

November 22, 2021

City of Rochester Hills
1000 Rochester Hills Drive
Rochester Hills, MI 48309

Attn: Ms. Tracey A. Balint, P.E., Public Utilities Engineering Manager

Re: Proposal for Professional Engineering Services
DWAM Grant Project Administration

HRC Job No. 20201032

Dear Ms. Balint:

Thank you for the opportunity to submit a proposal for professional engineering services to assist you with developing and administering the City's Drinking Water Asset Management (DWAM) Grant. We propose to complete this work in accordance with our current Agreement for Professional Engineering Services. Our understanding of the work and scope of services is based on the Preliminary Distribution System Materials Inventory (PDSMI) that our office completed for the City in 2019, the DWAM Grant application and work plan that our office helped prepare for the City in December of 2020 and our continued support of the City's water system operations.

As you are aware, our office was successful in helping the City secure a \$707,180 DWAM Grant for water service line verification and asset management planning work to help the City complete their Distribution System Materials Inventory and collect additional information on its water supply system to further the City's Asset Management and Capital Improvement Planning activities. The work eligible under the DWAM grant includes; water service line verifications, large valve inspections, pipeline integrity analysis, pipeline condition assessment and asset inventory updates. A more detailed description of the scope of services is as follows;

Scope of Services

Distribution System Materials Inventory Work

The City of Rochester Hills is required by the State of Michigan's Safe Drinking Water Act (MI-SDWA) to develop a Complete Distribution System Materials Inventory (CDSMI) by January 1, 2025. Recent guidance from the Michigan Department of the Environment, Great Lakes & Energy (EGLE) has identified a minimum number of services lines that need to be inventoried for development of the CDSMI. Based on the guidance, the City of Rochester Hills is required to verify a minimum 379 water service lines (selected at random throughout the water distribution system) at multiple locations along the service line (as also defined in the EGLE guidance), including at the connection with the meter and at each side of the curb stop box (typically located at the City's right-of-way line). HRC is proposing to provide assistance for the notification, scheduling and visual inspection/verification of the water service line material upstream of the customer meter (which is typically located within the basement or crawl space of each home), as well as providing full-time observation and documentation control of a competitively bid contractor exposing the service line on each side of the curb stop box. In addition to the aforementioned field services, HRC will also provide service line verification program management and supervision to ensure the random selection of service lines to verify is completed correctly, that the reporting is organized properly and that the requirements of the Grant are met throughout the service line verification process. Lastly, HRC will work with the City's Management Information Systems (MIS) department to develop a cloud-based mobile application and data collection system to collect the service line information and photo documentation in the field and instantaneously upload the data into the GIS in real-time. HRC would also coordinate for the service line information to be input into the City's CCMS and be prepared for reporting.

Delhi Township
2101 Aurelius Rd.
Suite 2A
Holt, MI 48842
517-694-7760

Detroit
535 Griswold St.
Buhl Building, Ste 1650
Detroit, MI 48226
313-965-3330

Grand Rapids
1925 Breton Road SE
Suite 100
Grand Rapids, MI 49506
616-454-4286

Howell
105 W. Grand River
Howell, MI 48843
517-552-9199

Jackson
401 S. Mechanic St.
Suite B
Jackson, MI 49201
517-292-1295

Kalamazoo
834 King Highway
Suite 107
Kalamazoo, MI 49001
269-665-2005

Lansing
215 S. Washington SQ
Suite D
Lansing, MI 48933
517-292-1488

An estimate of hours and associated fees for this task are detailed in the attached Work Plan taken from the DWAM Grant Application, which also includes previously accumulated time to prepare the Grant Application. As shown, the total proposed cost for this task is \$133,180, which will not be exceeded without prior authorization. The full amount of the proposed cost is considered Grant eligible and was included in the approved Grant amount.

