



# LAND INFORMATION *Bulletin*

from the National Consortium for *Rural Geospatial Innovations*  
Mid-South, University of Arkansas

## Finding the Lay of the Land— On the World Wide Web

### The Northwest Arkansas Community Asset and Development Information System (CADIS)

*Information about land and its characteristics is the lifeblood of all rural community decision-making—but access to information can sometimes be difficult. The Community Asset and Development Information System (CADIS) assembles a wide range of information about rural, northwest Arkansas and uses the World Wide Web to make this complex information available to the public. CADIS is built upon a strong partnership of community leaders, private industries, educators, high school students and state, county and local officials. The National Consortium for Rural Geospatial Innovations in Fayetteville provided the long-term structure that enabled the various participants to work toward a common goal: addressing key community issues using geospatial technologies, and helping train people to serve the community in the future.*

**A**ccess to quality information is a key aspect of effective public policy, economic development and community decision-making. Much of this needed information is “place-based:” Where do I vote? Where is a wetland? Where is the local police station? Where will we need a new school?

A second important query is how are these things related: Is the proposed school on or near a wetland? How far do I need to go to vote? How many parks are within 2 miles of our home? Computer-based tools are now a necessity to aid communities in answering these inter-linked, complex questions.

The Community Asset and Development Information System (CADIS) is a community-sponsored program that makes important place-based information about northwest Arkansas easily available to the public over the Internet. The two northwestern counties of the state (Benton and Washington) have seen rapid growth over the last two decades, and easy and rapid access to information has become crucial. In addition to the immediate goal of developing a useful system, CADIS also serves as a vehicle to demonstrate how technology systems can be created that can aid any community in its activities. The system is comprised of four parts: **Civic Center**, **Land Finder**, **Land View** and **School Modeler**. All are accessible from the CADIS Web site, and each provides a different type of information to the community. ([www.cast.uark.edu/local/cadis](http://www.cast.uark.edu/local/cadis))

### About RGIS

The National Consortium for Rural Geospatial Innovations—Mid South (RGIS) is located on the campus of the University of Arkansas in Fayetteville. It is a USDA program designed to promote the use of geospatial information and technologies by communities in rural America. RGIS is dedicated to helping communities understand the concepts and benefits of using geospatial data as well as assisting them in all aspects of GIS development.

## Civic Center

A Web page in Civic Center that can help homeowners locate voting districts

Problems confronting a newcomer to an area include basic information: “Where do I go to vote, connect to utilities, register my car or any of the other myriad things that need to be completed in starting a life in a new town?” Civic Center is a Web-based system that answers these questions.

Users type in their address and Civic Center informs them where to obtain utility service, identifies their school district, and where to vote. It also provides information on their elected officials including U.S. senator, mayor, alderperson, or justice of the peace and how to contact them.



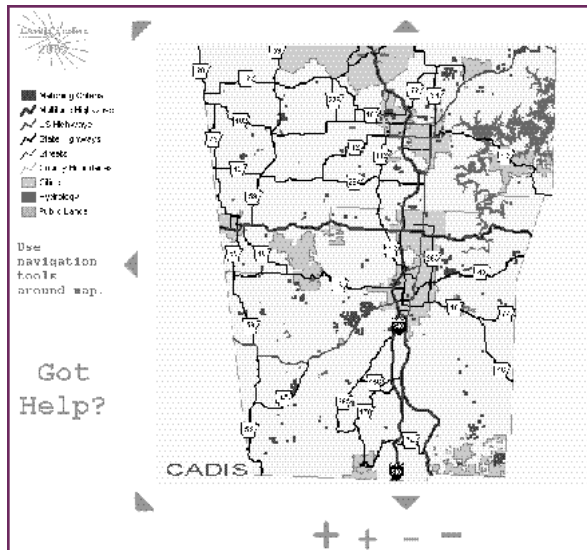
## Land Finder

We all know the old saying that the three most important factors in finding the best home or business are: location, location, and location. However, figuring out the best place for a business or residence is a complicated process with many different, sometimes competing, factors to consider. Whether it's a question of locating a new industry, buying a farm, determining the location for a new middle school or deciding the best place to build a house, we all want to make the best decision. But sound decisions require access to the best information—and that means up-to-date information focused on our needs. Because of the rapid growth in Benton and Washington counties in Arkansas, there was a tremendous need to improve the access to land information. The Land Finder Web-based system was developed as a prototype to demonstrate how such a system aids the area's citizens in this task.

### *What makes a good parcel?*

The first step in developing a system to assist in locating the “best parcels” for any of a number of uses is to identify factors that contribute to selecting such a parcel. These will be quite different for different individuals and needs. The Land Finder system is designed to be flexible and to meet the

Using Land Finder to get the lay of the land



needs of many groups. For instance, criteria appropriate for selection of an industrial facility, a residential home or a farm are all included in the system. Land Finder criteria include:

- proximity to main highways, streets, county roads and railroads
- land surface (flat, steep, rolling)
- septic tank absorption field limits
- proximity to commercial businesses (machine shops, sheet metal work, truck repair, welding)
- vegetation in area (percent pasture or forest)
- percent prime farmland
- within (or outside) city limits
- proximity to nearest selected city
- proximity to confined animal operations

Using geographic information systems (GIS), each of these factors was scored for the region's 30,000 40-acre parcels. The parcels were created by dividing each of the area's square-mile sections into 40-acre quarter-quarter sections. The GIS-derived attributes of each parcel were loaded into a database that produces a quick response to a query.

