



# Wisconsin MAPPING BULLETIN

## Clearinghouse meets the "Information Highway"

by Bob Gurda

Wisconsin is one of nine states recently funded to do research and development work toward building a nationally linked set of spatial data clearinghouses. The Wisconsin Land Information Board (WLIB) along with the State Cartographer's Office (SCO) successfully applied for a \$25,000 grant from the Federal Geographic Data Committee (FGDC) this summer. These clearinghouses will help provide knowledge about the massive and varied components of the National Spatial Data Infrastructure (NSDI).

### Formal cooperators

The Wisconsin NSDI Clearinghouse Initiative is based on cooperation between the WLIB and the SCO. Additional cooperators include Dodge County, Winnebago County, Marathon County, Wis. DNR, Wis. DOT, and the State Office of the Soil Conservation Service.

### Collecting, structuring, and serving metadata

The SCO will carry out the bulk of the activities under this 12-month project, which will benefit from additional funds provided by the WLIB, as well as in-kind contributions from the SCO and other cooperating organizations. Diann Danielsen will be the SCO's primary staff on this project. We will hire a part-time graduate student to provide technical assistance for the project.

Our work has already begun on the Wisconsin project, which is designed to develop documentation ("metadata") on selected spatial data holdings of federal, state, and local agencies. This test metadata will be organized in a standard format, and then placed on a computer ("server") that is connected to the Internet.

Along with similar metadata provided by other states and federal agencies, Wisconsin's offerings will be available to anyone who has an Internet connection. All of this metadata, regardless of the physical location of the computer on which it resides, will be accessible through WAIS. Short for "Wide Area Information Servers", WAIS is a software that facilitates simultaneous searching across multiple networked computers.

### FGDC's Metadata Standard

Over the last several years, work has proceeded at the national level toward a standard list of descriptive items that together serve to document any particular piece of spatial data. The SCO was directly involved in the development of this national model.

The FGDC Content Standard for Digital Geospatial Data was approved by the FGDC earlier this year. We will be implementing this standard as part of the Wisconsin project. The FGDC metadata standard details the various contents needed for a metadata package, but does not require any particular format such as ASCII text file, flat file, or relational database. Though designed as companion pieces, the metadata standard also does not explicitly lay out a formal relationship with that portion of the existing Spatial Data Transfer Standard which provides for a data quality report to accompany a set of transferred data.

### Special benefits for Wisconsin

Wisconsin's project is attempting to meet Wisconsin Land Information Program (WLIP) clearinghouse goals as well as satisfy FGDC's goal of building a nationally networked clearinghouse for spatial data. Under the WLIP, each county Land Information Office is responsible for being a local clearinghouse; yet without a smooth way of integrating those clearinghouses, the locally maintained metadata would not be easily accessed by others.

*continued on pages 2 & 3...*

### Highlights of this issue....

<i>Clearinghouse grant award .....</i>	<i>1-3</i>
<i>BBS developments .....</i>	<i>4&amp;5</i>
<i>DNR forestry photography ready.....</i>	<i>6</i>
<i>Geologic guide available .....</i>	<i>7</i>
<i>New and improved NGS geodetic data....</i>	<i>12</i>

# WLIB News

by Bob Gurda & Ted Koch

## Board Meetings

The Wisconsin Land Information Board (WLIB) met on October 13, its first meeting since its two-day retreat in June. (The meeting scheduled for August 15 was canceled). The meeting previously scheduled for December 12 has been rescheduled for December 15.

## Countywide Plans

Vernon County's proposed plan for its land information modernization was approved by the WLIB on October 13. All 72 counties now have had the Board approve their plan.

The Board also adopted a required format for counties to use in proposing amendments to their existing plans. In instances where the previous plan does not mention an activity, an amendment to the plan and approval by the Board is required before retained fees can be spent on the activity. Some counties have already had to amend their countywide plan in order to provide supporting language upon which to make an effective grant application to the Board.

## Grants

At its October 13 meeting, the Board approved \$1,371,160 in grant awards to 16 organizations. The winning recipients were selected from 21 applications received by the WLIB in July. Grant amounts ranged from \$50,000 to \$100,000, with the average award at \$85,693.

Trempealeau and Richland Counties and the Menominee Indian Tribe were first-time grant recipients. In addition to nine other grants awarded to counties or county/local government partners, funding assistance was approved solely for the cities of River Falls and Madison (\$100,000 each), the City of Sheboygan (\$50,510) and the City of Gillett (\$50,000).

## Funding

Registers of Deeds offices across the state have had a busy past year if the amount of fees collected by the Land Information Program is any indication. From July 1, 1993 through June 30, 1994, the dollar amount retained by the 72 counties totaled \$5,387,408. Add to that figure the \$2,706,330 forwarded to the Board from the counties, and the 12-month total of \$8,093,778 exceeds the previous year's collections by 10% statewide.

Since 1990, Land Information Program fees have totaled \$25,085,245. Nearly \$9 million of that amount has been routed to the Board to award as grants and to underwrite Board operating expenses. Of the \$16.1 million retained by the counties, more than one-third of this amount (\$5.50 million) has been retained by the seven counties in the southeast corner of the state, nearly 9% (\$1.46 million) by Dane County, and 11% (\$1.71 million) by the Fox River Valley counties of Brown, Outagamie and Winnebago.

## State Agency Integration Plans

The Integration/Clearinghouse Committee is currently in the process of evaluating the state agency plans submitted

to the board. An analysis and summary report on the plans will be compiled in the next couple of months for use by the Statewide Integration Task Force.

## Clearinghouse Grant

The WLIB applied for, and has received a \$25,000 federal grant to begin development of a land information clearinghouse. See story on page 1.

## Clearinghouse meets the "Information Highway",

*continued from page 1...*

Earlier this year, the WLIB instituted a metadata reporting requirement for the program grants it awards. Grants awards now carry a stipulation that the awardee provide the WLIB with metadata at the conclusion of the work funded by the grant. The current project should lay a strong groundwork towards a practical method for recording and submitting such metadata.

## Custodians are providers to a clearinghouse

Scores of organizations collect, organize, and/or manage spatial data. Only part of their activities are funded through the Wisconsin Land Information Program. These organizations all have important custodial roles in developing and maintaining data for broader integration, and in keeping others informed about the data's qualities and availability.