Asset Management Planning Work

The City of Rochester Hills wanted to collect more detailed information about their transmission system and prioritize updating of their water system asset inventory, as such, four (4) separate asset management planning (AMP) tasks were requested and approved for funding as part of the DWAM Grant. HRC is proposing to assist with the development and completion of these tasks as follows;

- 1) Large Valve Inspections – HRC proposes to assist in the solicitation of qualifications for contractors to complete the work, assembly of a price proposal and specifications for the work, full-time observation of the work, documentation and organization of valve assessment information, site photos and administration of the Contact.
- 2) Pipeline Integrity Assessment – HRC proposes to assist in the solicitation of qualifications for professional services contractors and development of cost proposals and scope of work, attendance at necessary workshops and review of the deliverables.
- 3) Pipeline Condition Assessment - HRC proposes to assist in the solicitation of qualifications for contractors to complete the work, assembly of a price proposal and specifications for the work, review of contractor SOPs and proposed work plan, full-time observation of the work, documentation and organization of the pipeline assessment information and administration of the Contact.
- 4) Asset Inventory Updates – This task is proposed to be completed by City MIS personnel and any HRC assistance is anticipated to be minimal and as needed.

It is anticipated that a project kickoff meeting will be necessary for Task #1, Task #2, and Task #3 and that Task #3 will require multiple site meetings to review water system shutdown and assessment tool insertion strategies. An estimate of hours and associated fees for this task are detailed in the attached Work Plan taken from the DWAM Grant Application. As shown, the total proposed cost for the planning, administration, coordination and reporting necessary to complete these tasks is \$39,000, which will not be exceeded without prior authorization. The full amount of the proposed cost is considered Grant eligible and was included in the approved Grant amount.

The Grant Agreement provides an end date of December 1, 2024; however, we propose the following project timeline for the performance of the tasks so that the DSMI work can be completed with sufficient time remaining before the due date of the CDSMI and so that the AMP tasks can be completed efficiently to stay within the proposed budget.

- ≡ Mid-December 2021: Authorization to Proceed/Kickoff Meeting
- ≡ January 2022 – March 2022: Solicitation Development (DSMI & AMP Work)
- ≡ April 2022 – May 2022: DSMI Procurement
- ≡ June 2022 – December 2022: DSMI Work
- ≡ April 2022 – May 2022: Review of AMP SOQs
- ≡ June 2022 – July 2022: AMP Scope of Work Development
- ≡ August 2022 – September 2022: Large Valve Inspection & Pipeline Integrity Assessment Procurement
- ≡ October 2022 – June 2023: Large Valve Inspection Work
- ≡ October 2022 – June 2023: Pipeline Integrity Assessment Work
- ≡ November 2022 – December 2022: Pipeline Condition Assessment Scope of Work Development
- ≡ January 2023 – February 2023: Pipeline Condition Assessment Procurement
- ≡ March 2023 – August 2023: Pipeline Condition Assessment Pre-Planning
- ≡ September 2023 – December 2023: Pipeline Condition Assessment Work

Summary

The City of Rochester Hills has been awarded a Drinking Water Asset Management (DWAM) Grant in the amount of \$707,180. The total proposed cost for professional engineering services to assist the City with developing and administering this DWAM Grant, and the tasks described herein, is \$172,180 which will not be exceeded without prior authorization.


HRC has wide-ranging experience assisting municipalities in all aspects of water supply system operation from planning to design and construction administration, asset management, service line identification and replacements, water quality & hydrant flow testing, hydraulic modeling, regulatory reporting, reliability studies, emergency response plans and water system general plans for state and federal regulatory agencies.

We are proposing Bradley Shepler, P.E. as the Managing Engineer for this Work. Mr. Shepler has been the main point of contact for the City on numerous water system related planning, design and construction projects and has worked on a multitude of service line related projects, including DWSRF and DWAM Grant projects and is well-versed in the regulatory and reporting requirements of the Grant. Mr. Shepler will be supported by Tim Prince, P.E., Beth Clarke, P.E., Emily Ause, P.E. and Andrew Johnstone, P.E. who are all familiar with the City and/or water systems in the region. HRC also has a multitude of qualified staff that can fulfill the Program Manager role for “boots-on-the-ground” work throughout the service line verification process. It is our intention to provide the City with one (1) single point of contact for this DSMI work from beginning to end. When the need for DSMI Program Management approaches, we will present the City with 2 to 3 recommended staff that would be available through the duration of the project for your review.

