GIS InterMap Adds Easy Property Search

The GIS InterMap was created in 2006 as an Internet-based GIS Mapping service that allows the public and private sector to access GIS property information and other important GIS data. Up until that point, there was no way to access GIS information outside of the Delaware County Building. We have recently added a new front-end interface to the InterMap that allows the user to search for property records without having to load the mapping page. This allows users that don't need to view or print the map to quickly search for a property, and link to information including current owner, basic building sketch, and treasurer's tax statement. If a map is needed for the property, users simply click the "Launch Map Viewer" button to open the GIS map page in a new browser window. The search window and map window are linked, so all a user has to do to locate a search result in the Search results is to click on the associated "PIN" (parcel ID number). The map page window will automatically zoom and pan the map to the selected parcel. The map portion has the ability to create an Adobe Acrobat .pdf document if the user needs to save an electronic version of the map, or to simply create a quick HTML-based print for fast printing. The map portion of the site retains the ability to search for property or properties if the user does not require or wants to use the seperate interface. Users are urged to turn off or allow pop-up blockers for these sites due to the fact that much of the functionality of the site (printing, etc...) requires a new browser window to be opened. Updated parcel information is uploaded to the website on a regular basis, or as needed.

The new property search interface allows for quick and easy retrieval of parcel information.

Oblique Aerial Imagery is Now Available
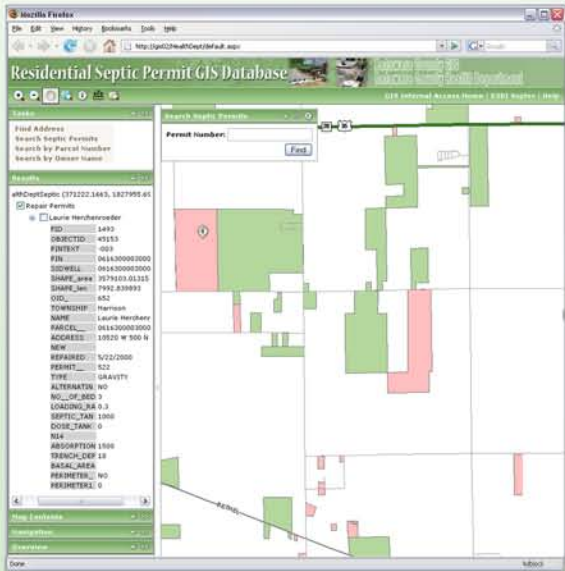## No Longer are GIS Users Limited to a "Straight Down View"

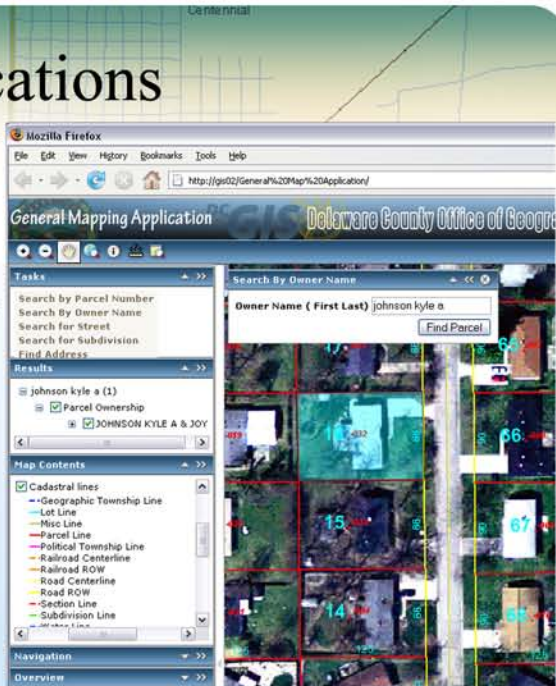*Screenshot of the MultiVision Oblique Imagery Viewer*

