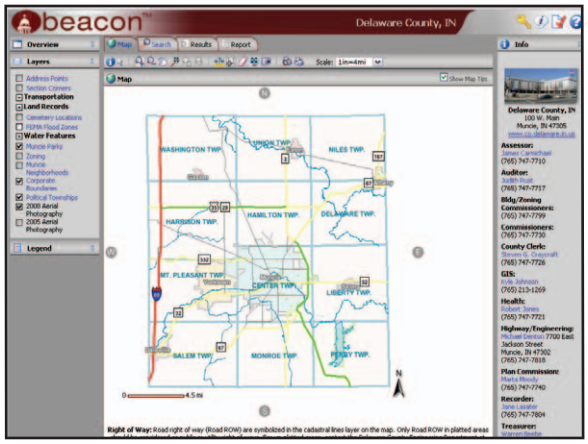
DC GIS
MAPPING DELAWARE COUNTY AND THE CITY OF MUNCIE

Delaware County
GIS News

December, 2008

In This Issue

Delaware County Launches New Public Access GIS Web Site



Delaware County has launched a new GIS web site with increased functionality, speed, and simplicity of use. The Beacon interactive public access tool provided by the Schneider Corporation allows users to view County and City information, public records and Geographic Information Systems (GIS) data via an online portal. The site combines both web-based GIS and web-based reporting tools including CAMA (property database), assessment, and tax information into one user friendly web application. Delaware County will work with Schneider to incorporate the County's new property database when it comes online in early 2009. We are hoping to provide additional property information through the site that has previously only been available on printed property cards such as information about structures, number of rooms, square footage, year built, assessed value and much more. Street-level photographs are planned to be added once they have been collected by the Assessor's office. An automatic update process will be set in place that will ensure the property records, as well as any dynamic GIS data will be updated to the web site from the County's GIS server on a nightly basis.

Currently, users can search by owner name, property address, or parcel number (13 digit PIN/Sidwell number). Search results, reports, and maps can be printed or saved as an Adobe Acrobat pdf with the ability to customize the print layout, title, and other elements. Users can also send web site links (URLs) to specific property records. The site allows users to select multiple properties on the map to create custom lists, which users will be able to download as a spreadsheet or mailing labels. Advanced selection tools will allow you to select parcels or other map features within a distance that the user specifies. Additional functionality includes the ability to retrieve Section Corner Monument information and download the tie sheet surveys in a .pdf format. Several transportation GIS layers are available including traffic counts, average annual daily traffic, railroad crossings, road functional classification, and bridge inventory. The newly created and recently officially approved Delaware County and City of Muncie zoning layer is also available. Two years of aerial photography is available, the 2005 12" resolution color photography, as well as the new 2008 6" resolution photography.

Beacon Quick Facts

Has the potential to save organization staff an average of over 25 hours of office and phone traffic daily.

Implemented by over 100 organizations in 8 states

Provides 24/7 information access for both public and internal users

Has the added value of lowering GIS implementation costs and licensing fees by reducing the number of required "licenses" of GIS needed to view up to date information

New Aerial Photos, Mapping Data Now Available

2 ft contours, spot elevations and building footprints

Delaware County has acquired several key new county-wide GIS data sets. The Woolpert Company was hired to collect and create this new information. The base of this new data is the 2008 6" resolution Aerial Orthophotography acquired in March and April. An orthophoto or orthophotograph is an aerial photograph that has been geometrically corrected ("orthorectified") such that the scale of the photograph is uniform, meaning that the photo can be considered equivalent to a map. Unlike an uncorrected aerial photograph, an orthophotograph can be used to measure true distances, because it is an accurate representation of the earth's surface, having been adjusted for topographic relief, lens distortion, and camera tilt. The imagery is high resolution, with a single pixel representing 6" on the ground. Also collected was a brand-new type of data called LiDAR.

