G E O G R A P H I C
I N F O R M A T I O N
S Y S T E M S

Westchester County GIS Going Green

ESRI ArcIMS environment provides foundation for new web mapping application

The Westchester County Green Map was officially launched in April as part of County Executive Andy Spano's Global Warming Task Force which is creating a countywide action plan to reduce greenhouse emissions and promote sustainable development through awareness and education. Developed in-house by county GIS staff, the interactive ArcIMS application highlights dozens of sustainable "green" projects and programs throughout the county and encourages residents to identify similar efforts in their neighborhoods and communities.

The Green Map homepage offers a range of discovery options and user tools including:

About: The About page provides a brief summary regarding the background to the Green Map Project in addition to contact information.

Data: The Data page lists the various local resources and programs currently catalogued in each of the six primary Green Map cate-gories: Recycling/Waste Reduction, Green Buildings, Alternative Energy, Green Purchasing, Open Space and Trails and Transportation. Links to other useful related sites are also listed here. From this page, users can download datasets in either ESRI (coverage and shapefile) or Google Earth (KMZ) file formats.

Online Mapping: This option provides access to the online Green Map application. The application allows users to view the location of local resources, programs, and events throughout the county. Users can open/close folders to show or hide the contents of the folders, as well as control layer visibility. Location data such as Recycling Centers, Household Chemical Clean-up Days, and Energy Star certified buildings and retailers, are also listed in the folders.

Helping Out: Users are encouraged to get involved and "Nominate a Site" in their community or suggest new "green" themes to be mapped. Student and schools are encouraged to identify environmental programs or projects and a Green Calendar is available to post "green" programs and events.

Green Links: The Green Links page offers a list of "green" websites which users can use to find additional information and documentation. Links to tutorials and reuse/recycling websites are included for children, students and teachers.

The Green Map System (*www.green-map.org*) is a locally adaptable, globally shared framework for environmental map-making that Westchester County signed on for in December 2006. The site can be accessed by going to *http://giswww.west-chestergov.com/wcgis/GreenMaps/home.htm*. For more information on the county's collaboration with the Green Map System or the Green Map web mapping application, contact Cindy Louie at *llc4@westchestergov.com*.
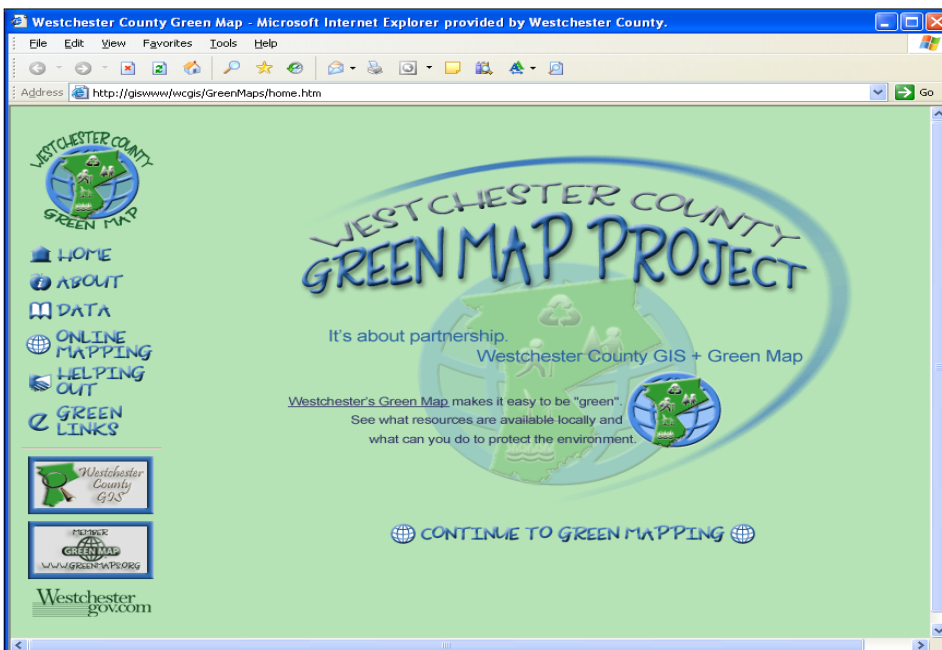
Westchester County's Green Map interactive web application is a portal where browsers can find green programs, green websites, and green activities throughout the County. GIS staff joined the Green Map System in 2006, and launched the webpage in April.