During May and June 2007, several aircraft crisscrossed Delaware County taking digital images of the ground. These images were not the typical straight-down aerial photos that we have all grown to use on daily basis. These images were taken at an approximately 45° angle. In coordination with the Delaware County Assessor's Office and the Delaware-Muncie Metropolitan Plan Commission, MultiVision USA was contracted to provide Oblique Aerial images for the entire county. To acquire these images, an aircraft outfitted with 5 special high resolution digital cameras follows a flight path crossing back and forth across the county, snapping 5 images at a time as it flies. These images are then taken back and processed, tying them to their exact coordinates on the ground. The images are then retrievable by the special software provided by MultiVision. A user can simply select a location in the county and then view that location from 4 different directions, allowing them to see all 4 sides of a property or structure. This is incredibly useful for assessors to fairly estimate the value of structures. It enables the assessor to view the property without having to physically go out to inspect. The images can also be used as an exhibit during the appeals process. The Plan Commission is using the images as part of the packet of materials handed out to board members when handling zoning appeals and other cases. Economic Development has benefited from the new imagery and has used it as visual aids to help bring new companies to Delaware County. Public Safety is another important user of the imagery. The County Sheriff Department has had officers attend training on the software. The images could be especially helpful when planning SWAT and drug raids. The imagery is accessible from the Emergency Operations Center in the Justice center for all police and public safety personnel to use. The next step in deployment is integrating the image viewer with the 911 dispatch consoles.

Custom Web-based Map Applications

This year, the GIS department acquired a new ability with the upgrade of ESRI's server-based GIS software. The new ArcGIS Server allows the GIS office to quickly and easily create web-based mapping applications from any existing or new GIS map document. The advantages of this type of application versus the standard ArcReader GIS, to the fact that the maps run in the internet browser and there is no software for the end user to install. This all means less time for the GIS office to complete maintenance and upgrades. This also means much of the processing is taken care of on the server, and not on the user's computer, speeding up the time it takes to create maps. It also allows the creation of custom searches for any GIS layer or associated information, making the web applications totally customizable for each office or user's needs. So far the GIS office has created custom applications for many offices including the County Health Department Residential Septic Division, County Building Commissioner, Assessment, and a general map for anyone to use. Currently, the web applications are only available to users connected to the government intranet, and are not available outside of these buildings. We are planning to acquire a dedicated GIS web server to allow us to make available these custom GIS map applications to users outside of the government complex soon. There is an index website that users can access some of the applications located here: http://gis02/index.html. If you would like a custom web application for your office, please contact the GIS office to set up a needs assessment.

The General Mapping Application has the same functionality as the General ArcReader, but is accessible through the user's internet browser, and does not require GIS software to be installed. The application allws the user to search by parcel number, owner name, street name, subdivision name, or address.


The Residential Septic Permit Application (left) was developed for the County Health Department and includes special GIS database of new and repaired septic systems linked to the parcel layer. The user can search by permit number, owner name, parcel number, and address. This provides an graphical way of viewing these reocrds on a map that was never before available. Shown at left is the associated information avaialble for an identified permit location.

GIS FAST FACTS

52,951	Number of GIS address points in Delaware County
60,818	Number of GIS Parcels
194,515	Number of parcel annotation features (dimension, lot, other text)
808,283	Number of located 911 calls in GIS since 1999

