

GEOGRAPHIC INFORMATION SYSTEMS

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Geospatial Services Aid in Hurricane Irene Response

GIS staff contribute to 24/7 support during the storm

From August 25 to August 29, GIS staff provided mapping support for the County's response to Hurricane Irene at the joint Emergency Operations Center in Hawthorne. Within hours of the arrival of the storm, with its heavy rains and tidal surges, low-lying areas began to flood, affecting roadways, residences and businesses.

The County's flagship *Mapping Westchester County* online application served thousands of residents anxious to find out if their families or homes were at risk for flooding from rain or storm surge, as well as others who were preparing for possible evacuation. Application and system analytics after the storm show that the *Hurricane Zone Finder* was supporting nearly 700 hits per hour the afternoon of August 25.

During the first 24-36 hours of the storm, GIS staff was called up to carry out several tasks. Anticipating power outages and network disruptions, GIS staff initially com-

pleted a local back-up of all GIS data and imagery. Thereafter, GIS staff undertook several assignments such as calculating population figures in designated hurricane flood zones adjacent to Long Island Sound and the Hudson River, creating designated hurricane and storm inundation maps, and producing transit maps (Bee-Line bus routes, bus stops, Metro-North Railroad stations) for emergency service and first responder personnel.

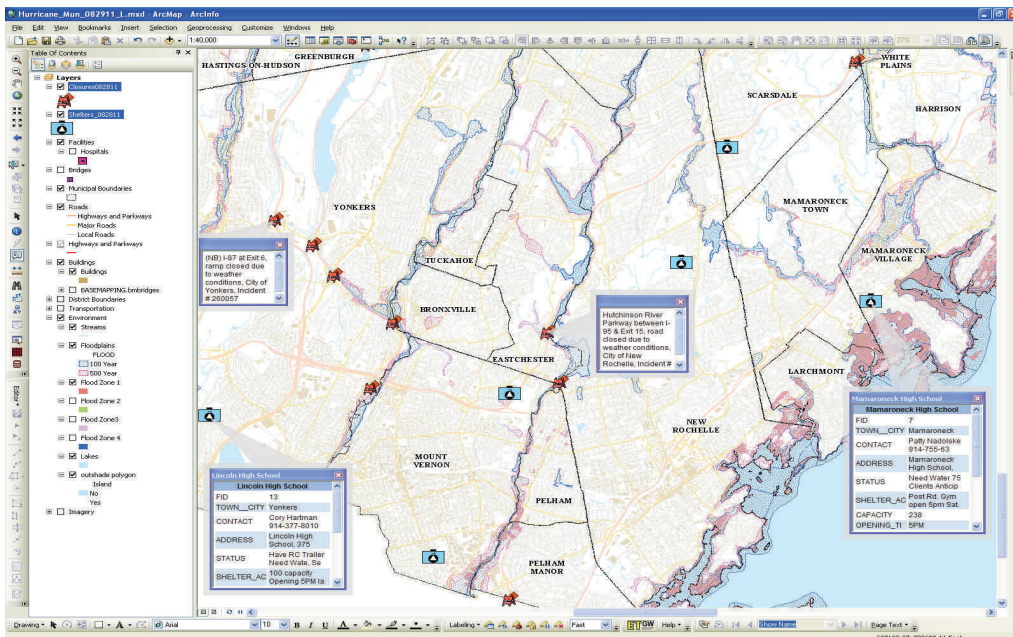
GIS staff also generated *Google Earth* "kml" file maps of shelter data for dispatchers and call-takers, and a variety of maps identifying critical-care facilities (shelters, hospitals, nursing homes, etc.) in designated flood zones. Additionally, maps were made from official NYS Dept. of Transportation announcements that identified road closures (including both travel directions on divided roads). Many of these roadways were estimated to be within FEMA-designated flood

zones, with many more miles of local roads impassable at some point during the storm.

By Monday, August 29, several towns and villages declared a state of emergency. GIS staff continued to support the coordinated response effort by creating new base maps for response teams deployed countywide to conduct damage assessment inventories. These maps included watercourses, roads, building footprints, bridges and other public infrastructure features.

GIS staff provided vital support in the preparation, response, and initial recovery to Hurricane Irene. Around-the-clock presence in the EOC provided analytical support and "on-demand" mapping to many local, state and federal agencies.

For more information on GIS support to Hurricane Irene, contact [Noah Goldberg](#) (DES) at 864-5454 or [Ilij Tota](#) at 995-5605.



Map requests for the locations of road closures and designated shelters were common during Hurricane Irene, particularly in context of designated hurricane zones and FEMA floodplains.

