infiltration presentation by PW staff and TREKK Consultants.
08/18/08 (R191-08) - Authorizing an agreement with TREKK Design Group for engineering services related to an inflow and infiltration study of the collection system.

John D. Glass
Department Approved

City Manager Approved

Introduced by _____ Council Bill No. _____R 141-15_____

A RESOLUTION

authorizing an agreement for professional engineering services with TREKK Design Group, LLC for an Inflow and Infiltration (I/I) study of the County House Branch-D and Flat Branch-G basin areas.

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF COLUMBIA, MISSOURI, AS FOLLOWS:

SECTION 1. The City Manager is hereby authorized to execute an agreement for professional engineering services with TREKK Design Group, LLC for an Inflow and Infiltration (I/I) study of the County House Branch-D and Flat Branch-G basin areas. The form and content of the agreement shall be substantially as set forth in "Exhibit A" attached hereto and made a part hereof.

ADOPTED this _____ day of _____, 2015.

ATTEST:

_____ _____

City Clerk Mayor and Presiding Officer

APPROVED AS TO FORM:

_____

City Counselor

AGREEMENT
For
PROFESSIONAL ENGINEERING SERVICES
Between
THE CITY OF COLUMBIA, MISSOURI
And
Trekk Design Group, LLC

THIS AGREEMENT made as of _____ day of _____, 20__, by and between the City of Columbia, Missouri, hereinafter called the CITY, and Trekk Design Group, LLC, hereinafter called the ENGINEER.

WITNESSETH, that whereas the CITY intends to make improvements as described below, hereinafter called the PROJECT, consisting of the following:

Inflow & Infiltration(I/I) Study – County House Branch-D and Flat Branch-G as described in Attachment A
(Description of Project)

NOW, THEREFORE, in consideration of the mutual covenants set out herein the parties agree as follows:

ENGINEER shall serve as CITY's professional engineering contractor in those assignments to which this Agreement applies, and shall give consultation and advice to CITY during the performance of the services. All services shall be performed under the direction of a professional engineer registered in the State of Missouri and qualified in the particular field.

SECTION 1 - AUTHORIZATION OF SERVICES

1.1 ENGINEER shall not undertake to begin any of the services contemplated by this agreement until directed in writing to do so by CITY. CITY may elect to authorize the PROJECT as a whole or in parts.

1.2 Authorized work may include services described hereafter as Basic Services or as Additional Services of ENGINEER.

SECTION 2 - BASIC SERVICES OF ENGINEER

2.1 General

2.1.1 Perform professional engineering services as set forth in Attachment A - "Scope of Basic Services," dated August 19, 2015.

2.1.2 The ENGINEER will designate the following listed individuals as its project team with responsibilities as assigned. The ENGINEER shall dedicate whatever additional resources are necessary to accomplish the PROJECT within the specified time frame but will not remove these individuals from the assigned tasks for any reason within the control of the ENGINEER without the written approval of the CITY.

Name and Title	Assignment
Mr. Jeffrey Kaestner, P.E.	Project Manager
Mr. Dan Hanner	Field Manager
Mr. Paul Anderson	Field Technician

All of the services required hereunder will be performed by the ENGINEER or under its supervision and all personnel engaged in the work shall be fully qualified and authorized or permitted under state and local law to perform such services.

None of the work or services covered by this Agreement shall be subcontracted without the prior written approval of the CITY and any work or services so subcontracted shall be subject to the provisions of this Agreement.

2.2 The ENGINEER shall furnish such periodic reports as the CITY may request pertaining to the work or services undertaken pursuant to this Agreement, the costs and obligations incurred or to be incurred, and any other matters covered by this Agreement.

2.3 The ENGINEER shall maintain accounts and records, including personnel, property and financial records, adequate to identify and account for all costs pertaining to the Agreement and any other records as deemed necessary by the CITY to assure proper accounting for all project funds. These records must be available to the CITY or its authorized representatives, for audit purposes, and must be retained for three (3) years after expiration or completion of this Agreement.

SECTION 3 - ADDITIONAL SERVICES OF ENGINEER

3.1 General

If authorized in writing by CITY, and agreed to in writing by ENGINEER, ENGINEER shall furnish or obtain from others Additional Services of the following types which are not considered normal or customary Basic Services. The scope of Additional Services may include:

3.1.1 Financial Consultation

Consult with CITY's fiscal agents and bond attorneys and provide such engineering data as required for any bond prospectus or other financing requirements

3.1.2 Property Procurement Assistance

Provide consultation and assistance on property procurement as related to professional engineering services being performed.

3.1.3 Obtaining Services of Others

Provide through subcontract the services or data set forth in Attachment A.

3.1.4 Preliminary or final engineering design of capital facilities except as specifically identified herein.

3.1.5 Preparation of reports, data, application, etc., in connection with modifications to FEMA floodplain definition and/or mapping.

3.1.6 Extra Services

Services not specifically defined heretofore that may be authorized in writing by CITY.

SECTION 4 - RESPONSIBILITIES OF CITY

4.1 Provide full information as to CITY's requirements for the PROJECT.

4.2 Assist ENGINEER by placing at ENGINEER's disposal available information pertinent to the assignment including previous reports and other data relative thereto, including the items outlined in Attachment A - "Scope of Basic Services," dated August 19, 2015.

4.3 Guarantee access to and make all provisions for ENGINEER to enter upon public and private property as required for ENGINEER to perform his services under this Agreement.

4.4 Examine all studies, reports, sketches, estimates, Bid Documents, Drawings, proposals and other documents presented by ENGINEER and render in writing decisions pertaining thereto.

4.5 Provide such professional legal, accounting, financial and insurance counseling services as may be required for the PROJECT.

4.6 Designate Mr. Nate Runyan, as CITY's representative with respect to the services to be performed under this Agreement. Such person shall have complete

authority to transmit instructions, receive information, interpret and define CITY's policies and decisions with respect to materials, equipment, elements and systems to be used in the PROJECT, and other matters pertinent to the services covered by this Agreement.

4.7 Give prompt written notice to ENGINEER whenever CITY observes or otherwise becomes aware of any defect in the PROJECT.

4.8 Furnish approvals and permits from all governmental authorities having jurisdiction over the PROJECT and such approvals and consents from others as may be necessary for completion of the PROJECT.

4.9 Furnish ENGINEER data such as probings and subsurface explorations, with appropriate professional interpretations; property, boundary, easement, right-of-way, topographic and utility surveys; zoning and deed restriction; and other special data or consultations, all of which ENGINEER may rely upon in performing his services under this Agreement.

SECTION 5 - PERIOD OF SERVICE

5.1 This Agreement will become effective upon the first written notice by CITY authorizing services hereunder.

5.2 This Agreement shall be applicable to all work assignments authorized by CITY subsequent to the date of its execution and shall be effective as to all assignments authorized.

5.3 Services shall be started within 10 calendar days of Notice to Proceed and completed within 455 calendar days from the issuance of the Notice to Proceed. CITY shall have the right to establish performance times for individual phases or elements of the PROJECT by delivering a written schedule setting out the performance times to the ENGINEER.

