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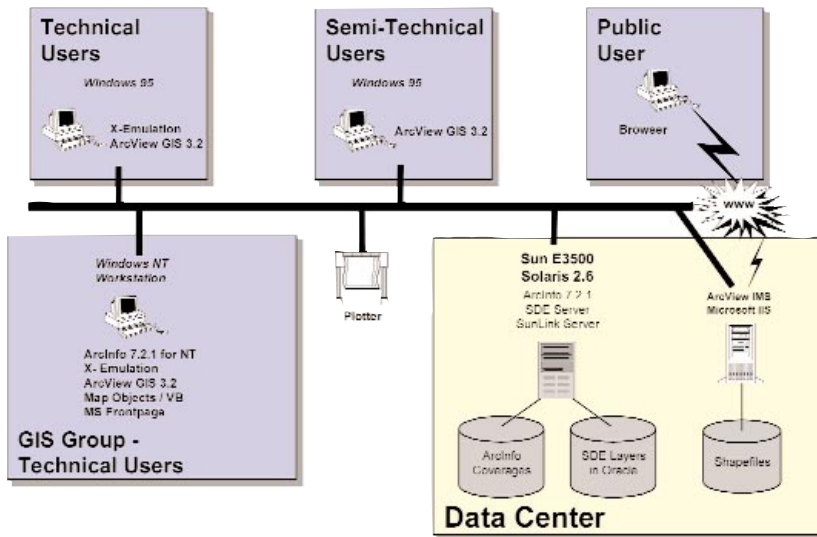
GEOGRAPHIC INFORMATION SYSTEMS

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Westchester County GIS Architecture Redesign

New System Will Take Advantage of Many Recent GIS and Information Technology Advancements



Centered around several ESRI software products, Westchester County GIS will provide access to applications for a wide range of users.

Over the past year, the Westchester County GIS has been working with ESRI to design a new overall GIS architecture which will be more open and accessible to county agencies and offices. While the existing architecture has served the county and GIS staff well since the early 1990's, a redesign of the GIS infrastructure was desired to take advantage of the recent advancements in hardware and software technology. The new architecture is intended to incorporate state-of-the-art database management and Internet software tools, robust centralized data servers, the latest GIS software components, and easier user interfaces. Major system changes have been in the works since the middle of 1999 and are anticipated to continue throughout most of 2000.

Old Architecture:

For many years, the core GIS group was self contained, with GIS users limited to one work group and all users working with X-terminals on the same UNIX workstation. The backbone of this system was a pair of IBM RS6000's running AIX. PC's running Windows NT were used as X-terminal emu-

lators and as ArcView workstations. However, the communications between UNIX and NT were too slow to allow for central data sharing, so each user had to create a separate data collection. This made maintenance of the central GIS database difficult.

Plotting was handled by a large document Calcomp electrostatic plotter, which was state of the art when it was new, but has been made obsolete by newer, more flexible and less expensive ink jet printers.

Phase I - UNIX Server Upgrade:

The core of the new system includes a new Sun E3500 UNIX machine which serves as the primary data server. It makes use of sophisticated new networking software (SunLink Server) to make ArcInfo coverages available to desktop clients (like ArcView) as though they resided on a Windows NT server. This greatly simplifies data administration, allowing all users to share one file system.

GIS users have shifted output to Postscript capable printers including Tektronix 600 and HP2500cp large format printers and

Tektronix 560 color laser printers. The new Sun Server has been installed

Phase II - Client/Server software Upgrades:

Using the new server as a foundation, GIS staff are developing a next generation GIS database using Oracle and ESRI's Spatial Database Engine (SDE). This high performance configuration will allow for the tremendous expansion in both data and users that are anticipated over the next several years. With this configuration it will be possible to manage large tax parcel and planimetric/or orthophoto databases.

On the client side, the county is moving ArcInfo 8.0 from the UNIX environment to the NT desktop. This will distribute processing power more evenly and will allow users to take advantage of new software tools from ESRI which depend on NT. This should make the ArcInfo environment more powerful and much easier to use. Much of this work is scheduled to be completed in first half of 2000.

Internet:

Another major area of expansion has been the county's use of the Internet. Currently, GIS staff support a modest, ArcView Internet Map Server(IMS) based, online mapping system which is expected to be expanded upon both scope and performance over the next year. By taking advantage of the recent server changes, we will begin serving much larger datasets, including tax parcels and other detailed data. Keep an eye on the county's Web site in the second quarter of the new year for new applications featuring Map Objects IMS and ArcIMS.