Part of the challenge in the current FGDC Grant project is to ensure that all custodians, regardless of where they function in the public or private sectors, fully appreciate the value of well maintained, detailed metadata. A successful clearinghouse requires a strong and continuing custodial commitment to building and maintaining metadata documentation for spatial data sets that are often complex and dynamic. The more current the picture is, the more valuable it is to the spatial data community at large.

*continued on page 3...*

## Table of Contents

• State land information news .....	2
• State Cartographer's Commentary .....	3
• Bulletin Board Update.....	4 & 5
• Project Reports .....	6
• Remote Sensing .....	7
• SCO News .....	7
• Questions and Answers .....	8
• Guest Opinion.....	9
• People and Organizations .....	10
• Publications & Products .....	10 & 11
• Geodetic Control .....	12 & 13
• Event Profiles .....	14
• Conferences, Technical meetings, & Classes ...	15

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## ***Clearinghouse meets the "Information Highway",***

*continued from page 2...*

### **Internal benefits of current metadata**

Custodians have another, and probably more powerful reason to maintain documentation on their spatial data. In some ways, it is like insurance for internal business. Investment in corporate data must be protected like any other corporate asset. Metadata documentation offers this type of protection.

Without such documentation, people inside the organization may tend to underutilize the data for fear of assuming too much accuracy, completeness, consistency, or timeliness; since data development tends to be expensive, this reluctance to use what may in fact be high quality data represents lost value.

More dangerously, a lack of documentation may lead less careful users to misuse the data, potentially resulting in erroneous or simply inaccurate analyses or products; the potential costs from misuse of data could also be very high.

### **WLIA's role**

The Wisconsin Land Information Association's Metadata Task Force will be involved in supporting this clearinghouse project, primarily in two respects. First, that group will assist in fine-tuning the Metadata Standard for Wisconsin. Second, it will expand its earlier activities in awareness and education on metadata and clearinghouse topics for the land information community.

### **Expected time frames**

The FGDC grant began on September 15, for a one-year period. There will be a 6-month report presented at the National GeoData Policy Forum next spring, and a final report. Other presentations will be made in conjunction with meetings of Wisconsin-based organizations such as the WLIA.

### **Activities in other states**

A number of other states have been active in recent years in developing various ways of documenting and/or cataloging spatial data. Under the current FGDC grant cycle, the Wisconsin project will be running concurrently with eight others, in the following states: Minnesota, Iowa, Montana, New Jersey, Florida, New Mexico, Texas, and North Carolina. The FGDC plans to initiate a second funding cycle in the next few months.

The nine funded projects share common elements, particularly a focus on establishing Internet clearinghouse nodes and on testing and implementation of the metadata standard. Wisconsin's project has a stronger local government flavor than the others.

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## **State Cartographer's Commentary**

### **Linking Land Use and Land Information**

by Ted Koch

Governor Thompson's signing, on September 15, of the executive order creating the State Interagency Land Use Council and the Wisconsin Strategic Growth Task Force should be welcome news to the state's land information community.

Regardless of your personal views about land use issues, and the acceptable mix of state and local decision making in this area, intelligent and informed discussions and decisions regarding land use need a sound and up-to-date information base that inventories features and events impacting the landscape. Much of that needed information base is being created now, through the parcel, base, wetlands, soils, zoning and orthophoto mapping that forms the foundation of Wisconsin's land information program.

The Council's membership will include the secretaries of seven state agencies, chaired by the Department of Revenue Secretary Mark Bugher. The council will select members of the Strategic Task Force, representing state and local agencies, municipal associations, private groups and citizens. The council will promote state-level coordination and a statewide land use vision. The task force is to produce an interim report by January 1, 1996, with a final report by July 1, 1996.

Land use controversies, and concern over existing and future land use policies are often the result of expansion of the edges of urbanized areas into productive and valuable farmland. Milwaukee and Madison form part of a larger region extending into Illinois that is one of the nation's most endangered regions for losing farmland to urban growth.

To successfully plan and implement acceptable, long-term land use vision and growth strategies, traditional adversaries - urban and rural - will have to develop mutually creative solutions. Growth may be inevitable, but perhaps haphazard growth, that satisfies no one in the long run, is not.

The land information community has to be an important participant on the land use and strategic growth teams as they develop agendas for the future. Our foundations of land information can bring much clarity and objectivity to what, too often, is an overly emotional situation. At the same time, a statewide focus on land use policy and growth can help the land information program develop and fund needed statewide, uniform and integrated data sets.

The communities representing land use, strategic growth, and land information have much in common. Their goals and objectives will overlap significantly. Through tight cooperation, integration, and communication the continuing success of these efforts can be assured.

# BULLETIN BOARD UPDATE

by Jim Lacy

I've noticed a number of users having problems downloading files from the BBS recently, so I thought I would take some time this issue to discuss the basics. File "downloading" refers to the process of transmitting files from the BBS to your computer. Similarly, a file "upload" is when you transmit a file in the other direction—from your computer to the BBS.

## Preparing your download

Files on the BBS are organized by categories, such as DOS utilities, Graphics and Images, SCO Text Files, and a number of others. Select (F)ile from the main menu, then (A)rea to select a file category. After a category is selected, you can view an annotated directory of files in that area by hitting (L)ist.

When viewing the file list, you should see a message near the bottom of the screen that says "More (Y/n)/(T)ag?" or "(Enter) to continue, (T)ag/(V)iew/(E)dit." In either case, the "T" option lets you mark files for later download. This way, you can easily browse through the various file categories, tagging interesting files. To tag a file, hit "T", then type in the number you see next to the file you want. You can tag as many files as you wish, so long as the total estimated download time does not exceed your daily time limit. (The BBS will let you know if you've selected too many files.)

After you are finished tagging files, select (D)ownload from the file menu. A complete list of tagged files will be displayed. You can optionally add more files by selecting (A)dd, or delete one or more files using (D)elete. Hit enter when you are finished modifying the list. If you want a text file describing the files you selected, answer "Y" to the question "Download file descriptions?"

## Download protocols

This step is where many people get confused. At this point, you are given the option to choose a download protocol. The download protocol determines the way in which your communications software "talks" to the BBS to exchange a file. Typical protocols include Xmodem, Zmodem, Ymodem, and Kermit, among others.