SECTION 6 - PAYMENTS TO ENGINEER

6.1 Amount of Payment

6.1.1 For services performed, CITY shall pay ENGINEER the sum of amounts determined as follows:

6.1.1.1 For time spent by personnel, payment at the rates indicated in the "Rate Schedule for Professional Services," Attachment B. Such rates include overhead and profit. The schedule is effective to December 2016, and may be revised thereafter.

6.1.1.2 For outside expenses incurred by ENGINEER, such as authorized travel

and subsistence, commercial services, and incidental expenses, the cost to ENGINEER.

6.1.1.3 For reproduction, printing, long-distance telephone calls, company vehicle usage, testing apparatus, computer services and computer-assisted drafting (CAD), amounts will be charged according to the ENGINEER's standard rates in effect at the time service is provided.

6.1.1.4 For professional services rendered by others as subcontractor(s) to ENGINEER such as surveying, real property descriptions, soil borings, subsurface investigations, laboratory testing, field quality control tests, progress photos, or other activities required or requested by CITY, will be billed at the cost to ENGINEER.

6.1.1.5 For time spent by outside individual professional consultants employed by ENGINEER in providing services to CITY, the cost to ENGINEER. Expenses incurred by such outside consultants in service to CITY shall be reimbursable in accordance with 6.1.1.2 above.

6.1.2 Total payment for Scope of Services and all other expenses and costs to the City under this agreement and described herein **shall not exceed $658,713.00.**

6.2 Payments

6.2.1 The ENGINEER shall submit an invoice for services rendered to the CITY not more than once every month. Upon receipt of the invoice and progress report, the CITY will, as soon as practical, pay the ENGINEER for the services rendered, provided the CITY does not contest the invoice, to the extent of ninety-five percent (95%) of the uncontested amount earned. Upon completion and acceptance of the final plans by the CITY, the five percent (5%) of these services retained by the CITY will be paid to the ENGINEER.

SECTION 7 - GENERAL CONSIDERATIONS

7.1 Insurance

7.1.1 ENGINEER'S INSURANCE: ENGINEER agrees to maintain, on a primary basis and at its sole expense, at all times during the life of this contract the following insurance coverages, limits, including endorsements described herein. The requirements contained herein, as well as CITY's review or acceptance of insurance maintained by ENGINEER is not intended to and shall not in any manner limit or qualify the liabilities or obligations assumed by ENGINEER under this contract

Commercial General Liability ENGINEER agrees to maintain Commercial General Liability at a limit of liability not less than **$2,000,000** combined single limit for any one occurrence covering both bodily injury and property damage, including accidental death.

Coverage shall not contain any endorsement(s) excluding nor limiting Contractual Liability or Cross Liability. If the contract involves any underground/digging operations, the general liability certificate shall include X, C and U (Explosion, Collapse and Underground) coverage.

Professional Liability ENGINEER agrees to maintain Professional (Errors & Omissions) Liability at a limit of liability not less than **$2,000,000** per claim and **$2,000,000** aggregate. For policies written on a "Claims-Made" basis, ENGINEER agrees to maintain a Retroactive Date prior to or equal to the effective date of this contract. In the event the policy is canceled, non- renewed, switched to an Occurrence Form, retroactive date advanced; or any other event triggering the right to purchase a Supplemental Extended Reporting Period (SERP) during the life of this contract, ENGINEER agrees to purchase a SERP with a minimum reporting period not less than two **(2)** years. The requirement to purchase a SERP shall not relieve ENGINEER of the obligation to provide replacement coverage.

Business Automobile Liability ENGINEER agrees to maintain Business Automobile Liability at a limit of liability not less than **$2,000,000** combined single limit for any one occurrence and not less than $150,000 per individual, covering both bodily injury, including accidental death, and property damage, to protect themselves from any and all claims arising from the use of the ENGINEER's own automobiles, and trucks; hired automobiles, and trucks; and automobiles both on and off the site of work. Coverage shall include liability for Owned, Non-Owned & Hired automobiles. In the event ENGINEER does not own automobiles, ENGINEER agrees to maintain coverage for Hired & Non-Owned Auto Liability, which may be satisfied by way of endorsement to the Commercial General Liability policy or separate Business Auto Liability policy.

Workers' Compensation Insurance & Employers' Liability ENGINEER agrees to take out and maintain during the life of this contract, Employers' Liability and Workers' Compensation Insurance for all of their employees employed at the site of the work, and in case any work is sublet, the ENGINEER shall require the subcontractor similarly to provide Workers' Compensation Insurance for all the latter's employees unless such employees are covered by the protection afforded by the ENGINEER. Workers' Compensation coverages shall meet Missouri statutory limits. Employers' Liability minimum limits shall be $500,000 each employee, $500,000 each accident and $500,000 policy limit. In case any class of employees engaged in hazardous work under this contract is not protected under the Workers' Compensation Statute, the ENGINEER shall provide and shall cause each subcontractor to provide Employers' Liability Insurance for the protection of their employees not otherwise protected.

Excess/Umbrella Liability The above liability limits may be satisfied by any combination of primary and excess/umbrella liability policies.

Additional Insured ENGINEER agrees to endorse CITY as an Additional Insured with a CG 2026 Additional Insured – Designated Person or Organization endorsement, or similar endorsement, to the Commercial General Liability. The Additional Insured shall

read "City of Columbia."

Waiver of Subrogation ENGINEER agrees by entering into this contract to a Waiver of Subrogation for each required policy herein except professional liability. When required by the insurer, or should a policy condition not permit ENGINEER to enter into an pre-loss agreement to waive subrogation without an endorsement, then ENGINEER agrees to notify the insurer and request the policy be endorsed with a Waiver of Transfer of Rights of Recovery Against Others, or its equivalent. This Waiver of Subrogation requirement shall not apply to any policy, which includes a condition specifically prohibiting such an endorsement, or voids coverage should ENGINEER enter into such an agreement on a pre-loss basis.

Certificate(s) of Insurance ENGINEER agrees to provide CITY with Certificate(s) of Insurance evidencing that all coverages, limits and endorsements required herein are maintained and in full force and effect. Said Certificate(s) of Insurance shall include a minimum thirty **(30)** day endeavor to notify due to cancellation or non-renewal of coverage. The Certificate(s) of Insurance shall name the City as additional insured in an amount as required in this contract and contain a description of the project or work to be performed.

Right to Revise or Reject CITY reserves the right, but not the obligation, to review and revise any insurance requirement, not limited to limits, coverages and endorsements based on insurance market conditions affecting the availability or affordability of coverage; or changes in the scope of work / specifications affecting the applicability of coverage. Additionally, the CITY reserves the right, but not the obligation, to review and reject any insurance policies failing to meet the criteria stated herein or any insurer providing coverage due of its poor financial condition or failure to operating legally.

7.1.2 HOLD HARMLESS AGREEMENT: To the fullest extent not prohibited by law, ENGINEER shall indemnify and hold harmless the City of Columbia, its directors, officers, agents and employees from and against all claims, damages, losses and expenses (including but not limited to attorney's fees) arising by reason of any negligent act or failure to act, or willful misconduct, of ENGINEER, of any subcontractor (meaning anyone, including but not limited to consultants having a contract with ENGINEER or a subcontractor for part of the services), of anyone directly or indirectly employed by ENGINEER or by any subcontractor, or of anyone for whose acts the ENGINEER or its subcontractor may be liable, in connection with providing these services except as provided in this Agreement. This provision does not, however, require ENGINEER to indemnify, hold harmless or defend the City of Columbia from its own negligence, except as set out herein.