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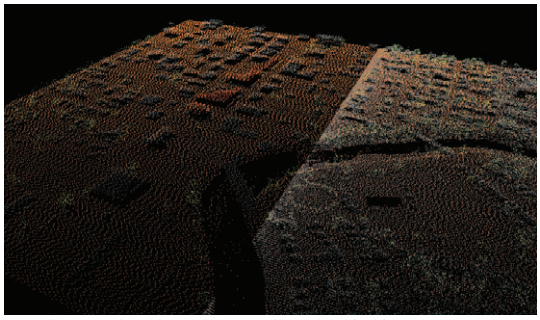
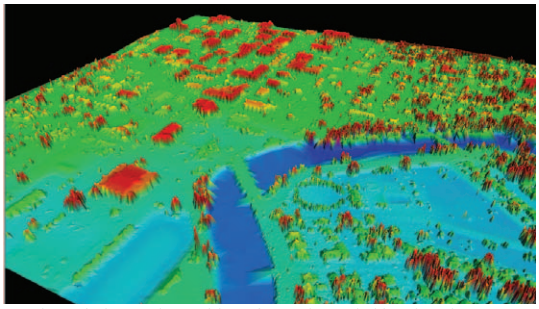
2008 6" resolution aerial orthophoto of the High Street Bridge and Tuhey Park

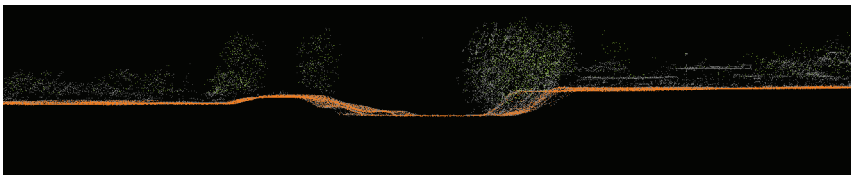
LiDAR (Light Detection and Ranging) is an optical remote sensing technology that measures properties of scattered light to find range and/or other information of a distant target. The prevalent method to determine distance to an object or surface is to use laser pulses. Like the similar radar technology, which uses radio waves instead of light, the range to an object is determined by measuring the time delay between transmission of a pulse and detection of the reflected signal. The end product is often referred to as a "point cloud" because when viewed in a 3D application the densely spaced points representing the point returns show the ground, building tops and tree canopies look similar to a cloud. The LiDAR data was collected to use as a base for generating new county-wide 2 foot interval topographic contour lines. The GIS office has the ability to view the raw LiDAR data, and manipulate it in a couple different ways. The points can be color coded by elevation, return type (tree or ground), or a surface can be created connecting all of the points. Aerial photos can be "draped" over the surface creating a photo-realistic 3D scene that can be viewed from any angle. Cross sections showing elevation change over a defined linear distance can also be created. Also collected with this project are several additional layers. Data representing buildings, edge of pavement, driveways, water features, elevation contours, and spot elevations. The new buildings layer can be coded to show if the building is new, changed, removed, or existing in the last 5 years. The contours and spot elevations are created from the LiDAR data set and show elevation change in 2 foot increments or exact elevations in depressions or hills. An impervious surface layer representing any surface that blocks the absorption of rainfall and snow melt will be created from a combination of the color imagery, Infrared, and LiDAR reflectivity data sets. This will be an important GIS data set for analysis pertaining to relieving storm water issues as well as other environmental projects.



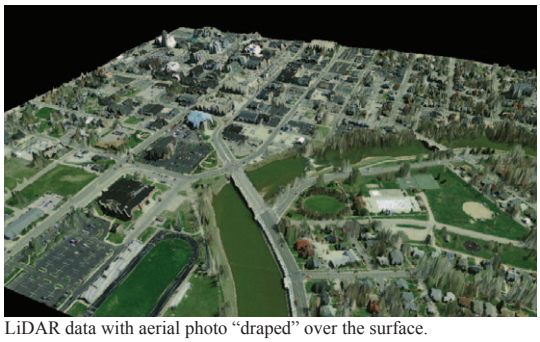
Raw LiDAR points shown in a 3D view, classified by return type.



