THE CITY OF LAKE ELMO

STAFF REPORT

DATE: December 15, 2020
CONSENT

AGENDA ITEM: Authorize Engineering Services for Water Tower No. 3 Preliminary Design and Water System Planning/Modeling

SUBMITTED BY: Jack Griffin, City Engineer
REVIEWED BY: Kristina Handt, City Administrator
Marty Powers, Public Works Director
Chad Isakson, Assistant City Engineer

ISSUE BEFORE COUNCIL: Should the City Council authorize engineering services for Water Tower No. 3 Preliminary Design and Water System Planning/Modeling?

BACKGROUND: In accordance with the City's Capital Improvement Plan, a new water tower (Water Tower No. 3) is planned for construction in 2022, to be located in the low-pressure zone to support growth and development beyond the 400 REC unit limitation. Over the past year city staff have been in discussions with various property owners to identify properties that may be both a suitable location for the water tower and be available for timely acquisition by the city. Site acquisition is becoming critical and engineering design services are needed to continue preparing this project for 2022 construction.

In addition, the State of Minnesota Co-Trustees for the 3M Settlement Funds has released its draft Clean Drinking Water Supply Plan (CDWSP) for City review and comment. While the City has completed its high-level overview comments, the planning process has revealed that the City's water distribution system needs to be reviewed and evaluated in greater detail to fully understand the impacts to the distribution system, and necessary improvements that may be required by an alternative water source location. The City has requested the water system model files, in WaterCAD, from Wood LLC (the State's consultant). Once received the City will require engineering support services from SEH to review and update with the water system changes over the past 2 years, and perform various modeling scenarios to review operational performance and identify system deficiencies.

PROPOSAL DETAILS/ANALYSIS: At this time, the City Engineer is recommending that preliminary design services be initiated for Water Tower No. 3 to be located within the City's water system low pressure zone. More specially, along Lake Elmo Avenue, between I94 and 14th Street North. The scope of work and associated fees has been developed with SEH as outlined in the attached Task Order No. 11. The preliminary design services shall aid the in determination of the water storage requirements and tower sizing, the water tower location for efficient hydraulic operations within the pressure zone, and site evaluation services to make recommendations regarding the site layout and other siting requirements. The services outlined in this task order are intended to assist the City to verify the selected water tower site as the preferred location prior to the city's acquisition of the property.

The City Engineer is also recommending that professional engineering support services be obtained to update and calibrate the city's existing water distribution system hydraulic model, using the base WaterCAD file prepared by Wood LLC. Once the model has been obtained and verified to reflect updated existing conditions, water system modeling scenarios will be run to evaluate and make recommendations for expansion of the water supply system, as necessary, to responsibly and cost-effectively accommodate future growth, including an evaluation of alternative water supply source locations within the system.

Over the next few years, the City will need to make important decisions related to the future of the City's water supply sources, distribution system, and storage facilities. Development and utilization of the updated water system model will help to make informed decisions related to expected system operations. As part of the evaluation, the updated water model and corresponding evaluation will explore the viability of potential water supply options related to alternatives driven by the State's Clean Drinking Water Supply Plan (CDWSP) related to 3M Settlement Funds. The scope and effort defined in the attached Task Order No. 12 will support the City in understanding the impacts and changes to the water system plan and will assist in supporting the City's effort to advocate for the best alternative(s).

FISCAL IMPACT: $19,000 to complete the Water Tower No. 3 Preliminary Design work, with services to be charged against the Water Towner No. 3 Improvements. Once completed a Task Order will be prepared for engineering services for final design and construction support services. $30,600 for Water System Planning/Modeling, with services to be charged against the Water Enterprise Fund. The City will be submitting a request to the State of Minnesota Co-Trustees for the 3M Settlement Funds to reimburse the City for the water planning services, however, no commitments for reimbursement have been made at this time.

