
**VILLAGE OF SUGAR GROVE
BOARD REPORT**

TO: VILLAGE PRESIDENT & BOARD OF TRUSTEES
FROM: ANTHONY SPECIALE, DIRECTOR OF PUBLIC WORKS
BRAD MERKEL, PUBLIC UTILITIES SUPERVISOR
SUBJECT: RESOLUTION: AUTHORIZING AN ENGINEERING AGREEMENT FOR
WATER SYSTEM MODELING STUDY
AGENDA: JULY 10, 2018 BOARD MEETING
DATE: JULY 6, 2018

ISSUE

Should the Village Board approve a resolution authorizing an engineering agreement for a Water system modeling study.

DISCUSSION

Throughout the last several years, Crown Development has been evaluating the feasibility of developing approximately 760 acres in the areas of the I-88 / Route 47 interchange. As Crown continues to their study, the annexation agreement negotiations with the Village have begun. Additional studies of the area are warranted to determine the potential Water System Improvements necessary to make the site development viable.

The goal of the study is to determine the necessary water supply, treatment, storage and distribution system improvements to be constructed for the development so it will not negatively affect the Village's existing water system. Also, given the Village's plan to for growth beyond the limits of the Crown Development, a wholistic approach to the recommended improvements should consider the potential impacts of future developments. The water main needs to be designed to meet the ultimate build-out to the extent of the Village's planning area. This study will evaluate the quantity of supply, treatment and storage as well as perform a hydraulic analysis of the area. Furthermore, at a minimum, land should be reserved for future water sites at key locations for operational efficiency and assuring access to groundwater for future supply. As part of this study, the Village's Water Works system Master Plan will be updated.

The total cost for the project is estimated at \$56,460.00. As the proposal was initiated by a request from Crown Development, staff suggested Crown set up an escrow account to offset the costs to the Village. Crown believes the study benefits the Village

as a whole and has stated they believe the costs should be shared equally. Staff believes both cost scenarios have merit.

Attached is a copy of the proposed agreement for review.

COST

The total estimated cost of the project is \$56,460.00. The costs associated with this project were not budgeted for FYE 19. The costs will be applied to account 50-71-6303: Engineering Services and repaid either 50% or 100% using the escrow account from Crown.

RECOMMENDATION

The Village Board approve **Resolution # 20180710PW1** authorizing an engineering agreement for a Water system modeling study and direct staff in regard to the cost allocation.



RESOLUTION NO. 20180710PW1

VILLAGE OF SUGAR GROVE, KANE COUNTY, ILLINOIS

RESOLUTION AUTHORIZING EXECUTION OF AN ENGINEERING AGREEMENT WITH ENGINEERING ENTERPRISES, INC. FOR A WATER SYSTEM EVALUATION

WHEREAS, the Village of Sugar Grove Board of Trustees find that it is in the best interest of the Village to engage the services of Engineering Enterprises, Inc. to provide professional engineering services for a Water System Evaluation, and to execute the attached agreement;

NOW, THEREFORE, BE IT RESOLVED by the President and Board of Trustees of the Village of Sugar Grove, Kane County, Illinois, as follows:

The Director of Public Works and/or his assigned are hereby authorized to execute a contract for a Water System Evaluation on behalf of the Village and to take such further actions as are necessary to fulfill the terms of said contract with Engineering Enterprises, Inc.

Passed by the President and Board of Trustees of the Village of Sugar Grove, Kane County, Illinois, at a regular meeting thereof held on the 10th day of July, 2018.

 P. Sean Michels, President of the Board
 of Trustees of the Village of Sugar Grove,
 Kane County, Illinois

ATTEST: _____
 Cynthia Galbreath, Village Clerk,
 Village of Sugar Grove

	Aye	Nay	Absent	Abstain
Trustee Sean Herron	_____	_____	_____	_____
Trustee Mari Johnson	_____	_____	_____	_____
Trustee Ted Koch	_____	_____	_____	_____
Trustee Heidi Lendi	_____	_____	_____	_____
Trustee Rick Montalto	_____	_____	_____	_____
Trustee David Paluch	_____	_____	_____	_____
President P. Sean Michels	_____	_____	_____	_____



June 18, 2018

Mr. Walter Magdziarz
Community Development Director
Village of Sugar Grove
601 Heartland Drive
Sugar Grove, IL 60554

**Re: *Water Service Evaluation for Crown Property
Sugar Grove, Illinois***

Dear Mr. Magdziarz:

We have reviewed the letter regarding Water System Consulting for The Crossings Development for the Crossings Developed prepared by RHMG Engineers, Inc. and dated March 13, 2018. We offer the following comments:

