

RESOLUTION NO. 2019- 562

A RESOLUTION AUTHORIZING A PROFESSIONAL SERVICE AGREEMENT WITH REMINGTON AND VERNICK, HADDONFIELD, NJ, TO COMPLETE PHASE TWO - ENGINEERING SERVICES INCORPORATING AND LINKING THE WATER UTILITY AS-BUILT DRAWINGS INTO THE GIS SYSTEM MAPPING AND GEODATABASE.

WHEREAS, the City Council of the City of Vineland has adopted Resolution No. 2019-52, a Resolution pre-qualifying certain firms to submit proposals for as needed Architectural and Engineering Services; and

WHEREAS, the Director of Municipal Utilities received a proposal to complete Phase Two –Engineering Services incorporating and linking Water Utility As-Built Drawings into the GIS System Mapping and Geodatabase; and

WHEREAS, the Director of Municipal Utilities has recommended that a contract for the required services be awarded to Remington and Vernick, Haddonfield, NJ, based upon the proposal received, pursuant to a fair and open process; and

WHEREAS this contract is awarded in an amount not to exceed \$60,000.00; and

WHEREAS, the availability of funds for said Professional Services Contract to be awarded herein have been certified by the Chief Financial Officer; and

WHEREAS, the Local Public Contract Law (N.J.S.A. 40A:11-1, et seq) requires that the Resolution authorizing the award of contract for Professional Services without competitive bidding and the contract itself must be available for public inspection.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Vineland that said contract for Professional Services to complete Phase Two – Engineering Services incorporating and linking the Water Utility As-Built Drawings into the GIS System Mapping and Geodatabase, be awarded to Remington and Vernick, Haddonfield, NJ, based upon the proposal received, pursuant to a fair and open process, in the amount not to exceed \$60,000.00.

Adopted:

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President of Council

ATTEST:

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Deputy City Clerk

**REQUEST FOR RESOLUTION FOR CONTRACT AWARDS  
UNDER 40A:11-5 EXCEPTIONS  
(PROFESSIONAL SERVICES, EUS, SOFTWARE MAINTENANCE, ETC)**

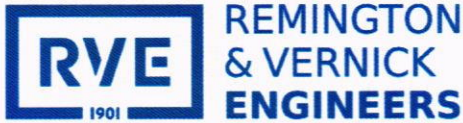
**RECEIVED**  
**DEC 10 2019**  
CITY OF VINELAND  
BUSINESS ADMIN.

12-6-19  
(DATE)

1. Service (detailed description): Phase Two Engineering Services -  
Incorporating AS-Build Drawings to GIS System Mapping
2. Amount to be Awarded: \$ 60,000  
 Encumber Total Award  
 Encumber by Supplemental Release
3. Amount Budgeted: \$ \_\_\_\_\_
4. Budgeted: By Ordinance No. \_\_\_\_\_  
Or Grant: Title & Year \_\_\_\_\_
5. \*\*Account Number to be Charged: 9-07-55-502-8013-53044
6. Contract Period: \_\_\_\_\_
7. Date To Be Awarded: 12-23-19
8. Recommended Vendor and Address: Remington + Vernick Engineers  
232 Kings Highway, Haddonfield NJ 08033
9. Justification for Vendor Recommendation:(attach additional information for Council review)  
Continuation of Existing Project
- Non-Fair & Open (Pay-to-Play documents required)  
 Fair & Open: How was RFP advertised? \_\_\_\_\_
10. Evaluation Performed by: Sharon Hillie
11. Approved by: John Lulle
12. Attachments:  
 Awarding Proposal  
 Other: Scope & Proposal

- Send copies to:  
Purchasing Division  
Business Administration

\*\* If more than one account #, provide break down



RVE HQ:  
232 Kings Highway East  
Haddonfield, NJ 08033  
O: (856) 795-9595  
F: (856) 795-1882

November 25, 2019

**Sharon Lillie**

City of Vineland Municipal Water Utility  
330 E. Walnut Road  
Vineland, New Jersey 08360

**Subj: Phase Two-Professional Engineering Services to Complete the Compilation, Inventory, Incorporating and Linking the City Water Utility As-Built into the GIS System Mapping and Geodatabase for the City of Vineland Water Utility**

Dear Ms. Lillie:

**REMINGTON & VERNICK ENGINEERS (RVE)** is pleased to present this proposal to provide professional engineering services to inventory and digitize the existing resource data (Water Utility Assets) - scan and vectorize any remaining existing manually and/or digitally generated as built infrastructure mapping using Autodesk AutoCAD and Esri ArcGIS software applications.

