



November 18, 2022

Mr. Brian D. Wagner  
Utility Superintendent  
Village of Schaumburg Engineering and Public Works  
714 South Plum Grove Road  
Schaumburg, Illinois 60193-4329

**Subject: Proposal for Professional Engineering Services  
2023 Flow Monitoring**

Dear Mr. Wagner:

RJN Group, Inc. (RJN) is pleased to provide this proposal to the Village of Schaumburg (Village) for flow monitoring of the sanitary sewer system in the eastern part of the Village in 2023. RJN has been providing flow monitoring services for the Village since 2015 in an effort to find priority areas within the Village in accordance with the Metropolitan Water Reclamation District of Greater Chicago's (MWRDGC) Infiltration and Inflow Control Program (IICP). The Village owns 14 flow meters and the projects have typically consisted of utilizing these Village-owned meters annually in various locations throughout the Village. Through the past flow monitoring programs, the RJN and the Village has successfully identified high priority basins in which to focus I/I remediation efforts including identification inspections, rehabilitation design, and rehabilitation efforts.

To date, RJN has metered all the sanitary sewer flow tributary to the Hanover Park Water Reclamation Facility (WRF) and about 30% of the flow tributary to the Egan WRF. With this proposal, RJN and the Village will monitor the flow of the remaining areas tributary to the Egan WRF. Following the monitoring of this project, The Village will have sanitary sewer flow data for 99% of the sanitary collections system and will be poised to create a full system hydraulic model that is a continuation of the previous model that RJN built in 2021/2022.

A history of the work that has been completed by RJN for the Village is as follows:

**2014/15**

- Flow Meter Purchase and Kickoff

**2015/16**

- Flow Meter Planning and Coordination
- Walnut Basin Flow Monitoring
- Replace Flow Meter Equipment Purchase
- MWRD IICP Compliance Assistance

**2016/17**

- Kessel/Braintree Basins Flow Monitoring
- Walnut Basin SSES
- GIS Collection of Rim Elevations and Locations
- Walnut Lane Lift Station Study
- MWRD IICP Compliance Assistance

#### **2017/18**

- Walnut Lift Station Downstream Capacity Flow Monitoring
- Kessel Park Basin SSES
- Walnut Basin Rehab Design
- Walnut Basin Construction Management/Observation
- MWRD IICP Compliance Assistance

#### **2018/19**

- Braintree Basin Flow Monitoring
- North Braintree Basin SSES
- North Braintree Basin Rehab Design
- Walnut and Kessel Basins Construction Management/Observation
- MWRD IICP Compliance Assistance, Private Sector Program, and Long Term Plan

#### **2019/20**

- Bode Rd LS and Cedarcrest Basins Flow Monitoring
- Bode Rd LS Basin SSES and Survey
- Bode Rd LS Basin Rehab Design
- North Braintree Basin Rehab Construction Management/Observation
- Walnut Basin Rehab Construction Management/Observation
- MWRD IICP Compliance Assistance, Private Sector Program, and Long Term Plan

#### **2020/21**

- Downstream Walnut Basin Flow Monitoring
- South Braintree Basin SSES
- South Braintree Basin Rehab Design
- Bode Rd LS Basin Rehab Construction Management/Observation
- MWRD IICP Compliance Assistance
- Miscellaneous Design Services

#### **2021/22**

- South Braintree Basin Rehab Design
- South Braintree Basin Point Repair Construction Management/Observation
- East Schaumburg Flow Monitoring (Partial)
- Braintree Basin Hydraulic Model

- Weathersfield Way Relief Sewer and Rear Yard Improvements Construction Management/Observation
- Woodfield Mall Water Main Replacement at Macys Parking Garage Construction Management/Observation
- Jeffrey Ln and Illinois Ave CMP Assessment and Preliminary Design
- Bode Rd Lift Station Force Main Assessment
- MWRD IICP Compliance Assistance

## **2022/23**

- South Braintree Basin Rehab Design
- South Braintree Basin Construction Management/Observation
- ACP CCTV Assessment and Preliminary Design
- ACP Rehab Design
- Jeffrey Ln and Illinois Ave CMP Rehab Design

## **Key Project Goals and Objectives**

The Village's sanitary sewer system is tributary to two Metropolitan Water Reclamation District of Greater Chicago (MWRD) Water Reclamation Facilities (WRF). The southwestern part of the Village is tributary to the Hanover Park WRF. The eastern part of the Village is tributary to the Egan WRF located in Schaumburg near Interstate 290 and Schaumburg Road.

