G EOGRAPHIC I NFORMATION S YSTEMS

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DOT and Traffic Engineering Expand GIS Use

Bus stops and traffic count stations the focus of mapping and GPS work

GIS staff have been assisting the county Department of Transportation (DOT) and Department of Public Works Traffic Engineering section with data development and mapping efforts over the past several months. Central to these efforts include mapping updates for both the Bee-Line and ParaTransit bus route systems, the Bee-Line and Indian Point Evacuation Plan bus stops, and county traffic count locations. GIS staff are also supporting DOT's migration from ArcView 3.2 to the ArcGIS platform.

The ParaTransit system provides transportation to residents with special needs who are not normally able to ride in the Bee-Line fixed route system. Eligibility is based on living within ¾ mile from the fixed Bee-Line bus routes. To assist in identifying eligible residents, DOT GIS staff are working together to produce "buffer" maps for the fixed routes. As illustrated below, the ¾ mile buffer around each route will assist

ParaTransit personnel in determining whether an individual lives within the zone.

A larger GIS initiative in DOT involves the Global Positioning System (GPS) mapping of Bee-Line bus stops. In addition to collecting an X,Y coordinate for each bus stop and taking a photograph of the location, site details noting the presence and condition of shelters, benches, lighting, route maps, and other amenities will be collected. GPS data collected by the project contractor (Urbitran) is displayed over the county's 100-scale orthophotos and reviewed by DOT staff for spatial accuracy and consistency. Urbitran is also using GPS to map Indian Point Emergency Evacuation Plan bus stops.

GIS staff is providing support to staff in the Department of Public Works (DPW) Traffic Engineering section for the mapping of traffic count locations. The county collects Automatic Traffic Recorder (ATR) data at

approximately 400 predetermined count stations on county and regionally significant local roadways that are included in the New York Metropolitan Transportation Council's (NYMTC) "Best Practice" Travel Demand Model. Each count is updated approximately every three years. The data is submitted electronically to NYSDOT and NYMTC annually and the records are maintained by the DPW Engineering Division. Average Annual Daily Traffic (AADT) volumes are provided on the DPW website at *http://www.westchestergov.com/dpw*. In the coming months individual traffic volumes for these count stations will be posted on this web site which will include the hourly volumes by direction for a 48-hour weekday period.

For more information contact Michael Swee in DOT at (914) 813-7760 or Kevin Roseman in Traffic Engineering at (914) 995-4084.
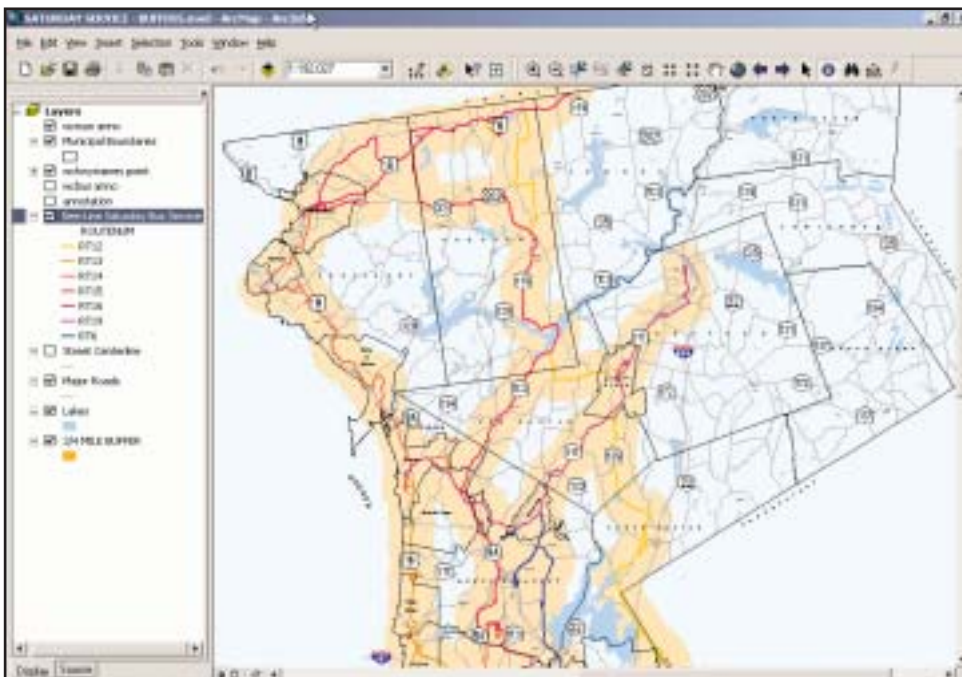
Westchester County DOT staff are preparing maps which show a 3/4 mile buffer around existing Bee-Line fixed bus routes. Areas within the 3/4 mile buffer (highlighted in yellow above) serve as a basis in helping determine eligibility for ParaTransit assistance.