Section Corner Tie Sheets

Creating a Simple and Easy Way to Retrieve Documents

Section corner tie sheets are documents contain the section corner location information for the Public Land Survey System (PLSS). These markers are from which most other land surveys are originate from. The County Surveyor is charged with perpetuation of these section corners, including locating missing corners and having the new tie sheet documents created by a licensed surveyor. Other private surveyors use these documents as a point of origin to start their new land surveys. The GIS Office is scanning and indexing all of the section corner tie sheet documents that reside in the County Surveyor's Office and linking them to a GIS database so that they can be recalled dynamically from a map, database, or website. Up until now, there has no been an easy way to retrieve these documents electronically outside of the Delaware County Building. In addition to providing enhanced and easy access to these documents, it will become quickly apparent on the map where the locations of section corners that do not have tie sheets are located. Mary Fleming, part-time GIS Analyst and Ball State Graduate Student is spearheading this project. She has started by a creating a GIS layer of half and quarter section lines on which the corners will be placed. This layer will be fundamentally helpful for other GIS functions such as land parcel maintenance and corporate limit updates. We hope to have this project completed in the first quarter of 2008.
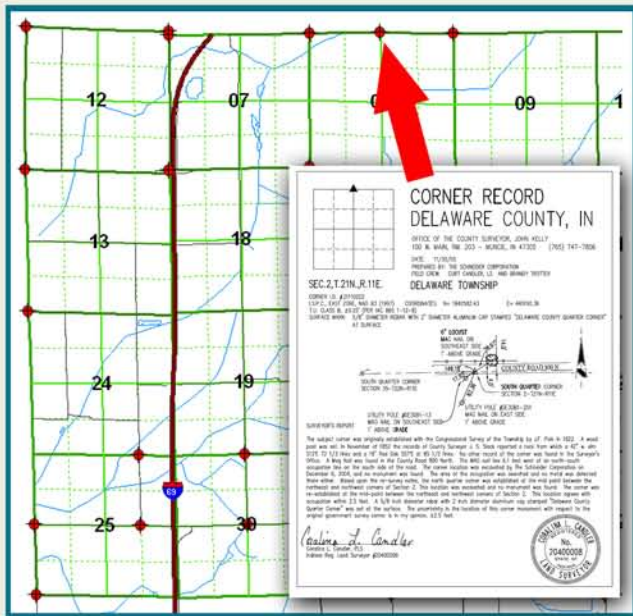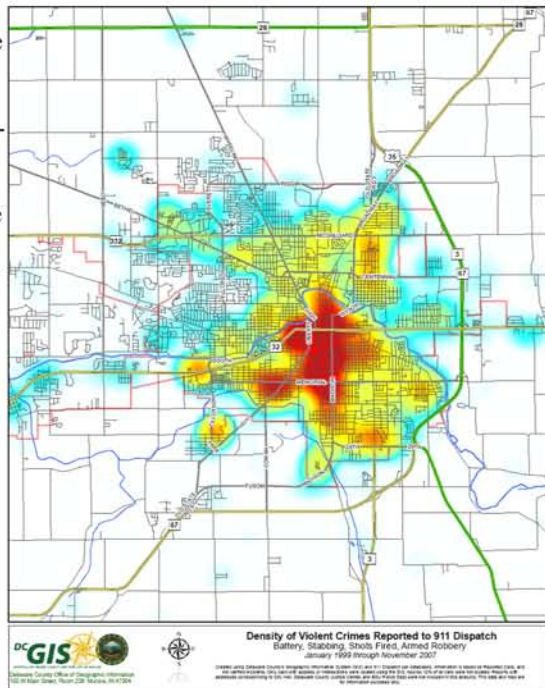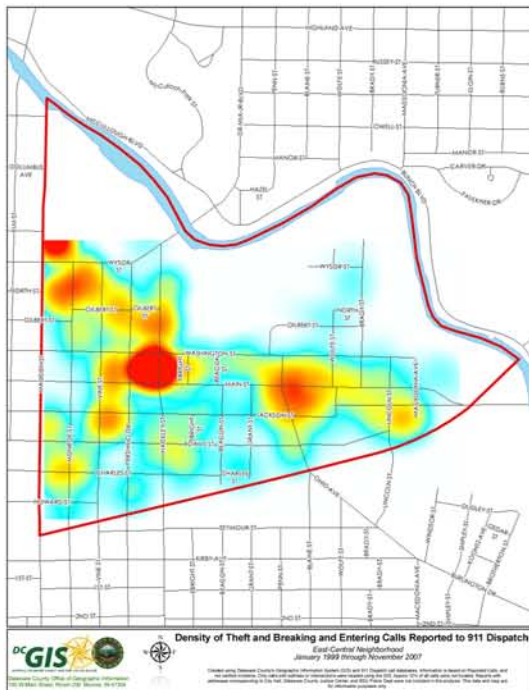
Mapping Crime, Emergency Calls
Using GIS Technology to Give a Geographic Picture of Where Crime is Happening

One aspect of GIS that Delaware County and the City of Muncie have not explored in the past is crime and other emergency/911 reports. This has the potential of providing valuable information that has otherwise not been available. This summer, the City of Muncie applied for a Federal Weed and Seed grant aimed at preventing, controlling and reducing violent crime, drug abuse, and gang activity. The Weed and Seed initiative is a community-based, comprehensive multi-agency approach to law enforcement, crime prevention, and neighborhood restoration. It is designed for neighborhoods with persistent high levels of serious crime and corresponding social problems. In order to qualify for this grant, Muncie had to show where high levels of certain types of crimes have been reported over a certain time period. GIS is designed to do this type of analysis, and provided the maps and tabular data needed in order to fulfill the grant application requirements. In order to map out the reports, a database table containing the address and call description was created by Adam