RVE is presently updating and maintaining the current GIS shape file/schema for the City and we will incorporate these as-builts into the City's schema. We will also utilize the provided "Electronic Map Look Up Street Name" electronic index Excel spread sheet table to all of the City maps for the water system as a data element in the schema for this project.

#### Scope of Services

RVE's proposed services will update the City of Vineland Municipal Water Utility's existing water main Geographic Information System (GIS) shapefiles on their GIS Water Utility Infrastructure System Mapping for the City's municipal water supply system. This project will include mapping and linking the Water Utility's existing infrastructure system assets utilizing existing as-builts to the City's current GIS Enterprise System. The summary of RVE's proposed services is shown below. A detailed scope of technical services is outlined in Appendix A.

#### GIS Document Collection and Mapping

The City of Vineland Municipal Water Utility's (Water Utility) existing Water System Mapping was digitally generated, utilizing AutoCAD and then converted into a GIS geodatabase using Esri software applications in 2000 and last revised in 2019 by the Water Utility and RVE. The existing map displays water mains with size labeled, elevated water storage tank(s) with capacity labeled, wells-pump house, line valves and fire hydrants with valves and now the year the water mains were installed throughout the Water Utility's water supply and distribution system. All street and as-built information on the map reflect 2019 conditions. This existing Water System Map will be indexed and linked to the City's GIS Enterprise for the newly updated GIS Water Utility Infrastructure System Mapping (see attached).

This data will be exported and utilized in a GIS mapping database layered to display and query water utility infrastructure locations within the City. RVE can also provide options for future data layers for use by the Department of Engineering, including New Jersey Department of Environmental Protection (NJDEP)

overlays, such as wetlands, flood prone areas and soil classifications, as well as any available Cumberland County GIS Resources, which can also be exported and utilized, as a layer, in the CADD mapping drawing file, for use by the City.

### Cost of Services

The **total cost** to complete the Compilation, Inventory, Incorporating and Linking the City Water Utility As-Built into the GIS System Mapping and Geodatabase, as outlined above, is as follows:

**Task One:** Inventory and Digitizing the Existing Resource Data (Water Utility Assets) - Scan and vectorize any remaining existing manually and/or digitally generated as built infrastructure mapping using Autodesk AutoCAD and Esri ArcGIS software applications.

Cost estimate and estimated completion time to be determined from written authorization to proceed.

The cost estimate and estimated completion time will be completed for each **Phase/Task** from written authorization to proceed. All work will be invoiced at the current Vineland Water Utility contract rates and a dedicated project number will also be established for billing purposes.

The cost breakdown for the completion of the GIS Mapping Services complying with the New Jersey Water Quality Accountability Act going forward, as outlined above, is as follows:

### TASK ONE: GRID MAPS AND AS-BUILT DRAWINGS/DOCUMENTS

The City of Vineland Municipal Water Utility has a total of approximately (659+/-) as-built digital (PDF) and hardcopy maps on file pertaining to the City's existing Water Distribution System infrastructure. The as-built maps were generated between 2000 and 2019.

The City of Vineland Municipal Water Utility has a total of approximately (491) grid hardcopy maps on file pertaining to the City's existing Water Distribution System infrastructure. This index file started with old grid maps that is the City "book" for in-ground assets. When changes were made to the water main system over time with construction projects the index "book" was updated with the new as-built map that superseded the old GRID map and cross referenced it to the new as-built map. All of this is indexed by Vineland City street names. It is a convenient tool to find the latest depiction of an area of the City researching it by street. It will be used to verify what grid/as built map to reference in order to validate the water main inventory.

The City of Vineland Municipal Water Utility has a total of approximately (35+/-) miscellaneous as-built digital (PDF) and hardcopy maps on file pertaining to the City's existing private and City Water Distribution System infrastructure. The as-built maps were generated between 1990 and 2019.

The City of Vineland Municipal Water Utility has a total of approximately (631+/-) as-built digital (AutoCAD) and hardcopy maps on file pertaining to the City's existing Water Distribution System infrastructure. The as-built maps were generated between 2000 and 2019.

RVE will inventory and geo-reference all utility site plan and as-built drawings related to the City's water distribution system. The digital (PDF/CAD file) documents will be georeferenced into the NAD 83 NJ State Plane US Foot to verify that the information is spatially accurate.