7.1.3 Professional Oversight Indemnification

The ENGINEER understands and agrees that CITY has contracted with ENGINEER based upon ENGINEER's representations that ENGINEER is a skilled

professional and fully able to provide the services set out in this Agreement. In addition to any other indemnification set out in this Agreement, ENGINEER agrees to defend, indemnify and hold and save harmless the CITY from any and all claims, settlements and judgments whatsoever arising out of the CITY's alleged negligence in hiring or failing to properly supervise the ENGINEER.

The insurance required by this Agreement shall include coverage which shall meet ENGINEER's obligations to indemnify the CITY as set out above and the CITY shall be named as co-insured for such insurance.

7.2 Professional Responsibility

7.2.1 ENGINEER will exercise reasonable skill, care, and diligence in the performance of its services and will carry out its responsibilities in accordance with customarily accepted good professional engineering practices. If the ENGINEER fails to meet the foregoing standard, ENGINEER will perform at its own cost, and without reimbursement from CITY, the professional engineering services necessary to correct errors and omissions which are caused by ENGINEER's failure to comply with above standard, and which are reported to ENGINEER within one year from the completion of ENGINEER's services for the PROJECT.

7.2.2 In addition, ENGINEER will be responsible to CITY for damages caused by its negligent conduct during its activities at the PROJECT site or in the field.

7.3 Estimates and Projections

Estimates and projections prepared by ENGINEER relating to construction costs and schedules, operation and maintenance costs, equipment characteristics and performance, and operating results are based on ENGINEER's experience, qualifications and judgment as a design professional. Since ENGINEER has no control over weather, cost and availability of labor, material and equipment, labor productivity, construction contractor's procedures and methods, unavoidable delays, construction contractor's methods of determining prices, economic conditions, competitive bidding or market conditions and other factors affecting such estimates or projections, ENGINEER does not guarantee that actual rates, costs, performance, schedules, etc., will not vary from estimates and projections prepared by ENGINEER.

7.4 On-Site Services

PROJECT site visits by ENGINEER during construction shall not make ENGINEER responsible for construction means, methods, techniques, sequences or procedures; for construction safety precautions or programs; or for any construction contractor(s') failure to perform its work in accordance with the plans and specifications.

7.5 Changes

CITY shall have the right to make changes within the general scope of

ENGINEER's services, with an appropriate change in compensation, upon execution of a mutually acceptable amendment or change order signed by an authorized representative of the CITY and the President or any Vice President of the ENGINEER.

7.6 Suspension of Services

Should CITY fail to fulfill its responsibilities as provided under Section 4 to the extent that ENGINEER is unduly hindered in his services or if CITY fails to make any payment to ENGINEER on account of its services and expenses within ninety (90) days after receipt of ENGINEER's bill therefor, ENGINEER may, after giving seven (7) days' written notice to CITY, suspend services under this Agreement until CITY has satisfied his obligations under this Agreement.

7.7 Termination

Services may be terminated by the CITY at any time and for any reason, and by the ENGINEER in the event of substantial failure to perform in accordance with the terms hereof by the CITY through no fault of the ENGINEER, by ten (10) days' notice. If so terminated, CITY shall pay ENGINEER all uncontested amounts due ENGINEER for all services properly rendered and expenses incurred to the date of receipt of notice of termination.

7.7.1 In the event of CITY's termination of the Agreement pursuant to the above section, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs and reports prepared under this Agreement, shall at the option of the CITY become its property.

Further, the ENGINEER shall not be relieved of any liability to the CITY for any damages sustained by the CITY by virtue of any breach of this Agreement by ENGINEER and the CITY may withhold any payments due the ENGINEER for the purpose of set-off until such time as the exact amount of damages to the CITY, if any, is determined.

7.8 Publications

Recognizing the importance of professional development on the part of ENGINEER's employees and the importance of ENGINEER's public relations, ENGINEER may prepare publications, such as technical papers, articles for periodicals, and press releases, pertaining to ENGINEER's services for the PROJECT. Such publications will be provided to CITY in draft form for CITY's advance review. CITY will review such drafts promptly and will provide comments to ENGINEER. CITY may require deletion of proprietary data or confidential information from such publications but otherwise will not unreasonably withhold its approval. The cost of ENGINEER's activities pertaining to any such publication shall be paid entirely by ENGINEER.

7.9 Nondiscrimination

During the performance of this Agreement, ENGINEER agrees to the

following:

7.9.1. ENGINEER shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, disability, or national origin. ENGINEER shall take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, sex, age, disability, or national origin. 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. ENGINEER agrees to post notices in conspicuous places, available to employees and applicants for employment.

7.9.2 ENGINEER shall, in all solicitation or advertisements for employees placed by or on behalf of ENGINEER, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, disability, or national origin.

7.9.3 ENGINEER shall comply with all provisions of State and Federal Laws governing the regulation of Equal Employment Opportunity including Title VI of the Civil Rights Act of 1964.

7.10 Successor and Assigns

CITY and ENGINEER each binds himself and his successors, executors, administrators and assigns to the other party of this Agreement and to the successors, executors, administrators and assigns of such other party, in respect to all covenants of this Agreement; except as above, neither CITY nor ENGINEER shall assign, sublet or transfer his interest in the Agreement without the written consent of the other.

7.11 Rights and Benefits

ENGINEER's services will be performed solely for the benefit of the CITY and not for the benefit of any other persons or entities.

7.12 Compliance with Local Laws

ENGINEER shall comply with all applicable laws, ordinances and codes of the state and city.

7.13 Law; Submission to Jurisdiction Governing.

This Contract shall be governed by, interpreted and enforced in accordance with the laws of the State of Missouri and/or the laws of the United States, as applicable. The venue for all litigation arising out of, or relating to this Contract Document, shall be Boone County, Missouri or the United States Western District of Missouri. The parties

hereto irrevocably agree to submit to the exclusive jurisdiction of such courts in the State of Missouri and waive any defense of forum non conveniens

7.14 Employment of Unauthorized Aliens Prohibited

7.14.1 ENGINEER agrees to comply with Missouri State Statute section 285.530 in that they shall not knowingly employ, hire for employment, or continue to employ an unauthorized alien to perform work within the state of Missouri.

7.14.2 As a condition for the award of this contract ENGINEER shall, by sworn affidavit and provision of documentation, affirm its enrollment and participation in a federal work authorization program with respect to the employees working in connection with the contracted services. ENGINEER shall also sign an affidavit affirming that it does not knowingly employ any person who is an unauthorized alien in connection with the contracted services.

7.14.3 ENGINEER shall require each subcontractor to affirmatively state in its contract with ENGINEER that the subcontractor shall not knowingly employ, hire for employment or continue to employ an unauthorized alien to perform work within the state of Missouri. ENGINEER shall also require each subcontractor to provide ENGINEER with a sworn affidavit under the penalty of perjury attesting to the fact that the subcontractor's employees are lawfully present in the United States.