3D view of LiDAR data, with surface color coded by elevation.



This cross sections shows the raw LiDAR points, classified by ground (orange) and trees (green). The river and levees are clearly visible.



LiDAR data with aerial photo "draped" over the surface.

Muncie Urban Forestry Receives Urban Tree GIS Inventory Grant

The Muncie Urban Forestry program initially created a GIS-based tree inventory in the late 90's and early 2000's to identify and catalog all of the City of Muncie Street trees (within the public right of way) as well as park trees. This project was a joint effort between the City of Muncie and Ball state University. A group of 4 students (including your very own GIS coordinator, as part of his internship) were tasked with locating, assessing (condition, size, problems, species) of every Muncie street and park tree, as well as the entire Ball State Campus. After completion of the inventory, a summary report was created and the GIS databases were delivered to each respective program. Over the years, reorganization and transitions between offices, and a severe ice storm and numerous windstorms, coupled with a lack of technology support for the urban forestry program left the inventory substantially out of date in 2006, the Urban Forestry Program applied for an Indiana Department of Natural Resources Urban Tree grant to help fund the update of the inventory, as well as plant trees and develop an informational guide for homeowners. This grant was enough to fund

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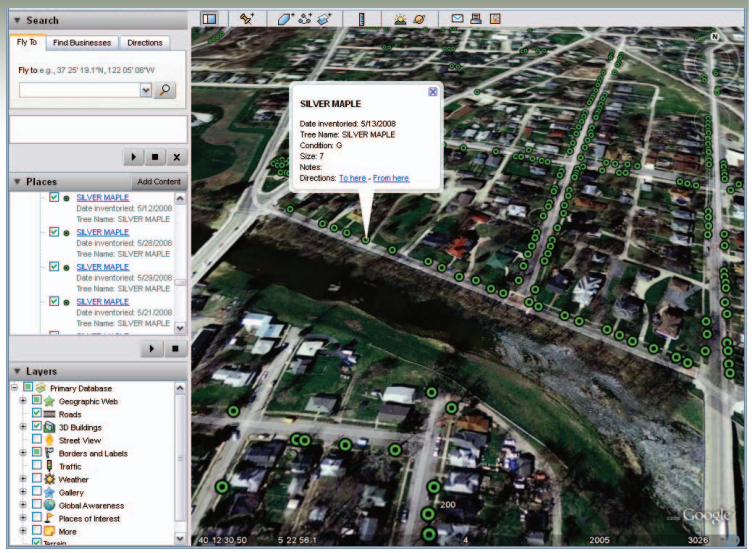
approximately 60% of the inventory. FlatLand Resources, a local environmental consultant with staff trained in tree assessment and GIS was hired to perform the update. The initial inventory was completed in just a couple of weeks. The Delaware County GIS office provided a GPS enabled field computer, and technical support for the project. In 2008, the Urban Forestry Board again applied for an IDNR forestry grant and was awarded the remaining funds needed to complete the inventory planned for the summer of 2009. This inventory will serve as the base data for the creation of a management plan to help guide the Urban Forester in how and where to care for diseased, dangerous, or damaged trees, as well as locating areas where new trees need to be planted. A healthy urban forest is one step in helping make Muncie a more attractive community both for it's citizens, and for potential businesses and industry. Additional information on the Muncie Urban Forestry Program, as well as a downloadable .kml file for viewing the inventory in the Google Earth application is available at http://muncieurbanforestry.org.