### *An easy-to-use system*

Ease of use is a key ingredient in a land system intended for public use. Usually, a geographic information system (GIS)—powerful mapping and database management software—is used to allow comparisons of complex geographic criteria. While powerful, these GIS systems are usually complicated to use and require a skilled professional. In the CADIS system, a “point-and-click” Web interface was created that mimics the selection criteria a person might use. Each factor can be selected with a mouse click, and once all the criteria are chosen, the user can view a map of the results.

**A Land View aerial photograph**



After viewing the results, a user can change factors to see how they affect the outcome.

### **Land View**

An important way for people to understand the geography of their community is to see it from the air. The Land View component of CADIS allows easy Web-based viewing of high-resolution aerial photography. Using special image-compression technology, highly detailed aerial photographs can be quickly sent across the Internet and displayed in a standard Web browser. Users can zoom in to see details in the photographs. Land View uses high-resolution black and white photography with a three-foot (1 meter) level of detail based on photographs taken in 1994. Color infrared photography will be acquired in late 2000 and added to the system.

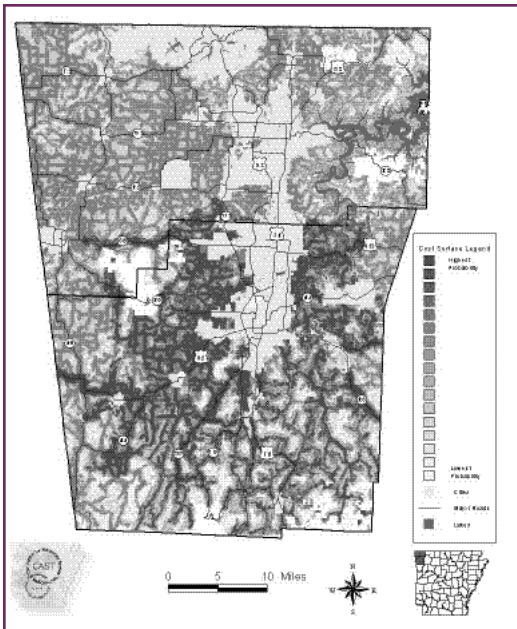
### **School Modeler**

**School Modeler map projecting areas of population growth**

Many new residents have moved into northwest Arkansas over the last decade and this trend is projected to continue for the next three decades. New residents bring economic opportunities to the

area, but they also place increasing demands on the public infrastructure. Knowing the specific locations of population growth and of growth by families who have school-age children is critically important to planning for new schools. To assist the region’s school districts in planning for future school construction, the CADIS Project developed School Modeler, which uses a spatial analysis approach to predict where population will grow over the next three decades.

Key factors influencing the location of new growth were determined with input from community leaders. These included factors such as existing population centers, location of transportation, water lines, land cover and slope. These factors were integrated in a GIS and used to predict the areas of new residential construction. With school locations selected, the School Modeler project then determined how many new students would be added to each school. Population growth estimates were provided to each of the area’s school districts along with detailed maps showing growth predictions. The CADIS School Modeler is but one demonstration of the ways in which geospatial technology can help community leaders glimpse the future. Ultimately, this will pave the way for better decision-making.



## Community Partnerships

The entire CADIS project was developed through an extensive community partnership. The RGIS program provided the long-term structure that allowed the CADIS community partnerships to flourish. Among the participants: the Northwest Arkansas Council, representing the business leadership of the area; the Bank of Fayetteville; Ozark International Consultants; and the Intergraph Corporation. Governmental participants included Washington and Benton counties. Several private firms provided important data, as did the National Association of Counties (NACO).

Besides its benefits to decision-makers, CADIS has also become a great teaching tool. Area high school students in the Environmental and Spatial Technologies (EAST) program were responsible for actually implementing the project. The EAST program involves students in practical projects that use technologies such as GIS. Before joining the CADIS project, students at Lincoln, Rogers, Greenland and Fayetteville High Schools had been learning the fundamentals of computerized GIS systems. Ben Farley, a Fayetteville High School student and CADIS team member said, "CADIS has given us a more realistic idea of what may be in store for us later in life."

*This bulletin was prepared by the National Consortium for Rural Geospatial Innovations–Mid-South at the University of Arkansas. For more information, contact Tom Graff, University of Arkansas, 12 Ozark Hall, Fayetteville, AR 72701; (501) 575-3159, or email: [tgraff@comp.uark.edu](mailto:tgraff@comp.uark.edu)*

*"I believe tools like CADIS will revolutionize community-based planning over the next decade."*

Mark Schafer, Deputy Assistant  
Secretary for Water and Science for  
the U.S. Department of Interior

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