GPS for Offender Monitoring

GIS and IT staff recently assisted the Department of Probation in the review of proposals which included a GPS component for "offender monitoring." Radio devices currently in use send an alarm if an offender is not home during specified hours ('presence/absence' monitoring). The new devices present the advanced capacity to monitor movements of an offender while away from home.

A portable unit records its location every 30-90 seconds, and transfers these records to the base device hooked to a phone line, triggering alarms or notifications as necessary. The GPS systems also offer new controls, such as enforcing court-ordered 'exclusion zones' (i.e., stay at least 2 miles from a protected individual's home). For more information contact Supervising Probation Officer Wanda Baskerville at *wjb1@westchestergov.com*, or Deborah Parker *dape@westchestergov.com*.

GPS for County Surveyors

The Department of Public Works survey team recently reviewed bids for a pair of Real Time Kinematic (RTK) GPS receivers, and will purchase a Z-Max Surveying System from Thales Navigation (*http://www.thalesnavigation.com/en/*). With a roving base station, the crew can record real-time survey accuracies.

Set up over a precisely surveyed geodetic monument, the base unit uses satellite data to calculate corrections from its known true position, and transmits these corrections via wireless or radio. The rover unit applies corrections "on the fly," boosting productivity. Data can easily be exported to ESRI Shapefiles or DXF for the use in other systems. For more information contact Rich Murray, survey coordinator, at (914) 995-2575.

AVL Study Initiated

GIS has contracted with Applied GIS, Inc., and the Waypoint Technology Group to conduct a county government needs assessment for the deployment of Automated Vehicle Location (AVL) technology. It is anticipated that the initial focus and deployment of AVL in county government will be in the areas of emergency response and public safety.

While mapping the location of a vehicle is the most common and visible component of an AVL system, other elements such as the available modes of communication (radio frequency vs. wireless), compatibility and integration with existing county systems, X and Y capture rates, two-way voice and/or text messaging, and data archiving must also be included in the study and design. For more information contact Deborah Parker *dape@westchestergov.com*.

Using GIS to Validate Applicant Residency
Application customized for Department of Human Resources

For many years, the county's central GIS database has provided the foundation for established and more common applications in the areas of transportation, environmental and land use planning, emergency services, and property management. However, over the past six months, GIS staff has also assisted county software architects in developing an application which utilizes geocoding functions to verify an address with regard to its correct municipality, school district, and fire district.

This project was initiated by the Department of Human Resources (WCHR), which was interested in building an automated process that would validate the residency of an address - a common need in filling positions from within the civil service exam system. For example, some jobs associated with a specific fire department, school district, or local government requires that eligible candidates live within a specific district or municipality.

The application was developed using industry standard software packages such as Oracle, Sagent Address Broker and ESRI's ArcSDE API. Oracle software is used to manage the Human Resource database, while Sagent Addresss Broker is used to standardize the applicant address to United States Postal Service (USPS) standards. The ESRI ArcSDE API is used to find the address location and contributes to spatial analysis functions.