A. Water Demands

1. Existing Sugar Grove Water Demands

- a. The Maximum Day Demand versus Average Day Demand ratio presented for 2016 appears to be lower than what the Village has historically experienced at times. The Village has observed Maximum Day Demand versus Average Day Demand ratios in excess of 2.7 during drought years in the past. The water use during a dry/drought year should particularly be analyzed before projecting future water use. Per the *Recommended Standards of Water Works*, adequate water shall be provided by calculations based on one in a fifty-year drought or the extreme drought of record, and should include consideration of multiple year droughts. Therefore, a minimum of five years of historic water use data shall be compiled and analyzed, but should also include 2012 given it was a dry year.

2. Projected Water Demands for The Crossing:

- a. In the type of development presented to date, fire flow requirements often govern the design of the Water Works System Improvements. Therefore, Crown Development shall provide anticipated maximum fire flow needs for any of the possible types of development/buildings that could be constructed within their property.
- b. Additional research and review is warranted on the anticipated demands for the Crown Property. It is our understanding that irrigation demand will be limited. However, in terms of the projected domestic demands, further consideration should be given to all potential land uses within the Crown Property. For example, data processing uses typically have a high water demand along with any restaurants. Once the water main and any other

improvements are constructed, we may otherwise be limited in terms of uses within the Crown Property. This is particularly concerning given the proposed flex zoning.

c. Back-up/source information for the proposed water demand assumptions shall be provided.

3. The proposed Flex Zoning can result in significantly different water use demands depending on the ultimate water use. Therefore, the recommended improvements need to be able to accommodate any of the potential land uses that would reasonably be foreseen at this site.

B. Capacity of Existing Water System to Accommodate The Crossings

4. Wells – Both Ultimate Source (Firm) Capacity and Reliable Source Capacity shall be reviewed upon further analysis of the Village demands. Ultimate Source Capacity was the only parameter that was analyzed by RHMG. Additional calculations are required.

5. Storage – Peak Hour Storage, Fire Flow, and Emergency Supply are three parameters which should be reviewed with respect to storage. The report analyzes Peak Hour Storage and Emergency Supply. However, an important distinction which needs to be made regarding Elevated Water Storage versus the Ground Water Storage is that the available ground storage is limited by the distribution pump capacities. This limit shall be taken into consideration when performing the analysis. Furthermore, the general proposed pressures may be adequate for the Crown Property, but additional study is warranted to understand how this conceptual change to the Village's overall Water Works System will impact other areas within the Village's planning area.

C. Water Transmission Mains

6. Additional evaluation is required to confirm there is adequate storage, supply and treatment. Furthermore, a hydraulic analysis is necessary to determine the following:

- a. Is there adequate distribution system flow and pressure at the anticipated point of connection for both domestic and fire flow requirements?
- b. Are any negative impacts anticipated on the existing distribution system as a result of the proposed development?
- c. Will the proposed water main within this development adequately distribute water and transfer water between wells, water treatment plants and storage tanks both under existing conditions, as well as the ultimate Village build-out. The water mains have a 50 to 100 year life, and the sizing of such water mains should be designed to adequately serve areas as they are built-out. Furthermore, consideration shall be given to redundancy within the system such that water service is maintained in the event of major water main breaks and regular maintenance of their municipal facilities (storage tanks, wells, and water treatment plants).

7. The Illinois Environmental Protection Agency promotes looped water mains not only for Hydraulic reasons, but also for water quality reasons. A proposed significantly long dead-end water main is not recommended. At a minimum, the Crown plan shall show how this water main will be looped within a reasonable timeframe.

Mr. Walter Magdziarz
June 18, 2018
Page 3 of 3

D. Capacity of Existing Water System to Accommodate The Crossings

8. Locations within the Crown Property were identified as a potential location for shallow groundwater supply. We recommend the Village continue to investigate the feasibility of shallow groundwater. At a minimum, one or two sites should be identified as potential locations of future shallow well(s). It shall be understood that field work, including resistivity testing and possible test well, would need to be performed prior to confirming the viability of any site that is selected.

As presented above, we feel it is in the Village's best interest to further analyze the proposed plan. We feel it is essential to understand the full impact of this development on the existing Village's Water Works System (both existing and master plan). Please find attached a proposal for the Village's consideration.

Please let us know if you have any questions or require additional information.

Respectfully Submitted,

ENGINEERING ENTERPRISES, INC.