Phase No.	Existing Available As-Built Drawings	Sheets	Time/Week or Day	GIS Cost
1.	As Builts – PDF (Maps 1-463)	659+	6 Weeks	\$25,383.00
2.	Selected Grid Maps – PDF (Grid Maps A-U)	491	4 Weeks	\$14,183.00
3.	Miscellaneous Maps	35+	1 Weeks	\$4592.00
4.	AutoCAD drawing files	631+	5 Weeks	\$15,842.00
<b>Total</b>		<b>1816+</b>	<b>16</b>	<b>\$60,000.00</b>

**Review and Comment**

RVE will provide a copy of the updated GIS mapping in "draft" format to the City of Vineland Municipal Water Utility for final review. The final draft of the GIS mapping will be based upon the City’s review process and will be considered complete and ready for delivery once the requested changes have been made.

To Complete the Compilation, Inventory, Incorporating and Linking the City Water Utility As-Builts into the GIS System Mapping and Geodatabase for the City of Vineland Water Utility, we will also utilize the provided “Electronic Map Look Up Street Name” electronic index Excel spread sheet table to all of the City maps for the water system as a data element in the schema for this project. The existing Water System Map will be indexed and linked to the City of Vineland Water Main System As Built Coverage as part of the City’s GIS Enterprise for the newly updated GIS Water Utility Infrastructure System Mapping.

Deliverable: The scans and inventory information will be delivered via RVE ShareFile Account and on a USB 3.0 flash drive.

**The estimated completion cost for TASK ONE Services as outlined herein:       \$60,000.00**

***Exclusions: All work required not specifically described herein or in the attached Appendix A is excluded and will be provided separately, if required.***

**Assumptions/Exclusions:**

1. We assume that the existing digital files (GIS/CADD/PDF format) of all water utility maps will be provided to our office, in their native file format, for the completion of this task and the verification of the accuracy of the existing water system. At a minimum the files must include water main locations, hydrants, wells, tanks, and water main sizes. If topographic data is not provided in these maps additional fees may be incurred to determine this information via utility maps and USGS topographical maps.
2. Based on some recent information discovered by Vineland City MWU, there may be less work than anticipated, however we will not confirm until we proceed. If this is the case Vineland City MWU may be able to accomplish CAD and GIS update work professional services under this proposal umbrella or also consulting services for future projects, like TAP card conversions.
3. Once the database has been established, ownership will be transferred to the City of Vineland Municipal Water Utility. Maintenance of the database is not included in this scope of services and if required will need to be determined under an additional scope of services.

**Project Schedule:**

Our estimated completion time is a minimum of (4) four months from written authorization to proceed and contingent on schedules, weather conditions, traffic control measures needed, etc.

RVE thanks the City of Vineland for the opportunity to propose its services. If you have any questions or concerns regarding this proposal, please contact Kevin Zelinsky, GIS/CADD Department Manager of RVE at (856) 795-9595, ext. 1064 or via email at Kevin.Zelinsky@RVE.com. RVE looks forward to working with you on this important project.

Sincerely,

**REMINGTON & VERNICK ENGINEERS**

By

Edward Vernick, P.E., C.M.E.  
*President*

EV/KRZ/mts

cc:

**APPENDIX A  
DETAILED SCOPE OF SERVICES:**

**TASK ONE: GRID MAPS AND AS-BUILT DRAWINGS/DOCUMENTS**

Remington & Vernick Engineers understands that The City of Vineland, New Jersey (City) requests a quote to undertake a project to create/update our existing Esri ArcGIS shapefile attributes for water system mains for the City's water distribution footprint. All deliverables must be completed using Esri ArcGIS to be compatible with the City's existing GIS application.

RVE must be able to have large amounts of data files exchanged electronically by a secure Drop Box or other such facility site. RVE proposes to utilize our ShareFile Account and/or OneDrive Portal system to securely exchange these GIS/CADD mapping layer datasets.

**A. Inventory and Compilation of Existing Data**

RVE believes that the most cost effective and timely way to generate an accurate set of GIS Water Distribution Infrastructure System Maps is by reusing as much of the City's existing information as possible.

We will complete a GIS base map foundation showing streets, roads, railroads, waterways and tax parcel data. The digital tax parcel map will serve as the foundation for the City of Vineland to be utilized as the layered base for the GIS Water Distribution System Infrastructure Mapping Database.