The residency verification process begins when an application for a specific position is submitted (in hardcopy format) to WCHR. Human Resources staff first key in applicant data including the applicant's address. The application then sends the address to Sagent Address Broker to standardize the address, and then uses ArcSDE API to perform geocoding function and spatially analyze the address location in context of district boundaries (municipal, school, and fire) which have been integrated from the central GIS database. As seen in the screen shot below, the application provides a list of districts associated with the address. This information is used to check against the district and residency requirements of the specific job.

Prior to this application, validating the job applicant's address by municipality, school, and fire district was done manually. "The ability to establish candidate residency automatically using the county's GIS database can save HR staff hundreds of work hours over the life of an eligible list, which can be up to four years. When we demonstrated the new examination system to NY State and other counties, this capability generated more interest than any other. It is a system loaded with work-saving features," notes Bill DeLeo, director of Human Resources Information Systems for Westchester County. For more information, contact Dave Blake at *dmb9@westchestergov.com* or Ameeta Sharma at *amsa@westchestergov.com*.

This screen shows the interface to enter a candidate's address and other applicant information. After the button "Get GIS Profile" is pressed, information about the candidate's address location is displayed at the bottom of the form. It identifies which municipality and school and fire district the address is located.

Local Government
Village of Hastings-on-Hudson initiates GIS project

Westchester County GIS staff is working closely with the **Village of Hastings-on-Hudson** in the development of a village-wide GIS project. The county conducted the village's GIS User Needs Assessment (UNA) in June 2001 and is currently in the process of implementing a Land Use Planning and Analysis application which was identified in the UNA. The application will assist village staff in day-to-day land use and zoning decisions. The village also recently contracted Stuart Turner & Associates to convert its zoning map to GIS format and with the assistance of Westchester County GIS, the zoning district data was also integrated with the tax parcel data.

More Local News

■Westchester County GIS recently met with the **Town of Bedford** and a representative from the Bedford Hills Fire Department to discuss GIS development and implementation options. The **City of Peekskill** has been working with GIS staff to produce a map of the city's waterfront to assist in the city's Local Waterfront Redevelopment Plan. Staff recently met with the **Town of Somers** to review its tax map maintenance program and suggest procedures in working with its tax map maintenance contractor.

■County GIS staff recently completed the **Village of Port Chester** User Needs Assessment (UNA) study, and is currently working on UNAs for the **Village of Larchmont** and the **Town and Village of Mamaroneck.** It is anticipated the three municipalities will be working together over the next several years on an inter-municipal GIS program. Several municipalities are working with county staff to build and launch web-based GIS "data viewers." Currently the towns of **Cortlandt** and **Yorktown**, the **City of Mt. Vernon** and the **Village of Mamaroneck** all have data viewers established that are accessible from either the county's GIS website at *http://giswww.westchestergov.com* or individual municipal homepages. Discussions are currently underway with the **City of New Rochelle, Village of Mt. Kisco** and the towns of **Pound Ridge, Bedford, Lewisboro and New Castle** to start similar efforts.