When in doubt, you should always use Zmodem, as it offers a number of advantages over the others. Its main advantage is a "batch" transfer mode. That is, once you start the transfer process (see below), the BBS will automatically begin transferring files to your computer. By contrast, with Xmodem, you start the transfer, then you must tell the software on your end to accept the incoming data. Or with Telix, for example, this means you must hit the page-down key on your keyboard before any data is transferred.

Zmodem is also a bit more forgiving of noisy phone lines, as it is an "error-correcting" protocol. (Note: not all communication packages include Zmodem; check your users manual.)

## Starting the transfer

Finally, after the proper download protocol is selected, you can (S)tart the transfer process. All files that are tagged for downloading will be sent to your computer. (Remember my note above on Xmodem!—you might need to press a few more keys on your computer to start receiving.)

The download process is a little awkward at first, but you will master it in no time. Contact me at the SCO, or via e-mail (see my Internet article), if you have any questions.



## Chronological news listing added

## BBS continues to grow

by Jim Lacy

Everything about the SCO's electronic bulletin board continues to grow. One new feature you'll want to check out is "News from the SCO"—a listing of brief news items on a wide variety of topics, which we started in August. Each entry is just a few sentences long, and is dated. The entries are listed in chronological order, the newest at the top of the list.

This news listing can keep you informed on projects, activities, policies, facts, opportunities, etc. While we will carry more detailed accounts of some of these items in the Mapping Bulletin, you can get the news in a much more timely manner through our BBS.

Here are some BBS statistics for your consideration (all of these are growing):

- Number of registered users: 173
- Total calls to date: 1370
- Combined size of downloadable files: 19Mb
- Average length of call: 10 minutes
- Average calls per month: 100
- Approximate number of active messages: 1400

## BULLETIN BOARD UPDATE

### The Internet—you know, the "Information Superhighway..."

by Jim Lacy

By now, most of us have heard about the "Information Superhighway" and how it will change our world. Beyond the hype, the Internet does offer an incredible variety of information, and over time, will probably change how we access information on a daily basis. It is already benefitting mapping scientists, and you can join in. We've been using the Internet at the SCO for three years!

Many people incorrectly think of the Internet as one giant supercomputer located in some secret government agency. In reality it is a collection of networks, to which millions of computers are attached—some 24 hours a day and others temporarily, at the control of a user. Each of the computers on the Internet can publish information, in an electronic sense, to the Internet community.

What can you do on the Internet? You can download shareware and freeware files from "FTP" sites, send electronic mail around the world, read articles on thousands of special interest topics in USENET news, access online multimedia documents, and take part in e-mail discussion lists, just to name a few possibilities. Virtually everything you can imagine can be found on the Internet—provided you know where to look.

This last point is the real catch; there currently are no "global" searches you can perform to find information relevant to your needs. Unless someone tells you about a resource, you have no way of knowing it exists. This is changing, however, with the growing popularity of the World Wide Web.

The World Wide Web is the collective name given to a virtual linkage of computers on the Internet using "hypertext" connections. When used with the right software (*see below*), hypertext lets you jump from one Internet resource to another, simply by clicking on a word or phrase. For example, you could be reading a document about the USGS, and within the text find the word 'GIS' highlighted. In you click on GIS, this link will lead to another document, possibly on another computer thousands of miles away. In this manner, you can browse the Internet, using these hypertext links to find new resources.

Mosaic is a popular hypertext browser developed at the National Center for Supercomputing Applications of the University of Illinois. Mosaic is an all-encompassing navigation tool for the Internet. It lets you access hypertext documents, FTP sites, and many other Internet resources using a consistent graphical interface. It uses a convention called the Uniform Resource Locator (URL) to find and access hypertext documents.

### Try these out

If you currently have access to the Internet, and have a hypertext browser like Mosaic, I suggest you check out the following GIS/mapping URL's (for a comprehensive list of earth science/mapping resources, download the file "ores.zip" from the SCO BBS.):

#### GLIS:

<http://sun1.cr.usgs.gov/glis/glis.html>

#### Internet Geography Information:

<http://zia.geog.buffalo.edu/GIAL/netgeog.html>

#### Manual of Federal Geographic Data:

<http://info.er.usgs.gov/fgdc-catalog/title.html>

#### Geographic Information Referral Page:

<http://waisqvarsa.er.usgs.gov/wais/html/geog.html>

### Learn more about the people on the Internet!

It has become a growing tradition for many Internet users, primarily those with access to UNIX-based workstation, to create so called "home pages." People use a home page as a means to give a brief biographical sketch of themselves, and to provide hypertext links to other Internet resources they find interesting. I have a home page that can be accessed at:

<http://feature.geography.wisc.edu/lacy/homepage.html>

### Want to get connected?

The October 11, 1994, issue of *PC Magazine* contains an article entitled "Make the Internet Connection." I suggest those of you interested in connecting to the Internet check it out. The article explains in greater detail the resources found on the Internet, highlights some of the available navigation tools, and the costs involved.

### What about Bulletin Board Systems?

Electronic Bulletin Boards complement the services found on the Internet, and will not cease to exist any time in the near future. The current reality is, not many people outside academia have access to the Internet. BBS's are inexpensive to run, the hardware and software involved is cheap, and everyone has the necessary connection: a phone line. BBS's provide many of the same things found on the Internet: files, messages, and information. In fact, many BBS's now mirror information found on the Internet, such as USENET news and e-mail. The main drawback with a BBS is the lack of hypertext navigation. In the future, I suspect we will see the boundaries between the Internet and Bulletin Boards become even more fuzzy.

The Internet is, and will continue to be, a great tool for mapping scientists. If you know of any interesting Internet resources for mapping scientists, or would like a little more background on the Internet itself, I can be reached at: [jlacy@geography.wisc.edu](mailto:jlacy@geography.wisc.edu). I look forward to hearing from you!

## PROJECT REPORTS

*Statewide coverage from '92, '93, & '94*

### **DNR forestry photography project completed**

by Bob Gurda

Aerial photographs of any location in the state are now available from a recently completed project of the Wisconsin Department of Natural Resources (DNR). Each frame covers about 4 square miles (scale of negatives is 1:15,840). The photographs were acquired under "leaf-on" conditions for trees (summer) using black-and-white infrared film.