We thank you in advance for considering us for this engineering work. If this Proposal meets your needs, please sign below and return one copy to us. This will serve as the Engineering Contract Agreement and authorization to proceed. We look forward to hearing from you soon. Should you have any questions, or require additional information, please contact this office at (248) 454-6300.

Very truly yours,

HUBBELL, ROTH & CLARK, INC.



Bradley Shepler, P.E., CCCA, LEED AP
Associate

pc: Rochester Hills; A. Schneck, P. Davis, L. Luedeman
HRC; D, Mitchell, T. Prince, B. Clarke, E. Ause, A. Johnstone, File

Recommended by:
CITY OF ROCHESTER HILLS

Allan E. Schneck, P.E., DPS Director

Date: _____

Approved by:
CITY OF ROCHESTER HILLS

Bryan K. Barnett, Mayor

Date: _____

October 13, 2021

Michigan Department of Environment, Great Lakes, and Energy
Finance Division - Water Infrastructure Financing Section
525 West Allegan Street
Lansing, Michigan 48909

RE: Drinking Water Asset Management Grant Work Plan
City of Rochester Hills, Michigan

HRC Job No. 20201032

The following provides additional information for the proposed activities to completed as part of the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Drinking Water Asset Management (DWAM) grant.

≡ Project Need

The preliminary distribution system material inventory (PDSMI) completed by the City of Rochester Hills indicated that 17,603 of the total 23,882 water service lines were considered 'material unknown'. However, as part of EGLE's "Minimum Service Line Material Verification Requirements" guidance, this definition of "unknown" has been clarified since the PDSMI work and as such all 23,882 of the water service lines would have been considered "unknown" if this guidance was provided at the time of the DWAM Grant Application submittal deadline. The requested Grant funds will be used to verify the material of these "unknown" service lines in accordance with the "Minimum Number of Service Lines Requiring Physical Verification" guidance and support the collection, documentation and organization of information to develop the Complete DSMI.

The City's water supply system contains over 428 miles of 4-inch to 36-inch water main and approximately 5,132 hydrants and 4,774 line valves. Approximately 10% of the City's system is 16-inch diameter pipe and greater. Refer to the map included with this Work Plan. These water mains that are greater than 16-inch in diameter are critical system mains, however, they are predominantly located along major collector roads that have been heavily developed and would be difficult, disruptive and costly to replace. The City wishes to develop a maintenance and rehabilitation program for their critical large diameter mains and valves to extend their useful life and minimize disruption to their customers.

≡ Project Plan

Distribution System Materials Inventory (DSMI) Work

The current scope of service line material investigations is based on the physical verification of a random representative sample of the unknown services lines in the City's distribution system. Based on guidance from EGLE's "Minimum Service Line Material Verification Requirements" document, the City of Rochester Hills has 23,882 service lines within their distribution system that would be categorized as "unknown". Therefore, the City would be required to physically verify a minimum of 379 of these service lines in order to produce a statistically sound subset of information and assess the reliability of their existing records and predict service line materials at locations that were not physically verified for the completion of their Complete DSMI. The investigation of the unknown service lines will consist of potholing at the curb stop locations (at least 24 inches on either side of the curb stop) to physically observe the public and private side service line piping materials as well as coordinating with residents a time and date to conduct an internal verification of the service line material upstream of their meter. The estimate per line cost is inclusive of only the excavations to complete the verification at the curb stop locations and restoration of the surface

Delhi Township 2101 Aurelius Rd. Suite 2A Holt, MI 48842 517-694-7760	Detroit 535 Griswold St. Buhl Building, Ste 1650 Detroit, MI 48226 313-965-3330	Grand Rapids 1925 Breton Road SE Suite 100 Grand Rapids, MI 49506 616-454-4286	Howell 105 W. Grand River Howell, MI 48843 517-552-9199	Jackson 401 S. Mechanic St. Suite B Jackson, MI 49201 517-292-1295	Kalamazoo 834 King Highway Suite 107 Kalamazoo, MI 49001 269-665-2005	Lansing 215 S. Washington SQ Suite D Lansing, MI 48933 517-292-1488
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necessary to complete the work. Communicating the project with impacted residents, scheduling internal investigations, observing and recording the curb stop verification work and the time spent documenting, organizing and reviewing all the information collected from the physical verifications will be completed by professional engineering services.