7.15 No Waiver of Immunities

In no event shall the language of this Agreement constitute or be construed as a waiver or limitation for either party's rights or defenses with regard to each party's applicable sovereign, governmental, or official immunities and protections as provided by federal and state constitutions or laws.

7.16 Entire Agreement

This Agreement represents the entire and integrated Agreement between ENGINEER and CITY relative to the Scope of Services herein. All previous or contemporaneous agreements, representations, promises and conditions relating to ENGINEER's services described herein are superseded.

[SIGNATURES ON FOLLOWING PAGE]

CITY OF COLUMBIA, MISSOURI

By: _____
Mike Matthes, City Manager

ATTESTED BY:

_____
Sheela Amin, City Clerk

APPROVED AS TO FORM:

_____
Nancy Thompson, City Counselor

CERTIFICATION: I hereby certify that the above expenditure is within the purpose of the appropriation to which it is charged, Account No. , and that there is an unencumbered balance to the credit of such appropriation sufficient to pay therefor. 555-6320-6343 49-90

_____
Director of Finance

ENGINEER

By: _____
Kimberly Robinett/Managing Partner

By: _____
(Name/Title)

NOTICE TO VENDORS
Section 285.525 – 285.550 RSMo Effective January 1, 2009

Effective January 1, 2009 and pursuant to RSMo 285.530 (1), No business entity or employer shall knowingly employ, hire for employment, or continue to employ an unauthorized alien to perform work within the state of Missouri.

As a condition for the award of any contract or grant in excess of five thousand dollars by the state or by any political subdivision of the state to a business entity, or for any business entity receiving a state administered or subsidized tax credit, tax abatement, or loan from the state, the business entity shall, by sworn affidavit and provision of
documentation, affirm its enrollment and participation in a federal work authorization program with respect to the employees working in connection with the contracted services. Every such business entity shall sign an affidavit affirming that it does not knowingly employ any person who is an unauthorized alien in connection with the contracted services. [RSMO 285.530 (2)]

An employer may enroll and participate in a federal work authorization program and shall verify the employment eligibility of every employee in the employer's hire whose employment commences after the employer enrolls in a federal work authorization program. The employer shall retain a copy of the dated verification report received
from the federal government. Any business entity that participates in such program shall have an affirmative defense that such business entity has not violated subsection 1 of this section. [RSMO 285.530 (4)]

For vendors that are not already enrolled and participating in a federal work authorization program, E-Verify is an example of this type of program. Information regarding E-Verify is available at:
http://www.dhs.gov/xprevprot/programs/gc_1185221678150.shtm.

CITY OF COLUMBIA, MISSOURI
WORK AUTHORIZATION AFFIDAVIT
PURSUANT TO 285.530 RSMo
(FOR ALL BIDS IN EXCESS OF $5,000.00)

Effective 1/1/2009

County of Clay)
) ss.
State of Missouri)

My name is Kimberly Robinett. I am an authorized agent of TREKK Design Group, LLC (Bidder). This business is enrolled and participates in a federal work authorization program for all employees working in connection with services provided to the City of Columbia. This business does not knowingly employ any person who is an unauthorized alien in connection with the services being provided. **Documentation of participation in a federal work authorization program is attached to this affidavit**.

Furthermore, all subcontractors working on this contract shall affirmatively state in writing in their contracts that they are not in violation of Section 285.530.1 RSMo and shall not thereafter be in violation. Alternatively, a subcontractor may submit a sworn affidavit under penalty of perjury that all employees are lawfully present in the United States.

Affiant

Kimberly Robinett
Printed Name

Subscribed and sworn to before me this 28 day of August, 2015

Notary Public

SERGIO WESCOTT
Notary Public - Notary Seal
State of Missouri
Commissioned for Clay County
My Commission Expires: July 01, 2016
12362792

Attachment A
Scope of Services
City of Columbia, Missouri
Inflow & Infiltration (I/I) Study – County House Branch-D and Flat Branch-G

August 19, 2015

The City of Columbia (City) provided TREKK Design Group, LLC, (TREKK) basin information for County House Branch – D (CHB-D), and Flat Branch – G (FB-G) sewer sheds on Thursday, August 13, 2015. The City requested a Scope of Services to complete this study similar to previous studies performed by TREKK. TREKK is providing this cost estimate to complete basins CHB-D and FB-G together as one project. A brief summary of the individual basins areas included in this cost estimate are provided below.

TREKK will furnish all necessary labor, supervision, equipment and material to provide flow monitoring, sanitary sewer smoke testing, GPS survey of manhole rims, internal and external inspections, and CCTV sewer inspection of sewer mains and sewer service lateral lines. TREKK will update the City's hydraulic model and provide a Technical Project Memorandum that documents our field approach, summarizes results and findings and discusses hydraulic capacity observations. The City will use condition assessment and defect data to develop a rehabilitation plan.

County House Branch – D

This sewer shed is primarily comprised of single family residential homes. There are approximately 721 parcels in this area with 896 mailing addresses. There are 415 identified manhole structures to be inspected, and 69,865 linear feet of sewer pipe to be inspected. There is a single outfall flow meter location at Manhole 5O25.

Flat Branch – G

This sewer shed is primarily residential, single family homes. There 416 parcels and 440 mailing addresses. The sewer shed includes 161 manhole structures and 30,051 linear feet of sewer pipe to be inspected. Outfall monitoring will be required at two flow meter locations at Manhole 3A76 and 3A183.

The description of task's TREKK will perform are outlined below. Based on direction from the City, TREKK has developed an estimated budget for the combined basin estimate for CHB-D and FB-G to be completed together.

Project Administration and Kick-off Meeting
TREKK will communicate with the City's assigned Project Manager on schedule progress and proposed activities. Mr. Jeffrey Kaestner will be the TREKK Project Manager and will serve as the City's single point of contact. Field work will be completed from our Columbia office with support from other TREKK offices as needed.

TREKK will coordinate a project kick-off meeting prior to starting field work. The purpose of the meeting will be to share project objectives, discuss schedules and key project milestones, and discuss field procedures and expected communication during field activities.

Throughout the duration of this project, TREKK will meet with the City monthly to provide a progress update and discuss any issues that may affect project timing or budget. This meeting

will be scheduled each month following the monthly invoice cycle. The Invoice will be submitted with a brief project status report that will include the following:

- Invoice summary with percent completed and number of units billed for unit rate billing task and hours and expenses billed for hourly tasks completed during the month and project-to-date
- Project schedule with visibility of key milestones
- Brief summary of work completed
- Project issues with proposed resolution dates and assignments

Public Relations

TREKK fully understands the significance of public relations and the complexity of the areas targeted as a part of this project. TREKK will meet with the City, Downtown Business owners and the University to ensure that tasks are coordinated with all stake holders in an effort to minimize disruption. Notifying the public about work being scheduled in the study area is important, especially as TREKK employees will be performing work in streets, yards and homes. Open communications with residents help us create a safe work environment, educate residents on the project initiatives the City is pursuing and minimize distractions to implementing field work. While these efforts are time intensive the communication of our efforts is essential.