GIS Events

NEARC

The Northeast Arc Users Group (NEARC) will host its 22nd GIS user conference at the Wyndham/Hilton in Burlington, Vermont, November 4 - 7, 2007. The conference is expected to attract over 500 GIS users including government agencies, industry and academia. To register or for more information visit *www.northeastarc.org*.

NYS GIS Conference

The New York State 23rd Annual GIS conference will be held at the Holiday Inn Albany on Wolf Road, Albany, New York, October 1 - 2, 2007. A wide range of workshops, vendor presentations, and demonstrations including poster sessions are scheduled. For more information and registration visit the New York State GIS site at *http://nysgisconf.esf.edu*.

GIS Support to April Flood Response

GIS staff were called upon to provide mapping support for the county's response to widespread flooding in Long Island Sound shore communities from the April 15th nor'easter. Within hours after the arrival of the storm, with its predicted heavy rains and tidal surges, low-lying areas began to flood, affecting roadways, residences and businesses. According to the National Weather Service, nearly seven inches of rain fell over a 15-hour period.

By Sunday evening both the Town of Mamaroneck and the City of New Rochelle had declared a state of emergency. In Mamaroneck, the Red Cross opened a shelter and residents in coastal areas were urged to evacuate. The county's emergency response was coordinated from the joint Emergency Operations Center in Hawthorne. Response teams, deployed to flooded neighborhoods to assess damage, needed maps showing rivers, roads, building footprints, bridges and hospitals. Responders returned several times to disaster areas, and GIS staff soon built up a PDF library covering large portions of the County to support on-demand printing.

Although coastal areas near the county's Long Island Sound were hardest hit, serious flooding also occurred on all parkways, prompting the county to close large sections of the Bronx, Hutchinson, Saw Mill, Sprain Brook, and Playland parkways. At one point, the entire length of the Saw Mill Parkway was closed from New York City to Katonah.

GIS staff identified 211 miles of county and 80 miles of state roadways (including both travel directions on divided roads) that had been closed by noon on Sunday, with more than half of these remaining closed 24 hours later. Almost 64 miles of these roadways (both lanes of travel) were estimated to be within FEMA designated flood zones with many more miles of local roads impassable at some point during the storm.

"Support from the County GIS staff played a huge role in our efforts as we prepared for, responded to and began recovery from the recent Nor'easter and associated flooding" said County DES Commissioner Anthony W. Sutton.

"Their 24/7 presence in the EOC and their ability to produce custom maps on the spot made it possible for us to identify vulnerable areas, track road closures and assess damage after the storm. The GIS staff generated maps used by assessment teams made up of FEMA, SEMO and County OEM staff. There is no question that having GIS as an emergency partner in the EOC sped up the assessment process and ultimately led to the early disaster declaration we received," said Sutton.