This project began late in the summer of 1992, was seriously hampered by cloudy weather the next year, and was completed this summer. In all there are over 90,000 frames of photographs available. The acquisition includes standard 60% endlap, where successive image pairs along a flight line depict a common ground area amounting to 60% of the each frame. The overlapping area can then be viewed in stereo.

A new feature is available with some of the imagery acquired in 1993 and 1994. The latitude and longitude of the center of the photograph is recorded on the negative.

Indexes to this photographic resource can be viewed at certain local DNR forestry offices, generally one such office per county. These offices also hold a full stereo set of contact prints for the local area, for public viewing. The SCO also has a set of the county flight indexes as well as forms to use for ordering prints.

Orders for contact prints, enlargements, etc., are filled through a contractor in Maryland. Technical and administrative questions on orders and products received, and on orders for photo index maps should be directed to:

Nicole Merryfield  
Bureau of Forestry  
Wisconsin DNR  
P.O. Box 7921  
Madison, WI 53707  
Phone: 608/266-5202  
Fax: 608/266-8576

Dunn, Pierce County areas available

### **More digital orthophoto coverage arrives**

by Bob Gurda

Digital orthophoto data files are continuing to emerge from the production phase into usable form. The latest areas for which Wisconsin coverage is available are Dunn and Pierce Counties, in west-central Wisconsin.

The latest project completions are for work being carried out under the National Digital Orthophotography Program, where federal agencies match contributions from non-federal organizations. In Wisconsin, this 50/50 cost-sharing arrangement has been a popular means for the USDA Soil

Conservation Service and counties to develop an accurately-scaled base map for overlaying digital soil surveys and various other applications. U.S. Geological Survey funds and Wisconsin Land Information Program funds have also been applied to this development.

Our previous issue reported on two large areas that had been completed in the summer--the Chequamegon National Forest and a large rectangular area including the cities of Green Bay and Fond du Lac. Additional areas are in production, with various expected delivery dates.

Since the digital orthophoto production process requires a digital elevation model (DEM) as one of its inputs, all areas where the orthophotos are completed also have DEMs.

The Wisconsin Department of Natural Resources, Geo Services Section (GEO), has acquired digital orthophoto image files for some of the areas first produced in the state. GEO is evaluating the technical aspects of providing this product to end users in the most practical format and area coverage. The product that comes out of the federal program has a specific digital format and each file covers a ground area of 3.75 minutes of latitude x longitude (plus an additional collar area beyond that boundary, which overlaps with adjacent images).

For further information on orthophotos, contact the SCO. We can fill you in on technical background, which areas have been completed, which areas are in work along with their expected delivery dates, areas where we are aware of significant interest in contracting for orthophotos, etc.

Some certification to be less strict

### **Digital soil info process eased**

by Bob Gurda

The USDA Soil Conservation Service (SCS) is about to change its methods of certifying existing digital versions of its soil surveys. Under the new process, each State Soil Scientist will have latitude to qualify digital soil survey information that was developed prior to SCS initiating its standard program for the conversion of paper maps and records to computer files.

Uncertified digital soil surveys exist for 9 Wisconsin counties: all 7 served by the Southeastern Wisconsin Regional Planning Commission, Dane, and Winnebago.

According to Ken Lubich, the SCS State Scientist for Wisconsin, the previous absolute standard for positioning of soil polygon boundary lines will be relaxed within limits. To substitute for this relaxation, supporting metadata will be collected to document the procedures by which the digital files were developed; such metadata will allow a user to determine whether the product meets a particular end use. The digital files will continue to be archived by SCS in Digital Line Graph (DLG) format.

## Private sector getting involved

### 21st Century satellites think small

by Jim Jordan

It may not be long before corporate names eclipse government acronyms in news about remote sensing satellites. Even NASA has recently taken a definitive step in the direction of private industry, by announcing plans to build and launch in two years, a new type of earth imaging satellite.

Two private firms, TRW Inc. of Redondo Beach, CA, and CTA Inc. of Rockville, MD, have been awarded contracts of \$59 million and \$49 million, respectively, to build what NASA views as the prototype for most future satellites - small, technologically innovative remote sensing platforms that will be "faster, better, and cheaper" than current government-directed designs.

The two "smallsats" are intended to expand the commercial remote sensing market by providing fast, reliable, and inexpensive data to the private sector. The TRW platform will carry the first "hyperspectral" sensor, capable of acquiring 30m-resolution images in 384 spectral bands. The CTA satellite will carry a World View Imaging Corp. sensor capable of acquiring 3m-resolution panchromatic images as well as limited multispectral data. Other advances include on-board image processors to allow direct downlinking to some users.

To encourage data use and experimentation, smallsat images will be available free of charge for one year after launch, from the Commercial Remote Sensing Office at Stennis Space Center. Design applications are wide-ranging, and are expected to find use in vegetation inventory and change monitoring; forestry, land management and planning, and mineral exploration, among others.

The announcement comes at a time when several commercial firms have also gone public with their intent to build private remote sensing satellites. The global market for satellite data is growing, and the variety and applications of this data will expand with private sector development in the coming years, adding to what is now available from Landsat, SPOT, European Space Agency (ERS-1), and Indian Remote Sensing (IRS-1) satellites.

Despite the recent flap over prices and availability of remote sensing data (for conflicting views see editorials in *Earth Observation Magazine* - Sept. 1994, and *Photogrammetric Engineering and Remote Sensing* - June 1994), it appears that the move toward private sector development and use of this technology truly signals its coming of age on a world-wide scale.

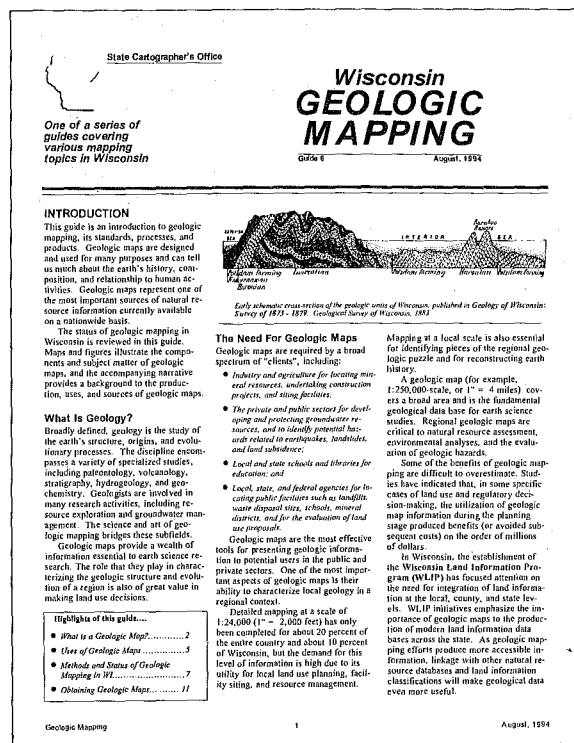
(sources: *Earth Observation Magazine*: July, September 1994; *Photogrammetric Engineering and Remote Sensing*: June 1994; *Geo Info Systems*: September 1994).