RVE will also provide all available digital data from State, County and local offices be integrated with the City's available hardcopy data as the initial foundation.

The project will be based on the following current data to be provided/collected for the City of Vineland prior to the commencement of this project:

- Copies of the water infrastructure as-built drawings from 1990 and 2019 hardcopy formats.

The requested data will be vectorized and integrated into the new GIS Water Distribution System Infrastructure Maps to provide a comprehensive mapping database with one-stop reference capabilities.

Phase No.	Existing Available As-Built Drawings	Sheets
1.	As Builts – PDF (Maps 1-463)	659+
2.	Selected Grid Maps – PDF (Grid Maps A-U)	491
3.	Miscellaneous Maps	35+
4.	AutoCAD drawing files	631+
<b>Total</b>		<b>1816+</b>

All drawings will be saved in TIF format for georectifying and hyperlinking to the GIS database.

In addition to any available digital map data already provided, we will require any/all available electronic and/or hard copies of the following information from the City of Vineland:

- Any/all utility system engineering plans, sketches and/or maps, mark-ups in hardcopy and/or digital formats, as applicable, to update the existing sanitary sewer system mapping to current conditions, if applicable.
- Any existing numbering convention currently in use by the City for utility structures/facilities, if applicable
- Section grids that could be used for designating ID's throughout the City (i.e. Grid Maps, etc.)
- Existing SDL Utility Layers Schema

**B. Vectorization**

Vectorization is a coordinate-based data structure commonly used to represent map features and is suitable as a foundation for the City's GIS mapping services in the future. The georeferenced scanned TIFF images will be vectorized (digitized) into a new digital water system infrastructure assets for the City utilizing the AutoCAD and ArcGIS software applications. RVE will use the scanned images as reference to generate and locate the sanitary sewer assets on the new map.

The scanned and digitized infrastructure drawing data will then be applied to the GIS System Mapping and Geodatabase for the City of Vineland Water Utility as part of this project.

**C. Inventory and Compilation of Existing Data**

RVE will utilize this updated information along with the latest Vineland Water Utility area parcel data to serve as the parcel-base map foundation for the new Water Quality System Mapping to reflect 2019 development, street name changes and other pertinent information.

In addition to the available digital tax map and utility data already provided, we will reference any/all available electronic and/or hard copies of the following information from the Vineland Water Utility:

- Locations of known Water Utility Infrastructure within the Vineland Water Utility and its service region

We will also reference the following available data from other local, County, State and Federal sources:

- GIS Resource Data: GIS Utility Infrastructure Location Data (Cumberland County Planning Department GIS shapefile and photograph information)
- All Water Utility Documents: (utility structure locations, if applicable)
- New Jersey Department of Environmental Protection (NJDEP): Bureau of GIS and NJ-GeoWeb
- Cumberland County resource data available to the Vineland Water Utility through the City's data sharing agreement with the Cumberland County Department of Planning/GIS Division, if applicable
- New Jersey Department of Engineering: Any/all applicable planimetric resource data available for the Vineland Water Utility
- New Jersey Geographic Information Network (NJGIN): Data downloads including LiDAR and 2015 Imagery



A parcel-based foundation for the Vineland Water Utility GIS Water Infrastructure Mapping Database will be based solely on the current digital parcel map(s) and any resource data outlined and created in a GIS format utilizing the latest Autodesk AutoCAD and Esri ArcGIS software applications. The existing parcel data will reflect the current conditions (2019) and linked to the associated PIN tabular tax assessment data on a property by property basis.

To georeferenced, or link, each infrastructure feature to its geographical location on the GIS Base Map, unique identification numbers must be assigned on a feature by feature basis. The unique identification numbers will also tie any associated tabular data to its appropriate infrastructure feature and location on the new map. The unique identification numbers will be based on the Township's existing numbering convention(s) for water utility system infrastructure features.

#### **D. Utility As-Built Updates**

RVE will scan and vectorize any existing manually generated infrastructure mapping, as applicable. We will utilize the Océ TDS 600 E Size Scanner at a minimum resolution of 600 dots per inch. The files comprising the newly digitized maps will then be cleaned and edited using Autodesk AutoCAD software applications.

All street right-of-way lines, railroads, waterways, street names and adjoining municipality names will be shown on the new maps. All information will be layered for ease of inventory and maintenance. We will utilize surveying and cadastral mapping experience to manipulate and process the digitized infrastructure features to ensure an accurate fit to the parcel foundation.