For more information on GIS support to the April flooding, contact Noah Goldberg (DES) at *ndg1@westchestergov.com* or Deb Parker at *dape@westchestergov.com.*
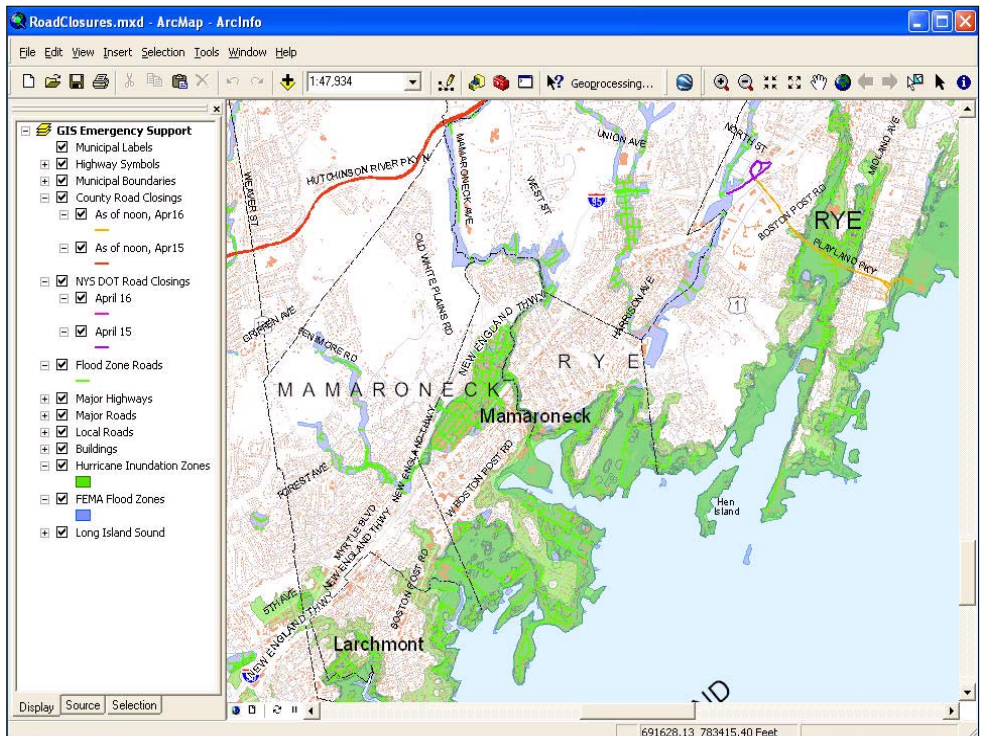
Map shows part of the County that experienced flooding from the April 15th storm, with roads that were officially closed by the State or the County. The visible portion of the Hutchinson River Parkway (red) was re-opened by noon on April 16, while the Playland Parkway (orange) remained closed. All flood-prone roads are highlighted in green.

Taking the Pulse of Our Parks

Note: The following article was written by Beth Herr, Program Administrator, Ward Pound Ridge Reservation.

The forests, lakes, meadows, and shorelines of Westchester Parks are more than just special places and spectacular scenery; they are a shared, precious part of our natural and cultural heritage. Preserving them requires a sound understanding of park resources, their condition, and the actions needed to maintain their health in dynamic landscapes.

Scientific knowledge, and its application, plays a key role in solving the complex issues faced today by our county parks. Working together with other agencies and experts, especially the Department of Information Technology and GIS staff, means more thorough science is carried out and applied. GPS technology, GIS mapping and GIS analysis are critical tools in this equation.

Scientific research in Westchester's parks is aimed at three broad goals: First, what resources are here? Pinpointing locations of rare or endangered species with GPS is essential for designating biodiversity zones, which we will monitor over a period of years. Much has already been done to record the most visible species, but greater challenges remain to inventory some less-noticeable inhabitants of our parks.

We also need to understand the natural dynamics and processes in park ecosystems. We study the role of invasive species, fire or floods, and how animal and plant populations change over time or interact with each other. Mapping the changing perimeters of invasive plant infestations over time in GIS helps evaluate the effectiveness of control methods.

Second, we need to monitor and assess the health of park resources, and identify any specific threats to them - it's like going to the doctor for your annual check-up. We'll monitor air and water quality by studying lichens and aquatic invertebrates, or track the activities of wildlife such as bears or coyotes. The ability to overlay GIS layers such as soil, elevation and watershed boundaries can help identify sites for surveillance.

Beyond studying natural features, we use science to study ourselves. Are park visitors affecting the park ecosystem? Can we involve visitors in our science programs? IT and GIS can help us with these questions, too. Finally, we need to monitor and learn from our actions, apply our research findings, and adaptively improve park management based on the results. GIS can help present our findings and provide decision-makers with clear evidence of the value of preservation plans.

