# G EOGRAPHIC
# I NFORMATION
# S YSTEMS

# Countywide Base Map Update Continues

### *New orthophotography online with planimetric and contour data development on schedule*

Westchester County's extensive 100-scale countywide planimetric datasets obtained through the New York State Digital Orthoimagery Program (NYSDOP) are nearing completion. Datasets include edge of pavement, building footprints, hydrology, street centerlines, and driveways, originally developed from spring 2000 aerial photography. In addition, the current project has been expanded to incorporate previously unmapped street features, including fire hydrants, manholes, catch basins and utility poles, as well as stone walls, roadside barriers and guard rails.
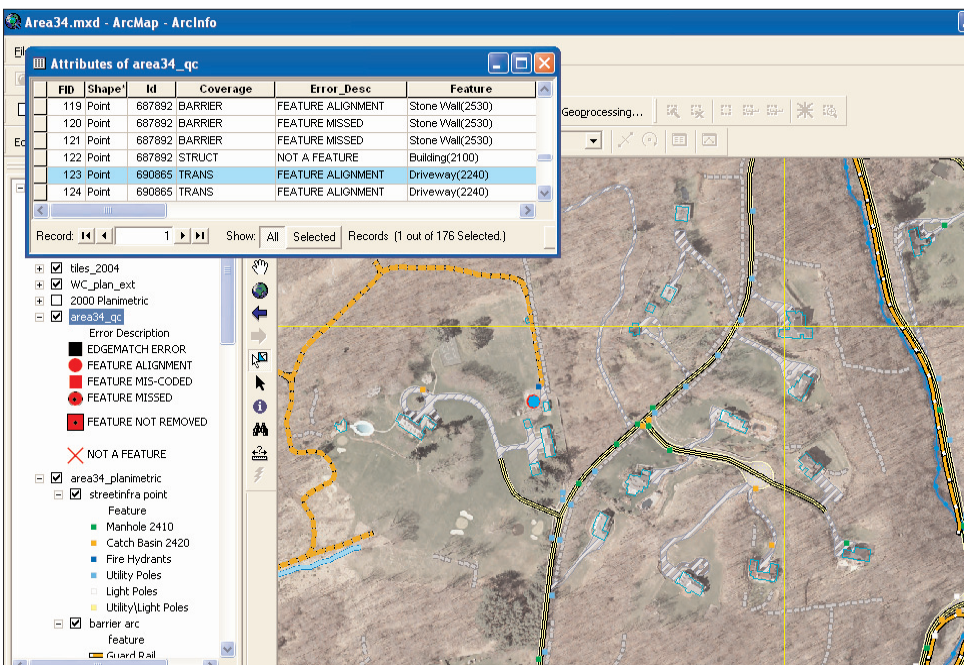
**Planimetric Data:** All vector datasets are being rigorously reviewed for spatial accuracy, completeness and attribute coding by Pinnacle Mapping Technologies (*www.pinnaclemapping.com*), the county's selected QA/QC contractor. Pinnacle's both automated and visual review of each delivery area (approxi-

mately 13.5 square miles) typically contains from 16,000 to over 100,000 features. Once approved, final data are delivered to the County in ESRI coverage and shapefile formats, and in AutoCAD DWG format. All data is scheduled to be converted by the county to Geodatabase format. Upon completion of the project, most of the countywide planimetric datasets will be available for download from the county's GIS website.

**Two-foot Contours:** In one of the most ambitious countywide spatial data development efforts ever undertaken, county GIS staff are also overseeing the development of two-foot contour data which is also a product of the Spring 2004 NYSDOP aerial photography campaign. The county has contracted with Buchart-Horn, Inc. (*www.bh-ba.com*) for production of the contour data with QA/QC services being provided by Applied Geographics, Inc. (*www.appgeo.com*). Initial produc-

tion of contour data focused on the Bronx River Watershed to support a joint project of the county's Department of Planning and the U.S. Army Corps of Engineers. Most of the 14 delivery areas in the watershed have now been completed, and all contour datasets are scheduled to be complete by early 2007.

**Color Orthophotography:** Digital orthophotography from the 2004 state program is available for download from the New York State Clearinghouse (*www.nysgis.state.ny.us*) and has been integrated into the interactive *Mapping Westchester County* application at *giswww.westchestergov.com*. The aerials are stored in SDE which greatly improves display and redraw performance of the imagery in both desktop and web-based applications. For more information on all elements of the countywide base map update, contact Deborah Parker *dape@westchestergov.com*.



