

Project Name & Location: GIS Conversion of GIS System and Onsite Support, Bergen County, Northwest Bergen County, NJ

Client Name: Northwest Bergen County Utilities Authority

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Start: May, 2005

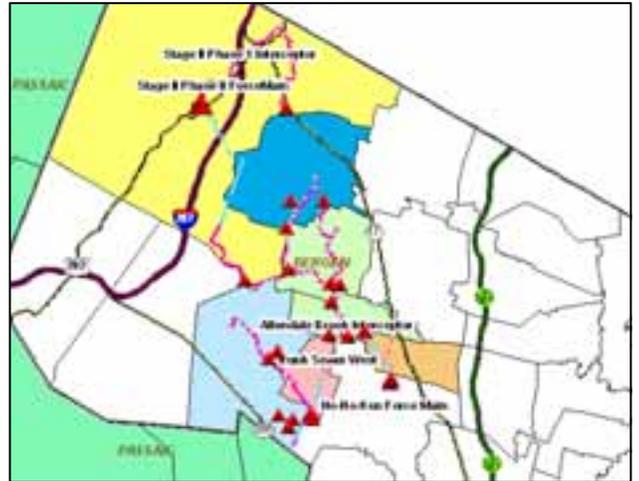
End: Present

Background

The NBCUA maintains a system of gravity and force mains to transmit raw sewage collected in local sewer systems to a regional sewer plant for treatment. This collection system utilizes approximately 33 miles of sewer interceptor mains with 4 Pump Stations and 1 Treatment Plant that serves a number of municipalities in Bergen County New Jersey including: Waldwick, Wyckoff, Midland Park, Saddle River, Upper Saddle River, HoHo Kus, Mahwah, Franklin Lakes, Ramsey, Allendale and a portion of Ridgewood. The total service area is approximately 70 square miles. The NBCUA knew that GIS is essential to improve the management of its infrastructure through the development of a GIS database of sewer facilities to be integrated with various internal business operations and existing information systems. It was also important to the NBCUA that the data developed for this project be compatible with GIS data developed and maintained by Bergen County's GIS Office and with those maintained by any local municipalities or utility authorities. The County also provide links to the tax records which include parcel owner name and address as well as lot and block identification of the property.

The NBCUA maintained records of its sewer facilities in digital (scanned images) and hard copy formats and in Microsoft Excel spreadsheets. Sewer system as-built records consisted of scanned image files at various scales that depicted the plan view and corresponding profile of the sewer system. Every manhole in the NBCUA sewer system had a unique facility ID which was noted on the as-built drawings. The NBCUA had been actively collecting detailed information on manholes and pumps in the field using GPS receivers and data collectors. The information collected via GPS was maintained in a series of MS Excel spreadsheets. All this was to be brought into GIS.

The Northwest Bergen County Utilities Authority of New Jersey, Bergen County contracted with Nobel Systems in 2005 to perform GIS conversion of the Authority Sewer collection system.



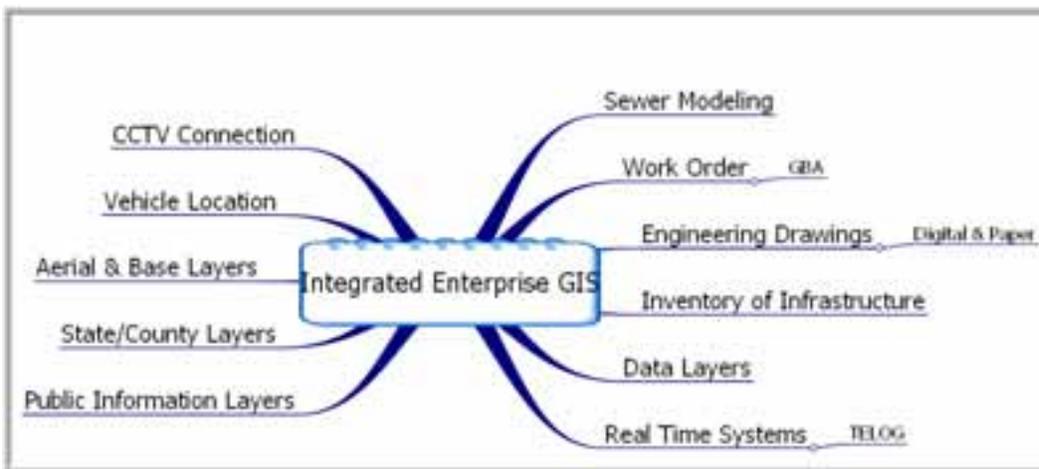
Nobel helped NBCUA plan the Data Model and the GIS implementation in a phased manner. All sanitary sewer services were captured in separate feature classes in a UML data model.

