

June 15, 2020

Mayor Dunwell Alpha Borough
1001 East Boulevard
Alpha, NJ 08865

**RE: Proposal to Provide Consulting Engineering Services
Preparation of a Water System Model**

Dear Mayor Dunwell:

REMINGTON & VERNICK ENGINEERS (RVE) is pleased to submit this proposal to provide professional consulting engineering services for the **PREPARATION OF A WATER SYSTEM MODEL**. Based upon our ongoing discussions with the Borough there is a need for the proposed services.

As you are aware, both of the Borough's standpipes are in need of costly upgrades and painting including a new replacement tank at Pursel Street. Due to the costs associated with these major projects, we have been asked to evaluate the possibility of eliminating one of the standpipes. The standpipes in the system provide the necessary storage and pressures throughout the system. The elimination of a tank should not be considered without proper modeling of the system.

A system model depicts the entire system and allows for various scenarios to be run via the computer model. The model will be utilized to evaluate the Pursel Street tank elimination as well as any associated improvements to the system to move water under the railroad in an efficient manner.

In addition, the Borough has pipes that were installed many years ago. Although they met the standards of the time that they were constructed, today the water mains may be undersized. The proposed model, once developed, may be used routinely by the Borough to evaluate the system and the impact that proposed changes will have on the system flows and pressure.

SCOPE OF SERVICES

Based on our understanding of the project, we anticipate the following tasks will be required:

1. RVE will utilize the existing GIS Water system model in its current configuration. Please note that the resultant model will only be as good as the information that RVE has obtained from the Borough to date (June 2020). Any updates in information would be the subject of future studies. Remington & Vernick Engineers, utilizing the latest Esri ArcGIS applications, will ultimately create an ArcGIS file geodatabase with, but not limited to, the following water infrastructure feature classes (and attributes), as applicable:

- Hydrants (ID)
- Water valves (ID)

- Interconnects (address, description)
- Storage Tanks (address, description)
- Treatment Plants (address, description)
- Wells (address, description)
- Water lines (size, material)

Alpha Borough currently has its water system mapped in GIS. We will perform quality control and topology on the resulting GIS layers to ensure continuity and identify missing information. Topology is a key GIS requirement for data management and integrity. A topological data model manages spatial relationships by representing spatial objects (point, line, and area features) as an underlying graph of topological primitives—nodes, faces, and edges. In geodatabases, topology is the arrangement that defines how point, line, and polygon features share coincident geometry. We will utilize ArcGIS Standard software application on the topology layers to perform a “map clean-up” to display and correct these topological relationships, errors, and exceptions.

2. RVE will perform one day of flow testing to calibrate the model. We will coordinate this testing with the Borough to minimize impacts on the Water System.
3. RVE will develop the Base Model for the existing system and calibrate the model using the flow data. This phase will review the need for improvements to undersized mains in the Borough and will allow proper investigation of the hydraulic connection between the east and west side of the water system (separated by the railroad tracks).
4. RVE will then model tank options with at least five scenarios.
 - a. Keep existing tanks in place;
 - b. Install new larger elevated tank at Pursell Avenue with Industrial Drive Standpipe;
 - c. Install new larger elevated tank at Industrial Drive with Pursell Avenue Standpipe;
 - d. Rerun b and c with new tank higher elevation which will hydraulically lock the standpipes flow in the tank;
 - e. Install a new elevated tank at Industrial Drive and remove the standpipe at Pursell Avenue.

COST OF SERVICES

Accordingly, our fees for the aforementioned professional services will be on a time and material basis **not to exceed \$34,800.00**. This cost is based upon our current contract rates with the Borough.

Should you have any questions or require additional information regarding this project, please do not hesitate to contact Gregory Sullivan at (856) 795-9595 ext. 1510.

Sincerely,

REMINGTON & VERNICK ENGINEERS, INC.



Edward Vernick, P.E., C.M.E.
Chairman

Cc: Borough Council
Donna Messina, Acting Clerk
Lorraine Rossetti, CFO
Chris Troxel, Borough Attorney
John Manganaro, WRM
Frank Seney, RVE
Gregory Sullivan, RVE