

# Winston-Salem/Forsyth County Utilities

Digital Data Submission Standards

Winston-Salem, NC



To: Developers  
Engineers  
Contractors  
Developing Consultants

From: Winston-Salem/Forsyth County Utilities

Date: Updated 5/23/2019

Subject: **Digital Submission Requirements for Utility GIS Data**

This letter is to inform you of the Winston-Salem/Forsyth County Utilities' (WSFCU's) updated requirements for digital data submission into our existing Geographic Information System (GIS). These new requirements for digital GIS data will affect a multitude of WSFCU projects, including but not limited to: new construction & expansion, rehabilitation, service connection installation, fire line installation, etc. These requirements will become effective for all new projects submitted to and received by this office after January 1, 2011.

The addition of digital information submission is necessary to allow for efficient entry of new water and sewer infrastructure into WSFCU's GIS and Work Order Management system. As utility projects are completed, the information you provide enables our GIS system maps to stay current and relevant.

Due to limited field verification of WSFCU's water and sewer GIS data to-date, incorporating new record drawing data into the GIS is critical for new construction and rehabilitation projects. Diameters and materials are changed, new features are added, and the alignment of the system can be altered. This updated information is important for engineering and maintenance personnel. The Utility also benefits by tracking costs associated with maintaining sewer infrastructure and helps to demonstrate to the State that WSFCU is meeting permit requirements. In turn it will allow you access to the most complete and accurate public water and sanitary sewer system information.

**Digital GIS data submission shall adhere to the same quality and standards as currently required for record drawing submissions to the WSFCU. It should be noted, however, digital GIS data submission is NOT a substitution for record drawings.**

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The following items will be required to be submitted prior to final utility acceptance:

1. GIS data shall be submitted to the WSFCU GIS Department for review.
  - a. Submission of digital GIS information for utilities infrastructure to be delivered as an updated Personal Geodatabase (PGDB) ESRI ArcGIS version 10.6 (or current version used by WSFCU). WSFCU's original PGDB for the project area will be supplied to the appropriate party during design phase of any proposed project which will be used as a basis for submission upon project completion. Each water/sewer feature is to be entered into the respective feature class database at the completion of the project as part of the close-out submittal process.
  - b. To ensure the digital GIS data is delivered in the correct database format, specific processes and procedures need to be followed. This requires the contractor to have a good understanding of the database so it can be successfully populated with the information of the asset(s). The exact assets and attributes to be evaluated, located, inspected, or constructed will be determined by WSFCU in conjunction with the consultant prior to field investigations. A full list and description of each asset feature, associated attribute table, and domain code values will accompany this memorandum.
    - **All provided domain drop-down menus are to be used when attributing data.**
  - c. Sewer and water feature class descriptions, editing protocols and location of GPS point to be collected for the following assets:

### Sewer Features:

#### **Sewer Mains (polyline)**

- Maintained as manhole to manhole segments drawn in the direction of flow, lines snapped and split at manholes, pump stations, or discharge structure.
- Attribute data should be collected in all Construction & Rehabilitation Projects.

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### **Sewer Manholes (point)**

- The GPS point for manholes is the center of the manhole lid.
- The GPS locations are used to establish the location and elevation attributes of the sewer main.
- Manholes and mainline lamp holes and mainline cleanouts are stored within this feature class.

### **Sewer Laterals/Services (polylines)**

- The public portion of the sewer service should be drawn from the cleanout to the sewer main drawn in the direction of flow and snapped to the edge of the main.

### **Sewer Service Connections (points)**

- Currently, many service points are located in the center of a parcel and serve as a reference point.
- The GPS point for the sewer service point is taken at the cleanout location.

### **Sewer Pump Stations (point)**

- The wet well (or discharge point for the influent sewer) is used and the location and elevation of the pump station.
- The GPS point is the center of the lid of the wet well.

### **Miscellaneous Sewer Features and ARVs**

- All miscellaneous sewer features and sewer ARVs need to have a corresponding GPS point and attributes recorded.

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### **Water Features:**

#### **Water Mains (polyline)**

- Maintained node to node (fittings), lines snapped and split at nodes, hydrants, or valves.
- GPS points on valves are used to establish the location of the water main.

#### **Water Valve (point)**

- All valves except ARVs are included in this feature class.
- The GPS point is the center of the valve cover at the ground surface.

#### **Water Hydrant (point)**

- Fire hydrants and post hydrants are stored in this feature class.
- The GPS point is the ground directly in front of the main nozzle.

#### **Water Lateral/Service (polyline)**

- The public portion of the water service should be drawn from the water meter to the water main, snapped to the edge of the main.
- At the snapped location on the main, a water node should be added in the GIS to represent a connection. This node does not require GPS accuracy.
- The account number tagged to the meter should be recorded in the attribute table to ensure the meter is matched to the correct account.

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- The meter GPS point should be used for the location of the lateral.

### **Water Service Connection (point)**

- Currently the service points are located in the center of a parcel for many accounts and serve as a reference point.
- A new GPS point needs to be taken at the correct water meter location.

### **Miscellaneous Water Features and ARVs**

- All miscellaneous water features and water ARVs and PRVs need to have a corresponding GPS point and attributes recorded.

- d. GPS coordinates are required at each point location with survey grade accuracy for horizontal and vertical elevation data.. RTK (Real-Time Kinematic) GPS technology provides the greatest benefit for the costs associated with GPS location. Providing elevation data helps establish pipe invert and slope of pipe for sewer mains. All GPS survey data collected will be referenced to the North Carolina State Plane Grid, US Survey Foot, Zone 3200 and horizontal datum NAD83, vertical data referenced to NAVD88. The results of the GPS survey should be placed in the corresponding XCOORD, YCOORD, ZCOORD attribute fields.
- e. In cases where lines are laid or are found to be in a different layout from what the provided GIS data reflects, the data may be corrected and/or moved to show the correct layout.
- f. Please see attached tables for required attributes for each feature type. Full domains are also included, to be followed for easy integration into GIS system. If a feature is found which doesn't follow the allowed attributes, please indicate "Other" and use the GIS\_PROD\_COMM field to comment on attributes to be updated.

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Digital GIS files shall be submitted to the WSFCU GIS department for review and approval a minimum of one week prior to requesting the final inspection. If you have any questions or concerns, please contact Dustin Stephens, IS Analyst, at (336) 747-6851 or [dustinjs@cityofws.org](mailto:dustinjs@cityofws.org).