RECOMMENDATION: Staff is recommending that the City Council authorize, *as part of the consent agenda*, engineering services for Water Tower No. 3 Preliminary Design and Water System Planning/Modeling and as outlined in Task Order No. 11 and Task Order No. 12 respectively. If removed from the consent agenda, the recommended motion for this action is as follows:

"Move to approve engineering services for Water Tower No. 3 Preliminary Design and Water System Planning/Modeling and as outlined in Task Order No. 11 and Task Order No. 12 respectively."

ATTACHMENTS:

1. Task Order No. 11 – Water Tower No. 3 Preliminary Design.
2. Task Order No. 12 – Water System Planning/Modeling.

In accordance with ARTICLE 1 of the Master AGREEMENT between the City of Lake Elmo ("CITY") and ***Short Elliott Hendrickson, Inc. (SEH)*** ("ENGINEER"), dated **AUGUST 13, 2014** ("AGREEMENT"), the ENGINEER agrees to provide Professional Engineering Support Services as follows:

WATER TOWER NO. 3 PRELIMINARY DESIGN

PROJECT OVERVIEW: The City of Lake Elmo requires professional engineering services for the preliminary design of Water Tower No. 3 to be located within the city's water system low pressure zone. The preliminary design services shall aid the in determination of the water storage requirements and tower sizing, the water tower location for efficient hydraulic operations within the pressure zone, and site evaluation services to make recommendations regarding the site layout and other siting requirements. The City is currently searching for a suitable site to acquire for placement of the new water tower. The services outlined in this task order are intended to assist the city to verify the selected water tower site as the preferred location prior to the city's acquisition of the property.

SERVICES TO BE PROVIDED BY ENGINEER: SEH, Inc. shall provide the following Professional Engineering Services:

Water Tower Sizing, Siting Evaluation & Preliminary Design. The tasks outlined below will verify and secure the City's plan to move forward with the prosed water tower site and verify the anticipated water tower size and operation, so that final design and construction of the tower can proceed.

1. Project Management throughout the course of the work including submittal of a weekly progress memo and job to date budget form.
2. Meeting: Conduct meeting to review potential water tower sites and size alternatives, Water Tower Site visit.
3. Develop water tower size and height recommendations based on previous tasks.
4. Meet with city staff to develop site design criteria, miscellaneous project data for development of schematic plan and cost estimates.
5. Hydraulic Modeling and Storage Determination.
6. Review Tank Operations and needs with City Engineering and Public Works staff.
7. Review and provide recommendations regarding existing PRV station and SCADA system modifications.
8. Provide Architectural Rendering for one style of water tower located on the proposed site. Additional renderings, if requested by the city, would be completed as additional services.
9. Preliminary Site Plan Layout.
10. Preliminary Cost/Benefit Estimates for selected Water Tower style and size. Cost estimates for alternative style and sizes, if requested by the city, would be completed as additional services.

11. Prepare Preliminary Design Memorandum.
12. Private Utility Coordination and Design Locate.
13. Survey Site and other features.
14. Coordinate Soil Boring locations.
15. Review draft report with City and finalize the report.
16. Present the final report to the City.

TIMES FOR RENDERING SERVICES: ENGINEER shall perform its services and provide deliverables in accordance with the following project schedule:

1. December 15, 2020 – Council approves Task Order to authorize work.
2. The Project schedule will vary and will be dependent upon the identification of various potential water tower sites by the city that are available for acquisition, and receipt of the WaterCAD model from the State of Minnesota.
3. Once information becomes available to the ENGINEER, services will proceed diligently through completion.

CITY'S REPRESENTATIVE AND CONTRACT ADMINISTRATION: The CITY's representative with respect to services rendered by ENGINEER under this TASK ORDER shall be the City Engineer. Project correspondence must be addressed to:

Jack Griffin, P.E., City Engineer
City of Lake Elmo
3800 Laverne Avenue North
Lake Elmo, MN 55042
651.300.4264
Email: Jack.griffin@focusengineeringinc.com

COMPENSATION: Compensation to ENGINEER shall be based on the hourly billing rates for each staff as assigned and provided in the ENGINEER's Proposal for the work. Invoices shall be submitted once each month and should be sent to the attention of the City Engineer.