*The base map update incorporates a series of automated and visual inspections of the planimetric datasets. Errors are logged into spreadsheets as well as rendered on the orthophoto image. The entire QA/QC process for the base map update was designed to be "paperless."*

## Westchester County receives GIS Awards

Westchester County GIS recently received two awards for outstanding achievement in GIS program development and services to local governments. The first award was given by the National Association of Counties (NACo) for the *GIS Data-Sharing Program* which promotes no-cost data sharing between county and local governments. The second honor was awarded through the American City & County Crown Communities program for the county's "*Mapping Westchester County*" ArcIMS application. The application is available for viewing at *giswww.westchestergov.com*.

For more information, contact Ana Hiraldo at *aeh2@westchestergov.com*.

## ORPS Update

On June 29, county GIS and Tax Commission staff met with more than70 local officials and assessors at the White Plains library to launch a countywide study which will focus on the feasibility of increased county participation in tax map maintenance and standardization. The study is being funded through a grant obtained through the New York State Office of Real Property Services (ORPS) 2005-2006 Tax Administration Technology Improvement Grant Program (RPTATIP). David Jackson, Westchester County Tax Commissioner, provided an overview of the study's major components which was then followed by a general question and answer period. Interviews with local governments are currently underway and being conducted by James W. Sewall Co., which is providing consultant support to the study. Study findings and recommendations are currently scheduled to be completed by the end of the year. For more information contact David Jackson at *dbj1@westchestergov.com* or Sam Wear at *stw1@westchestergov.com*.

## Fire District Map Series

GIS staff is currently working with county Department of Emergency Services (DES) staff on the generation of a countywide "map series booklet" for each fire district in the county. The booklet is designed to be published and printed on a 8.5"x11" sheet and will be based on a base map tile grid (2,500 ft x 2,500 ft). Each page (or map) in the booklet will represent one section of the "grid" which covers the entire fire district. Currently, each map includes street maps with facilities such as schools, fire, police and EMS stations, and building footprints. The map series is being generated using the "*DS Map Series*" ArcMap Developer's Sample. PDF files of the map series for each fire district will be provided to DES and each local fire department. For more information, contact Cindy Louie at *llc4@westchestergov.com*.

## M.A.S.C.

Mapping Applications for Schools and Communities (M.A.S.C) is a new mapping initiative being promoted by Westchester County GIS. Though still in development, M.A.S.C is being designed to allow schools and community-based organizations to create basic maps by submitting address-based information through the project homepage available at *giswww.westchestergov.com*. Interested schools and community-based organizations which may be interested in working with county GIS staff in testing and providing input on final design of the program are encouraged to contact David Blake at (914) 995-5605 or *dmb9@westchestergov.com*.

# AVL Deployment and Application Expanded

Westchester County GIS recently received Version 2.0 of the AVLClient vehicle tracking application developed by Fountains Spatial, Inc. of Schenectady, New York (*www.fountainsspatial.com*). The new version runs as a service on the county's new GIS architecture - a server cluster and ArcSDE 9.1. Many enhancements are based on feedback from user departments' experience with Version 1.0. The new application is deployed in the Public Safety and Corrections departments.
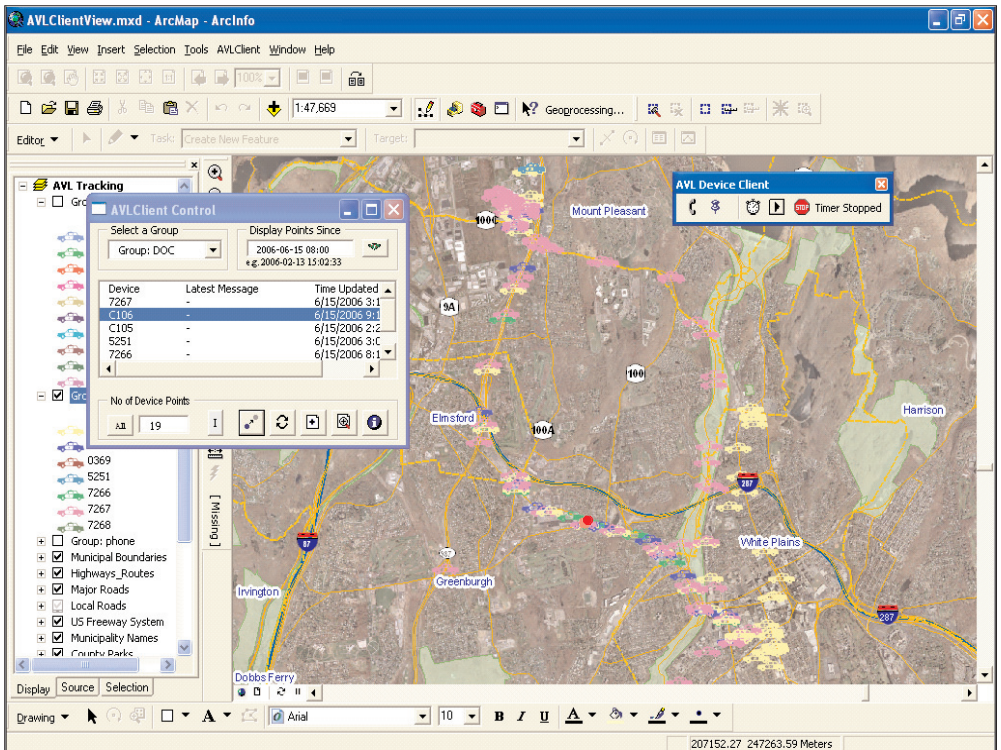
While earlier versions of the software - a Nextel GPS-enabled wireless phone prototype and Version 1.0 - wrote records to a simple text file, the data repository is now written to a SDE point file, while automatically converting GPS date and time to local time, and GPS lat/long coordinates to the county's data standard, New York State Plane coordinate system. The entire dataset is now instantly available for display in the desktop application. New online administrative tools allow users to create and manage a group of vehicles by department, and to individually configure the reporting interval for any device. In ArcMap, department users can now display locations for their group of vehicles from a user-defined starting date/time, zoom to any vehicle's current location or most recent positions, or replay onscreen the path of a vehicle within a user-specified time interval.

