



EMERGENCY PLANNING

Montgomery County's Enhanced 911 Emergency Dispatch System

By Su Clauson

▲ (l to r) Project Manager D. Lewis Harford, Montgomery Administrator Betty Thomas and county assistant administrator Gary Elander look over 911 mapping sheets.

Dispatching emergency vehicles to rural addresses can be frustrating when every second counts; box numbers may bear little relation to house location and two roads on opposite sides of the county may have the same name. An increasing number of localities are making their rescue and law enforcement operations more efficient by adopting the 911 emergency dispatch system and its exact mapping network.

The Montgomery County Board of Supervisors decided to enhance its emergency response system – and open the door to many other planning and information management possibilities – when they voted in February 1988 to develop a network of accurate maps for the enhanced 911 dispatch system.

“The county is pleased to make a major improvement in our emergency communications capabilities,” said Montgomery County Administrator Betty Thomas. “When the 911 system is implemented, a county resident who is experiencing a medical or law enforcement emergency can dial 9-1-1 and receive help quickly and effectively. The location from which the call is made will be identified automatically on a computer screen for the dispatcher. A person who cannot speak, is disoriented or in severe distress will not need to give directions.”

The accurate mapping system used by 911 required that each road have a name and that each residential structure, each commercial structure and each 25 feet of road frontage have a number. The maps being developed will have many other uses. “The primary purpose of this system is to dispatch emergency vehicles quickly and effectively,” Thomas said. “The maps developed will also further land use planning, economic development and school planning.”

“If the enhanced 911 system helps to save one life, this major project will be worth the efforts involved,” said Gary Elander, assistant county administrator. “We are pleased to be able to offer such an efficient system of emergency dispatch to the citizens of Montgomery County.”

Montgomery County decided to develop a map system which will have applications beyond 911: a geographic information system (GIS) digitizes map information so that it can be used in land use planning, school bus routing, utility planning, zoning, plotting school attendance districts and obtaining accurate information about tax parcels.

MAP CAN BE LAYERED FOR MULTIPLE USES

The digital, computerized map of

Montgomery County beginning to take final form includes the exact location of every building, road and stream. It can be plotted and displayed at any scale. The map contains 15 layers, which can be plotted in any combination. For example, on the one inch equals 500 feet scale (which matches county tax maps) all houses and individual new house numbers are shown. When mappers plot one inch equals 1,000 feet scale, address ranges rather than individual houses, are displayed. These maps are the ones which will be copied onto 11" x 17" sheets, bound into a booklet and carried in every emergency vehicle in the county.

“In the future, we expect the county to add layers for parcel boundaries, water and sewer locations, voting precincts, school districts and zoning or land use boundaries,” said Ken Anderson, president of Anderson and Associates, the Blacksburg consultants assisting the county. “The digital base map is opening up a number of new uses which weren’t even anticipated when the county decided to invest the funds for an accurate digital base map.”

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The author is a writer based in Christiansburg.

FIRST PHASE INVOLVED AERIAL PHOTOGRAPHY, GLOBAL POSITIONING, MAPPING

The first phase of mapping involved almost a year of aerial photography, surveying, mapping, rural road naming and structure numbering. Preparation of a data base, now almost complete, took five more months. As soon as C&P Telephone accepts the mapping database, cross-references it with the names in their directory and installs the necessary equipment in the sheriff's office, the system will be completely operational. The anticipated completion date is November, 1990.

An aerial photographer was hired to fly over all 396 square miles of Montgomery County. Photographs were shot over each tax parcel map covering 10,000 feet by 10,000 feet on the ground. The photographs obtained were used to create digital maps showing roads, streams, houses and other structures.

The consultants used global positioning system surveying, a technique which involved using electronic signal receivers to measure the distance to survey satellites positioned above the earth to identify the exact positions of concrete markers the company installed throughout the county. As the receivers measure the distance from three or more satellites whose exact position at any given instant has already been computed, the exact latitude and longitude of the receiver can be easily computed. By orienting an address to the

markers, mappers can now give the exact latitude, longitude and elevation (within five feet) of any structure in the county.

The county conducted a series of neighborhood meetings during the summer and fall of 1988 to involve the public in the plan for naming all existing rural routes and roads with at least three buildings. Suggestions included names with historical or geographic significance. The new names were approved by the board of supervisors in November 1988 or soon after.

Drafters worked round the clock to number roads and houses. The project team entered name and address data supplied by C&P Telephone, the local power company, and county records, into the database. Compilers generated new addresses for every rural resident of the county. Mappers had to travel the county to verify that the old addresses referred to the same structures as the new addresses did.

New homes will receive a street and number as part of the building permit process. Joe Powers, Montgomery County planner, says his office will update the system with new building permit information. Address information for the changeover to the 911 system, which includes new street addresses and numbers for many rural residents, is being carefully coordinated with the U.S. Post Office and the U.S. Census Bureau. Both agencies see the switch as being beneficial to their operations. "It would be much simpler if everyone had a street address and if

numbers increased systematically along the street. It's just more efficient," said David Wiggins, a geographer with the Charlotte, N.C. regional office of the census bureau. In some localities, such as Ashland, Ky., the post office actually has initiated the changeover and assigned the house numbers.


Lew Harford, project manager of the 911 crew, said, "What we're working on here is a base mapping system - one that we'll have many possible uses for later. Municipalities used to throw out their old maps and fly [over] the county every several years. These maps don't have to be discarded; they're still useful."

OTHER AGENCIES MAY BENEFIT FROM MAPS

Other county and regional agencies stand to benefit from possible uses for the 911 maps. David Rundgren, executive director of the New River Valley Planning District Commission, looks forward to using the maps to plot public utility projects because their level of accuracy surpasses that of the old, hand-drawn maps in the county deed books. Rundgren, officials from the county, and town and county school personnel are discussing how to use the new, more accurate maps being developed.

"If Montgomery County Schools shaved just 10 percent off their \$1.4 million school busing budget through use of the new mapping, the system would pay for itself in two years," Anderson said.

Larry Schoff, director of facility maintenance and transportation for Montgomery County Schools, said, "A geographic information system like the one we could develop from the 911 system could allow us to update our bus system and cut down on overlap."

"The Montgomery County Board of Supervisors are to be applauded for their foresight in not only moving forward with the E-911 system, but including a sophisticated mapping system to enhance planning and economic development to better serve the citizens of Montgomery County," said administrator Betty Thomas. 

Betty Thomas on Montgomery's 911 System

The experience of Montgomery County in preparing for the enhanced 911 telephone system for use in emergency dispatch illustrates that management, planning, public works and economic development objectives can also be considered in preparation activities. The county invested additional resources through its capital improvement program to insure that the new addressing system and mapping data was fully capable of supporting a geographic information system. Precise mea-

surement was enabled by the extensive location of monuments on the ground throughout the county. By digitizing data and creating a database with dozens of "data overlay" possibilities, specific location maps or general area maps can be made via computer to illustrate population changes, public utilities, land use or other changes. This will support and further Montgomery County's efforts to plan for the growth which is occurring within its boundaries and in the New River Valley.

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