## Sixth in the series

### Geologic Mapping guide available

by Bob Gurda

We are pleased to announce *Wisconsin Geologic Mapping*. This 12-page guide to the methods, products, sources, uses, and status of this type of mapping in our state, has been printed and is available free upon request.



This publication was written by Jim Jordan and Rob Carnahan, of the SCO's graduate student staff, and is heavily illustrated from various sources. The SCO's work on this project benefitted from major contributions by the Wisconsin Geological and Natural History Survey.

Our standard distribution process is underway, we send copies of each of our guides to all 72 county land information offices, various regional, state, and federal offices, certain libraries, and college departments.

## Staff Update

by Bob Gurda

Liz Krug joined the SCO's permanent staff in September. She works daily, 9 am - 1 pm, helping provide various office support. Liz replaced Nancy Graham, who transferred to a full-time position with the Philosophy Department on campus.

We also expect to be adding a third part-time graduate student position, to support the automation aspects of the clearinghouse work profiled in this issue's cover story.



## Questions & Answers

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### **Is there any digital elevation information available that would support general highway route planning?**

There is some digital elevation model (DEM) data available from the U.S. Geological Survey that probably would support rough work, such as is sometimes done for highway work "pre-planning". However, this data is currently available for only limited parts of Wisconsin.

Such data is computerized from the topographic contour lines on the 24,000-scale 7.5-minute USGS map series, which portrays the terrain in either 10 or 20 foot elevation increments. The resulting computer files represent a regular grid of elevation points spaced 30 meters apart. (Other digital elevation is available statewide, but would be far too general to use for any highway route analysis).

The largest single area for which 24K DEMs are available is over the greater lower Fox River Valley, a block extending roughly from Green Bay to Fond du Lac. These DEMs were developed as part of the process of making digital orthophotos for the area. As digital orthophoto production extends to other parts of the state (over 30% of the area is scheduled already), similar DEMs will become available. In some areas, more detailed and more accurate DEMs may be produced.

For further details about DEMs, contact us at the SCO.

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### **Are geodetic and geographic latitude the same?**

It depends. They can be, but may not be the same in any particular situation. To quote from the recently published *Glossary of the Mapping Sciences*, latitude is "The angle from a specified reference-plane to a line of specified type through the point of interest. The definition is so general that many different kinds of angle can be included under it..."

The Glossary then goes on to list 34 types of latitude!!! Of course, some of these are simply different terms with the same definition. However, several distinct types of latitude are commonly used in making measurements on the earth.

Geodetic latitude is measured normal (perpendicular) to the ellipsoid at the point of interest. Astronomic latitude, by contrast, is measured relative to the vertical (which is determined by gravity). Both are measured from the equator to the observer's position.

Geographic latitude is sometimes casually used in place of geodetic, astronomic, or geocentric latitude.

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### **How long does it take to receive aerial photography prints after they have been ordered?**

Copies of aerial photographs may be purchased from a variety of sources depending upon what you wish to order.

Specifically, if you are interested in ordering prints of the National Aerial Photography Program (NAPP), the following turnaround can be expected:

The Wisconsin Dept. of Transportation (WISDOT) indicated a 1 to 1-1/2 week turnaround for contact and 2X enlargements. The Earth Resources Observation System (EROS) indicated a 3 to 4 week turnaround and cautioned when ordering near the end of the federal fiscal year (Sept. 30) it can take as long as 4 to 6 weeks. The Aerial Photography Field Office (APFO) indicated a 6 to 7 week turnaround.

If you are interested in purchasing prints of the recent Wisconsin Dept. of Natural Resources statewide forestry photography from Photo Science, Inc., you can expect a 2 to 3 week turnaround.

Lastly, if you are interested in purchasing old photography from 1950 and earlier, the National Archives Division indicated a 6+ week turnaround. Add an additional 4 weeks if you need them to determine what photography covers your area of interest.

Listed below are the addresses and phone numbers for these companies:

WISDOT  
Technical Services  
Rm. 5B, P.O. Box  
4802 Sheboygan Avenue  
Madison, WI 53707  
phone: 608/266-7809  
fax: 608/266-1859

EROS Data Center  
USGS, User Services Unit  
Sioux Falls, SD 57198  
phone: 605/594-6151

APFO  
USDA/ASCS  
P.O. Box 30010  
Salt Lake City, UT 84130  
phone: 801/975-3503

Photo Science, Inc.  
45 West Watkins Mill Rd.  
Gaithersburg, MD 20878  
phone: 301/948-8550  
fax: 301/963-2064

National Archives Division  
Cartographic & Architectural  
Branch (NNSC)  
National Archives at College  
Park, Rm. 3320  
8601 Adelphi Road  
College Park, MD 20740-6011  
phone: 301/713-7040  
fax: 301/713-7488

For general advice on aerial photography resources, scales, film types, etc., contact the SCO.

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*Editor's Note: If you have a question, or had a question for which you found an answer that might be of interest to others, please let us know.*



## On Reconciling Various Definitions of Wetlands

### Editor's Note:

In this issue, we are deviating from our usual Guest Opinion column, replacing it with a Guest Interview format. For the interview we have chosen to talk with Michael Hines regarding his activities as "owner" of the Wisconsin Land Information Board's (WLIB) initiative on reconciling inconsistent wetlands definitions. The "wetland issue" ranked second on a prioritized list of 16 issues identified by the WLIB at their June, 1994 planning retreat.

Mike, thanks for agreeing to give us an update on the wetlands issue. You made a very nice presentation on this topic at the WLIB meeting on October 13th. Can you summarize your progress at this point?