■GIS Data Sharing Intermunicipal Agreements (IMA) between the county and local governments continue to grow. Currently, more than 20 municipalities have signed the agreement and others are in development. Both the county and local governments realize significant cost savings in sharing spatial datasets which would otherwise be unnecessarily duplicated. For more information on the IMA data sharing agreement, contact Ana Hiraldo at *aeh2@westchestergov.com* or at (914) 995-4416.
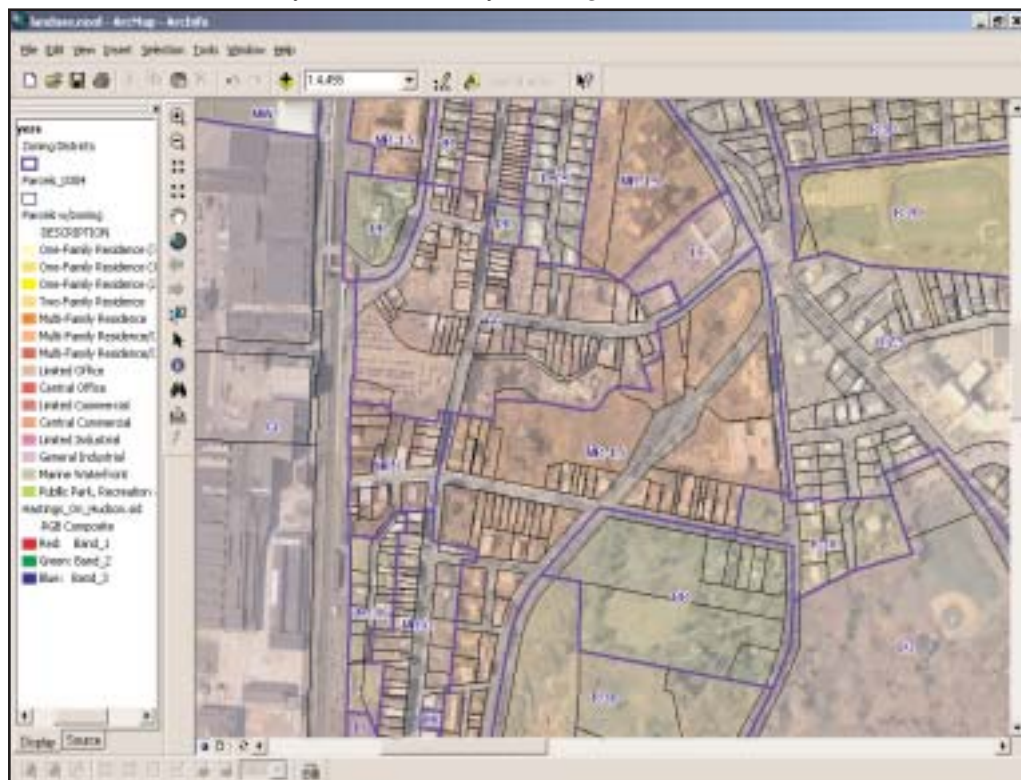
This image covering the Village of Hastings shows zoning districts and tax parcel data (color coded by zoning district) draped on top of orthophoto imagery. A zoning district code was added to the tax parcel attribute table based on data provided by the village's consultant Stuart Turner & Associates.

Geospatial One-Stop (GOS)

County GIS staff have been working with project managers from both the U.S. Department of Interior and ESRI as part of the Geospatial One-Stop (GOS) initiative (*http://www.geo-one-stop.gov/*). Overall, it is the intent of GOS "to improve the ability of the public and government to use geospatial information to support the business of government and facilitate decision-making." The county's initial focus will be to establish a "metadata service" that makes the county's extensive metadata inventory accessible using GOS metadata harvesting tools. County GIS plans to expand its GOS capabilities over the next several months by adding functions to search for metadata from the county's GIS website and by also including local government metadata records. For more information on the GOS initiative, contact Sam Wear at *stw1@westchestergov.com.*

Navteq Database Improvements

Westchester County GIS has recently reached an agreement with Navteq (*www.navteq.com)* in which the company will register its street centerline file to the county's photogrammetric base map. As part of the agreement, Westchester County will supply Navteq with orthophotography and planimetric datasets from the county's April 2000 base mapping project. Originally developed to support automotive navigation applications, use of the Navteq file in government has grown substantially over the past two to four years in emergency dispatching, route planning and general address matching and geocoding. In its licensing agreement with Navteq, the county is able to provide the road file to local governments throughout the county. For more information on the Navteq street centerline file update, contact Sam Wear at *stw1@westchestergov.com.*

Spring 2004 Base Map Update

This spring, Westchester County will be participating in the New York State Digital Orthoimagery Program (DOP). GIS staff has been working closely with NYS Office of Cyber Security and Critical Infrastructure Coordination to develop photogrammetric specifications which can be used to update the county's existing planimetric datasets (derived from Spring 2000 photography) as well as capture additional infrastructure and street features. New true color orthophotography (.5 foot pixel resolution) will also be produced. The countywide digital terrain model (DTM) is also being enhanced to support the generation of 2' contours. Over the next several months, the county is scheduled to retain a contractor to perform the planimetric updates and new data development. Contact Sam Wear at *stw1@westchestergov.com.*

