



AGENDA ITEM EXECUTIVE SUMMARY

Agenda Item number: 5.1

Title: Recommendation to Award Contract Amendment Agreement for Engineering Services for Sub-basin SC02 Flow Monitoring Study to Engineering Enterprises, Inc.

Presenter: Tim Wilson

Meeting: Government Services Committee

Date: March 27, 2017

Proposed Cost: \$59,724

Budgeted Amount: \$ 60,000

Not Budgeted:

Executive Summary *(if not budgeted please explain):*

At the September 2016 Government Services Committee meeting, Council approved Phase I Flow Monitoring for Sub-basin SC02. Flow monitoring occurred from September to November 2016. During this time window the fall weather was exceptionally warm and dry, the data collected was insignificant. The recommendation is to complete a second flow monitoring phase for this Sub-basin SC02.

In addition due to the delay of the phase I final report, additional work has been added to this contract amendment. All of the additional services would normally be completed during the Phase II evaluation. Phase II portion of SC02 will be delayed by at least four months; staff is recommending the proposed amendment in an effort to keep the CMOM plan on schedule. All of the proposed costs will be covered by 2016-2017 budget savings and the pending approval the 2017-2018 budgets.

The first additional the contract is an evaluation of the IL Rte. 31 sewer trunk main. Recent video inspections by city crews of the Rt. 31 sewer main have discovered some additional deterioration. The Rt. 31 section of sewer main is part of the SC02 basin. Normally the evaluation would be completed as the Phase II portion of the CMOM plan. However, due to the delays in Phase I and the need to add any recommendations to the capital planning process, the Public Works Department would like to get the evaluation process of the Rt. 31 sewer main started in May.

The second addition was a public education portion of Phase II. Public education would normally be a cost occurred during the second phase contract. But again, due to the delays staff is recommending the public education portion to start earlier. The public education portion also includes a presentation planned for the Government Services Committee Meeting in May or June.

As a quick reminder, Sub-basin SC02 was selected as a starting point due to the problematic history in the 10th street area. The Sub-basin is generally located between Prairie Street to the north, the Fox River to the east, Gray Street to the south, and Randall Road to the west. Flow monitoring will include eight (8) flow monitors for an eight (8) week period of time while local weather data is collected. At the completion of the Phase I (flow monitoring) recommendations will be made for Phase two, which is the Sewer System Evaluation Survey.

Attachments *(please list):*

* EEI Amended Agreement for Consulting Engineering Services for Sub-basin SC02 Flow Monitoring Study

Recommendation/Suggested Action *(briefly explain):*

Recommendation to Award Amended Agreement for Engineering Services for Sub-basin SC02 Flow Monitoring Study to Engineering Enterprises Inc. for a fixed fee amount of \$59,724.



March 10, 2017

Mr. Tim Wilson
Public Works Manager - Environmental Services
City of St. Charles
Two East Main Street
St. Charles, IL 60174

**Re: *Subbasin SC02 Flow Monitoring Study (Phase 1) Contract Amendment
City of St. Charles, Kane & DuPage Cos., IL***

Dear Mr. Wilson:

On behalf of the project team at EEI, I want to take another opportunity to express our pleasure in working with you and City staff on the City's Capacity, Management, Operations and Maintenance (CMOM) Plan for the City's Sanitary Sewer System and more specifically, the City's Inflow and Infiltration Reduction Program (I&IRP). We feel privileged to have been selected by the City to provide the professional engineering services for this very important program, and hope that we have lived up to the City's expectations and our reputation.

Please recall a goal of the City's I&IRP is to cost-effectively identify Inflow and Infiltration (I/I) sources and cost-effectively rehabilitate the system to reduce I/I. The program follows a three phased approach to minimize the amount of expenditures and maximize the amount of I/I that is removed from the system. Phase 1 consists of the flow monitoring at multiple locations within a subbasin. Typically the flow monitoring results, if there are sufficient rain events during the monitoring period, will identify areas where the I/I can be considered excessive, but it also typically identifies areas where I/I is not an issue. Those areas that have excessive I/I will be further analyzed in Phase 2. Phase 2 consists of sewer system evaluation survey (SSES) field work items, such as smoke testing, manhole inspections and televising sewers, which will identify the location of the defects in the sanitary sewer system. Phase 2 also will identify which areas of the system need to be rehabilitated. Phase 3 is the implementation of the planned rehabilitation.

As we have discussed, there were insufficient rain events within Subbasin SC02 in the Fall of last year (during the first flow monitoring period) to draw reasonable conclusions of the level of I/I throughout Subbasin SC02. Therefore, additional flow monitoring should be conducted within the subbasin this spring. The work items and costs associated with conducting additional flow monitoring this spring are included in the contract amendment.