Overall Design Goals:

WCGIS is committed to giving maximum functionality to the greatest possible number of users. These users include people in various county departments, local governments, non-governmental organizations, the private sector and interested citizens at home or in a public library. The changes being made behind the scenes today are establishing a solid base for realizing this vision in the new millennium.

GIS NEWS

Maps Presented at the 1999 NYS GIS Conference

Westchester County contributed a total of four GIS map posters at the annual NYS GIS conference in Albany, October 23-24. Titles of individual posters included: *Visualize Westchester County GIS Data in 3D*, *Westchester Telecom Fiber Optic Network Scoping Project*, *Municipality in-a-Box*, and *Town of Greenburgh Water and Sewer System*. Examples of the conference maps can be found at <http://giswww.westchestergov.com>

GIS Staff Assists NYS GIS Programs

GIS Manager, Sam Wear, recently attended a meeting of the NYS GIS Coordinating Body in Albany, New York on December 6th. The Coordinating Body, which is administered through the NYS Office for Technology, is a 15-member committee that oversees and makes recommendations on statewide GIS initiatives. Sam continues to serve as Chairman of the Finance Work Group. County GIS staff member Laura McGinty contributes to the Communications Work Group and Ana Hiraldo is scheduled to serve as a liaison to the Local Government Work Group starting in 2000. For more information on the work of the NYS GIS Coordinating Body, contact Sam Wear at stw1@westchestergov.com

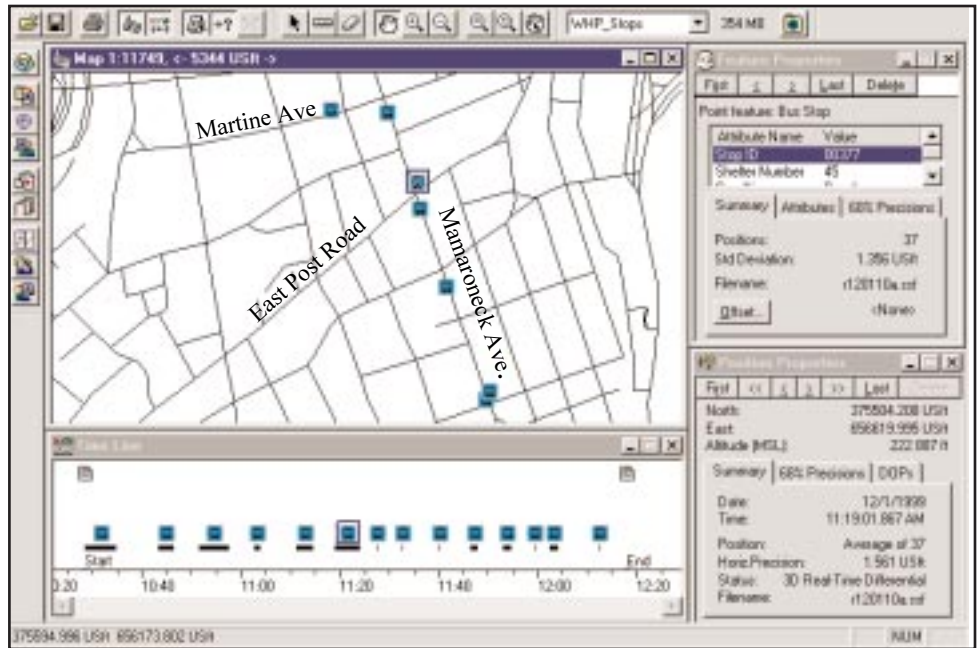
ArcView Training Continues

Westchester County GIS staff whom are certified ArcView instructors recently conducted two separate *Introduction to ArcView* training courses. In August, Ana Hiraldo held the two-day GIS course at the Northern Westchester BOCES computer center in Yorktown Heights for BOCES and Teatown Reservation Preserve staff. In late September, Xiaobo Cui conducted the introductory course for six county staff and two local government representatives. Contact Ana Hiraldo at aeh2@westchestergov.com for more information on training opportunities.

GIS on CBS

GIS staff member recently Sam Wear recently appeared on the WCBS-FM Sunday morning radio program "Dialogue 101" hosted by Al Meredith. The weekly community affairs program, which is aired from WCBS studios in New York City, focuses on a range of technology issues and how it affects citizens throughout the metropolitan region. Sam highlighted the growth of GIS technology in government in both Westchester County and New York City highlighting its use in the areas of infrastructure management and emergency services.

County GIS Begins GPS Data Collection Efforts



Top graphic shows locations of bus shelters mapped along Mamaroneck and Martine Avenue in downtown White Plains. Bottom graphic shows the time line when points were collected.

