

December 27, 2021

Mr. Joel Hanenburg
Georgetown Charter Township
PO Box 769
Jenison, MI 49429

RE: Professional Engineering Services
Water System Reliability Study Update

Dear Mr. Hanenburg:

Thank you for the opportunity to offer our engineering services related to an update of the Georgetown Charter Township Water System Reliability Study. Part 12, Rule R325.11203 and R325.11604 promulgated under Michigan's Safe Drinking Water Act, 1976, P.A. 399, as amended, requires a water system Reliability Study every 5 years. We completed your last reliability study in October 2017 and will prepare this study to address current reliability issues and concerns.

The study must include an evaluation of the reliability of the Township's existing water distribution system as well as the projected future supply to this service area. With this in mind, we have prepared a scope of services that will meet the overall request of the EGLE, as well as provide meaningful information for planning purposes. The following represents our intended scope of services to meet the EGLE requirements and the needs of the Township:

1. Obtain recent water system data

This task includes gathering data on recent changes to the system infrastructure and operation, and historic demands since 2017. This includes:

- Monthly operating reports for 2017 through 2021.
- Annual billing volume totals for each customer class (residential, commercial, etc.) from 2017 to 2021
- Annual billing volume totals for the largest users from 2017 to 2021
- Annual water loss (accountability) data from 2017 to 2021
- Updates to operational settings
- Updates to maintenance programs (hydrant flushing, valve turning, meter replacement, tank maintenance, cross-connection control, etc.)
- The current number of service connections or equivalent Residential Equivalent Units (REUs)
- Your current Water Shortage Response Plan
- Any Main Break data
- Water Quality Data: PFAS Sample results, DBPs, lead service plan, etc.
- Your most recent EGLE Sanitary Survey

2. Prepare 20-Year Demand Projections

Demands will be projected through Year 2042 in five-year increments. The projections will be based on historic data, land use maps, available projections or other information provided regarding potential growth. Average day, maximum day and peak hour demands will be estimated based on this information.

3. Evaluate Storage and Supply

Based on the demand projections through Year 2042, the system supply and storage capacity will be analyzed. This analysis includes consideration for both non-emergency storage (equalization storage) and emergency storage. Deficiencies will be identified.

4. Obtain Hydrant Flow Test Results

We plan to use hydrant flow tests to calibrate your hydraulic model. We will work with you to perform the tests. First, we will prepare a hydrant test plan that ensures representation of differing areas of your system as well as various distribution main sizes and ages. We propose one day of testing with our field engineer and will provide the testing equipment.

5. Review and Update Hydraulic Model

The objective of this task is to verify the accuracy and update the computer model from which further hydraulic analysis can be performed. Water system information obtained from the BPW would be incorporated to improve the model accuracy. We proposed to update the existing model using WaterGEMs computer software developed by Bentley Systems.

6. Recalibrate the Model

Calibration is a critical step in developing an accurate model, since results of a poorly calibrated model typically don't provide meaningful information. We will verify/calibrate your model using 10 to 12 hydrant test results, primarily by adjusting roughness factors and demands. The EGLE requires a calibration based on recent hydrant test results, as mentioned previously.

7. Determine Existing and Projected System Performance

The calibrated model can accurately simulate the current system operation. Model simulations will be performed for existing average day demands, maximum day demands, and maximum day demands plus fire.

With the demand projections, the model will also be used to simulate future conditions. Model simulations will be performed for projected average day demand, maximum day demand, and maximum day demand plus fire.

8. Water Quality Analysis

Water quality is a critical aspect to the reliability of your water system. This task incorporates modeling to identify locations of the system that may have lesser water quality, and therefore lower chlorine residuals, disinfection byproducts, etc. We will perform simulations using an extended period model scenario to identify locations of high water age and will consider system alternatives that will reduce the water age.

9. Identify Deficiencies and Evaluate Solutions

System deficiencies will be identified for both existing and future demand conditions. These include areas of low pressure under emergency (<20 psi) or non-emergency (<35 psi) conditions, or other reliability concerns. These deficiencies will be tabulated and solutions to removing the deficiencies will be reported.

10. Review Operation and Maintenance Procedures

Operation and Maintenance procedures will be reviewed including hydrant flushing, valve exercising, meter replacement and calibration, leak detection and water accountability, cross-connection program, etc. Recommendations will be made as necessary.

11. Review Reliability Issues

System redundancy, system looping, maintenance programs, aging infrastructure, and various water quality parameters will be reviewed, among others.

12. Prepare Recommendations/CIP

Based on the hydraulic analysis, improvements to the transmission and distribution mains and other facilities will be prepared. Recommendations will consider the cost-effectiveness of the various improvement options. A phasing plan will be developed to prioritize the improvements to the system. Recommendations will also include new and updated cost estimates and will be summarized to be included in the Capital Improvements Plan.

13. Provide Water System Maps

Part 16 of the Michigan Safe Drinking Water Act requires the development of a General Plan Map. The map will show water mains, sizes, metering stations, and storage facilities (with capacities of each). The General Plan Map will also provide information on system deficiencies and recommended improvements.

We will use your GIS system data to develop the maps provided in the report. Other maps to be provided include an existing water system map with future service boundary, water main material map, water main age map, and two pressure contour maps/results for high demand conditions will be provided.

14. Prepare Report

Prepare a report summarizing the findings of the reliability study. This report will include a description of the system, results of the analyses, recommendations, and cost estimates as described in this scope of services. The report will also include color maps described previously.

15. Submit Final Draft Report

Following your review of the draft report and modifications to meet your needs, we will provide a final draft copy of the draft report to the EGLE. With EGLE's acceptance of the Reliability Study, we will then submit copies of the final report to you.

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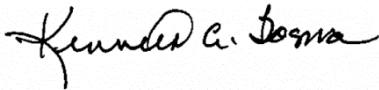
Fees and Schedule

We propose to perform the services described above for a not-to-exceed fee of \$21,500. We can complete the work and submit the draft report to EGLE by August 2022, if that is your preference.

Prein&Newhof appreciates the opportunity to provide you with this proposal. Please contact us if you have any questions.

Sincerely,

Prein&Newhof



Kenneth A. Bosma P.E.



Thomas A Smith, P.E.

TS/tas

Enclosures: None