Density of Violent Crimes Reported to 911 Dispatch
Battery, Stabbing, Shots Fired, Armed Robbery
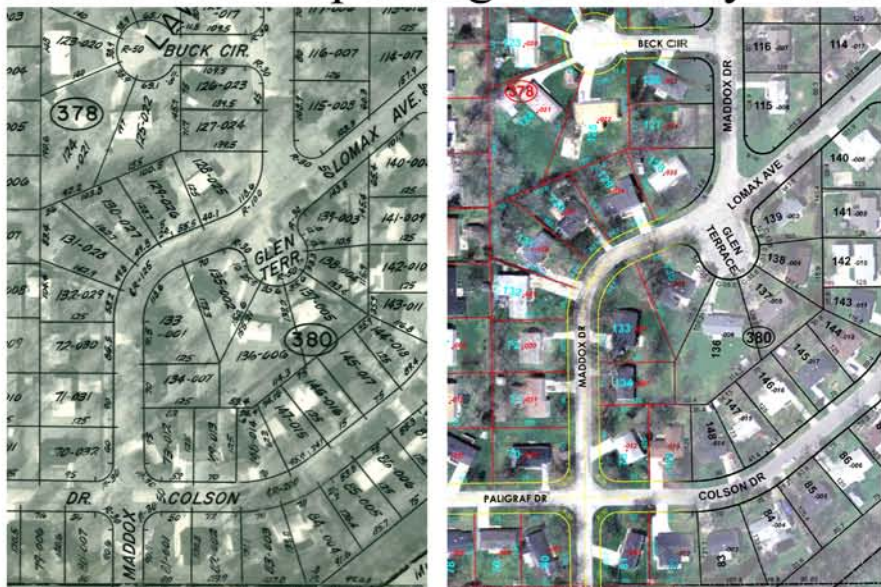January 1999 through November 2007

Williams, City of Muncie IT from the master 911 call and police records databases. The tables were then processed using a Geocoding locator (a part of the GIS software that indexes the locations of addresses and intersections using the County's address point and street address range GIS data). Over 800,000 calls since 1999 were processed. The end result is a master GIS database of the reports indicated by a point on the map for each call. This GIS layer can then be searched, categorized by date or report type. Density maps showing "hot spot" areas of certain report types can be created as needed. This analysis can then be used to determine if public safety is covering the right parts of the city in sufficient amounts. GIS can also expose trends over time, both yearly and times of day. The GIS office will be working closely with public safety officials to make sure the information they need is provided.

Density of Theft and Breaking and Entering Calls Reported to 911 Dispatch
East-Central Neighborhood
January 1999 through November 2007

Crime Density Maps
The maps at left and upper right show the density of selected types of 911 calls. The map to the left shows all theft and breaking and entering in the East-Central neighborhood area from 1999-present. The above map shows all violent crimes (Battery, stabbing, shootings, and armed robbery) for the greater Muncie area for the same time period.

Parcel GIS - Updating the County-Wide GIS Land Records System

Delaware County has been working towards the goal of a County-wide computer-based land records mapping system for over a decade. The first GIS person hired was selected to create this parcel mapping database. Along the way it was realized that it was necessary to have other important information, like aerial photos, river and stream centerlines, road centerlines, and other information in order to properly create the parcels. All of these steps added time to the project, adding several years of time to the process. Also along the way, computer technology was making huge leaps forward, and GIS technology was evolving with it. Keeping up with these changes became almost impossible, while still trying to work towards completing the parcel and associated projects. As more and more offices and agencies found out that the information that is now a part of the GIS database could help them in their daily tasks, more and more requests started coming to that GIS staff person, further delaying the project timeline. In 2001 the Delaware County Office of Geographic Information was created. Even though it was now an independent office, the GIS Coordinator still worked towards the goal of a completed parcel GIS layer. Dozens of Ball State interns and part time GIS staff came and (Continued, page 4...)

*A comparison of the new GIS-based (digital) parcel maps (right) and the old paper and mylar parcel maps (left) are shown above. Maintenance is much easier and is **instantly** available to all GIS users, instead of having to reproduce red-lined hard copy plat maps across 4 different County Offices. Also shown is how the new GIS parcel display allows color-coding of the property lines (left half of the right image) in order to show their function, such as right of way, old lot lines, and subdivision boundaries. Parcel annotation (text labels) can also be color-coded.*

(Parcel GIS, Continued....)

went and the County was closer to having a completed parcel layer. Unfortunately, because of different degrees of work quality, and the lack of workflow for entering in new subdivisions and parcel splits and combines, and the lack of a way to tie them to the County owner/tax database the information was never up to date. Many people were frustrated at the slow pace that the parcel project was moving, including the GIS Department.