Asset Management Planning (AMP) Work

To develop a Transmission Main and Large Valve maintenance and rehabilitation program, the City is proposing to access existing valve vaults and assess the condition of the existing 16 inch and larger valves, perform a pipeline integrity assessment of its 16-inch and larger water mains and strategically inspect the pipes (16 inch & larger) that the City has identified as most likely to fail.

The City has identified 280 valves within its water supply system that are 16 inch and larger. The City currently has record drawing information on the location, type and installation year of these valves but have not had the resources to GPS or inspect these valves. There have been instances when these valves will leak when operated or the City cannot get a quality shutdown when needed causing costly emergency repairs or project delays to get parts. The Large Valve maintenance and rehabilitation program will develop a plan and process to physically locate, inspect, and assess the large valves in the system, document and report repairs needed for each valve and create a strategic plan for future rehabilitation and major maintenance. It is estimated that the cost to inspect the large valves will be \$900 each which will include all dewatering, confined space entry and traffic control costs. As most of these large valves are located along major roads (refer to the City's Water Main Transmission System Map included in this Work Plan), traffic control set ups will be costly and time consuming, as such, it is anticipated that two (2) valves per day would be able to be inspected. Costs to repair the valves **are not** included in the Grant request.

The City will review all approximately 42 miles of its transmission system (i.e. 16 inch pipes and larger), installation history, laying conditions, pipe material, depths, topography, installer, joint type, geotechnical information, operational characteristics, break history, etc. from a desktop perspective to reveal any trends in performance and extract any tendencies in the data. This pipeline integrity assessment will assist the City with programming future transmission main rehabilitation and replacement projects. It is estimated that the cost to perform a pipeline integrity assessment is between \$500 - \$1,000 per mile of pipeline reviewed.

Through the development of the City's Water Asset Management Program (WAMP) and results of studies performed regionally, the City has identified certain pipelines in its transmission system with a higher likelihood of failure. The prestressed concrete cylinder pipe (PCCP), 16 inch and larger, manufactured and installed in the early to mid-1970's has been identified locally and regionally as a potential pipeline with integrity and failure concerns. The City has identified over 14 miles of 16" to 24" PCCP pipe that was manufactured and installed in the early to mid-1970's (refer to the attached map). The Transmission main inspection program would develop a plan and process to physically inspect a representative sample of these mains identified as critical. The City would propose to use technologies that physically assess PCCP pipeline integrity through analyzing wire breaks, steel cylinder corrosion and joint deterioration. It is estimated that costs to inspect existing 16" diameter PCCP water main will start at \$50,000 per mile including necessary appurtenances to insert and retrieve inspection equipment.

Lastly, the City will continue to update its GIS and asset inventory through review of historical data and information, work order history from its CMMS system and collection and review of information collected through the above asset management planning tools. The City has dedicated significant time and effort creating and developing its asset management system and is the entity that should continue to update it. This will be considered force account work and will follow Grant requirements for invoice detail and tracking and maximum fringe benefits. It is estimate that City staff will require approximately \$25,000 per year to upgrade and improve the City water system asset inventory including enhanced condition assessment and level of service information to help with Capital Improvement Planning.

≡ Map(s) illustrating project work area

A map of the City is attached with the service line information as reported in the Preliminary Distribution System Materials Inventory (PDSMI) illustrated. The current project area includes all services lines with unknown materials. The priority and extent of the verifications will be reviewed and updated upon receipt of the aforementioned EGLE guidance.