The Village is looking to complete a hydraulic model of the entire sanitary system. Through previous RJN projects, sufficient flow monitoring has been collected in the area tributary to the Hanover Park WRF. The flow monitoring tributary to the Egan WRF was started in 2021 with the tributary area west of N Plum Grove Road. RJN has reviewed the remainder of the sewers tributary to the Egan WRF and has identified a total of 19 flow monitoring points and four (4) rain gauge sites necessary for a complete Village system hydraulic model. 14 of these meters would be on Schaumburg sewers and five would be in the MWRD interceptors. There are a few more connections from Schaumburg sewers to MWRD interceptors, but RJN is not recommending to meter all the smaller basins. By including meters on the MWRD interceptors, sufficient information to complete the model will be collected.

In addition to the 14 Village owned flow meters, rental of RJN equipment will be necessary to deploy the 19 meter and 4 rain gauge locations. The RJN rental equipment includes 5 meters, 5 telemetry units, and 4 rain gauges.

Based on previous experience, there is some additional effort required to install and maintain meters on the MWRD interceptors including permits and additional confined space and traffic control equipment. RJN will need to submit for specific approval for these installations and coordinate with MWRD staff during the flow monitoring period.

## Assuring Quality and Safety

### Quality Assurance

RJN is committed to providing **quality** deliverables. The completion of these inspections is critical in providing actionable results for the Village. As collection system specialists, RJN has built data review processes that ensure that all data is accurate. Our engineers and field inspection crews are trained in flow monitoring and data analysis to ensure the highest quality flow monitoring results. RJN's internal Quality Control tools as well as our corporate training and Quality Assurance processes in place will ensure that program will provide value for the Village.

### Safety

As an employee-owned firm, RJN's commitment to the **safety** of our employees, Village staff, and the public is paramount. RJN demonstrates that commitment to safety in our internally developed and audited safety program where our goal is to have all field staff, engineers, and project managers "RJN Safety Certified." Every project follows RJN Health and Safety guidelines.

### Price and Schedule Summary

This project will be invoiced on a unit price and lump sum, percent complete basis for a total not-to-exceed fee of \$174,730. RJN will begin the study in March of 2023 with anticipated completion in the Fall of 2023. Complete Scope of Services, Pricing, and Schedules are provided in the following exhibits:

- Exhibit A – Scope of Services
- Exhibit B – Pricing
- Exhibit C – Schedule
- Exhibit D – Maps

We are looking forward to the opportunity to work with the Village on this important project. It is our pleasure to submit this proposal to you. Please feel free to contact Tom Romza at 224-587-7366 if you would like to discuss this proposal or have any questions.

Sincerely,



Tom Romza  
Regional Manager



Lewis Chellberg  
Project Manager



## EXHIBIT A

### SCOPE OF SERVICES

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RJN is proposing the following scope of services to conduct the 2023 flow monitoring for the Village of Schaumburg.

#### 1. Conduct Flow Monitoring

- a. Obtain and test Village owned metering equipment to ensure proper operation of equipment. Recommend any equipment purchases or repairs.
- b. Conduct site investigations for each flow meter (19) and rain gauge (4) location.
- c. Provide rental of five (5) flow meters, five (5) telemetry units, and four (4) rain gauges for the four-month monitoring period. Prepare 14 village owned meters for installation.
- d. Install each flow meter and rain gauge.
- e. Calibrate each flow meter at time of install by taking manual depth and velocity measurements.
- f. Provide standard traffic control measures (portable signs and cones) at each site in or near a roadway.
- g. Review the data at least once per week and report any equipment service needs to the RJN field crews.
- h. Provide flow meter and rain gauge maintenance as needed to keep meters and gauges operating properly for the duration of the monitoring period.
- i. Calibrate each meter by taking manual depth and velocity measurements during the flow monitoring period.
- j. Procure spare parts and replacement equipment, such as batteries and desiccant, as needed, to keep flow meters and rain gauge working and within operating standards. For Village-owned meters, this contract DOES NOT include replacement meters or sensors. Should a Village owned meter become unusable, RJN will supplement a rental meter at the corresponding unit price
- k. Remove all meters and rain gauges.
- l. Perform final calibration with manual measurements at each meter site at time of removal for a total minimum of four (4) calibrations.
- m. Process the collected raw data. Analyze the processed data for wet- and dry-weather flow patterns. Create hydrographs for each meter and determine wet-weather peaking factors at standard storm recurrence and durations for each basin.
- n. Perform inflow and infiltration analysis, including:
  - i. Inflow peaking factors;
  - ii. Regression analysis for peaking factor prediction;
  - iii. Scattergraphs and hydrographs; and
  - iv. Capacity analysis including downstream control and surcharging assessment.
- o. Prepare and submit an electronic copy of the Inflow and Infiltration (I/I) draft report to Village outlining flow monitoring results and recommendations.
- p. Include the following in the I/I report:
  - i. Details on each flow meter and rain gauge location;

- ii. Summary of the flow and rainfall data collected;
  - iii. Conclusions from the flow metering, including evidence of downstream control, hydraulic bottlenecks, and levels of infiltration and inflow (I/I);
  - iv. Adequacy of the existing system to handle existing flows and increased lift station flows; and
  - v. Recommendations for the next appropriate steps including SSES and reduction in I/I.
- q. Incorporate Village's comments and submit an electronic copy of the final I/I report to Village. Provide a pdf of the final report.