County GIS staff member Laura McGinty, along with WCDOT staff Greg Sullivan, have initiated a county-wide GPS data collection effort on mapping the locations of approximately 300 bus shelters along the Bee Line system. An accurate and up-to-date inventory of the shelters will be useful in operational and long range management of the shelters which are strategically located throughout the bus system. In addition to capturing the geographic location of the shelter, GIS staff is also recording attribute data on the shelter such as shelter number, bus stop number(s), type/make, and shelter condition. With the Trimble Pathfinder XR-10 unit being used on the project, bus shelters are being mapped to an accuracy of plus or minus three (3) feet.

The bus shelter GPS data collection project is one of several GPS initiatives county GIS

staff anticipate during the upcoming year and has been very useful in gaining in-field experience with satellite configuration, line-of-sight issues such as building obstructions, establishing initial timetables for in-field data capture, and the "post processing" of data collected in the field. County GIS staff currently use Trimble GPS hardware and software which simplifies exporting GPS data into GIS and CAD software packages such as ArcView and AutoCAD. Other areas of county government which will be utilizing GPS in 2000 include environmental and public health data collection, boundary surveys, park trail mapping, and signage inventories. For more information on GPS data collection efforts in the county, contact Laura McGinty at lam7@westchestergov.com.

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County-wide Base Map Review Continues

Commissioned by County Executive Andy Spano to review the feasibility of creating a countywide digital basemap, the Westchester GIS Task Force is continuing its work with the review of a recently completed study by Plangraphics, Inc. Earlier in the year, Plangraphics met with over 20 organizations and groups with an interest or need in having access to an accurate digital base map for mapping applications. Having summarized and analyzed all of the data collected during the study, Plangraphics has submitted draft *Technical Specifications*

which are anticipated to be used as the basis of a *Request for Proposals (RFP)* scheduled to be released in early 2000. Comprised of members representing local and county government, utilities, state organizations and professional organizations, the Task Force continues to also work on project funding alternatives, data development standards, data access and dissemination issues, and consistency with other statewide mapping initiatives. For more information on the work of the Task Force, contact Sam Wear at stw1@westchestergov.com.

Tim Gulden Leaves GIS-land for Maryland

Known as "The Doctor", Tim's lasting impact on the county's GIS program is secure

After guiding and overseeing all technical components of the county's GIS project for the past eleven years, Westchester County GIS staff member Tim Gulden will be leaving government service to begin his doctoral education at the University of Maryland in January. Recognized throughout the ARC/INFO and ArcView user group community as an excellent GIS software programmer, Tim is one of the original members of the county's GIS program, which was established in 1987.

Tim started his county career as an intern in the Department of Planning during the summer of 1987 while a student at Sarah Lawrence College. As the county GIS initiative emerged, he quickly began to apply his self-taught computer programming skills on early GIS mapping projects, designing first generation databases, and yes, even digitizing. From there, Tim led the county's GIS hardware and software architecture through UNIX, command line ARC/INFO, desktop ArcView, and now today, into an environment of enterprise database management tools (Oracle) and developing GIS applications for the World Wide Web. Over the years, he has been a frequent presenter, both in context of oral presentations and GIS posters, at



ARC/INFO user group conferences. "In my 10-years with the county's GIS project, I have worked on a wide range of projects which have continued to make my job challenging and professionally rewarding", he says. "A few of the most challenging and enjoyable projects included the update of the 1990 TIGER file, development of the county's central user interface with ARC/INFO in the mid 90's, and the recent

project to explore the feasibility of building a large scale fiber optic network throughout the county". Never too busy to help a colleague with programming or technical assistance, Tim's friendly personality and presence in the office will be sorely missed. His contribution to the growth and development of GIS technology throughout Westchester County is greatly appreciated and everyone at

Local Government News

County Staff Begin Design on Internet GIS Applications with Municipalities

The end of 1999 marks another significant year in the growth and development of GIS throughout local government in Westchester County. County GIS staff is currently working on user needs assessments and implementation plans for both the **Towns of North Castle** and **Pound Ridge** which are being supported by grants from the New York State Archives and Records Administration (SARA). Both of the studies are scheduled to be completed early next year. Over the past several months GIS staff has also met with representatives from the **Town of Eastchester**, **Village of Hastings**, **Village of Dobbs Ferry**, **City of Peekskill**, and most recently with the **City of Mount Vernon** which are all considering user needs studies in the year 2000. The county continues to provide technical support and consulting services to the **Towns of Lewisboro**, **Ossining**, **Greenburgh**, and **New Castle**.