***No survey work or field verification will be provided as part of our proposed mapping services, unless requested and authorized to propose and proceed. All GIS infrastructure mapping will be based on available resource data from 1990 through 2019 only. RVE will need to work closely with the City of Vineland to collect and compile the most current information possible for inclusion in this project.***

#### **E. GIS Features and Mapping Layers**

Once the base map updates have been made and the existing Water System Map has been vectorized, georeferenced and digitally applied to the new digital base map, any available utility as-built information based on 1990 through 2019 projects within the Vineland Water Utility will be applied to the updated base map, if applicable.

Any AutoCAD drawing files will be exported and converted into the Esri ArcGIS shapefile format suitable for GIS use and all overlays for the utility system infrastructure mapping will be included on the GIS system.

RVE, utilizing the latest Autodesk AutoCAD and Esri ArcGIS applications, will ultimately create and update the ArcGIS file geodatabase with, but not limited to, the following water infrastructure feature classes (and attributes):

- Water distribution features to be displayed on the updated map include pipe sizes, flow directions (where available), fire hydrants (located in KLM format with longitude and latitudes), water tanks, valves and nodes

Also, using a variety of electronic inputs create an updated City Water Main GIS Geo Database and Shapefiles for each size water main to include reviewing the current data and adding the year installed to the attribute water main tables. This project is in preparation for a second project to use the outputs of this as an input into the development of an asset management and capital improvement plan required by the State of New Jersey Water Quality Accountability Act.

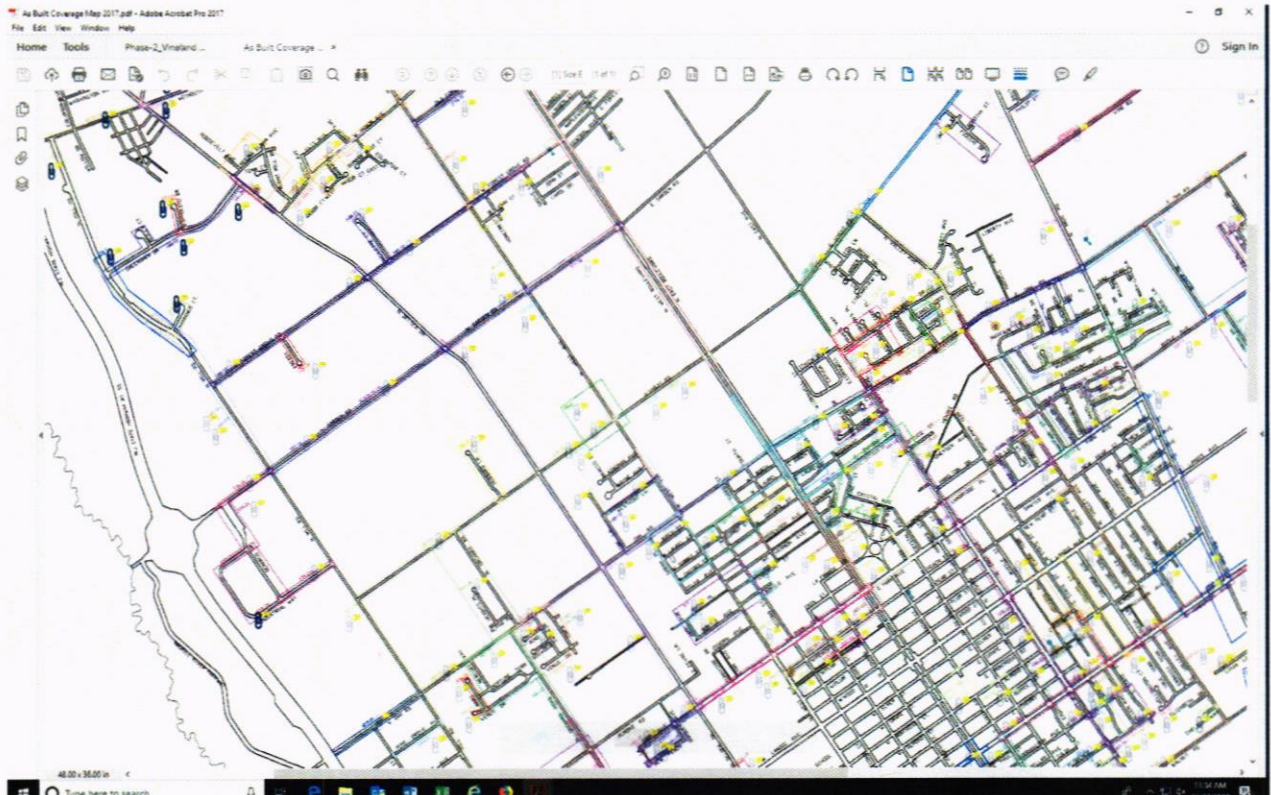
The City will provide electronically for this project the artifacts below. Due to the size of the data files, RVE will be able to provide a secure Drop Box like file sharing site for the exchange.