In addition to including the work items associated with the additional flow monitoring, this amendment also includes an interceptor capacity analysis for the main sanitary sewer lines that convey wastewater through Subbasin SC02. The purpose of conducting the interceptor capacity analysis is to establish the current capacity in the lines and then evaluate the hydraulics of the lines with the potential addition of flows from the Prairie Centre Development. The route of the sanitary sewer mains to be evaluated are highlighted in Exhibit A.

As part of the interceptor capacity analysis, field surveying will be completed to establish the alignment and elevation of the sanitary sewer pipes. The current level of I/I obtained from the flow monitoring will be utilized to evaluate the present level and projected level of I/I peak flows in the sanitary sewer network. It is quite likely the level of I/I that enters the system within this subbasin has changed over the last 20 years. We will develop a model of the sanitary sewer interceptors and then route 10-year and 25-year recurrence interval design storms through the model to evaluate the pipe capacity. If portions of the sanitary sewer network are undersized to carry existing and/or future flows, we will identify the improvements needed to expand the capacity of the network. We also will develop a cost estimate for the improvements. Please note City Staff has determined the sanitary sewer pipe along Route 31 (Geneva Rd) is in need of rehabilitation. Therefore, at a minimum, we will develop a cost estimate to rehabilitate that section of pipe.

A report summarizing the flow monitoring results and interceptor capacity analysis will be provided as part of this contract. Please note the work items and fees for the report development were part of the original contract. The report will identify the sub-subbasins that will need to be evaluated within Phase 2 of the I/I program for SC02.

This contract amendment also includes services in preparation of a communication plan for the Phase 2 work within Subbasin SC02. As previously mentioned, Phase 2 involves the investigation of high I/I areas by utilizing smoke testing, dye testing, manhole inspections and possibly televising to identify the location of the defects within the pipes and manholes. This amendment provides time for EEI to work with the City to develop the communication plan, as well as, develop and make a presentation to the City Council regarding the reasons behind and the expected outcomes of SSES activities.

The attached documents include a detailed scope of services, estimate of level of effort and associated cost, and schedule for each of the work items of the contract amendment along with the remaining work items for the Original Contract. The total cost

Mr. Tim Wilson
March 10, 2016
Page 3

of the Basin SC02 Phase 1 amendment is \$59,724. We project the flow monitoring to take place in May – June, data analysis to be complete in July and report finalization in the Fall.

We look forward to continuing our outstanding partnership with the City and look forward to working with you and members of your staff on this project. Upon approval of this contract amendment, please sign in the space below and submit a copy for our records. If you have any questions or require any additional information, please do not hesitate to contact me.

Respectfully submitted,

ENGINEERING ENTERPRISES, INC.



Jeffrey W. Freeman, P.E., CFM, LEED AP
Vice President

JWF/clv

Enclosures

pc: Peter Suhr – Director of Public Works (Via E-mail)
Chris Adesso – Assistant Director of Public Works, Operations (Via E-mail)
Mike Burnett – Wastewater Division Manager (Via E-mail)
PGW, TWT, STD, DMT, CLV – EEI (Via E-mail)

Accepted by: _____

Date: _____

ATTACHMENT A – SCOPE OF SERVICES
SUBBASIN SC02 FLOW MONITORING STUDY (PHASE 1) CONTRACT AMENDMENT
INFLOW AND INFILTRATION REDUCTION PROGRAM
City of St. Charles, Kane and DuPage Cos., IL

Introduction

The Subbasin SC02 flow monitoring phase will help delineate inflow and infiltration severity throughout the subbasin. The I/I Investigation for Subbasin SC02 is part of a 15-year, multiphase plan to complete flow monitoring, sewer system evaluation surveys (SSES), and rehabilitation as necessary for all mains within the St. Charles sanitary sewer basin. The estimated scope and cost of the entire 15-year St. Charles Sanitary Basin Evaluation and Rehabilitation Plan can be found in Table No. 3-3 of the February, 2016 CMOM plan.

The sub-subbasins within SC02 have already been delineated and monitored once from a previous flow monitoring study. The previous monitoring study did not capture any large rainstorms and therefore the flow data is not useful to project I/I for larger design storms. Additional flow monitoring will likely yield more information which can be used to project I/I under larger storms. The proposal includes flow monitoring in six (6) sub-subbasins using eight (8) flow monitors and one (1) rain gauge for eight (8) weeks. The locations of eight proposed flow monitors will be the same as the previously monitored SC02 locations. All cost and schedule decisions were based off of EEI's best knowledge of the SC02 Subbasin to-date.