TREKK will update previously developed brochures. Following City approval, we will provide printed copies for the City to mail to residents and business owners. TREKK will work with the City to develop a mailing schedule to align with proposed field work. Our staff will also have flyers on hand to distribute to residents as we complete the field work tasks. TREKK can also help the City communicate the work being performed via alternate communication methods.

Prior to smoke testing and building inspections, TREKK will hang flyers on doors in the work area. The notice will include a description of the work being performed and contact information for TREKK and City staff. This will inform residents of when workers will be in the area and how to identify them and will include contact information should they have concerns. Instructions and precautions will be provided to residents prior to smoke testing to inform them to pour water into trapped or infrequently used drains to prevent smoke from entering the building. The oil used to generate smoke is proven to be non-toxic, non-staining, and has no odor. The smoke is white to gray in color, does not create a fire hazard, and is not harmful to people or pets. Safety Data Sheets will be provided to the City and will be available through field crews. Field work will be performed by TREKK staff who are familiar with the City.

Flow Meter Assessment/Installation

TREKK will install flow meters at selected locations to monitor the basin areas for dry and wet weather flow. TREKK will incorporate temporary rain gauges in the basin area to be monitored during flow metering, this information into the hydraulic study. The purpose of the pre-rehabilitation flow monitoring is to create a baseline flow and qualify system I&I. The collected flow data will also be utilized to measure the results of the rehabilitation efforts as recommended by the study. TREKK will incorporate industry standards along with our knowledge and collective experience to estimate Inflow and Infiltration (I/I) during wet weather events and from groundwater sources.

TREKK will work with the City during the kick-off meeting to identify meter locations and discuss appropriate metering time and duration.

Following field observations, TREKK will perform a site assessment of the target meter locations and suggest any relocations. Completing a pre-installation survey is important to:

1. Identify a sewer's suitability for accurate metering. The accuracy of open channel flow metering will depend on numerous variables, and it is imperative that as many of these variables be identified and managed as possible. Suitability area studies include geometric flow conditions, pipe size and condition, evidence of surge, elevation of manhole configuration and collection system areas of influence.
2. Identify safe access to meter location. During meter installation and routine maintenance and data downloads, TREKK staff will compete a confined space entry of the structure. Safety considerations, including terrain, traffic, pipe configuration and accessibility to support vehicles, will be considered.

TREKK will install and maintain flow meters for the study duration. We have assumed a 60-day study period for purposes of preparing an estimated cost for this task. If significant wet weather events are not recorded during this period, the City will have an option to extend the monitoring duration.

Successful flow monitoring programs all center on collecting accurate data. Meters are installed in uncontrolled, non-uniform environments. Sensors require a minimum amount of dry weather flow and are subject to debris from sanitary and stormwater sources. Routine maintenance is required to record correct flow data. TREKK will visit each site weekly during routine field activities to download data and perform sensor cleaning as required. During periods where routine activities are not in progress, TREKK will download data every two weeks.

Flow Monitoring

TREKK will provide labor and equipment required to provide flow monitoring in each of the study areas. This will include flow meters installed in strategic sewers with sufficient rainfall gauges to document wet weather events. The purpose of this task is to provide a baseline assessment of dry and wet weather flow from each area and additional data points for the City's system-wide hydraulic model. The exact meter site locations will be discussed during the kick-off meeting. TREKK proposes to collect this data during Spring 2016. Flow monitoring will include a 60-day installed period with weekly site visits to download data and perform meter maintenance, including meter calibration, velocity profiling, cleaning and battery replacement, as needed. If insufficient wet weather events are recorded to capture flows that correlate to modeled flow additional monitoring period will be requested.

TREKK will install rain gauges for the flow monitoring period. Gauges will record rainfall to one-hundredth of an inch increments and 15 minute total rainfall intensities. The gauges will be downloaded and checked each week.

Hydraulic Model Network Alignment

TREKK will update the City's existing Hydra model with new information and correct discrepancies between the existing model database and the current sewer system configuration form data collected during these studies. Missing network sections and attributes will be incorporated utilizing information provided by TREKK field staff, including survey data on manhole rims, pipe size, pipe material and invert elevations. This information will improve model accuracy and provide accurate slopes and material selection for Manning's Roughness Coefficient numbers. The model currently includes pipes greater than 8 inch diameter. The resultant hydraulic model networks will be prepared for CHB-D and FB-G,.

Hydraulic Model Calibration

Hydraulic model calibration will be conducted at the flow monitoring locations for each branch. Separate models will be analyzed for both dry and wet weather conditions. The initial base flow model will be calibrated to the measured diurnal flow rate measured during dry weather

conditions. A connectivity check will be conducted in the model by inputting flows in the system's upper extremities and running flow through the model while helping ensure the simulated flows do not overload the system and cause backups and/or overflows. The resultant output tables and graphs provide comparisons of inflow and outflow volumes for the simulation period and are utilized to successfully obtain network connectivity.

Once the model has been calibrated for dry weather conditions, unit rates for I/I will be added to the model to evaluate system hydraulic performance under wet weather events. Wet weather events will include a statistical 5-year, 60-minute design storm or a design storm requested by the City. The model calibrated for the storm event will represent current conditions with no reduction of extraneous I/I. The model will provide sizes for parallel and/or replacement sewer lines required to transport peak wet-weather induced flow. All analysis will be provided in computer output format indicating the total peak design flow rate, percentage of existing pipe capacity utilized in transporting the remaining peak flow and relief or replacement sewer needs.

Hydraulic Model I/I Reduction Scenarios
After completing the hydraulic model calibrations for dry and wet weather conditions, alternate scenarios for I/I reduction can be evaluated for a series of I/I removal rates. This information will allow the City to identify sewers where capacity related issues can be minimized through I/I reduction and prioritize projects within the basin where it is cost effective to rehabilitate existing sewers or where increased capacity is required.

Smoke Testing
Smoke testing will be conducted on all sewer segments located within the basin study area for both public and private segments. Smoke testing activities will include a minimum of 48 hour advance notice to all businesses and residents via door hangers. TREKK staff will place hangers as the work proceeds, estimating how long each neighborhood will require. In the event that weather delays progress, TREKK will not place door hangers in areas more than two (2) weeks in advance.

Smoke will be used to identify line and manhole defects in the collection system. High rate blowers and liquid smoke will be used to create a constant supply of smoke in the segment to be tested. Field crews will canvass the immediate area near the manhole and adjacent lines and observe perimeter building locations. Observed smoke for defects will be recorded, photographed and field GPS located to create a defect map. Interior building plumbing defects, such as dry p-traps, faulty drains or vents, will not be recorded unless residents notify the field crews of smoke in the building. TREKK staff will not enter homes while completing smoke testing to investigate plumbing issues.

Photographic records will be used to supplement and substantiate smoke testing observations. All smoke testing inspections will be recorded on TREKK field forms and provided to the City in a database compatible with ArcView GIS software. The City will use this information to generate rehabilitation plans. TREKK is not being asked to prepare a prioritization of work or make recommendations.

Building Inspections
Smoke testing cannot locate and confirm every possible I/I defect on private or public properties. TREKK proposes to perform building inspections on all accessible buildings in the basin area to identify sources of I/I entering the sewer. Sources could include roof drains, yard drains, sump pumps, foundation drains and other illicit connections. Advance notification to all residents will be done by placement of door hangers on homes and businesses.