Michele L. Piotrowski, P.E., LEED AP
Senior Project Manager

Pc: Mr. Brent Eichelberger, Village Administrator
Mr. Anthony Speciale, Director of Public Works
PGW, JWF, DRB, TNP, EEI

**AGREEMENT FOR CONSULTING ENGINEERING SERVICES FOR A
WATER WORKS SYSTEM EVALUATION – CROWN PROPERTY**

This Agreement, made this _____ day of _____, 20__ by and between the Village of Sugar Grove, Kane County, Illinois, a municipal corporation of the State of Illinois (hereinafter referred to as the "VILLAGE") and Engineering Enterprises, Inc. of 52 Wheeler Road, Sugar Grove, Illinois, 60554 (hereinafter referred to as the "ENGINEER").

In consideration of the mutual covenants and agreements contained in this Agreement, the VILLAGE and the ENGINEER agree, covenant and bind themselves as follows:

1. Services: ENGINEER agrees to perform for the VILLAGE the work associated with the Water Works System Evaluation for the Crown Property as outlined in Attachment A.
2. Direction: The Director of Public Works, or his written designee, shall act as the VILLAGE'S representative with respect to the Services to be provided by the ENGINEER under this Agreement and shall transmit instructions and receive information with respect to the Consulting Engineering Services.
3. Compensation: The work items, estimated staff time, and projected fees for each work item are summarized within Attachment B. Based on this computation, the VILLAGE agrees to pay the ENGINEER for providing the Services set forth herein a fixed fee amount of \$56,460.

The defined work items and proposed fee structure does not include provisions for evaluating Waubensee Community College's connection to the VILLAGE Water Works System, or any interconnections with adjacent communities. If, at any time during the study period, the VILLAGE wishes to amend the contract to add any of these items, or any other items, then the contract may be amended in accordance with Section 10 of this agreement.

4. Term: The term of this Agreement shall be active through December 31, 2018, unless otherwise extended through written confirmation by both parties. The draft report shall be completed within 150 days of authorization to proceed and the final report shall be completed within 30 days of the receipt of the Village's draft report review comments. A general schedule is outlined in Attachment C.
5. Payment: Engineer shall invoice the VILLAGE on a monthly basis for Services performed and any costs and expenses incurred during the previous thirty (30) day period. The VILLAGE shall pay the ENGINEER within thirty (30) days of receipt of said invoice.
6. Termination: This Agreement may be terminated upon fourteen (14) days written notice of either party. In the event of termination, the ENGINEER shall prepare a final invoice and be due compensation calculated as described in paragraph 3 for all costs incurred through the date of termination.
7. Documents: All related writings, notes, documents, information, files, etc., created, compiled, prepared and/or obtained by the ENGINEER on behalf of the VILLAGE for the Services provided herein shall be used solely for the intended project.
8. Notices: All notices given pursuant to this Agreement shall be sent Certified Mail, postage prepaid, to the parties at the following addresses:

The VILLAGE:

Village of Sugar Grove
10 Municipal Drive
Sugar Grove, IL 60554
Attn: Tony Speciale, Village Dept. of PW

The ENGINEER:

Engineering Enterprises, Inc.
52 Wheeler Road
Sugar Grove, IL 60554
Attn: David R. Burroughs, P.E.

9. Waiver: The failure of either party hereto, at any time, to insist upon performance or observation of any term, covenant, agreement or condition contained herein shall not in any manner be constructed as a waiver of any right to enforce any term, covenant, agreement or condition hereto contained.
10. Amendment: No purported oral amendment, change or alteration hereto shall be allowed. Any amendment hereto shall be in writing by the governing body of the VILLAGE and signed by the ENGINEER.
11. Succession: This Agreement shall ensure to the benefit of the parties hereto, their heirs, successors and assigns.

IN WITNESS WHEREOF, we have hereunto signed our names the day and year first above written.

VILLAGE OF SUGAR GROVE:

ENGINEERING ENTERPRISES, INC.:

Village President

Senior Project Manager

ATTEST:

ATTEST:

Village Clerk

Secretary

ATTACHMENT A – SCOPE OF SERVICES
WATER WORKS SYSTEM EVALUATION - CROWN PROPERTY
Village of Sugar Grove, Kane County, IL

Introduction

Throughout the last several years, Crown Development has been monitoring and evaluating the feasibility of developing 760+ acres in the general vicinity of the proposed Route 88 and Route 47 interchange. As Crown continues to explore such opportunities and begin potential annexation negotiations with the Village, additional study is warranted to determine the potential Water Works System Improvements necessary to make the development viable.