Compensation to ENGINEER for Preliminary Design Services shall be on an hourly rate basis in a not to exceed amount of **$19,000.**

ADDITIONAL SERVICES: If authorized by the City, ENGINEER shall furnish or obtain from others Additional Services which are not considered under this Task Order. Such services shall be compensated for on an Hourly Rate basis in an amount approved by the City prior to any services being started or as otherwise mutually agreed. The City is not obligated to compensate ENGINEER for services completed outside the approved scope of work which are completed prior to ENGINEER submitting a written request to the City, and receiving written approval of the City.

ATTACHMENTS: This agreement supersedes and replaces all previous understandings, agreements or contracts, written or verbal, between ENGINEER and City, regarding the Water Tower No. 3 Preliminary Design. The following documents are attached for reference:

1. ENGINEER's Proposal to the CITY dated December 8, 2020.

APPROVAL AND ACCEPTANCE: Approval and Acceptance of this Task Order, including the attachment(s) listed above, shall incorporate this document as part of the AGREEMENT. ENGINEER is authorized to begin performance of services upon receipt of a copy of this Task Order signed by CITY.

The Effective Date of this Task Order is **December 15, 2020**.

SHORT ELLIOT HENDRICKSON, INC.	CITY OF LAKE ELMO, MINNESOTA
By _____	By _____
(Authorized Principal of the Firm)	City Administrator

SHORT ELLIOTT HENDRICKSON: PROJECT WORK PLAN

PROJECT NAME: Water Model Update and Source Water Modeling
PROJECT NUMBER: LAKMO 123536
CLIENT: City of Lake Elmo, Minnesota
PROJECT MANAGER: Chad T. Katzenberger, PE

TOTAL HOURS	**137**	**31**	**39**	**22**	**36**	**8**	**0**	**1**
COST PER HOUR/UNIT (CHARGE-OUT RATE)		$159.00	$114.00	$159.00	$141.00	$114.00	$141.00	$80.00
TOTAL LABOR COST	$18,941	$4,929.00	$4,446.00	$3,498.00	$5,076.00	$912.00		$80.00
% OF TOTAL COST		26.1%	23.5%	18.5%	26.9%	4.8%		0.4%

Task (Phase)	Task Description	**Chad Katzenberger** Lead Proj Engr and PM	**Heather Yelle** Lead Water Modeler	**Scott Haupt** Senior Civil Engineer	**Adam Bona** Engineering Technician	**Ryan Hanson** Project Engineer	**Mike Steuernagel** GIS	**Melissa Blommel** (Admin)
11	**Task Order 11 - Water Tower Sizing, Siting Evaluation & Preliminary Desgin**							
11.01	**MEETING:** Conduct Meeting to review potential wate tower sites and size alternatives, Water Tower Site Visit	6	4	2				1
11.02	Develop water tower size and height recommendations based on previous tasks	4	4					
11.03	Meet with City staff to develop site design critera, misc project data for development of schematic plan and cost estimates	4	4					
11.04	Hydraulic Modeling & Storage Determination	1	4					
11.05	Review Tank Operations and Needs with City Eng. & PW Staff	1	3	2				
11.06	Review and provide recommendations regarding existing PRV station and SCADA system modifications							
11.07	Provide Architectural Rendering for one style of water tower located on the proposed site	1	12			8		
11.08	Preliminary Site Plan Layout			4	10			
11.09	Preliminary Cost/Benefit Estimates for selected Water Tower style and size. Cost estimates for alternative style and sizes, if requested by the city, would be completed as additional services.	2	4					
11.1	Prepare Preliminary Design Report for Council Presentation	4	4					
11.11	Private Utility Coord & Design Locate			4	8			
11.12	Survey Site			4	16			
11.13	Coordinate Soil Borings	1		1	2			
11.14	QA/QC	1		2				
11.15	Review draft report with City, and finalize the report.	2		1				
11.16	Present the report to the City staff and provide support	4		2				
	Task Hour Total	**137**	**31**	**39**	**22**	**36**	**8**	**0**	**1**
	Total Task 11	**$19,000**	**$ 4,929**	**$ 4,446**	**$ 3,498**	**$ 5,076**	**$ 912**	**$ -**	**$ 80**