Westchester GIS Day November 16 & November 17

Westchester GIS User Group Meeting

Westchester Community College
Gateway Center
November 16, 2011
8:30 AM - 3:30 PM

[Download Agenda](#)

Speakers from industry, government and academia are scheduled to present.

GIS Day Map Gallery

November 17, 2011
148 Martine Avenue, Lobby
White Plains
9 AM - 3 PM

GIS Posters will be displayed in the
County Office Building Lobby.



Livable Communities Update

GIS staff recently renewed work with the Department of Senior Programs and Services (DSPS) to update and expand the existing [Livable Communities](#) utility which was integrated into [Mapping Westchester County](#) in 2008. This utility lets seniors locate relevant facilities and services, helping support independent living. The DSPS 2011/2012 update will focus on updating and adding new senior services/facilities to the existing senior database. GIS staff will also aid DSPS staff in identifying new concentrations of senior populations throughout the County using the recently released 2010 Census data, as well as identifying areas which have limited senior citizen-related services. For more information contact [Cindy Marx](#) at 914-995-3014.

Tax Parcel Viewer Update

Since publication of the last GIS newsletter, several municipalities have been added to the *Municipal Tax Parcel Viewer* maintained by Westchester County GIS. The viewer is a web-based application that enables residents to query local tax parcel data, identify property owners, print tax maps (selected municipalities), and generate “abutter” mailing labels. Each viewer includes a unique URL, which can be embedded on individual municipal Web sites. Currently available for 30 local governments, the viewer can be accessed from the [County GIS website](#). For more information, please contact [Conner Lynch](#) at 914-995-6532 or [Zhenglu Zhang](#) at 914-995-5347.

ESRI Community Maps

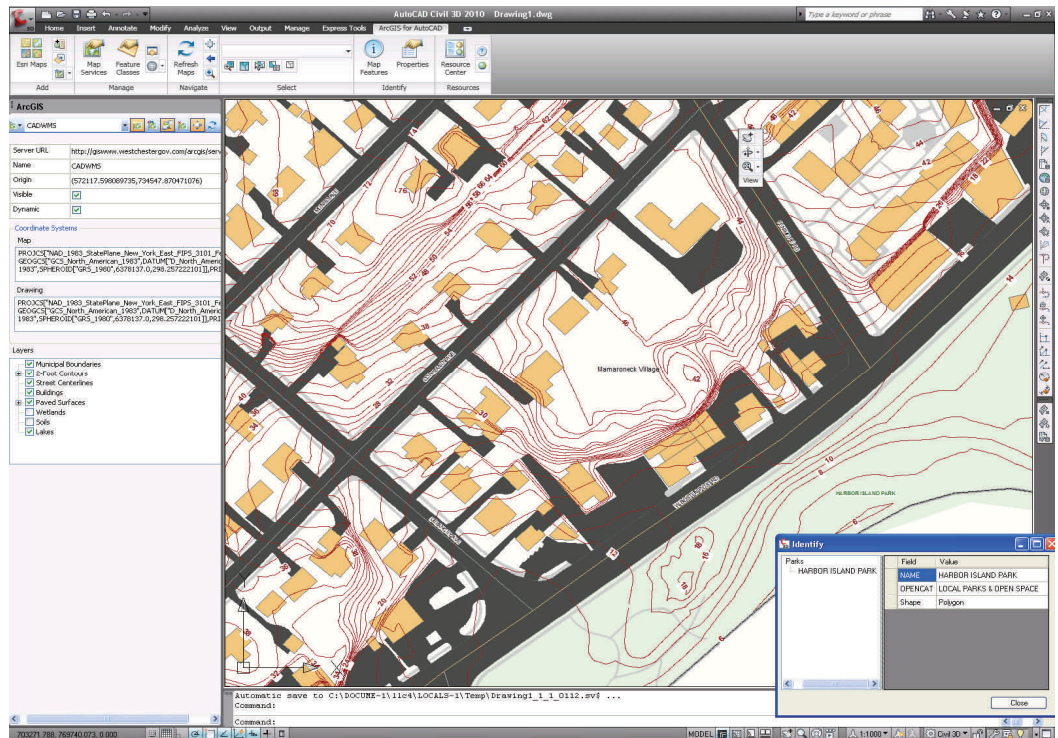
ESRI’s “World Topographic Map” map service now includes Westchester County GIS data such as building footprints, two-foot contours and selected environmental and cultural features. Available now through ArcGIS Online as a map service, the county’s base map features were combined and harmonized with other authoritative data sources by ESRI. The resulting product is a uniform base map that can be used in a variety of ESRI web and desktop applications. The map service can also be “mashed-up” with other geospatial datasets such as a user’s local GIS data or other agency map services. Currently the *World Topographic Map* is the default base map for [ArcGIS.com](#) and [ArcGIS Explorer Online](#) – both free online map viewers. For more information, visit <http://www.arcgis.com> or e-mail [Cindy Marx](#).