The goal of this study is to determine the necessary water supply, treatment, storage, and distribution system improvements to be constructed for the development such that it will not negatively impact the Village's existing Water Works System or their existing customers. Furthermore, given the Village of Sugar Grove plans for growth beyond the limits of the Crown Development property, a wholistic approach to the recommended improvements should also consider and understand the potential impacts of future development. Much of the water infrastructure has a 50-year to 100-year life; therefore, the intent is to confirm that such infrastructure will meet the needs during that time as well. Supply, treatment, and storage can be phased in throughout that period, but the water main shall be designed to meet the ultimate build-out to the extents of the Village's planning area. This study will evaluate the quantity of supply, treatment, and storage as well as perform a hydraulic analysis using a Bentley's Watercad modeling software. Furthermore, at a minimum, land should be reserved for future municipal water sites at key locations that are optimal for their system to operate efficiently as well as having access to groundwater for future supply.

As part of this study, we will revise the Village's Water Works System Master Plan, and work with both the Village and Crown to obtain the optimal solutions for the development. Cost estimates will be prepared, and final recommendations will be presented to the Village Board.

The proposed work items for this project are as follows:

PROJECT FACILITATION & MEETINGS:

- 1-1 Project Administration
- 1-2 Project Initiation & Progress Meetings (Prep. & Attendance)
- 1-2a Project Initiation & Progress Meeting No. 1 - Population, Demands, & Needs Assessment
- 1-2b Progress Meeting No. 2 - Model Verification, System Deficiencies & Improvements
- 1-2c Progress Meeting No. 3 - Final Recommendations and Presentation Review Meeting
- 1-2d Presentation to Village Board

WATER WORKS SYSTEM EVALUATION:

- 2-1 Review Land Use & Project Population
- 2-2 Obtain Concurrence with Crown & Community Development
- 2-3 Review Overall Water Works System Map (Connection Points and Larger Diameter Network)
- 2-4 Coordinate Flow Testing with Village Staff and Summarize and Review Flow Test Results
- 2-5 Evaluate Contours/Pressure Zones - Redefining Pressure Zones for Proposed North PZ

- 2-6 Summarize Historical Water Use Data (2012 - 2017)
- 2-7 Develop/Review Water Use Projections (Village & Crown Property)
- 2-8 Conduct Needs Assessment Calculations (Confirm Water Supply and Storage Needs)
- 2-9 Define Water Storage Facility Locations Within Planning Area
- 2-10 Review Potential Municipal Water Facility Sites on the Crown Property
- 2-11 Update & Verify Water Model (Including Field Verification of Fire Hydrant Flow Testing)
- 2-12 Confirm Large Diameter Water Distribution Network Within Planning Area Within the Crown Property Vicinity
- 2-13 Prepare/Update Water Works System Exhibits (Existing System and Proposed)
- 2-14 Prepare Cost Estimates for Water Works System Imp. (Maximum of 4 Estimates)

IMPLEMENTATION PLAN AND REPORT OF FINDINGS:

- 3-1 Develop and Prepare Water Distribution System Master Plan
- 3-2 Develop Draft Report & Submit To Village Staff For Review
- 3-3 Prepare Draft Village Board Presentation
- 3-4 Finalize Report & Presentation & Submit To Village

Clarifications:

1. Shallow groundwater potential has been identified previously in the vicinity of the Crown Property. This proposal excludes any further office or field investigation. However, at a minimum, we recommend land be reserved and the Village continue explore this sustainable supply resource as was identified in the 2005 Water Works System Master Plan.
2. Water modeling updates and verification will be focused on the major changes to the Water Works System that could impact the Crown Development. This will not be a full model update for the entire system.
3. Coordination with the Aurora Municipal Airport regarding specific tank locations is not included in this scope.
4. The defined work items and proposed fee structure do not include provisions for evaluating Waubensee Community College's connection to the VILLAGE Water Works System, or any interconnections with adjacent communities. If, at any time during the study period, the VILLAGE wishes to amend the contract to add any of these items, or any other items, then the contract may be amended in accordance with Section 10 of this agreement.