In advance of the application delivery, the county purchased and installed fifteen new CrossCheckGSM units from Trimble (*www.trimble.com*), with a magnet-mounted integrated GPS and GSM antenna - a design improvement over devices purchased less than a year before for the pilot project. The devices (including two pilot units) are installed in Public Safety's police patrol cars and in inmate transport vans at the Department of Corrections.

The devices transmit data via wireless service from Trimble Mobile Solutions, Inc. (TMS) (*www.trimble.com/tms.shtml*). As part of the service contract, TMS makes available a high-end web-based fleet management application (TrimWeb) which includes a mapping component and extensive fleet administration tools. The password-secured TrimWeb site also provides a suite of in-depth automated reports, including 'live' at-a-glance status of all vehicles, vehicle activity summaries and events reporting, as well as messaging capability. The web application has undergone nine upgrades in the last three years, reflecting the rapid evolution of location-based mapping technologies and industries world-wide.

As the county plans for AVL deployment to other departments, both applications will be considered for specific user requirements and functionality. For more information, contact Deborah Parker at (914) 995-3888 *or via e-mail at dape@westchestergov.com*.



*The new AVL Client Control Toolbar allows user to zoom to last known position of a selected vehicle, or all positions recorded in a day or week. The TRACK tool replays a specified set of records for any vehicle on screen (red dot at lower center).*

# Indian Point Emergency GIS (IPEG)

Since the initial launch of the Indian Point Emergency GIS (IPEG) application in early 2005, Westchester County Department of Emergency Services (DES) staff has used the ArcEngine-based application extensively during Indian Point emergency response and preparedness drills. Utilizing ESRI's ArcEngine technology enables the county to easily deploy the application in a cost effective way. For each machine, only a ArcEngine Runtime license and the free Microsoft .Net Framework are needed to run the application.

DES staff use and feedback on the initial release of IPEG over the past year and a half provided the foundation for several upgrades and enhancements which are reflected in the new release of the program. IPEG Version 2 (V2.0) has recently been delivered to the county for testing and acceptance. Application development support for V2.0 has been provided by Fountains Spatial, Inc. in Schenectady, New York (*www.fountainsspatial.com*). Major enhancements to IPEG V2.0 include:

**Layer Context Menu Enhancements:** A Refresh function was added to reflect any changes being dynamically made to the layer(s) during an emergency. A Zoom to Layer function was added to allow the map display to be zoomed to the extent of the selected layer;
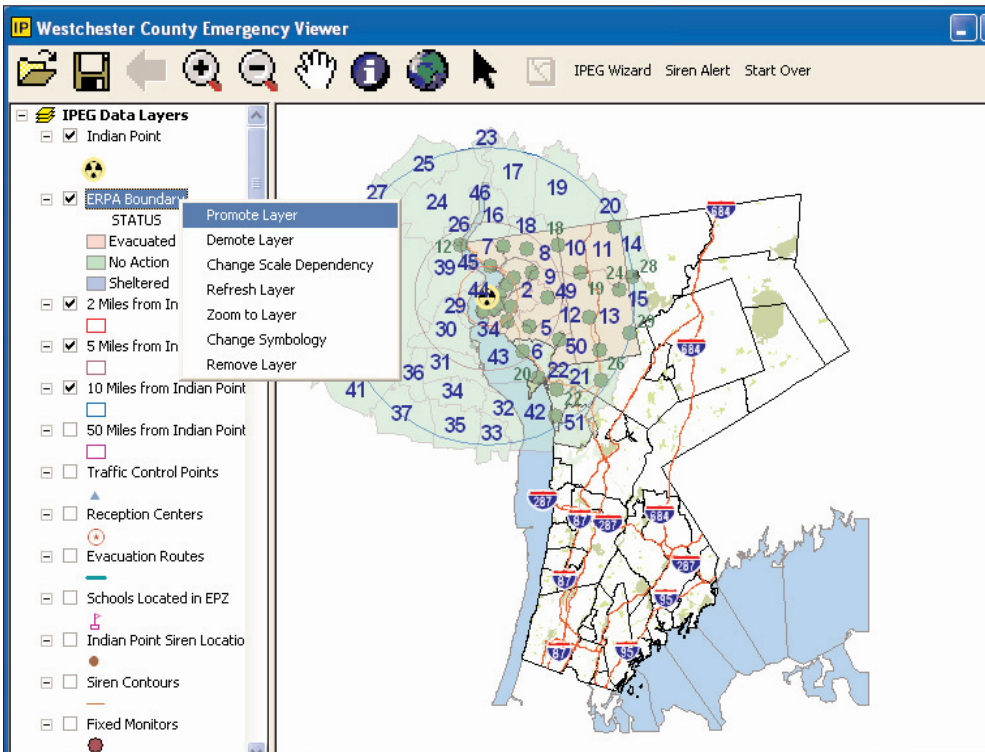
**Main Toolbar Enhancements:** A Start Over button was added to reset the application to the state of the original starting point. A Siren Alert button was added to open single or multiple siren PDF files describing the affected streets when those sirens were out after their corresponding siren numbers were entered in an input box. An Arrow button was added so other buttons could be released when it was activated;

**Redesign of Plume Buffer Option:** The buffer by plume option was significantly modified to better reflect the real situation during an emergency. The changes included adding human interaction in the final decision-making process by allowing users to pick and choose one of the three status (Evacuated, Sheltered, No Action) for each ERPA or municipality, improving color rendering of the affected ERPAs or municipalities for clearer presentation, and adding municipal boundaries as another option for evacuation buffering units;

**Additional Enhancements:** The name entered in the Enter Map Title input box was used for the name of the generated PDF file for easy identification. This option of population calculation was added to calculate the total population in the affected ERPA areas or municipalities;

Adjacent counties have also expressed an interest in using the application for emergency planning. Additional functionalities are expected to be added to the application in 2007. For more information on IPEG V2.0 contact Tong Zhou at *taz2@westchestergov.com*.



*This is the interface of the Indian Point Emergency GIS (IPEG) application Version 2 when it is launched. Several enhancements on the layer context menu and the toolbar which were described in the article are shown in the image.*

## GIS Meetings and Outreach

GIS staff continues to maintain an active schedule in outreach and coordination with government officials and industry representatives. In May, staff members Ilir Tota and Ana Hiraldo attended a GISMO meeting which featured a presentation by Wendy E. Brawer, founding director of the Green Map System (*www.greenmap.com*). Green Maps are locally created maps that chart the natural and cultural environment cultivating citizen participation and community sustainability in hundreds of places around the world. In March, GIS staff member Cindy Louie and Michael Swee of Westchester County DOT attended a GIS Regional Transportation Coordinating Committee meeting in New York City sponsored by NYMTC (*www.nymtc.org*). The committee discussed data sharing among members in addition to metadata standards. Sam Wear attended the 2007 Geospatial Summit (*www.nysgis.org/summit*) held in North Creek, New York on June 9 which featured industry leading representatives from Google, Microsoft, ESRI, MapInfo, Pictometry, and TeleAtlas.

## GIS Events

### NEARC

The Northeast ARC/INFO Users Group (NEARC) will hold its 21st annual conference at the Mystic Marriott Hotel & Spa in Groton, Connecticut, November 12-15, 2006. With the theme "*Charting the Future of GIS,*" the conference will feature keynote sessions, vendor demonstrations, poster displays, and more. For registration visit the conference website at *www.northeastarc.org*.