Research in our parks has never been as important as it is today: it's essential for us to understand these ecosystems, recognize potential threats and respond appropriately. Research also supports interpretive and educational programs that enhance public understanding and experiences. It fosters cooperation with outside scientists and other agencies. In short, scientific research is a key investment in the future of our parks, and GIS tools are a crucial element in this effort.
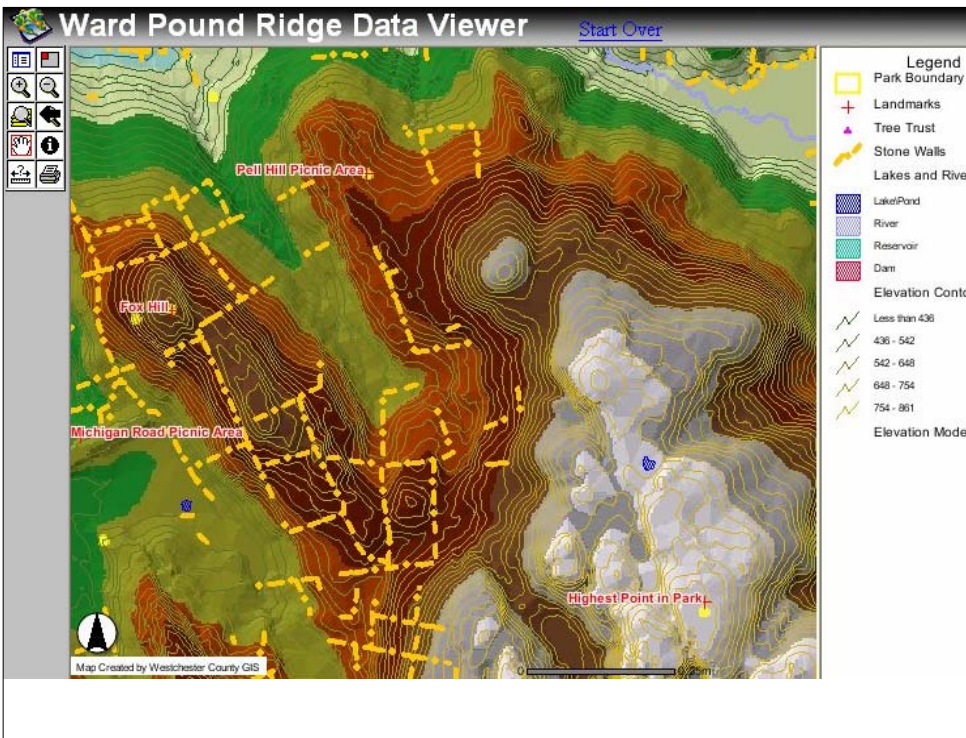
GIS recently deployed a prototype application for County Parks Naturalists incorporating legacy GIS environmental layers and base map planimetrics. GPS data collected by Parks staff such as habitat delineations and Tree Trust and trails map from the Planning Department were also included.

GIS Expo

Both the Westchester County GIS Green Map and M.A.S.C (Mapping Applications for Schools and Communities) projects were showcased at the recent Children's Environmental Learning Foundations (CELF) Expo at Pace University on April 26. Over 1000 students and visitors attended the expo and kept GIS staff members David Blake and Cindy Louie busy with questions about the projects and other county mapping efforts. GIS maps and posters were available for viewing and staff provided handouts to visitors. CELF (*www.celfoundation.org*) is an organization that collaborates with public school districts and individual teachers to raise awareness of sustainable development and to help incorporate related principles into K-12 curricula and programs. County GIS staff anticipate collaborating with CELF in similar efforts in the future. For more information contact either David Blake at *dmb9@westchestergov.com* or Cindy Louie at *llc4@westchestergov.com*.

GIS Reviews ALIS Data

On May 17, GIS members Deb Parker and Cindy Louie attended a workshop presented by the State's Office of Cyber Security and Critical Infrastructure Coordination (CSCIC) in New Windsor, N.Y. The half-day workshop provided training in custom geocoding tools from the State, and in the new Map Maintenance Notification and Tracking (MMNT) application built by CSCIC. MMNT is designed as a conduit for authorized data developers at the county or municipal level (who may be the local assessor, E9-1-1 coordinator, GIS manager, etc.) to share important updates to street centerline or address ranges with CSCIC. At the event, Westchester GIS staff was updated on CSCIC's street address point dataset under development for the Accident Location Information System (ALIS) [*http://www.nysgis.state.ny.us/gisdata/inventories/member.cfm?organizationID=522*], and will review this data as a source to support the County's enterprise mapping applications.