Additional Services

The above scope summarizes the work items that will be completed for this contract. Additional work items, including additional meetings beyond the project initiation 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
LEVEL OF EFFORT AND ASSOCIATED COST
Water Works System Evaluation - Crown Property
Village of Sugar Grove, Illinois



WORK ITEM NO.	WORK ITEM	ENTITY:		EEI					WORK ITEM HOUR SUMM.	COST PER ITEM	
		PROJECT ROLE:	PRINCIPAL	QC/QA	SENIOR	PROJECT	CAD	GIS			ADMIN.
			IN CHARGE	ENGINEER	PROJECT MANAGER	ENGINEER	MANAGER	TECH.			
			HOURLY RATE:	\$197	\$191	\$191	\$149	\$149			\$72
RESOURCE:	JWF	STD	MLP	CW	KKP	MJT	DRM				
PROJECT FACILITATION											
1-1	Project Administration			8					8	\$ 1,528	
1-2	Project Initiation & Progress Meetings (Prep. & Attendance)										
1-2a	Project Initiation & Progress Meeting No. 1 - Population, Demands, & Needs Assessment	2		4	3				9	\$ 1,605	
1-2b	Progress Meeting No. 2 - Model Verification, System Deficiencies & Improvements	2		4	3				9	\$ 1,605	
1-2c	Progress Meeting No. 3 - Final Recommendations and Presentation Review Meeting	2		4	3				9	\$ 1,605	
1-2d	Presentation to Village Board	2		4	3				9	\$ 1,605	
Project Facilitation Subtotal:		8	0	24	12	0	0	0	44	\$ 7,948	
WATER WORKS SYSTEM EVALUATION											
2-1	Review Land Use & Project Population			4	4				8	\$ 1,360	
2-2	Obtain Concurrence with Crown & Community Development	1		1	1				3	\$ 537	
2-3	Review Overall Water Works System Map (Connection Points and Larger Diameter Network)			4	2				6	\$ 1,062	
2-4	Coordinate Flow Testing with Village Staff and Summarize and Review Flow Test Results			2	8		4		14	\$ 1,862	
2-5	Evaluate Contours/Pressure Zones - Redefining Pressure Zones for Proposed North PZ			1	4				5	\$ 787	
2-6	Summarize Historical Water Use Data (2012 - 2017)	1		2	6				9	\$ 1,473	
2-7	Develop/Review Water Use Projections (Village & Crown Property)			2					2	\$ 382	
2-8	Conduct Needs Assessment Calculations (Confirm Water Supply and Storage Needs)			2	4				6	\$ 978	
2-9	Define Water Storage Facility Locations Within Planning Area			1	1				2	\$ 340	
2-10	Review Potential Municipal Water Facility Sites on the Crown Property	1		4	4				9	\$ 1,557	
2-11	Update & Verify Water Model (Including Field Verification of Fire Hydrant Flow Testing)			12	80				92	\$ 14,212	
2-12	Confirm Large Diameter Water Distribution Network Within Planning Area Within the Crown	1		1	2				4	\$ 686	
2-13	Prepare/Update Water Works System Exhibits (Existing System and Proposed)	1		4	12		20		37	\$ 4,189	
2-14	Prepare Cost Estimates for Water Works System Imp. (Maximum of 4 Estimates)	1		2	16				19	\$ 2,963	
Water Works System Evaluation Subtotal:		6	0	42	144	0	24	0	216	\$ 32,388	
IMPLEMENTATION PLAN & REPORT OF FINDINGS											
3-1	Develop and Prepare Water Distribution System Master Plan	1		1	4		6		12	\$ 1,416	
3-2	Develop Draft Report & Submit To Village Staff For Review	1		12	32		4	2	51	\$ 7,685	
3-3	Prepare Draft Village Board Presentation	1		8			2		11	\$ 1,869	
3-4	Finalize Report & Presentation & Submit To Village	1		4	8	1	1	4	19	\$ 2,654	
Implementation Plan & Reporting Subtotal:		4	0	25	44	1	13	6	93	\$ 13,624	
PROJECT TOTAL:		18	0	91	200	1	37	6	353	\$ 53,960	

Note:

- Shallow groundwater potential has been identified previously. This proposal excludes any further office or field investigation. However, we recommend land be reserved and the Village continue explore this sustainable supply resource as was identified in the 2005 Water Works System Master Plan.
- Water modeling updates and verification will be focused on the major changes to the Water Works System that could impact the Crown Development. This will not be a full model update for the entire system.
- Coordination with the Aurora Municipal Airport regarding specific tank locations is not included in this scope.
- The defined work items and proposed fee structure do not include provisions for evaluating Waubesa Community College's connection to the VILLAGE Water Works System, or any interconnections with adjacent communities.

DIRECT EXPENSES	
Printing =	\$ 400
Supplies & Misc. =	\$ 100
Fire Hydrant Flow Test (1 day) =	\$ 2,000
	\$ -
DIRECT EXPENSES =	\$ 2,500
Engineering Expenses =	\$ 50,727
Drafting & GIS Technician Expenses =	\$ 2,813
Administrative Expenses =	\$ 420
TOTAL LABOR EXPENSES =	\$ 53,960

TOTAL COSTS = \$ 56,460