An interceptor capacity analysis for both the existing and proposed trunk main carrying the flows from the proposed Prairie Centre development is also part of the contract amendment. The locations and sizes of the evaluated trunk mains can be found in Exhibit A. This analysis will evaluate the capacity of the mains that currently and potentially will convey the flow from the West end of the subbasin around the Proposed Prairie Center development area to the outlet at the northeast end of the subbasin. Part of this evaluation includes the surveying of the main in order to obtain the rim and invert heights. Once the conveyance capacity has been determined, the information will be combined with the projected I/I to determine if the conveyance is sufficient. This report will also investigate, in detail, the known problem area in the East end of the basin along Route 31 (Geneva Rd).

The results of the Flow Monitoring Study, along with the results of the interceptor capacity analysis will be summarized in a report. This report will outline and summarize the efforts and outcomes of the flow monitoring and the capacity analysis. The outcomes in this report are intended to be used as a guide for the SSES work that is expected to be completed as part of Phase 2 of the I/I Reduction Program for Subbasin SC02.

The work in the contract amendment also proposes a communication plan as preparation for Phase 2 of the SC02 monitoring project. The proposed communication plan outlines communication that must occur both within the City (between public works staff and the City Council) and to City residents. A communication plan is important in order to keep all residents informed of SSES activities and the impacts of those activities.

The proposed work items for this project are as follows:

PROJECT FACILITATION & MEETINGS:

- 0.1 Project Administration
- 0.2 Progress Meeting

FLOW MONITORING:

- 1.1 Monitor Flows (Assumes 8 Locations) Within Basin For 8 Weeks
- 1.2 Monitor Rainfall (Assumes 1 Location) Within Basin For 8 Weeks
- 1.3 Analyze Flows & Determine I/I Severity By Subbasin

SEWER SYSTEM EVALUATION SURVEY COMMUNICATION PLAN:

- 2.1 Develop communication Plan Document
- 2.2 Develop SSES Overview & Communication Plan Presentation
- 2.3 Draft Presentation Review Meeting with City Staff
- 2.4 Conduct SSES Overview & Communication Plan Presentation to Council

INTERCEPTOR CAPACITY ANALYSIS:

- 3.1 Survey Interceptor Routes
- 3.2 Existing Condition Interceptor Modeling
- 3.3 Modified Condition Interceptor Modeling
- 3.4 Route 31 Sanitary Sewer Rehabilitation Assessment and Cost Estimate
- 3.5 Interceptor Improvements Cost Estimate
- 3.6 Modeling Analysis Addition to Summary Report

REPORT (REPORT WORK ITEM AND FEES INCLUDED UNDER ORIGINAL CONTRACT):

- 4.1 Prepare Draft Flow Monitoring Report
- 4.2 City Draft Report Review
- 4.3 Finalize Report

Additional Services

The above scope summarizes the work items that will be completed for this contract. Additional work items, including additional meetings beyond the progress meeting defined in the above scope, shall be considered outside the scope of the base contract and will be billed in accordance with the Standard Schedule of Charges.

Attachment B:
ESTIMATE OF LEVEL OF EFFORT AND ASSOCIATED COST FOR PROFESSIONAL ENGINEERING SERVICES
BASIN SC02 PHASE 1 (FLOW MONITORING) STUDY CONTRACT AMMENDMENT
INFLOW AND INFILTRATION REDUCTION PROGRAM
CITY OF ST. CHARLES, KANE AND DUPAGE COS., IL

WORK ITEM NO.	WORK ITEM	EEI										SUB-CONSULTANT	WORK HOUR SUMM.	COST PER ITEM		
		ENTITY:	PROJECT ROLE:	PRINCIPAL	SENIOR PROJECT MANAGER	PROJECT ENGINEER	SENIOR PROJECT TECHN. I	PROJECT TECHN.	SURVEYING MANAGER	SENIOR PROJECT SURVEYOR II	SENIOR PROJECT SURVEYOR II*				SURVEYING INTERN*	ADMIN.
		HOURLY RATE:		\$191	\$185	\$133	\$133	\$121	\$168	\$155	\$196	\$82	\$80			
PROJECT FACILITATION & MEETINGS																
0.1	Project Administration		1		3										4	\$746
0.2	Progress Meeting (1 Additional Progress Review Meeting)		4		7										18	\$2,937
	Project Facilitation Subtotal:		5		10										22	\$3,683
FLOW MONITORING																
1.1	Monitor Flows (Assumes 8 Locations) Within Subbasin For 8 Weeks		1		2										7	\$20,298
1.2	Monitor Rainfall (Assumes 1 Location) Within Subbasin For 8 Weeks		1		2										5	\$1,827
1.3	Analyze Flows & Determine I/I Severely By Sub-Subbasin		2		4		20								26	\$3,782
	Flow Monitoring Subtotal:		4		8		28								38	\$25,892
SEWER SYSTEM EVALUATION SURVEY COMMUNICATION PLAN																
2.1	Develop Communication Plan Document		2		4										18	\$2,718
2.2	Develop SSES Overview & Communication Plan Presentation		8		2										10	\$1,794
2.3	Draft Presentation Review Meeting With City Staff		3		3										9	\$1,527
2.4	Conduct SSES Overview & Communication Plan Presentation To Council		4		3										7	\$1,319
	Sewer System Evaluation Survey Communication Plan Subtotal:		17		10		17								44	\$7,358
INTERCEPTOR CAPACITY ANALYSIS																
3.1	Survey Interceptor Route		1		8		2								32	\$8,858
3.2	Existing Condition Interceptor Modeling		1		4		20								29	\$4,351
3.3	Modified Condition Interceptor Modeling		1		4		10								15	\$2,261
3.4	Route 31 Sanitary Sewer Rehabilitation Assessment and Cost Estimate		1		1		8								10	\$1,440
3.5	Interceptor Improvements Cost Estimate		1		2		8								11	\$1,625
3.6	Modeling Analysis Addition To Summary Report		2		4		20								30	\$4,266
	Interceptor Capacity Analysis Subtotal:		6		19		68								167	\$22,781
	PROJECT TOTAL**:		32		47		117								271	\$59,724