In accordance with ARTICLE 1 of the Master AGREEMENT between the City of Lake Elmo ("CITY") and ***Short Elliott Hendrickson, Inc. (SEH)*** ("ENGINEER"), dated **AUGUST 13, 2014** ("AGREEMENT"), the ENGINEER agrees to provide Professional Engineering Support Services as follows:

WATER SYSTEM PLANNING/MODELING

PROJECT OVERVIEW: The City of Lake Elmo requires professional engineering services to update and calibrate the city's existing water distribution system hydraulic model, using WaterCAD. Once the existing model has been developed, professional engineering services shall be provided to evaluate and make recommendations for expansion of the water supply system, as necessary, to responsibly and cost-effectively accommodate future growth, including an evaluation of alternative water supply source locations within the system.

Over the next few years, the city will need to make important decisions related to the future of the city's water supply sources, distribution system, and storage facilities. Development and utilization of the updated water system model will help to make informed decisions related to expected system operations. As part of the evaluation, the updated water model and corresponding evaluation will explore the viability of potential water supply options related to alternatives driven by the State's Clean Drinking Water Supply Plan (CDWSP) related to 3M Settlement Funds. Since Lake Elmo is one of 14 different water systems being impacted by the final CDWSP, recommended improvements should be carefully evaluated to make sure that selected alternatives are in the best interest of the City of Lake Elmo. The scope and effort defined in this Task Order will support the city in understanding the impacts and changes to the water system plan and will assist in supporting the city's effort to advocate for the best alternative(s).

SERVICES TO BE PROVIDED BY ENGINEER: SEH, Inc. shall provide the following Professional Engineering Services:

Task 1 – Water Model Review, Update, Development and Verification. The work outlined below will develop an updated water system model, in WaterCAD, for the city so that advanced water system questions related to water supply, water quality and future system operations can be addressed. The model will become a central tool for the overall water system evaluation tasks related to supply, treatment, and storage. It is the intention to build upon the WaterCAD model prepared by Wood LLC, as the State's consultant for the CDWSP.

1. Review existing model and available water system data. Develop a list of questions and data needed to update the model.
2. Conduct a project kick-off meeting with key representatives of the city and the SEH project team. Review overall expectations and schedule for the project.
3. Update Water Model with latest system piping, elevation data, demand data, billing records.

4. Gather historical water system operational data (Average Summer Week, Average Winter Week), tabulate and analyze.
5. Develop diurnal demand curves for system pressure zones based on historical water use.
6. Review and verify existing water model operation with real extended period SCADA data (model verification process).
7. Provide schematic map printouts and data tabulations for city staff review and revisions.
8. Finalize Water System Model Updates.
9. Develop documentation related to model update.
10. Develop standard current water system modeling results maps (Pressure, Fire Flow, EPS Flow and Pressure).
11. Final Model Update Summary memo.

Task 2 – Future Water System Supply and Treatment Alternative Evaluation & on call water modeling services. The work outlined below will utilize the updated water model to evaluate potential water supply and distribution alternatives. In addition, long term water system expansion recommendations will be provided.