### NYS GIS Conference

The 19th Annual New York State GIS Conference will be held at the Crowne Plaza Resort and Golf Club, Lake Placid, NY, October 23-24, 2006. The conference will showcase GIS projects throughout the state at all levels of government, industry, and academia. A wide range of poster presentations are scheduled. For more information and registration, visit the conference website at *http://nysgisconf.esf.edu*.

## CAP Grant Concludes

Westchester County's 2005-2006 Cooperative Agreement Program (CAP) grant which was obtained through the Federal Geographic Data Committee (*www.fgdc.gov*) will be completed by the end of September. The grant provided funding for metadata training to local government officials and the development of ArcIMS applications for Town/Village of Mamaroneck, Village of Hastings and City of Mt. Vernon (still in development). Access to each of the web mapping portals is available through individual local government websites or the county's website.

---

# *Google Earth Provides 3D and Panoramic Views of County*

GIS users can now display and view spatial datasets in 3D with Google Earth software. The latest Google Earth software release enables users to integrate and render 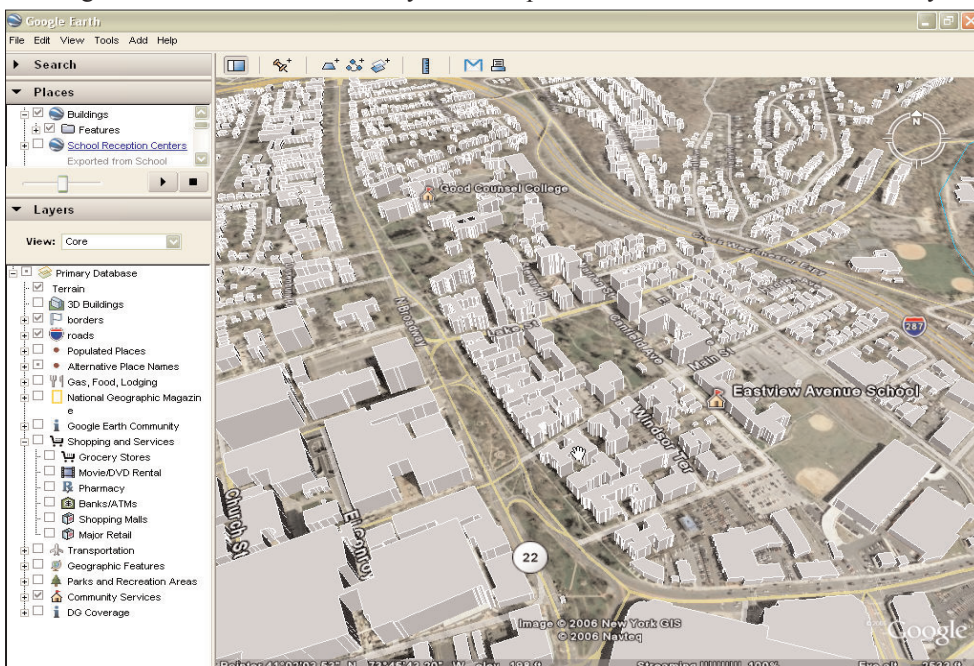ESRI coverages available from the county with aerial imagery provided by Google Earth. County GIS staff are developing initial Google Earth viewing applications with data from the current countywide base map update which includes the delivery of approximate z-values (height) for all building footprints.

Currently there are four versions of Google Earth: Google Earth, Google Earth Plus, Google Earth Pro, and Google Earth Enterprise Solutions, with each varying in price and service. The basic version of Google Earth is free and can be downloaded from Google Earth website at *http://earth.google.com*. Users are encouraged to check system requirements prior to downloading the latest release (Version 4 - BETA).

Google Earth reads KML (Keyhole Markup Language) files, an XML-based language. Keyhole Markup Zipped (KMZ files) are zipped KML files usually used for distribution. The KML file holds feature information such as name, description, latitude, longitude and tilt.

A number of free programs are available which convert GIS data (including ESRI shapefile format) to KML including those provided at the ESRI's ArcScript website (*http://arcscripts.esri.com*). It is anticipated Westchester County GIS will be making selected GIS datasets available in KML file format in the near future. For more information, contact Cindy Louie at *llc4@westchestergov.com*.



*The new version of Google Earth imports 3D models of buildings utilizing data being delivered as part of the countywide base map update. This image shows a view of the northwest section of the City of White Plains.*