## **2. Project Management**

- a. Provide project management services including invoicing, scope, schedule, and fee tracking, and closeout services.
- b. Provide monthly updates to Village staff through the duration of the project.
- c. Meet with Village staff as needed to discuss progress of the project.
- d. Coordinate installation and maintenance of meters in MWRD manholes with the District. Obtain necessary permits and permissions.

## **Items Requested from the Village**

- 1. Updated GIS geodatabases, shape files, or CADD atlases for the sanitary sewer collection system
- 2. Access to sanitary structures for inspection. Assistance locating or opening seized/buried manholes as required
- 3. Assistance with traffic control in high traffic areas, as necessary
- 4. Provide nine (9) flow meters with active telemetry, five (5) meters without telemetry, 14 AV sensors, and 14 ultrasonic depth sensors in good working condition for the entire four-month flow monitoring period
- 5. Provide installation rings for applicable meter sites



## EXHIBIT B

### PRICING

Pricing for the 2023/2024 Flow Monitoring project is as follows:

**Pricing Terms for Invoicing:** Unit Price/ Lump Sum, Percent Complete

**Not-To-Exceed Total Cost:** \$174,730

#### Cost Schedule FY 22/23 - Installs and 1 Month of Monitoring (complete 4/30/23)

Task No.	Task Description	Units	Quantity	Cost/ Unit	Total Cost
1000	Meter Site Investigations and Installs	Meter	19	\$ 1,650	\$ 31,350
2000	Rain Gauge Site Investigations and Installs	Rain Gauge	4	\$ 750	\$ 3,000
3000	Meter Maint, Cals, and Data Review (14 VOS Owned Meters)	Meter*Month	14	\$ 1,100	\$ 15,400
4000	Telemetry Units for VOS Meters (5 RJN Rental Units)	Meter*Month	5	\$ 175	\$ 875
5000	Meter Maint, Cals, and Data Review (5 RJN Rental Meters)	Meter* Month	5	\$ 1,750	\$ 8,750
6000	Rain Gauge Maint, Cals, and Data Review (4 RJN Rental Gauges)	Gauge*Month	4	\$ 330	\$ 1,320
7000	VOS Meter Operation Confirmation	Lump Sum	1	\$ 3,000	\$ 3,000
8000	MWRD Site Allowance	T&M	1	\$ 4,000	\$ 4,000
<b>TOTAL</b>					<b>\$ 67,695</b>

#### Cost Schedule for FY 23/24 – 3 Months of Monitoring and Reporting

Task No.	Task Description	Units	Quantity	Cost/ Unit	Total Cost
3000	Meter Maint, Cals, and Data Review (14 VOS Owned Meters)	Meter*Month	42	\$ 1,100	\$ 46,200
4000	Telemetry Units for VOS Meters (5 RJN Rental Units)	Meter*Month	15	\$ 175	\$ 2,625
5000	Meter Maint, Cals, and Data Review (5 RJN Rental Meters)	Meter* Month	15	\$ 1,750	\$ 26,250
6000	Rain Gauge Maint, Cals, and Data Review (4 RJN Rental Gauges)	Gauge*Month	12	\$ 330	\$ 3,960
7000	MWRD Site Allowance	T&M	1	\$ 3,500	\$ 3,500
8000	Data Finalizing and Reporting	Lump Sum	1	\$17,000	\$ 17,000
9000	Project Management Services	Lump Sum	1	\$ 7,500	\$ 7,500
<b>TOTAL</b>					<b>\$107,035</b>

#### Proposal Option

Should Village owned equipment become unusable, RJN can supplement the monitoring efforts with additional RJN owned equipment for the unit prices listed in the cost schedule. This will be done upon joint approval by the Village and RJN.

This Proposal can be amended to include additional work upon joint approval by the Village and RJN.



## EXHIBIT C

### PROPOSED SCHEDULE

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RJN is prepared to start work immediately upon an Agreement. The schedule for this project is summarized as follows:

Task	Timeline
Meter Operation Confirmation	Coordination of the testing of the Village equipment will begin with the Notice to Proceed
MWRD Meter Site Coordination	Due to the permitting requirements for MWRD manhole access, coordination is expected to begin in late January 2023
Site Investigations and Installations	Investigations and installs are expected to be completed by April 2023
Flow Monitoring Period	The monitoring period duration is 4-months after install
Data Evaluation & Reporting	Draft report submitted within 3-months of the monitoring period end