1. Request information on all existing water system facilities and proposed 5-year Capital Improvement Plan (CIP) projects.
2. Prepare a schematic of the overall water system(s).
3. Perform a water supply analysis to determine the capacity of the groundwater wells to provide current and future water needs and to identify any shortfalls.
4. Evaluate the capacities of the booster pumping facility to ensure that it has adequate capacities to provide water to customers throughout the service area.
5. Using future land use map - Develop Ultimate Water System model for future supply scenarios.
6. Using EPS Water Supply Simulation evaluate ability of Water System to Supply System Demands through 2040 from Internal Groundwater sources.
7. Using EPS Water Supply Simulation evaluate ability of Water System to Supply System Demands through 2040 from supply from Woodbury.
8. Meet with city staff to present the identified water system deficiencies and solicit input on proposed improvement alternatives.
9. Identify improvements to the water distribution system to ensure that adequate water can be transmitted to customers at required flows and pressures. This will include both the existing water distribution system and expansion of the water distribution system to serve areas of new development.
10. Prepare a map of water age and identify points or areas of oldest water under various seasonal pumping scenarios.
11. Additional On-Call Water Modeling Services and Modeling Support (as questions arise).

TIMES FOR RENDERING SERVICES: ENGINEER shall perform its services and provide deliverables in accordance with the following project schedule:

1. December 15, 2020 – Council approves Task Order to authorize work.
2. The Project schedule will vary and will be dependent upon the identification of various potential water tower sites by the city that are available for acquisition, and receipt of the WaterCAD model from the State of Minnesota.
3. Once information becomes available to the ENGINEER, services will proceed diligently through completion.

CITY'S REPRESENTATIVE AND CONTRACT ADMINISTRATION: The CITY's representative with respect to services rendered by ENGINEER under this TASK ORDER shall be the City Engineer. Project correspondence must be addressed to:

Jack Griffin, P.E., City Engineer
City of Lake Elmo
3800 Laverne Avenue North
Lake Elmo, MN 55042
651.300.4264
Email: Jack.griffin@focusengineeringinc.com

COMPENSATION: Compensation to ENGINEER shall be based on the hourly billing rates for each staff as assigned and provided in the ENGINEER's Proposal for the work. Invoices shall be submitted once each month and should be sent to the attention of the City Engineer.

Compensation to ENGINEER for Preliminary Design Services shall be on an hourly rate basis in a not to exceed amount of **$30,600.**

ADDITIONAL SERVICES: If authorized by the City, ENGINEER shall furnish or obtain from others Additional Services which are not considered under this Task Order. Such services shall be compensated for on an Hourly Rate basis in an amount approved by the City prior to any services being started or as otherwise mutually agreed. The City is not obligated to compensate ENGINEER for services completed outside the approved scope of work which are completed prior to ENGINEER submitting a written request to the City, and receiving written approval of the City.

ATTACHMENTS: This agreement supersedes and replaces all previous understandings, agreements or contracts, written or verbal, between ENGINEER and City, regarding the Water System Model Development and Evaluation. The following documents are attached for reference:

1. ENGINEER's Proposal to the CITY dated December 8, 2020.

APPROVAL AND ACCEPTANCE: Approval and Acceptance of this Task Order, including the attachment(s) listed above, shall incorporate this document as part of the AGREEMENT. ENGINEER is authorized to begin performance of services upon receipt of a copy of this Task Order signed by CITY.

The Effective Date of this Task Order is **December 15, 2020**.

SHORT ELLIOT HENDRICKSON, INC.	CITY OF LAKE ELMO, MINNESOTA
By _____	By _____
(Authorized Principal of the Firm)	City Administrator

SHORT ELLIOTT HENDRICKSON: PROJECT WORK PLAN

PROJECT NAME: Water Model Update and Source Water Modeling
PROJECT NUMBER: LAKMO 123536
CLIENT: City of Lake Elmo, Minnesota
PROJECT MANAGER: Chad T. Katzenberger, PE

TOTAL HOURS	**244**	**41**	**165**	**12**	**0**	**8**	**15**	**3**
COST PER HOUR/UNIT (CHARGE-OUT RATE)		$159.00	$114.00	$159.00	$141.00	$114.00	$141.00	$80.00
TOTAL LABOR COST	$30,504	$6,519.00	$18,810.00	$1,908.00		$912.00	$2,115.00	$240.00
% OF TOTAL COST		21.4%	61.7%	6.3%		3.0%	6.9%	0.8%