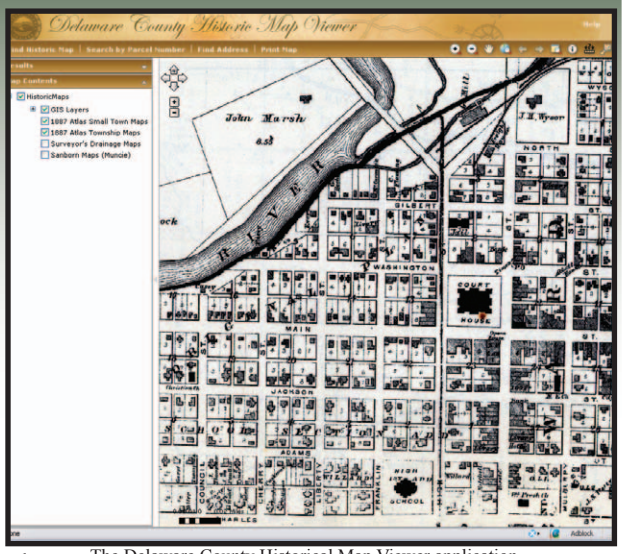


The Muncie GIS tree inventory, displayed through the Google Earth™ Application

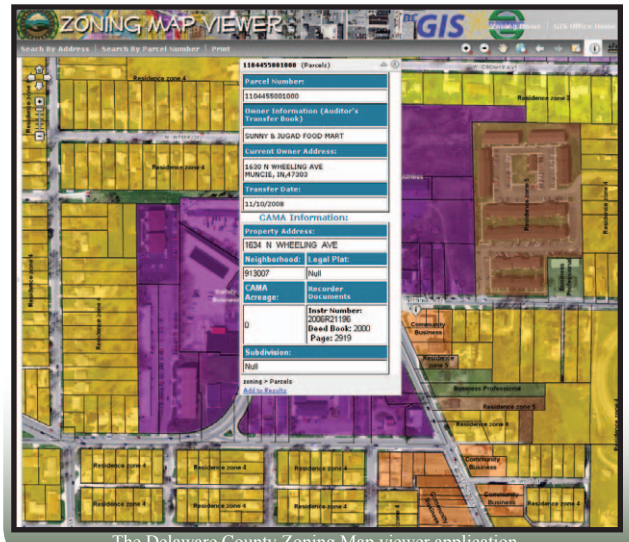
Internal GIS Services

Quick map applications for specialized needs

With the release of ESRI's ArcGIS Server 9.3, the GIS office has improved capability to quickly and easily create web-based applications and services for just about any mapping need based simply on a map document. Currently these custom applications are limited to the County-City internal network, but the GIS coordinator is hoping to move this type of application to some new servers courtesy of a grant from the Indiana Department of Homeland Security and make them available to the general public. This grant is designed to enable a county to provide a web-based GIS service that will automatically update IDHS with up to date addresses, streets, and parcel information that will be combined with other counties data to create a state-wide seamless GIS base map that is critical to responding to disasters. Currently, the GIS office is hosting a couple different web applications through this technology. A historical map viewer is available and has the ability to view georeferenced (placed in the correct geographic location) historical maps, including an 1887 atlas, surveyor's drainage maps, and detailed fire insurance maps for the City of Muncie from the 1950s.



The Delaware County Historical Map Viewer application.

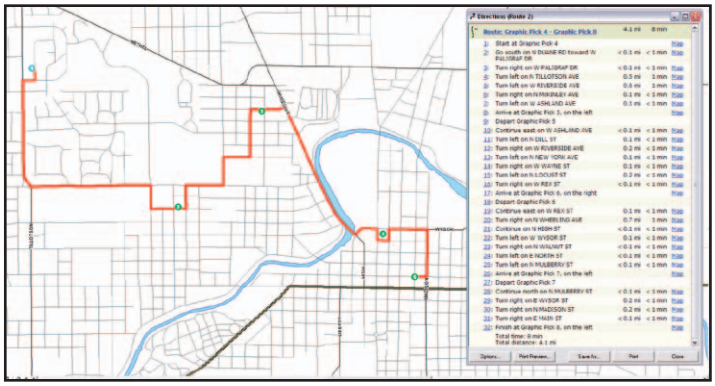


The Delaware County Zoning Map viewer application.