Notes:
*Assumes Senior Project Surveyor II and Surveying Intern 2 Man Field Crew
**Does Not Include Original Contract Hours and Fees

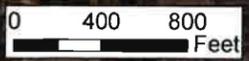
DIRECT EXPENSES	
Mileage =	\$50
Printing =	\$100
DIRECT EXPENSES =	\$150

LABOR EXPENSES	
Engineering Expenses =	\$30,368
Drafting Expenses =	\$484
Surveying Expenses =	\$8,592
Administrative Expenses =	\$80
Subconsultant Expenses =	\$20,200
TOTAL LABOR EXPENSES =	\$59,724

TOTAL CONTRACT COSTS =	\$59,874
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Legend

- Manhole
- Sanitary Mains
 - No Size Listed
 - 2"
 - 4"
 - 6"
 - 8"
 - 10"
 - 12"
 - 14"
 - 15"
 - 16"
 - 18"
 - 20"
 - 21"
 - 24"
 - 27"
 - 30"
 - 36"
- Abandoned Mains
- Force Mains
- Sanitary Sewer Route to be Modeled
- Mains Already Surveyed
- Proposed Survey Mains



Engineering Enterprises, Inc.
 52 Wheeler Road
 Sugar Grove, Illinois 60554
 (630) 466-6700
 www.eeiweb.com

City of St. Charles
 2 East Main Street
 St. Charles, IL 60174
 (630) 377-4400

DATE:	3/6/2017
PROJECT NO.:	SR1602
BY:	CLV
PATH:	H:\GIS\Public\St. Charles\2016\SR1602\Exhibit 4-1_routetobesurveyed.mxd
FILE:	Exhibit 4-1_routetobesurveyed

I&I Reduction Program

**Exhibit A:
 Sub-Basin SC02 Flow
 Interceptor Capacity Analysis**





Standard Schedule of Charges

January 1, 2017

EMPLOYEE DESIGNATION	CLASSIFICATION	HOURLY RATE
Senior Principal	E-4	\$196.00
Principal	E-3	\$191.00
Senior Project Manager	E-2	\$185.00
Project Manager	E-1	\$168.00
Senior Project Engineer/Planner/Surveyor II	P-6	\$155.00
Senior Project Engineer/Planner/Surveyor I	P-5	\$145.00
Project Engineer/Planner/Surveyor	P-4	\$133.00
Senior Engineer/Planner/Surveyor	P-3	\$121.00
Engineer/Planner/Surveyor	P-2	\$111.00
Associate Engineer/Planner/Surveyor	P-1	\$100.00
Senior Project Technician II	T-6	\$145.00
Senior Project Technician I	T-5	\$133.00
Project Technician	T-4	\$121.00
Senior Technician	T-3	\$111.00
Technician	T-2	\$100.00
Associate Technician	T-1	\$ 87.00
Engineering/Land Surveying Intern	I-1	\$ 82.00
GIS Technician	G-1	\$ 67.00
Administrative Assistant	A-3	\$ 80.00

CREW RATES, VEHICLES AND REPROGRAPHICS

1 Man Field Crew with Standard Survey Equipment		\$158.00
2 Man Field Crew with Standard Survey Equipment		\$247.00
1 Man Field Crew with RTS or GPS *		\$196.00
2 Man Field Crew with RTS or GPS *		\$284.00
Vehicle for Construction Observation		\$15.00
In-House Scanning and Reproduction	\$0.25/Sq. Ft. (Black & White)	
	\$1.00/Sq. Ft. (Color)	
Reimbursable Direct Costs & Services by Others	Cost + 10%	

*RTS = Robotic Total Station / GPS = Global Positioning System