Google Earth Data

Westchester County GIS has started to make data available for download in KML format for use in the Google Earth 3D viewing software (*http://earth.download.googlepages.com*). Initial KML files are being made accessible for download only through the Green Map application. For all other publically available datasets, ARC/INFO export coverages (.e00 format) and/or shapefiles continue to be available for download at the main county GIS website. For more information on Google Earth compliant datasets,, contact Cindy Louie at *llc4@westchestergov.com*.

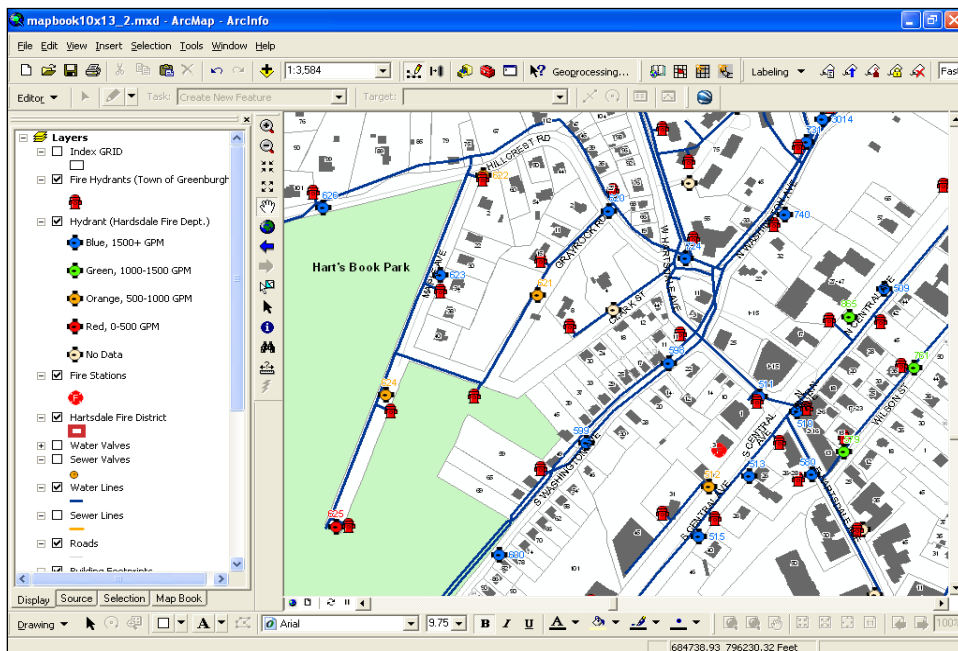
Local Government News

Westchester County GIS continues to provide technical support and guidance to several local government GIS programs. Using funding obtained through the New York State Archives (*http://www.archives.nysed.gov*) grant program, the towns of *Eastchester* and *Somers* and *Village of Pelham* were able to recently complete initial GIS User Needs Assessment and Implementation studies. County GIS staff worked closely with Bowne Management Systems (which prepared each of the studies) to identify county GIS components (data, software, intranet mapping applications) which could be efficiently incorporated into each of the local government GIS designs. Both *Eastchester* and *Pelham* also secured New York State Office of Real Property (ORPS) grant funding through the Real Property Tax Administration Technology Improvement Grant Program (RPTATIP) which will be used to convert tax maps to digital format.

The *Village of Ardsley* recently received an upgrade to their ArcReader application which includes 2004 aerial photography and tax parcel geography. Village staff is using the application to perform tax parcel data queries, data analysis in preparation of the Stormwater Annual Report and data development using GPS devices.

GIS staff is also working with selected fire districts on fire hydrant mapping inventories. Combining both local and county data sources, maps such as the one illustrated here, have been created for the *Village of Pelham Manor*, *Hartsdale* and *Town of Mamaroneck* fire districts.

For more information on local government GIS contact Ana Hiraldo at *aeh2@westchestergov.com*.

Hartsdale Fire District staff mapped all fire hydrants in the district with GPS. This image highlights fire hydrant locations coded based on flow rates. A map series will be generated in PDF to be used in the field for data management and inventory.