New Open Space GIS Layer Includes Over 100,000 Acres of Open Space

Westchester County Department of Planning staff Michael Selig and Paul Gisondo recently completed a comprehensive update to the 1994 major open spaces GIS data layer. Over 100,000 acres of open space, representing over one-third of the county's land area, were researched and digitized into a new data layer. The open space layer includes a broad range of lands characterized as 'open'. Public parks, nature preserves, institutions such as colleges and medical facilities, golf courses, water supply lands, cemeteries, utility rights-of-way, and farms are among the categories.

A variety of sources were used to compile this information, including current digital aerial photography, digital tax parcel datasets, and local recreation, land use and master plan maps. Municipal planning staffs also provided valuable input by proofing municipal draft maps.

Although the existing open space map was limited to parcels of at least 10 acres, the use of digital parcel line work (available for most Westchester municipalities) enabled the inclusion of much smaller open spaces in the new data, such as neighborhood pocket parks and open space set-asides in new developments.

A county-wide color open spaces map is being developed and will be available in early April. The new data layer will be available for viewing and download on the county's GIS website at *http://giswww.westchestergov.com*. For more information contact Mike Selig at *mss8@westchestergov.com* or Paul Gisondo at *pxg3@westchestergov.com* or visit *http://www.westchestergov.com/planning/default.htm*.
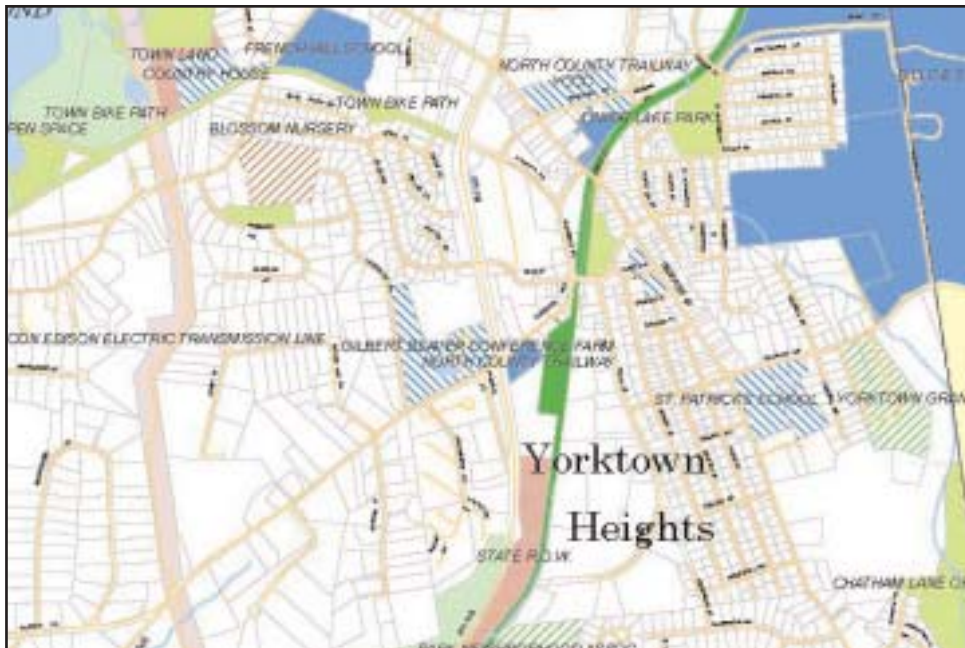

Image of the Yorktown Heights area from the new Department of Planning open space coverage. The last comprehensive mapping inventory of open space in the county was conducted in 1994. The new inventory is more detailed than the previous one due to the availability of digital color orthophotography and tax parcel datasets.