The inspection will be conducted by a two person inspection team. An attempt will be made to obtain information about basement flooding from the individual providing access to the property. The building's exterior and basement area will be inspected. No inspection of crawl spaces will be performed. Stormwater and groundwater source connections to the sanitary sewer will be noted and described. Source areas for each connection will be estimated, such as surface area drained and type of surface condition.

Four attempts will be made to complete the building inspection. The first three attempts will be made by scheduling an appointment via phone. If unresponsive, a fourth attempt will be made through an unscheduled visit to the property by the survey team. Outside observations will be documented at that time, where they can be performed safely, and documentation that the interior was not inspected will be noted. Scheduled site visits will be grouped together by neighborhood, where possible. TREKK will complete as many inspections as possible when other work is being done.

Building inspection will be billed on a unit completed basis and will be considered complete after four documented attempts. The City will provide TREKK property owner information and contact addresses and phone numbers.

CCTV Inspection of Mainline Sewers

Data gathered from the smoke testing and manhole/visual pipe inspections will be analyzed for further pipe cleaning and internal television inspection. CCTV inspections will be conducted utilizing a camera with pan and tilt capabilities. The pulling or pushing cable or tractor unit will have a footage meter on that the location of the camera and point of observation will be known at all times with reference to the starting manhole. CCTV equipment will be used to visually inspect each pipe where additional assessment is required to assess the condition and capacity of the sewer.

TREKK will meet with the City and present a plan, with rationale for the selection of sewers to be reviewed, for approval prior to starting any field work. CCTV inspections will be conducted utilizing a camera with pan and tilt capabilities. The pulling or pushing cable or tractor unit will have footage meter capabilities for the location of TV cameras and point of observation will be known from reference to the starting point manhole. The camera will pan to all service connections and each tap will be located in the line. A description of each observed structural defect and I/I source will be documented.

The City will provide TREKK with sewer maps including manhole locations with asset number. TREKK will provide updated maps with new sewers, sewer construction information, and unrecorded manholes. We will assign temporary manhole numbers to unrecorded structures.

The City is not requiring TREKK to collect pipe condition information in NASSCO PACP or MACP format. However, TREKK's standard forms meet current NASSCO requirements and our field staff are proficient at collecting data meeting this standard.

Computer generated television inspection reports created with Granite XP Software, or similar, will be produced at the conclusion of the project and submitted to the City with sewer video tape. Written reports will contain upstream manhole, downstream manhole, street address, date, pipe diameter, pipe material, direction of inspection, line footage, lateral and observations locations and digital photographs of defects and their relative severity.

TREKK will make one reverse set up attempt at the down-stream manhole to complete inspection of the sewer if a blockage or structural defect is encountered that will not allow the camera to pass through. If the reverse set up does not provide access to complete the inspection, TREKK will notify the City. If there is a significant amount of debris or water in the sewer, the City will be informed of the condition. TREKK has not included cost for cleaning, but

as footnoted in the cost estimate, this service can be provided on an hourly rate, if requested by the City.

CCTV Inspection of Sanitary Sewer Service Laterals
An additional inspection can be completed if defects are observed in the service lateral during smoke testing and sewer inspection. Lateral inspection will be recommended in areas with multiple observed lateral defects or where the City feels that connections to sanitary sewers include sources of stormwater connections. TREKK will prepare a plan for lateral inspections for the City's approval prior to starting field work.

TREKK will perform CCTV inspection of sewer laterals through existing cleanout access points. Service laterals will be inspected from either the house to the main or from an outside clean out. No construction of access points will be performed. The pushing cable will have a footage meter so that the location of the camera and point of observation will be known at all times with reference to the point of entry.

TERKK will use sonde locator devise connected to the camera during the service lateral inspection. The sonde will be used to locate the service lateral. Flagging will be used to identify the service lateral and connection to the main sewer line where possible. A field sketch will be completed for each service lateral property identifying point of entry, approximate location of the lateral and sewer connection. A photograph of the area with lateral flagging will be taken.

Blockages in the sewer lateral lines that will not allow the passage of the camera equipment will be reported to the City.

A digital video will be provided to the City. The video will include recorded footage and be tagged by service lateral address for easy indexing.

Dye Water Testing
Follow-up dyed water testing of suspect I/I sources identified during smoke testing and visual building inspections will be performed to verify direct connection to the sanitary sewer. TREKK will prepare a list of suspect sources to be dye tested and meet with the City for approval prior to starting field work. Dye testing is a practical method of confirming connection if other techniques used during visual observations are not conclusive.

TERKK will provide a fully equipped dye testing trailer that will be used to introduce a fluorescent dye with water into the suspect source. Staff will observe area outlets and manholes for the observation of the dye to confirm connections.

Dye testing will be performed during CCTV inspection, if possible, to observe and accurately identify the connection locations.

Photographic records will be collected of each confirmed dye source. All observations will be documented on dye water test field forms and provided to the City in an Access database.

Manhole Rim GPS Survey
TREKK will provide a sub-meter accurate GPS survey of manhole locations in the basin area. If satellites are not attainable, the location will be noted and an offset survey will be conducted.

Summary Report
The deliverable for individual task are described in the task, where applicable. TREKK will provide the City a summary Project Technical Memorandum to document the study observations. Results from flow monitoring, hydraulic modeling, building inspections, smoke testing and dye water testing will be provided in tabular format to help the City develop rehabilitation plans. A summary list of sewer defects will be compiled and prioritized based on severity and volume of flow potential. Format for the summary report and specific source type will be coordinated at the project kick-off meeting.

I/I estimates will be based on the following unless specifically altered:

- Source type
- Source category, public or private
- Number of sources
- Unit flow rate based on a specified storm event
- Rank of unit flow based on volume contribution
- Map of defects in basin area

The City can use this list to assign rehabilitation cost to categories and develop a cost/flow analysis to evaluate different rehabilitation options.

Compensation

The City requested unit rate billing for project tasks that can be estimated as units of work. The attached spreadsheet breaks down the unit rates and estimated quantities for each basin area. There are steps associated with some tasks that are difficult to assume a standard level of effort and provide a unit rate. These are estimated as Time and Materials.

The City will only be billed for actual units completed and additional units exceeding the estimated quantities will be billed at the unit rate for the service with prior approval from the City. Time and Material portion of the task work will be invoiced based on actual hours worked. TREKK will provide updates on the number of units completed and estimates of required quantities required to complete the project.

TREKK will self-perform this work utilizing staff from our Columbia, Missouri office where possible. This will minimize travel related expenses and, most importantly, provide the City flexibility in work task completion. Many of the proposed activities are weather dependent to various degrees. For example smoke testing in certain soil conditions and select defect source areas is less effective in saturated soil conditions.