- all Grid Maps and As Built PDF/CAD plan drawings for reference
- the master Map Index spreadsheet that contains all of the city street indexes referenced back to either the grid map number or the As Built plan number.
- Existing Excel Spreadsheet "Electronic Map Look Up Street Name" electronic index table to all of the City maps for the water system.
- Existing Water Main Geo Database Schema and water main shapefiles.
- A list of known corrections that need to be made to the GIS water main shapefile for incorrect sizes that was discovered through a recent valve review of the entire water system.

The City will also provide a contact for answering questions and information gathering, in addition to that any GIS related questions for existing information or deliverables.



*Inset: City of Vineland Water Main System As Built Coverage*



*Inset: City of Vineland Water Main System As Built Coverage*

The provided spreadsheet is an inventory of all of the City water mains by street. This is one of the files that was provided in determining the scope of the project for a quote. The problem for the City is the data it contains does not match how the GIS water main shape files were built. When the shape files were built, the as-built maps were used, and water mains were depicted in segments. The spreadsheet is the only source of what year the water main was installed and has the age of the water main labeled on it. This spreadsheet, and the challenge, has the mains not broken down by segments, but by total feet length of that size of water main installed on that street – not by segment size.

Therefore, the GIS has to be reviewed and updated measuring the water main in it and then using the spreadsheet for that location to determine what the segments in the GIS should be and assigned the correct installation by year in the GIS shapefile and ultimately the geodatabase. All of the work has to be done in Esri ArcGIS. For the most part the water main GIS geodatabase is being verified and updated to be recreated and returned to the City of Vineland.

If order to create the final product, all of the as built, original GRID maps and spreadsheets need to be used to achieve this end result.

RVE also understands that this entire project is to update and validate the current GIS files for water mains by using the provided dataset(s) to update the year installed for a water main sizes. In preparation for an on-going valve exercising project, the City of Vineland recently added valve name identifiers to all inline distribution valves in the system in the GIS with the water main shape layers

turned on for 4, 6, 8 10 and 12 in valves. As the City was going through adding and removing valves that had been missed or were placed in error, incorrect water main depictions were captured – that is the second spread sheet the City of Vineland provided. The City believes they accounted for all of the errors but that will need to be validated through this rebuild process.

RVE is updating and maintaining the individual water mains that currently exist in the GIS map as follows:

- 2" = 32
- 4" = 934
- 6" = 3358
- 8" = 2751
- 10" = 416
- 12" = 1625

The location of each fire hydrant, valve and required infrastructure water asset will need to be documented as GIS feature data collected from any existing hard copy construction/as-built plans. All data will be based on this hard copy/digital information and will be created on the New Jersey State Plane Coordinate System in feet units. The New Jersey State Plane Coordinate System serves as the common denominator for all data covering the same geographic areas, which makes it easier to share GIS data from a variety of State and local sources. The horizontal locations will be based on North American Datum of 1983 (NAD 83).

The updated Utility System Mapping will be drafted in color with ink on bond paper with corresponding color-coded legends for the water utility system.

**F. Review and Comment**

RVE will provide a draft copy of the new Water System Infrastructure Map in "draft" form to the Vineland Water Utility for final review. Any minor changes or revisions requested by the Vineland Water Utility will be applied to the GIS database at that time. The final draft of the new map will be based upon this review process and will be considered complete and ready for delivery once any requested changes have been made.

**G. Final Deliverables**

The new maps will be generated utilizing the latest Autodesk AutoCAD and Esri ArcGIS software applications.

The following deliverables will be delivered electronically:

**GIS Geodatabase**

- a. Updated Esri ArcGIS Geodatabase and shapefiles for each water main group by main size with:

**Water Main Maps**

- a. CAD & PDF files of the water main map system to print/update maps – similar to the example below for hydrants.