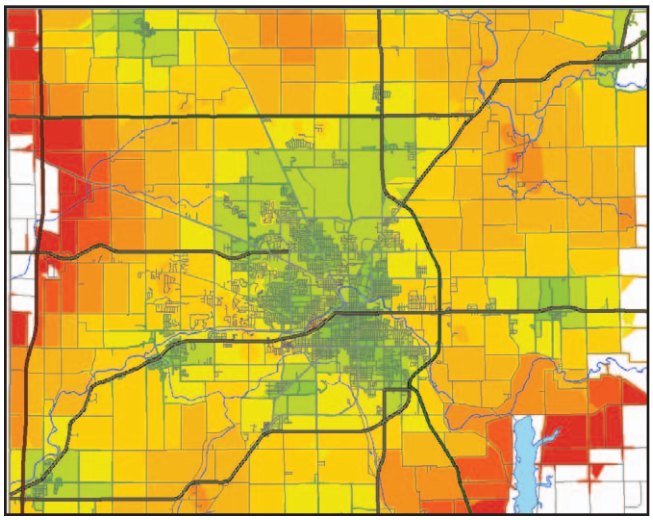
The application includes the ability to find an area on any of the historical maps by current address or parcel number or by small town name. Also available is a special viewer for retrieving zoning information. This is a "cached" map service that has extremely fast response time, similar to that of Google maps. All of the map images a pre-rendered, so that they can be retrieved very quickly, with minimal server processing. The zoning application also allows searching by parcel number and property address. Potential future uses for this type of mapping service include interactive maps for planning projects, economic development, disaster response, tax sale properties, brownfields rehabilitation, transportation, and many others. All of the internal web applications are available through public-use computers in the Plan Commission and Auditor's Offices. Offices or agencies interested in having a custom application available to meet a specific need are urged to Contact the GIS office to set up an appointment to initiate the application development process.

Transportation Network Modeling, Calculating Travel Times

Ball State University Senior Geography student Shawn Hipsher completed his required internship during the summer of 2008 here in the GIS office. One of the projects he worked on was creating a transportation network model for Delaware County. This type of model had never been created using the Network Analyst extension for ArcGIS Desktop. Significant manual updates to the data had to occur before the transportation network could be used for analysis. Shawn created intersections, divided highways, applied speed limits, school zones, one way streets, as well as road hierarchy and turn rules. All of this information was then used to create the transportation network geodatabase that allows the end user to enter in start and end points, as well as multiple stops and the software will automatically generate the best route, with directions and travel time. Additionally, the transportation network model can be used to generate travel time out from a specified location. Shawn was able to create detailed maps showing travel times for fire and EMS stations, which can be used as a planning tool to determine where there are overlaps orlack of adequate coverage. The GIS office will continue to refine and expand the transportation network to make it more accurate and reliable. Offices or Agencies that are interested in having travel times from specific locations or to have routes created are encouraged to contact the GIS office to set up an appointment.



A route created in just a few seconds showing the least-cost path connecting 5 locations. Detailed turn-by-turn directions and travel times similar to those available on Google or Mapquest are automatically generated, only with detailed, local street information.



Transportation Network Analysis of Fire Stations. Time increases from green (a few minutes) to red (more than 10 minutes).

The GIS office would like to thank the Ball State University interns and part-time student employees of 2008. Amy Krueger, Olivia Kellner, Tim Dykiel, Shawn Hipsher, and Mary Fleming were all wonderful additions to my staff and produced data, maps, and analysis that will greatly benefit our community. We wish those who have moved on in their careers good luck and happy mapping!

THANK YOU!

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 an 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 information about the County.*
- *To make this data available to the general public, private sector, and associated government agencies,*
- *To provide expert GIS consulting and application development to all government agencies, citizens and organizations whenever possible.*

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go to>Departments>GIS

What and Where?

Can you identify what and where from the aerial photo shown below?

The first 5 people with correct name and location can claim their prize in the GIS office!