Building Local Government GIS Capacity

Over the past several months, Westchester County staff have met with many local governments to discuss building cost-effective GIS access and capacity in their communities. Meetings and discussions have been held with Scarsdale, Yonkers, Bronxville, Hastings, New Rochelle (PD), Harrison, Pleasantville, Pelham Manor, Sleepy Hollow and Greenburgh among others. Of particular focus has been collaborative work on the mapping and inventory of public infrastructure systems including sanitary sewer, storm water and public water distribution systems. Conversion of hardcopy maps (many in excess of 50-years old) to digital format enables the County to provide infrastructure data to municipalities in free, unlicensed “data viewers” such as ArcReader, ArcGIS Explorer (www.esri.com) or GeoPDF (www.terragotech.com) format – the latter of which is particularly useful in local public works and engineering departments. For the first time, selected local governments now have digital versions of their local sanitary sewer system networks, which GIS staff converted from the mid-1990s Westchester County sewer system evaluation study map series.

Recognizing most public infrastructure systems are often managed and maintained in non-GIS software programs, County GIS staff have been working on strategies to make the county’s GIS planimetric and topographic datasets more readily accessible to municipalities and their consultants who use AutoCAD. In working with this geospatial user community, County GIS staff are promoting use of the new ArcGIS for AutoCAD extension which is a new and free, downloadable plug-in application for AutoCAD. Over the summer, GIS prepared an instructional video “How to use ArcGIS for AutoCAD.” Many local government public water distribution system networks are also being converted and inventoried as part of an ongoing project with the Department of Emergency Services. An instructional video was also made on “How to Digitize Sanitary Sewer System.” Both videos are available on YouTube at <http://www.youtube.com/user/WestchesterCountyGIS>.

In other areas of support, the County’s GIS software and hardware infrastructure allows local governments instant access to two web mapping utilities: *Mapping Westchester County* and the *Municipal Tax Parcel Viewer*. In both instances, the County provides municipalities with a unique URL that can then be located and used anywhere on the local government Web site. *Mapping Westchester County* enables local governments to combine locally developed (and maintained) GIS data with countywide datasets already being published by the County. The *Municipal Tax Parcel Viewer* focuses more on providing access to basic tax parcel data and the ability to generate and print out abutters mailing lists. County staff also provide assistance with desktop clients such as ArcGIS and Google Earth and hope to publish map services in Spanish by the end of this year or first quarter of 2012. For more information on local government GIS work and activities, contact [Sam Wear](#) at 914-995-3047 or [Connor Lynch](#) at 914-995-6532.



Both the ArcGIS for AutoCAD extension and web map services (WMS) being published by Westchester County GIS greatly extend data access capabilities for AutoCAD users looking to access and leverage GIS datasets from the county.