Task (Phase)	Task Description	**Chad Katzenberger** Lead Proj Engr and PM	**Heather Yelle** Lead Water Modeler	**Scott Haupt** Senior Civil Engineer	**Adam Bona** Engineering Technician	**Ryan Hanson** Project Engineer	**Mike Steuernagel** GIS	**Melissa Blommel** (Admin)
12	**Task 12.1 – Water Model Update and Preliminary Planning**							
12.01	Review existing model and available water system GIS data. Develop a list of questions and data needed to update the model	2	4					
12	**MEETING:** Conduct a project kick-off meeting with key representatives of the City and the SEH project team. Review overall expectations and schedule for the project.	8	8	2		2		1
12	Update Water Model with latest system piping, elevation data, demand data, billing records.		8				4	
12	Gather historical water system operational data - (Average Summer Week, Average Winter Week), Tabulate and analyze	1	8					
12	Develop diurnal demand curves for system pressure zones based on historical water system data	2	16					
12	Review and verify existing water model operation with real extended period SCADA data - Model verification Process	2	10					1
12	Finalize Water System Model Updates	1	8					
12	Develop documentation related to model update	1	2					
12	Develop standard current water system modeling results maps (Pressure, Fire Flow, EPS Flow and Pressure)		8				2	
12	Final Model Update Summary memo	1	4	1				
Deliverables: Updated water model, memo, figures		4	4	1				
	Task Hour Total	**116**	**22**	**80**	**4**	**0**	**2**	**6**	**2**
	Task Cost	**$14,500**	**$ 3,498**	**$ 9,120**	**$ 636**	**$ -**	**$ 228**	**$ 846**	**$ 160**
12	**Task 12.2 – Future Water System Supply Source Evaluation & On Call Water Modeling Services**							
Existing Water System Facilities								
2.01	Request information on all existing water system facilities and proposed 5-year Capital Improvement Plan (CIP) projects thru the City Engineer.	0.5		1				
2.02	Prepare a schematic of the overall water system (s)		4					
2.03	Perform a water supply analysis to determine the capacity of the groundwater wells to provide current and future water needs and to identify any shortfalls.	2	2			2		
2.04	Evaluate the capacities of the booster pumping facility to ensure that it has adequate capacities to provide water to customers throughout the service area.	0.5	1					
2.05	Using future land use map - Develop Ultimate Water System model for future supply scenarios		6				2	
2.06	Using EPS Water Supply Simulation valuate ability of Water System to Supply System Demands Through 2050 from Internal Groundwater sources		6				2	
2.07	Using EPS Water Supply Simulation valuate ability of Water System to Supply System Demands Through 2050 from supply froom Woodbury	1	8			4	1	
2.08	**MEETING:** Conduct a workshop with City staff to present the identified water system deficiencies, and solicit their input on proposed improvements.	6	4	2				1
2.09	Identify improvements to the water distribution system to ensure that adequate water can be transmitted to customers at required flows and pressures. This will include both the existing water distribution system and expansion of the water distribution system in areas of new development.	1	6	1				
2.10	Prepare a map of water age, and identify points or areas of oldest water under various seasonal pumping scenarios		8				2	
2.11	Additional On Call Water Modeling Services and Modeling Support	8	40	4			2	
	Task Hour Total	**128**	**19**	**85**	**8**	**0**	**6**	**9**	**1**
	Task Cost	**$16,000**	**$ 3,021**	**$ 9,690**	**$ 1,272**	**$ -**	**$ 684**	**$ 1,269**	**$ 80**
	Total Task 12	**$30,600**	**$6,519**	**$18,810**	**$1,908**	**$0**	**$912**	**$2,115**	**$240**