A map of the City's water transmission system showing all 42 miles of 16" and larger main has been provided. The mains highlighted on this map is where the large valves will be inspected and where the pipeline integrity assessment will focus. The number and location of the large valves to be inspected will be reviewed to coordinate with the City's criticality assessment from their WAMP and parallel AMP activities.

A map of the City's 16" to 24" PCCP water mains installed in the 1970's has been provided showing where the physical pipeline inspections will be focused. The location of the pipelines to be inspected will be reviewed to coordinate with the City's criticality assessment from their WAMP and parallel AMP activities.

≡ Estimated Costs

Asset Management Planning (AMP) estimated costs were provided on the Project Plan section and have been summarized in the attached cost summary sheet. AMP costs were based on previous experience coordinating large valve inspection programs and cost sharing information with regional water systems on pipeline integrity assessments and pressure pipeline condition assessments.

The attached table is a bid tabulation from a service line verification program publicly bid in the Spring of 2020. The table summarizes service line verification costs from seven contractors and calculates the anticipated costs for "typical" curb stop service line verifications including excavations, visual verification and documentation, backfill and turf restoration. For the Grant application, a cost of \$738 per service line verification at the curb stop (physical investigation at the curb stop, points 2 & 3 based on EGLE Guidance) and a cost of \$120 per internal service line verification (physical investigation at the curb stop, point 1 based on EGLE Guidance) was used for the cost allocation estimate. In addition, professional engineering service costs are necessary to manage the service line verification program, including but not limited to; planning and coordinating the verification locations, scheduling, tracking and observing the work, organizing the collected information, troubleshooting the asset management collection software, finalizing restoration items and administration of grant reporting and reimbursements.

Refer to the attached cost summaries for the breakdown of DSMI costs as provided in the DWAM Grant Application worksheet and the estimated professional service fees for the proposed work.

If you have any questions or require any additional information, please contact the undersigned.

Very truly yours,

HUBBELL, ROTH & CLARK, INC.



Bradley Shepler, P.E., CCCA, LEED AP
Associate

Attachment

pc: City of Rochester Hills, A. Schneck, T. Balint, L. Luedeman
HRC; D. Mitchell, B. Clarke, File

**CITY OF ROCHESTER HILLS
 DRINKING WATER ASSET MANAGEMENT (DWAM) GRANT APPLICATION
 ESTIMATED PROJECT COST BREAKDOWN**

HRC Project No. 20201032

Asset Management Planning Costs

Task	Qty	Unit	Unit Price	Total
1) Large Valve Inspections		54 each	\$ 900.00	\$ 48,600.00
2) Pipeline Integrity Assessment		42 miles	\$ 750.00	\$ 31,500.00
3) Pipeline Condition Assessment		2 miles	\$ 50,000.00	\$ 100,000.00
4) Asset Inventory Updates		3 years	\$ 25,000.00	\$ 75,000.00
			Subtotal: \$	255,000.00
			Planning, Administration, Coordination & Reporting: \$	39,000.00
			TOTAL AMP COSTS \$	294,000.00

Distribution System Materials Inventory Costs

Task	Qty	Unit	Unit Price	Total
1) Service Line Material Investigations (physical investigation at the curb stop, points 2 & 3 based on EGLE Guidance)		379 each	\$ 738.00	\$ 280,000.00
2) Interior Service Line Verification (physical investigation at the curb stop, point 1 based on EGLE Guidance)		379 each	\$ 120.00	\$ 45,480.00
			Subtotal: \$	325,480.00
			Planning, Administration, Coordination & Reporting: \$	87,700.00
			TOTAL DSMI COSTS \$	413,180.00

**CITY OF ROCHESTER HILLS
PROFESSIONAL ENGINEERING SERVICES FOR
PROGRAM MANAGEMENT SERVICES FOR SERVICE LINE MATERIALS INVESTIGATION
DRINKING WATER ASSET MANAGEMENT (DWAM) GRANT**