TREKK

August 20, 2015

Project Cost - I&I Study, CHB-D, FB-G, FB-I, FB-C

Combined CHB-D and FB-G

Cost breakdown for Unit and Time and Material budget by task

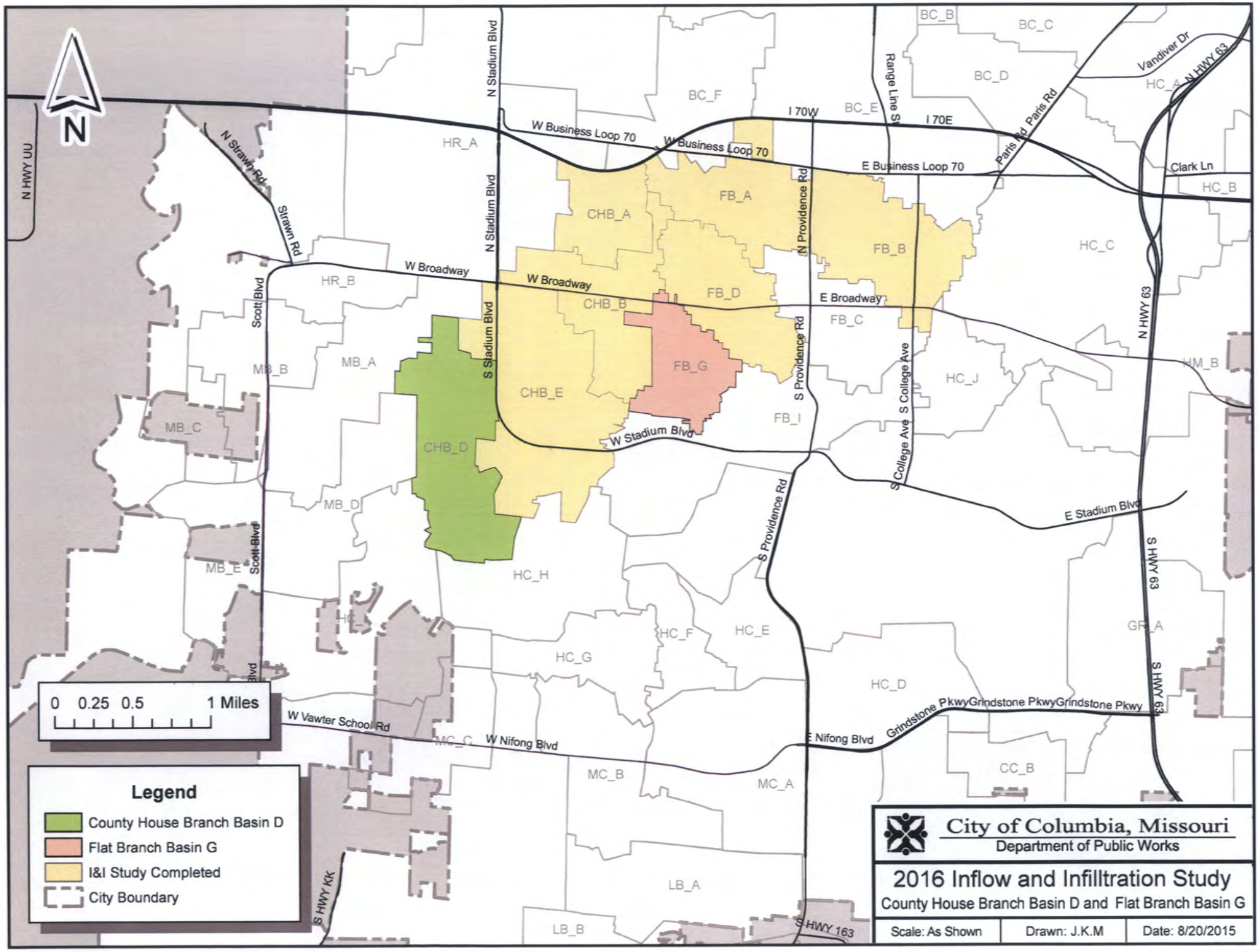
WORK TASK DESCRIPTION	Unit Costs				Hourly + Expenses															
	Units	Quant	Rate	Subtotal	PM	APM	PE	OTH	OTHI	FTI	FTH	GIS	Billing	FM	Admin	Total Hours	Expenses	Labor Subtotal	Total Costs
1. Project Meetings/Management & Administration																			
1a. Kick-off Meeting					8	4						18		8		38	$300	$4,085	$4,385
1b. Project Meetings (6) & Administration					68	36	8						6	40	22	180		$23,342	$23,342
2. Public Relations																			
2a. Communication Plan and Materials					2							20			48	70	$500	$4,935	$5,435
2b. Distribution of Door Hangers (Smoke and Building Inspection)	Address	1,336	3.45	4,609												0		$0	$4,609
3. Flow Monitoring																			
3a. Flow Meter Installation (Meter and gauge)	Each	5	525.00	2,625												0		$0	$2,625
3b. Flow Monitoring (60 days)	Meter-days	180	57.00	10,260												0		$0	$10,260
3c. Rainfall Monitoring (60 days)	Gage-days	120	18.00	2,160												0		$0	$2,160
3d. Flow Data Analysis					2	8	18	40			45				60	173		$14,317	$14,317
4. Hydraulic Modeling																			$0
4a. Network Development/Confirmation						50	36	48				60				194		$19,982	$19,982
4b. Model Calibration						24	64	80				45				213		$21,730	$21,730
4c. Model I&I Reduction Scenarios					6	36	60	48								150	$250	$17,703	$17,953
5. Smoke Testing	LF	99,918	0.41	40,966														$0	$40,966
6. Internal/External Building Inspections																			
6.a Inspection Scheduling	Address	1,336	11.50	15,364														$0	$15,364
6.b Residential Building Inspections	Address	782	200.00	156,312					30	60						90		$7,781	$164,093
6.c External Building Inspection	Address	421	95.00	39,980														$0	$39,980
6.d Commercial/Institutional Building Inspections (10%)	Address	134	250.00	33,400						38						38		$3,791	$37,191
7. Light Cleaning and CCTV																			
7.a Cleaning & CCTV Sewer Main Inspections (5%)	LF	9,992	4.50	44,962														$0	$44,962
7.b Mobilization	LS	1	2,500.00	2,500														$0	$2,500
8. CCTV Lateral Inspections (5%)																			
8.a Mobilization	LS	1	1,500.00	1,500														$0	$1,500
8.b CCTV Lateral Inspections from the Main	Each	57	285.00	16,202						40						40		$3,990	$20,192
8.c CCTV Lateral Inspections from the House	Each	57	220.00	12,540						40						40		$3,990	$16,530
9. Dyed Water Testing																			
9.a Private Sector Dyed-Water Testing (Residential)	Defect	80	190.00	15,200														$0	$15,200
9.b Private Sector Dyed-Water Testing (Commercial)	Defect	20	225.00	4,500														$0	$4,500
9.c Public Sector Dyed-Water Testing (estimated)	Defect	30	300.00	9,000														$0	$9,000
10. Inspect/Survey Manholes																			
10.a Inspect Remaining Manholes	Each	576	115.00	66,240														$0	$66,240
10.b Survey Manholes	Each	576	35.00	20,160														$0	$20,160
11. Summary Report																			
11.a Summary of Findings and Deliverable Meetings with City					12	40	48	80		35		40			24	279	$150	$28,271	$28,421
11.b Final Summary of Findings and Deliverables					4	8		16		4		8			16	56	$100	$5,019	$5,119
PROJECT TOTAL				$498,480													$1,300	$158,933	$658,713
Total hours by bill class					162	266	234	312	30	217	45	191	6	48	170				