GIS Projects and Data Development

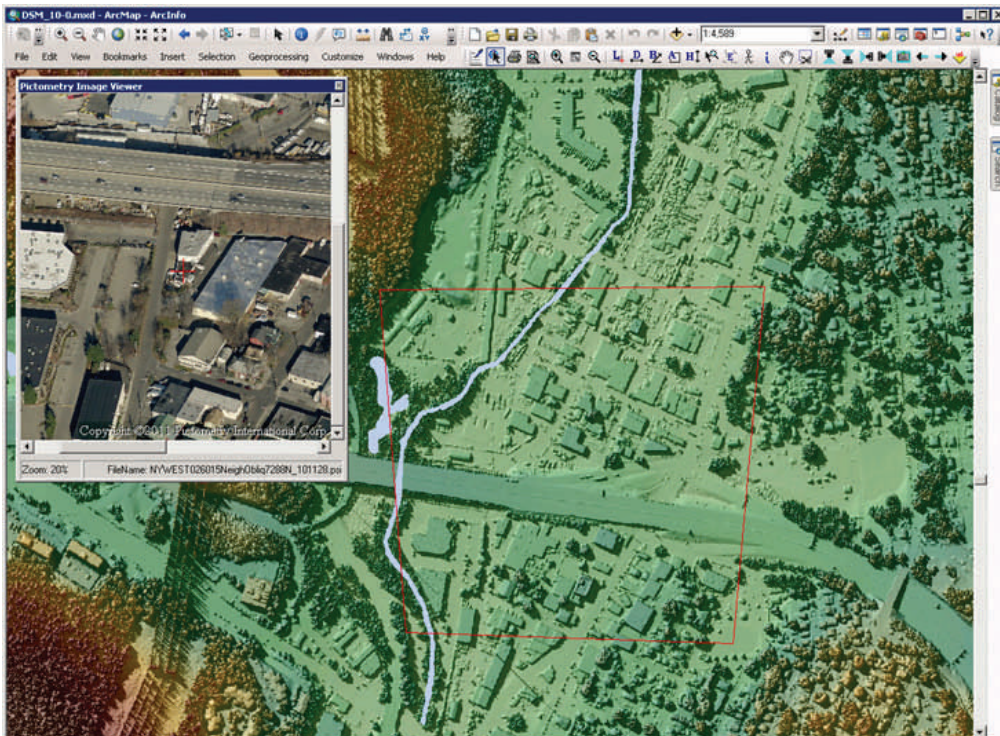
Projects: The County is working with Henningson, Durham, and Richardson Architecture and Engineering, P.C. (HDR) to compile information and create a geospatial drinking water distribution database. In addition to assembling and organizing available digital water system distribution data (GIS and AutoCAD formats), HDR is developing service area boundaries for each system, geo-referencing hardcopy or non-spatial digital (raster/image) maps, and gathering information on connections, storage tanks, treatment plants and pump stations. Critical for emergency planning and response, the data will be used within the County's GIS mapping and viewing environments in the Department of Emergency Services and at the Emergency Operations Center.

Also through an RFP process, the County selected Bowne Management Systems (Mineola, NY) to assist on conflation and related data development work on the County's street centerline file used for emergency dispatch system. Though this street centerline file system has been maintained since the initial launch of the system in 2000, maintenance has not been done in a spatially controlled environment and does not align with current spatially accurate street centerline files. Additionally, to more closely align spatial maintenance functions to the County's existing ESRI enterprise environment, the County recently migrated its street centerline maintenance software from MicroStation v.5 (Intergraph Cadtools) to GeoMedia v.6.1 (I/Map Editor). For more information, contact [Iir Tota](#) at (914) 995-5605.

Data Development: GIS staff is working with Vertex Geospatial, Inc. (www.vertexgeo.net) to develop new datasets from 2009 countywide one-meter LiDAR data, captured for the NYC Department of Environmental Protection. These products will include one-meter-resolution Elevation and Digital Surface Models, updated hydrology features (lakes and streams) and updated two-foot elevation contours ('topo'). Also developed from the LiDAR through the New York State Emergency Management (SEMO) office were new hurricane inundation zone polygons and rasters, created by the U.S. Army Corps of Engineers (New England branch). Visit *Mapping Westchester County* at <http://giswww.westchestergov.com/gismap> to download LiDAR (raw .LAS) files. For more information, contact [Deborah Parker](#) at (914) 995-3888.

Conversion of selected municipal sanitary sewer system manuscripts continues with over 240 miles of sanitary sewer lines, including pipe size attributes and flow direction, and nearly 7000 manholes, with manhole ID, having been digitized to date.

Geospatial datasets for Long Island Sound and Hudson River environs have been assembled, including: Bathymetric data (30-m grids) and contours; navigational charts (rasters) with soundings for Long Island Sound from NOAA; and both tidal wetlands and submerged aquatic vegetation (polygons) from the NY Ocean and Great Lakes Atlas (nyoglatlas.org).



This image shows the Digital Surface Model and oblique aerials (red polygon overlay indicates current image area).

Useful GIS Links

Use the following links for information on geospatial applications and data in Westchester County:

[County GIS Website](#)

[Mapping Westchester County](#)

[ArcGIS Explorer Online](#)

[NYS GIS Clearinghouse](#)

[National Map Viewer](#)

[NEARC ListServ](#)

[NYS GIS Listserv](#)

[County GIS YouTube](#)

[County GIS Twitter](#)

Base Map 2012

County GIS staff has initiated work in preparation of anticipated Spring 2012 aerial photography that will support a comprehensive countywide base map update. Several key planimetric features, such as structures, roads, sidewalks, and selected street features, have not been updated since 2004. Base map features provide registration for all countywide geospatial datasets and are used extensively in county and local government. The Westchester County digital base map meets National Map Accuracy Standards at 1"=100'. For more information on the Spring 2012 project, contact [Sam Wear](#).

Pictometry/Parcel Viewer Training

In conjunction with the [Tax Commission](#) office, county GIS staff is managing a two-year contract with [Pictometry](#), which includes the delivery of oblique imagery and street-level photography. The project also includes the delivery of specialized software to view and analyze both image types and is being made available to users in both local and County governments.