**TABLE 1
ESTIMATED HOURS AND FEES**

October 13, 2021

20201032

Task Description	Rate Classification & Estimated Hours				Total Hours
	Associate/ Managing Engineer	Staff Engineer	Program Manager	GIS Analyst	
1 DWAM Grant Application and EGLE Requested Application Modifications	20	-	-	-	20
2 Observation of Curb Stop Verification (1)	-	-	310	-	310
3 Program Management	32	64	32	-	128
4 Program Supervision	62	-	-	-	62
5 Mobile Application/Data Collection Setup	-	-	-	20	20
6 GIS/CMMS coordination/input/reporting	28	46	80	130	284
PROJECT TOTAL	142	110	422	150	824

Notes:

(1) Assumes a typical 10-15 verifications per day

ESTIMATED FEE SUMMARY

PERSONNEL	HOURS	RATE	TOTAL
Associate/Managing Engineer	142	\$ 150.00	\$ 21,300.00
Staff Engineer	110	\$ 110.00	\$ 12,100.00
Program Manager	422	\$ 95.00	\$ 40,090.00
GIS Analyst	150	\$ 95.00	\$ 14,250.00
TOTAL ESTIMATED FEE \$			87,700.00



**CITY OF ROCHESTER HILLS
PROFESSIONAL ENGINEERING SERVICES FOR
ASSET MANAGEMENT PLANNING COSTS
DRINKING WATER ASSET MANAGEMENT (DWAM) GRANT**

**TABLE 1
ESTIMATED HOURS AND FEES**

October 13, 2021

20201032

Task Description	Rate Classification & Estimated Hours				Total Hours
	Associate/ Managing Engineer	Staff Engineer	Graduate Construction Engineer	Rochester Hills GIS Analyst	
	\$ 150.00	\$ 110.00	\$ 90.00	\$ 35.00	
Large Valve Inspections					
1 Development of Contract Documents & Procurement	16	24	-	-	40
2 Construction Engineering	8	16	27	-	51
3 Project Tracking, Coordination, Documentation and Reporting	4	24		-	28
Pipeline Integrity Assessment					
1 Development of Professional Services Agreement	16	8	-	-	24
2 Coordinate Background Information/Project Kickoff Meeting	4	16	-	-	20
3 Project Tracking, Coordination, Reviews and Reporting	8	4		-	12
Pipeline Condition Assessment					
1 Development of Contract Documents & Procurement	24	48	-	-	72
2 Construction Engineering and Field Testing	8	16	24	-	48
3 Project Tracking, Coordination, Documentation and Reporting	12	20		-	32
PLANNING, ADMINISTRATION, COORDINATION & REPORTING TOTAL	100	176	51	-	327
Asset Inventory Updates (per year)					
1 Review of Historical Data, Information & CMMS Work Orders	-	-	-	200	200
2 Data Collection & Input	-	-	-	150	150
3 Enhance Condition Assessment and LOS Key Project Indicators	-	-	-	100	100
4 GIS Update & Review	-	-	-	250	250
PROJECT TOTAL	-	-	-	700	1,354

Notes:

(1) Rate for City Staff accounts for Force Account limitation of hourly wage plus 40% fringes

PLANNING, ADMINISTRATION, COORDINATION & REPORTING

Personnel	HOURS	RATE	TOTAL
Associate/Managing Engineer	100	\$ 150.00	\$ 15,000.00
Staff Engineer	176	\$ 110.00	\$ 19,360.00
Graduate Construction Engineer	51	\$ 90.00	\$ 4,590.00
TOTAL ESTIMATED FEE \$			39,000.00

ASSET INVENTORY UPDATES (FORCE ACCOUNT WORK)

Personnel	HOURS	RATE (1)	TOTAL
Rochester Hills GIS Analyst (year one)	700	\$ 35.00	\$ 24,500.00
(year two)	700	\$ 35.00	\$ 24,500.00
(year three)	700	\$ 35.00	\$ 24,500.00
TOTAL ESTIMATED FEE \$			73,500.00