Notes:

1 Combined

Number of parcels	1137
Number of mailing addresses	1336
Number of manholes	576
Length of sewer	99916
Basin exit meter locations	3

2 Field work for building and manhole inspections to begin October 2015. Flow metering to begin March 2016. Data analysis, meetings with City, and reporting to be completed December 2016


N
N HWY UU
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Strawn Rd
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N Stadium Blvd
Range Line St
Paris Rd
Vandiver Dr
N HWY 63
Clark Ln
N Providence Rd
W Broadway
E Broadway
Scott Blvd
S Stadium Blvd
S Providence Rd
S College Ave
W Stadium Blvd
E Stadium Blvd
S HWY 63
W Vawter School Rd
W Nifong Blvd
E Nifong Blvd
Grindstone Pkwy
S HWY KK
S HWY 163
BC_B
BC_C
BC_D
BC_E
BC_F
HC_A
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HC_D
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HC_G
HC_H
HC_J
HM_B
GR_A
CC_B
HR_A
HR_B
MB_A
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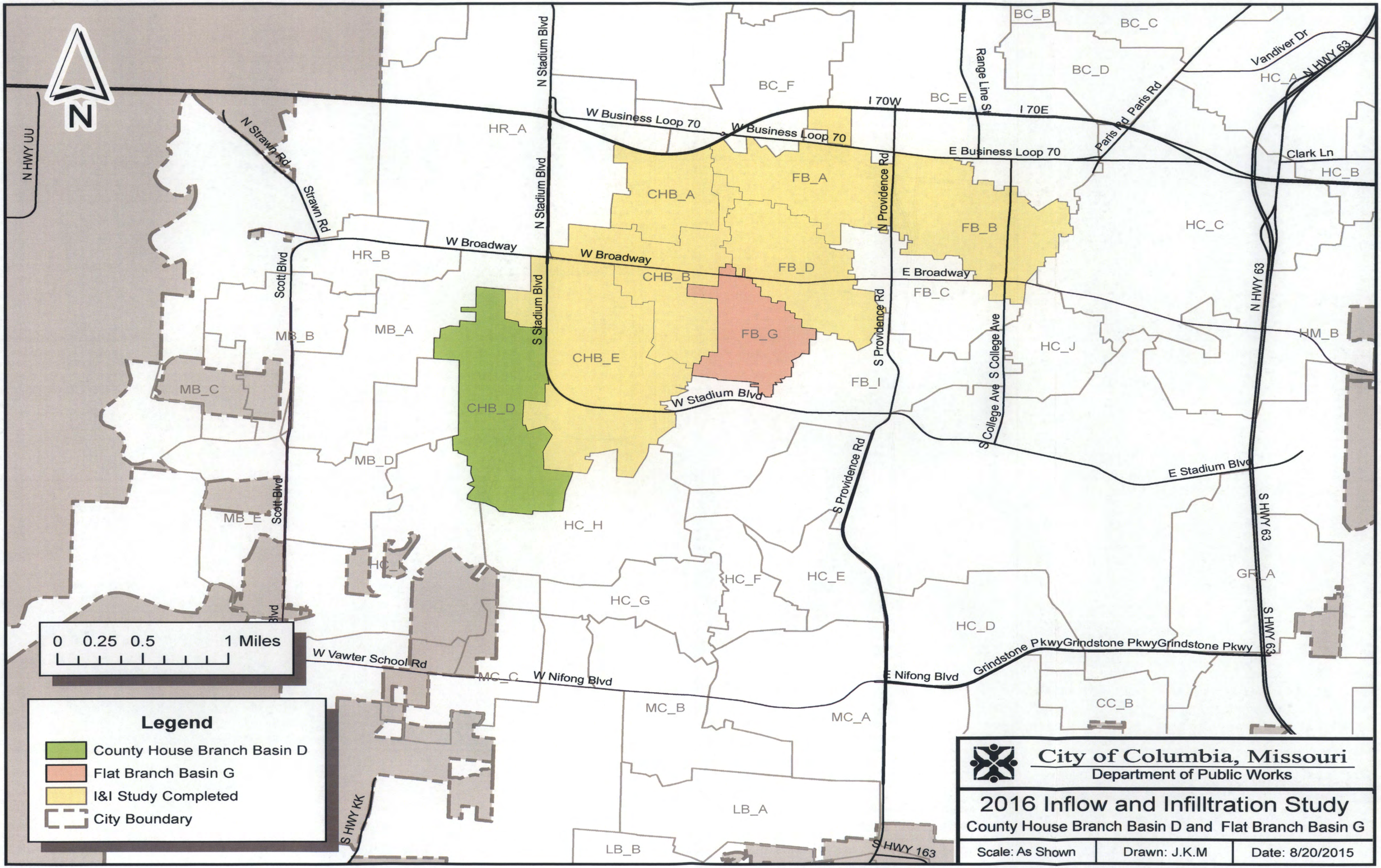
MB_C
MB_D
MB_E
MC_A
MC_B
MC_C
LB_A
LB_B
CHB_A
CHB_B
CHB_D
CHB_E
FB_A
FB_B
FB_C
FB_D
FB_G
FB_I
0 0.25 0.5 1 Miles
Legend
County House Branch Basin D
Flat Branch Basin G
I&I Study Completed
City Boundary
City of Columbia, Missouri
Department of Public Works
2016 Inflow and Infiltration Study
County House Branch Basin D and Flat Branch Basin G
Scale: As Shown
Drawn: J.K.M
Date: 8/20/2015

City of Columbia
701 East Broadway, Columbia, Missouri 65201

SUPPORTING DOCUMENTS INCLUDED WITH THIS AGENDA ITEM ARE AS FOLLOWS:

Map


N
N HWY UU
N Strawn Rd
Strawn Rd
HR_A
N Stadium Blvd
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Range Line St
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BC_D
Vandiver Dr
N HWY 63
HC_A
Paris Rd
Paris Rd
E Business Loop 70
Clark Ln
HC_B
BC_F
CHB_A
FB_A
N Providence Rd
FB_B
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HR_B
Scott Blvd
CHB_B
FB_D
E Broadway
FB_C
N HWY 63
MB_B
MB_A
S Stadium Blvd
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HM_B
HC_J
MB_C
FB_I
S Providence Rd
S College Ave
S College Ave
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MB_E
Scott Blvd
HC_H
S HWY 63
HC_I
HC_F
HC_E
GR_A
HC_G
HC_D
S HWY 63
Grindstone PkwyGrindstone PkwyGrindstone Pkwy
W Vawter School Rd
MC_C
W Nifong Blvd
E Nifong Blvd
MC_B
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CC_B
LB_A
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LB_B
S HWY 163
0 0.25 0.5 1 Miles
Legend
County House Branch Basin D
Flat Branch Basin G
I&I Study Completed
City Boundary
City of Columbia, Missouri
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County House Branch Basin D and Flat Branch Basin G
Scale: As Shown
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Date: 8/20/2015