After years of wrestling with how to complete the project, it was decided to have a private company hired to convert the existing information, in conjunction with the Auditor's official plat books into the new industry-standard GIS linear-tag cadastral geodatabase model. (Cadastral is an adjective that means having to do with the comprehensive register of the real property of a specific area, and commonly includes details of the ownership, the precise location, the dimensions, area, and the value of individual parcels of land.) The Sidwell Company from St. Charles, Illinois was chosen to complete the conversion process. A team of over 40 highly trained technicians spent over 3 years creating the new parcel database. The new cadastral GIS database was delivered along with a specialized toolset called Parcel Builder that is an extension to the core GIS software the County uses that simplifies the parcel maintenance routines, and increases efficiency. During the conversion process, new subdivisions and parcel splits and combines were still occurring and creating a backlog. As soon as the new layer was delivered the GIS office began adding the dozens of new subdivisions and developments that were missing. It took the GIS office nearly 6 months to bring them up to date. Currently, the Auditor's Plat Room staff is working with the GIS office toward compiling the associated surveys, deeds and other records needed in order to complete all of the splits and combines that had become backlogged.

Even though there is some missing information in the parcel layer, it has become an integral part of the GIS database. Most Delaware County Offices, as well as the City of Muncie and Sanitary District use the parcel layer in conjunction with the rest of the GIS database in their daily workflows. The parcel layer syncs nightly with the County's CAMA (Computer Aided Mass Appraisal) owner and tax database which allows users to search based upon any of the information available, including parcel number, ownership, address, or subdivision. The parcel GIS is available from anywhere within county and city government though ArcReader and ArcGIS Server custom web-based mapping applications. The parcel information is also available to the public through the GIS InterMap internet search and mapping application.

GIS User Spotlight

The GIS User Spotlight section of the Newsletter will feature a different person every issue who uses GIS in their job to help increase efficiency, reduce time spent on project, or to better organize information.

Angie Moyer- Computer Technician
Delaware County Engineering Department

Angie Moyer has been working in the County engineer's office since 1994. She is a trained AutoCAD technician and has moved into the realm of GIS over the last several years. She is one of the few people outside of the GIS office and Plan Commission who have editing privileges to parts of the master GIS database. Angie uses the GIS system on a daily basis, creating maps and looking up important information that is relevant to the operation of her office. She also creates her own GIS data for projects specific only to the Engineer's office. One of the main County-wide GIS layers she uses and edits is the County's geocoded (address-ready) street centerline layer. She uses it to determine lengths of road segments for paving and other estimates. She also keeps track of segments using the Federal numbering system in order to meet State certification requirements. She maintains several attributes for the road segments, including surface type (for paving purposes), road classification (for traffic counting and permitting), and whether the segment of road is public or private. Angie also maintains the County Bridge layer, which includes information on the individual bridges that are the responsibility of the county. Eventually, bridge photos and inspection records will be linked through the GIS, allowing simple retrieval of this information. Angie also uses the county's GASB (Governmental Accounting Standards Board) GIS layers which were compiled by a private firm that lists all of the assets and their values of county property including roads, bridges, storm drainage systems, and sidewalks. On many occasions, Angie uses the GIS drawing and survey entering tools to determine the course of legal drains as described by the County Surveyor's drainage cards. Angie is one person who is leveraging the power of GIS to get relevant information into the hands of those who need it.

DC GIS
Mapping Delaware County and the City of Muncie

Delaware County Office of Geographic Information

The Delaware County Office of Geographic Information manages the County's Geographic Information System (GIS).
Our GIS is a computer-based mapping system which relates various types of data and information with real-world locations.
The Delaware County GIS Department has three primary goals:
To efficiently create and maintain a state-of-the-art GIS which accurately and comprehensively represents all relevant and useful geographic data and informtion about the County, to deliver this data to the general public, private sector clients, and associated governmental agencies, and to provide expert GIS consulting and application development to all government entities, agencies, citizens and organizations whenever possible.

100 W Main Street Room 204, Muncie, IN 47305
765.213.1269   Kyle Johnson-GIS Coordinator   kjohnson@co.delaware.in.us   www.co.delaware.in.us