### Mike—

Thank you for the compliment, I have enjoyed the challenge of this project. First, let me give you some background information. This project, as identified at the WLIB's retreat, will work towards reconciling inconsistent wetlands definitions used by local, state and federal agencies. My approach has been to gather some of the facts and to then identify some of the actions needed to reconcile this issue.

On October 12th, the day before the WLIB meeting, representatives from the Wisconsin Dept. of Natural Resources (DNR), the U.S. Fish and Wildlife Service's Natural Wetlands Inventory (NWI), the Soil Conservation Service, the U.S. Geological Survey, and I gathered in Madison to discuss wetlands definitions and mapping.

From that meeting, one facet of this issue became clearly obvious, that wetland definitions and wetland delineations on a map are two very different things. Wetland biologists may agree that an area on the ground is a wetland, and they can readily agree on its extent. However, the problems arise on how biologists define and classify that wetland. They use varying classification schemes depending on their interest

in the wetland, whether it is regulation, management or inventory. That is where the major differences exist.

*How big a problem is this, and do you see a solution?*

### Mike—

I'm not sure if this is an irreconcilable problem, I'm not a wetlands bi-

**...there is no process, no mechanism, for this more accurate and current information to be passed upward...**

ologist. However, it is apparent that the various classifications systems have a scientific basis and are used for very valid applications. My opinion at this point is that, using GIS it is possible to incorporate data from multiple sources with differing schemes, combine them, and at the same time, with proper documentation, keep it clear where and when and how each piece of data was originated, its accuracy and its proper use. Whether we can reconcile the different classification systems into one scheme acceptable to all agencies, I'm not sure. I'm not convinced right now that we should try this, even if we thought it were possible to achieve.

*Mike, what other things have you learned concerning wetlands and wetlands mapping that are significant?*

### Mike—

Good question, it leads into my biggest concern. Neither the state nor federal wetlands mapping programs seem to have any provision for new information to flow upward. By this I mean, when someone, for example, a local conservationist, is in the field delineating and classifying a wetland, and they notice that their field data does not agree with the mapped data, there is no process, no mechanism, for this more accu-

rate and current information to be passed upward so the maps can be changed. My impression is that when differences occur between the reality of the field vs. the information on the map, the wetlands map, because it is a generalization of reality, is perceived as being inaccurate and therefore unusable. However, the wetlands maps could become more accurate, and up-to-date over time if the more precise field data were passed along for updates. This flow of information, from the bottom-up, is one of the basic principles of the state's land information program.

*As you know, the DNR has, for years, been compiling and producing the official wetlands maps for Wisconsin. The federal National Wetlands Inventory (NWI), on the other hand, has a congressional mandate to complete wetland mapping for the entire country, including Wisconsin, by 1998. Will we have a duplication of wetlands mapping programs in this state?*

### Mike—

I surely hope not. I believe that the DNR and NWI will work out their differences, particularly coming to some reconciliation on their classification scheme differences. Both organizations have said they will work together on this. I think our meeting on October 12th was an excellent start to opening up lines of communication between these agencies. I look for continuing cooperation in this area.

*Mike, thanks for your observations, and good luck with resolving this issue.*

### Mike—

Thank you for your interest.

*\*Michael Hines is President of GEO-CODE, Inc. in Eau Claire, WI and a member of the Wisconsin Land Information Board.*

## PEOPLE & ORGANIZATIONS

*Continuing service to Wisconsin....*

### Bryn Fosburgh joins Trimble Navigation

by Diann Danielsen

Bryn Fosburgh, formerly a geodetic engineer with the Wisconsin Dept. of Transportation, has moved to a position in the private sector, joining Trimble Navigation in September.

While at the DOT, Bryn was responsible for investigating GPS survey techniques and coordinating the agency's GPS survey crews. He also assisted with the review of data and adjustments produced on several recent county projects aimed at local densification of Wisconsin's high precision geodetic control network. According to John Haverberg, DOT Director of Technical Services, Bryn "provided insight for precision surveying for the organization. We appreciated his ability to analyze problems and come up with solutions, both technical and organizational."

At Trimble, Fosburgh will be applying those same skills. He is now a technical representative offering customer support for the Midwest region. His duties include helping customers develop and select a successful technical system to meet their application needs, and assisting with hardware and software system integration and support.

Bryn is looking forward to the technical challenges of his new position and the opportunity to continue to design innovative solutions using emerging technology. He still supports the DOT on a voluntary basis with the review of local government WHPGN densification projects, providing valuable continuity and expertise for those programs.

*One-year Term*

### Holland assumes Presidency

by Ted Koch

At its fourth annual meeting, held recently in Jackson Hole, Wyoming, Bill Holland became president of the National States Geographic Information Council (NSGIC). Bill is the Executive Director of the Wisconsin Land Information Board. Bill served as the NSGIC President-elect for the past year, and his term as president will extend one year to September, 1995.

NSGIC, which was created three years ago, provides a forum for its members to discuss geographic information issues, accomplishments, and problems primarily affecting the states. Additionally, the council gives the states an opportunity to present a unified view and voice on the geographic information activities and policy decisions of the federal government.

The Jackson Hole meeting brought together representatives from 37 states and more than a half-dozen federal agencies. In addition to its president, the Council elected three new members to its board of directors, Sheryl Oliver (Illinois), Karen Siderelis (North Carolina), and Emmett Fry (Arkansas), and elected Bruce Westcott (Vermont) as its president-elect.

## PUBLICATIONS and PRODUCTS

*BLM set to issue GLO data in November*

### Patent records on CD-ROM

by Bill Fulcer, Bureau of Land Management

The Bureau of Land Management (BLM) is projecting late November for release of its CD-ROM containing the State of Wisconsin General Land Office Patent record database and search software. The CD-ROM will contain a database of all 188,000 pre-1908 Cash and Homestead Land Patents for the State of Wisconsin. The database was derived from information indexed from optically scanned images of the original Land Patents for which the BLM is primary document custodian.

The patents are the legal documents that transfer property ownership from the federal government's public domain to private parties. BLM's database cross-indexes patents by patentee, modern county name, date of transfer, PLSS section, et al.

The CD uses public domain software called GSSEARCH, written and maintained by the US Geological Survey. This software provides the user with the capability of quickly searching for information in the patent database. Once the search is completed and information on the patent required is obtained, the user can contact the BLM and have copies of the original document sent to them.