NBCUA's GIS Program Objectives

Operational decisions are easier to make if the NBCUA field crew as well as the Office personnel have a clear understanding of where the issues are, what the street names are where the issue has taken place and how is the parcel being used.

■ The Key Objectives

- ◆ Have GIS help them in managing the assets and also lead them into the best practices in the future as GIS is just the beginning of an enterprise wide integrated effort
- ◆ Develop Map of NBCUA Collection System and Locate Specific Assets
- ◆ Provide Means to Search for and Locate Assets, Property Owners, etc.
- ◆ Provide for Electronic Storage and Retrieval of System Drawings
- ◆ Provide Rapid Access to As-built Drawings
- ◆ Link Inspection and Maintenance Reports to Specific Assets
- ◆ Go Enterprise wide



NBCUA Program Approach

- ◆ Identify and Record Location and Description of Assets.
- ◆ Link Assets to GIS System to Allow Ready Access to User.
- ◆ Expand System to Include Member Municipalities

Based on these three ideas, Nobel Systems worked with NBCUA to start the GIS Conversion program. The trunk sewers were the first to be converted and that established several data standards, based on practices and business needs of NBCUA. The attributes that NBCUA was interested in and that were incorporated in the Geodatabase UML were:

- ◆ Manhole Number and Coordinates
- ◆ Manhole Type, Rim Elevation, Depth
- ◆ Pipeline Size and Material
- ◆ Gravity or Force Main
- ◆ House Connections
- ◆ Meter Chambers
- ◆ Pump Stations
- ◆ Cleanouts

The final deliverables were Atlases and an all encompassing Geodatabase. NBCUA then asked Nobel to host the data on GeoViewer Online – so that NBCUA can remotely access all the infrastructure data 24/7. This approach was selected as a cost effective method to implement a GIS system while eliminating the need for investment in additional computer facilities and manpower to establish and maintain the system. Most important, GeoViewer allows users to effectively use the GIS without extensive training.

Nobel provided NBCUA with an IMS services and also added various State/County (bodies of water, wetlands and Flood plains, etc) layers to help the Authority with its analyses as information is key to growth. These datasets were very useful not only for compliance purposes but for seeing the natural and national resources that can be tapped into by NBCUA from time to time. Nobel also integrated external datasets and data services on to the system.

NBCUA was also interested on the use of GIS for document management, for furthering its search mechanisms and analyses. Nobel Systems connected all Drawings and documents/files, including videos/photographs, with the Assets, so that NBCUA could have access to information in the manuals and in videos on its GIS through internet. These days NBCUA has trained field crew who understand the use of:

- ◆ Manhole Inspection Reports Linked to GIS System.
 - ★ Includes Date of Inspection.
 - ★ Includes Photograph(s) of Manhole or other facility.



- ★ Includes Observations, e.g.

Once Nobel completed the work for NBCUA, it converted the sewer for the member boroughs – Mahwah, Midland Park, Ho-Ho-Kus, Waldwick and Wyckoff. Consequently, their GIS was loaded onto the data hosting site as well. This provides access to infrastructure data to both the NBCUA and the local system operators.

System Highlights

The GIS program includes a number of highly useful features. The program allows the user to search for an asset using the property owner's name or address, the parcel block and lot number and/or facility specific information such as manhole or flow meter identification number. The 24/7 on line availability of the information permits immediate response to an emergency, eliminating the need to search records for contact information and for reference drawings.

Conclusion

As a result of the GIS program, NBCUA has an On-Line GIS System with links to Drawings, Reports, etc. The system serves member municipalities in addition to the NBCUA facilities. Each municipality is password protected and can be accessed from any location and at any time. And now that the GIS System is in place, it is only going to evolve more and be connected with other departments, other systems, other datasets, other agencies thus bringing every entity closer.