In September, complete countywide datasets were delivered, and arrangements were made to support the first week of Pictometry classroom training at the county's Education Center in White Plains. To date, 118 county and municipal staff have been trained with the Pictometry *Electronic Field Study (EFS)* and *Facet ParcelViewer* software. Broadly used in the assessment and public safety disciplines, it is anticipated the imagery will be widely used in other government program areas including planning, public works and public health. Additional classes are scheduled for the week of November 14. For more information, contact [Deborah Parker](#) at 914-995-3888.

Articles and graphics in this newsletter prepared by: Xiaobo Cui, Connor Lynch, Cynthia Marx, Deborah Parker, Dongming Tang, Ilir Tota, Sam Wear, and Zhenglu Zhang.



<http://giswww.westchestergov.com>

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Updated Criminal Justice Data Viewer

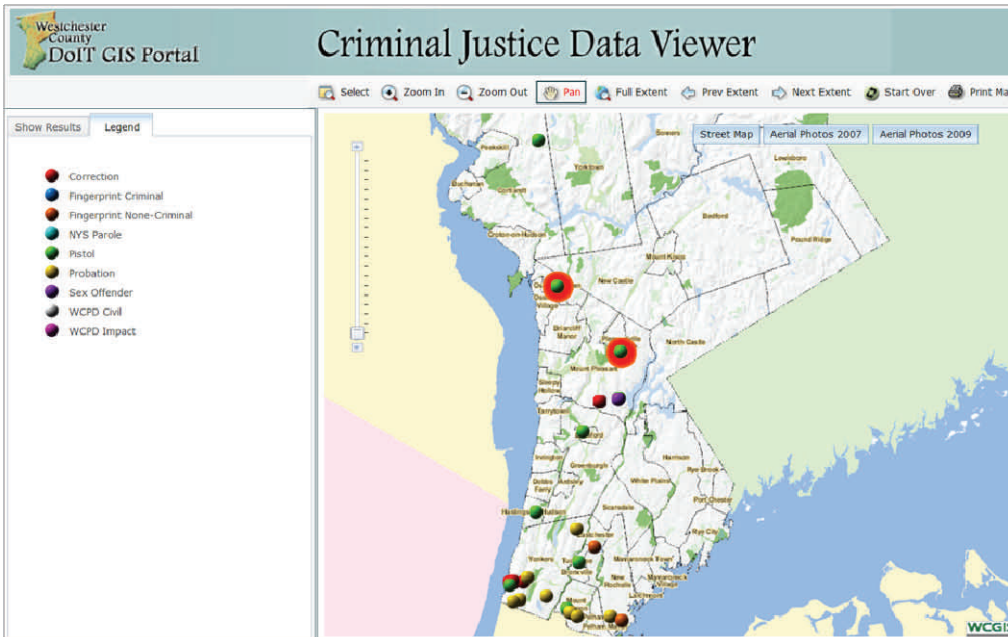
Geographic location is an important piece of information in crime investigations and GIS is increasingly being used to support a wide range of spatial mapping and analysis. The Westchester County shared *Criminal Justice Data Warehouse (CJDW)* application was developed to “facilitate searching across

various diverse criminal justice data sources to assist investigators in easily and quickly obtaining critical criminal justice information.” The map viewer enables investigators to visualize criminal data from a variety of sources both spatially and thematically, and integrate with other datasets from County’s

spatial data warehouse. The application is currently used by over 40 agencies inside and outside of county government, including state and federal agencies.

Several years ago, GIS staff assisted in the development of the initial map viewer using ESRI ArcIMS server technology. With the current retirement of ArcIMS server technology, GIS staff has worked closely with other DoIT staff to redesign structure and workflow for the map component using new ArcGIS Server technology with cached map services and JavaScript API.

The new map viewer provides better map performance, an easier-to-maintain structure, a more user-friendly interface, and enhanced functionality. Based on authoritative datasets collected and maintained by as many as nine government public safety agencies, the new viewer generates a query result by categories, including correction, sex offender, probation, pistol permits (county clerk), fingerprint criminal, fingerprint non-criminal. Users have various options for rendering results on the map. Users also find improved flexibility in using the new selection tool, easily moving between map and results list, viewing highlights, printing maps and search results. For more information about this map viewer, contact [Zhenglu Zhang](#).



As shown in the map legend to the left, data in the viewer is symbolized differently based on data source (i.e., NYS Parole, pistol permits, fingerprint databases, etc.). Users can display one data source from a dropdown list, or click the dots on the map to get detailed record information.