The Wisconsin CD is the fifth in a series of CDs which will be produced for the 13 Public Domain states in the eastern United States. Other available CDs are: Michigan, Florida, Louisiana, and Arkansas. CDs for the other automated states will be issued at the rate of two or three per year.

The CDs work on IBM XT or AT-compatible personal computers with a color monitor, 540 Kb of random access memory (RAM), DOS 3.0 or higher, 1 Megabyte free hard disk space, a CD-ROM drive with ISO 9600 drivers, and CD software. Directions for installation are printed on the cover of the CD jacket. Users of the Wisconsin and Michigan CDs must have a Super GVA monitor to access the sample patents and survey plats contained on this CD.

The CDs are distributed by the Government Printing Office and cost \$15 each. Copies of GLO patents are \$1.25 each. A certified copy costs an additional twenty-five cents (\$.25).

To assist users, the BLM has prepared a map for each county in each Public Domain state, showing the townships and ranges for that locale. The maps are free and can be obtained by writing to the BLM, Attention: R. Johnson, 7450 Boston Boulevard, Springfield, Virginia 22153.

For further information on how to obtain the CD and patents, contact Bill Fulcer at the BLM Milwaukee District Office (414) 297-4430, or the Public Services Section at BLM's Eastern States Office in Springfield, Virginia at (703) 440-1600.

*Editor's note: additional background on this project can be found on page 11 of the April 1993 Bulletin.*

## PUBLICATIONS and PRODUCTS

### Milwaukee suburbs get updated maps

#### More USGS topo quads revised

by Bob Gurda

More topographic quadrangle maps have been updated in the greater Milwaukee area, by the U.S. Geological Survey. These 7.5-minute, 24,000-scale maps cover parts of Milwaukee, Waukesha, Washington, Ozaukee, and/or Kenosha County.

USGS refers to the type of revision process used on these maps as "limited update". In this approach, revisions are printed in purple ink, and areas of a sheet needing no revision remain unchanged from the previous printing.

With the above additions, USGS has recently published limited updates for the following topo quads:

Allenton	Jackson	Red Wing*
Bay City	Little Prairie	Sharon
East Troy	Menomonee Falls	Stonebank
Elkhorn	Merton	Sussex
Genesee	Mukwonago	Walworth
Hales Corners	Muskego	Wadsworth**
Hartford East	Newburg	Waukesha
Hartland	Oconomowoc East	Wauwatosa
		West Bend

\*primarily covers Minnesota

\*\*primarily covers Illinois

You may contact the SCO for information on how and where to purchase USGS topo maps (we are not a sales outlet).

### from Lewis Publishers

#### New GIS & mapping books offered

Several new books are now available through Lewis Publishers in Florida. Prices (within the U.S.) range from \$60 - \$130. The titles are as follows:

- *Environmental GIS: Applications to Industrial Facilities*
- *Aerial Mapping: Methods and Applications*
- *Environmental Remote Sensing from Regional to Global Scales*
- *Practical Handbook for Wetland Identification and Delineation*
- *Satellite Remote Sensing in Climatology*
- *The Image Processing Handbook, 2nd edition*
- *Practical Handbook of Digital Mapping: Terms and Concepts*
- *Geoid and its Geophysical Interpretations*
- *Visualization in Geographic Information Systems*

For further information, contact Lewis Publishers, 2000 Corporate Blvd. N.W., Boca Raton, FL 33431 (Fax 800/374-3401).

### Public meetings stir interest

#### Cultural Map Project gets input

by Bob Gurda

Over one hundred people appeared at a total of nine public forums recently, to provide comments to the developers of the Cultural Map of Wisconsin. (See our Oct. '93 and July '94 issues for background on this project). The forums were held at sites throughout the state, and the attendees have further spread word of the project to other people. Steve Hoelscher, staff to the project, reports that "The forums were useful in many ways".

Each of the nine events began with a short introduction to the project, followed by a preliminary listing of sites from the local region that the project staff were considering for inclusion on the map. Attendees then provided comments such as recommended specific additional inclusions and general advice on key historical figures who had major affect on the regional identity. Native Americans altered the project with their concerns over vandalism of archeological sites that might too easily be located from the map.

Staff on the project are now revising their site listing, which is being built in an electronic database to facilitate categorization and retrieval. Production of the map itself will move into full activity in the spring, with a target for distribution in the summer of 1996.

### USGS Publications

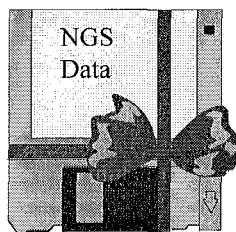
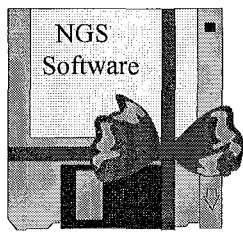
Water-Resources Investigations Reports (WRI) are reports that are of an interpretative nature made available to the public outside the formal USGS publications series. To order, contact the USGS-ESIC, Open File Report Section, Box 5286, Mail Stop 517, Denver, CO 80225, phone 303/236-7476.

WRI 91-4107. WISCONSIN. Hydrology and water quality of Wind Lake in southeastern Wisconsin, by S.J. Field. 1993. 61 p. (NC Da, M, Wb; USGS, WRD, 6417 Normandy Lane, Madison, WI 53719-1133.) Microfiche \$4; paper copy \$10.25.

### New county plat books

The following 1994 Wisconsin County Land Atlas and Plat Books are now available, for \$25 plus tax and shipping: Bayfield, Clark, Columbia, Dodge, Jackson, Lincoln, Marathon, Marinette, Oneida, Rock, St. Croix, Sauk, Trempealeau, Vilas, and Walworth Counties. In addition, Bayfield County is available for \$35. Sheboygan and Vernon Counties are now available for 1995 for \$25 each plus tax and shipping. For ordering details, contact: Rockford Map Publishers, Inc., P.O. Box 6126, Rockford, IL 61125, phone (orders only) 800/321-1MAP; for customer service information, call 815/399-4614.

# GEODETIC CONTROL



## *Bigger & Better!*

### New geodetic data and products from NGS

by Diann Danielsen

Beginning November 1, the National Geodetic Survey will make available an updated CD-ROM containing geodetic data and products for the North Central region of the United States. This new CD-ROM replaces a similar product released for the first time a year ago. This issue represents the first annual update of that product.