County GIS staff are using ESRI MapObjects Internet Map Server (MOIMS)

software to provide tax maps over the Internet. At least two municipalities have shown interest in providing access to their local tax maps via the county's web site. More information on this new and exciting component of the county's GIS program will be presented in the next newsletter.

The **City of New Rochelle** GIS project continues to move forward with the development of planimetric data and orthophotography. After obtaining digital data from Westchester County GIS, planning consultants F.P. Clark Associates has produced a series of maps for the **Village of Mt. Kisco** as part of its new comprehensive development plan. New GIS-based maps in the plan include transportation facilities, planning, zoning, and land use. For more information on local government GIS activity and municipal contacts, refer to the county's GIS Web page at <http://giswww.westchestergov.com> or contact Ana Hiraldo at aeh2@westchestergov.com.

Metadata Training

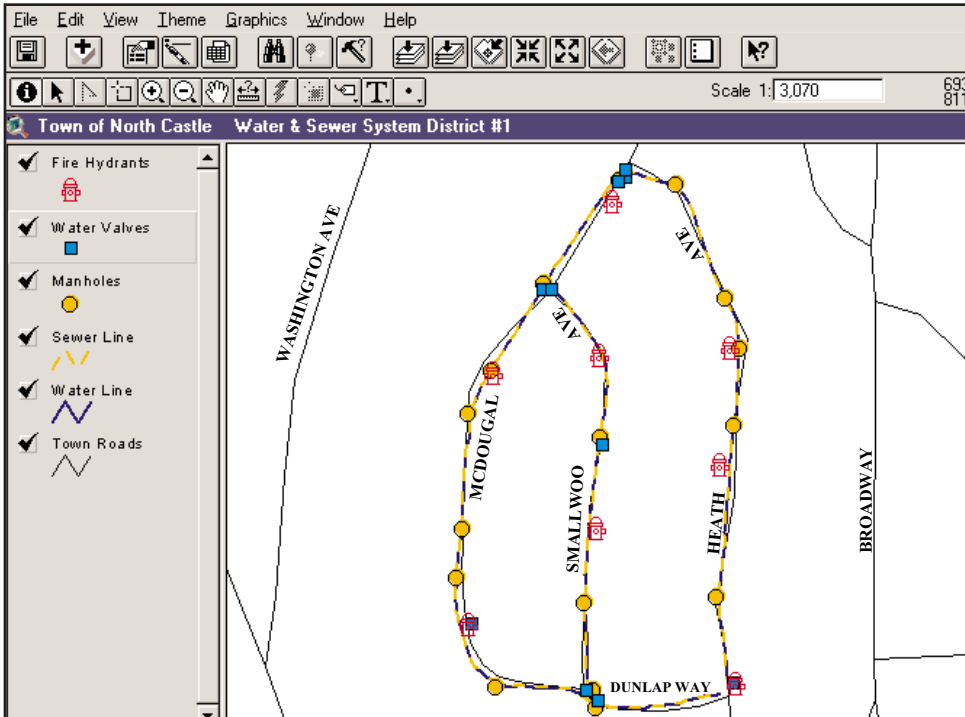
As part of its "Don't Duck Metadata" grant from the Federal Geographic Data Committee (FGDC), Westchester County GIS conducted its first metadata training session on October 21st in White Plains. County GIS staff member Ana Hiraldo conducted the 90-minute training session which included representatives from government and business. Attendees were presented a brief summary of the federal metadata standard which Westchester County GIS utilizes, instruction on how to access and complete metadata forms, and an overview of the New York State GIS Clearinghouse which houses metadata from organizations throughout the state. Three additional sessions are to be held over the next nine months, with the next program scheduled for February 29 at BOCES in Yorktown Heights, New York. For more information, registration, and directions to the BOCES Yorktown Heights campus, visit the Westchester County GIS web site at <http://giswww.westchestergov.com/>. Registration is free.

County GIS Assists North Castle with Infrastructure “Pilot Project”

As part of on-going GIS work with the Town of North Castle, County GIS staff are assisting with a pilot project aimed at capturing the locations of the town's water and

sewer system infrastructure using Global Positioning Systems (GPS). The project will serve as a guide to future town infrastructure data development and is intended


to be integrated with existing GIS data layers provided by the county. Using information provided by the Sal Misit from town sewer & water department, GIS staff captured several features including manholes, fire hydrant, water valves, and pipes. For more information about the project contact Ana Hiraldo at aeh2@westchestergov.com.



GPS data collection in Water District No.1, Town of North Castle. Sewer and water infrastructure features overlaid with existing digital road data from Westchester County GIS.



GIS staff, Laura McGinty, mapping a manhole location with a Trimble GPS unit on General Heath Avenue in North Castle.



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