The CD-ROM contains all the geodetic data for NGRS stations in 13 states, including Wisconsin. The 1994 data update will include station information added to the database or corrected over the past year.

In addition to "fresh data", the CD contains an updated version of the DSX program used to extract the datasheet files and two new software programs for use with the data files. DSX Version 4.3 includes many new features, making it easier to perform complex and customized searches. In particular, a new radial search option allows the user to input a central location using a latitude/longitude position, then search outward from that point based upon a specified mile radius. Complex searches are now handled by easy restriction and customization of various types of data extraction; for example, finding all horizontal points of 1st Order or higher accuracy within 2.5 miles of a work site. Extractions can also be performed on irregular boundaries such as municipal limits or project sites. DSX now better manages the use of multiple data files for CD-ROM users or users with several counties worth of data.

Two new software programs were developed to accompany the 1994 datasheet files. DSSELECT produces a user-specified tabular data listing based upon over 30 data items contained on the datasheet. This product is especially helpful for managing geodetic data, building databases, or developing GIS applications with NGS data. DSPLOT is a basic graphic program designed for viewing the extracted data. While limited in its application, the program is useful for looking at the layout of stations and level lines. DSPLOT ASCII output can be taken into other software systems for further use and enhancement.

The 1994 NGS North Central CD-ROM can be obtained from the SCO or from the NGS Information Center. The

CD-ROM contains geodetic data for all of Wisconsin and 12 other states, as well as all of the software programs described above. The SCO will also continue to make available individual county diskettes containing the NGS datasheet files. These diskettes will contain geodetic data only. A separate diskette will contain the three software programs now available for use with the datasheet files.

We have revised our SCO Geodetic Order Form to reflect the updated NGS data and products. For further details or to obtain the new order form, phone (608) 262-3065 or fax (608) 262-5205.

## *Let us hear from you...*

### ...about the USGS "Transfer Project"

by Diann Danielsen

In our July issue, we reported on a cooperative program being offered by the U.S. Geological Survey and the National Geodetic Survey. The project seeks to transfer USGS vertical control information to the NGS, where the data will be adjusted to the North American Vertical Datum of 1988 (NAVD 88) and maintained by the NGS along with other federal geodetic data. Approximately 7000 USGS vertical control points in Wisconsin would be affected.

A Task Force established by the Wisconsin Land Information Board investigated the prospects of Wisconsin participation in this project. The Board recently mailed the Task Force Summary Report and an accompanying questionnaire to various state and local government agencies, utility companies, private surveying and engineering firms, and professional organizations to assess interest in, and possible contributions to, the project.

The survey is due back November 1. Please use it to share your thoughts on the USGS Transfer Project. For more information, call the SCO at (608) 262-3065.

## *Software now uses an improved model*

### VERTCON v. 2.0 available

by Diann Danielsen

In September, NGS released a new version of the VERTCON software, used for performing vertical datum transformations. The new version uses an improved grid model that eliminates several systematic effects due to refraction and gravity. The model also was refined through the addition of approximately 50,000 "posted" benchmarks. The results of the new upgrade are most significant in the western US where the effects of gravity and refraction are more prominent - in Wisconsin the changes will be negligible.

VERTCON v. 2.0 can be ordered from the NGS Information Center or from the SCO.

# GEODETIC CONTROL

*Referencing policies are under review*

## Location gets a fresh look at DOT

by Ted Koch

Location is a common component of much of the data collected and maintained by government organizations. This common component can be the key element to joining and integrating very different data sets. The Wisconsin Department of Transportation (DOT), in recognizing the critical nature of location in its business activities, has assigned a committee to study and recommend new DOT location referencing policies.

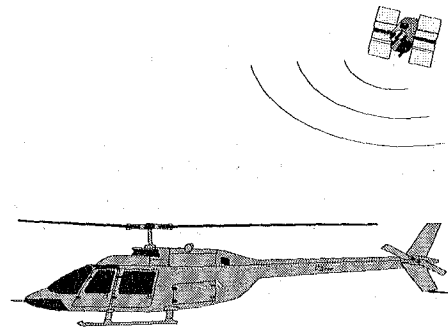
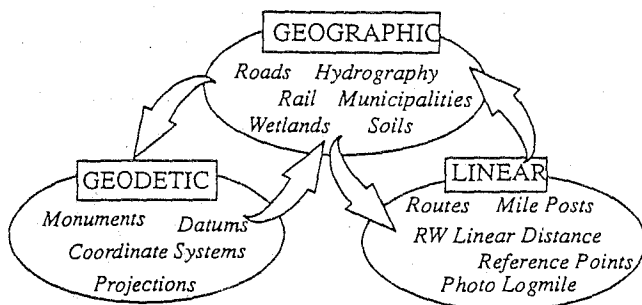
Dubbed as the Location Control Policy Committee (LCPC), this group will identify and recommend location reference system policies in three areas:

1. geodetic systems (datums, map projections, coordinate systems, and survey monuments);
2. geographic systems (location of features commonly found on base maps such as water, soils, and transportation); and
3. linear systems (specific locations along transportation features expressed in the form of mile posts, reference points, log miles, etc.).

The committee's policy recommendations will be based on an analysis of technical issues, current trends, legislation and mandates, with the intention of benefiting the DOT, its partners and the general public.

The LCPC has completed review and analysis of geodetic system issues, and has sent for departmental review, recommendations for new policies on horizontal and vertical datums, and map projection and coordinate system usage. There will be a period for outside agency comments on the proposed recommendations, with official approval and implementation expected by January, 1995.

The next area of work for the committee will be a review of reference schemes used along linear features such as roads, railroads, and rivers. Linear reference schemes describe the location of objects (bridges, pavement type, etc.), and events (crashes, pavement breakup, etc.) The LCPC has not set a deadline for completing its review and submitting recommendations on linear issues. For more information on LCPC activities, contact Ron Nohr, committee chair, at 608/266-3030.



*UW Hospital involved in testing...*

## GPS assists medical helicopter landings

by Diann Danielsen

In early October, the UW Hospitals and Clinics participated in an FAA sponsored test using the Global Positioning System (GPS) for medical helicopter landings. By participating in the program, Madison's UW Hospital will gain early certification for flying GPS helicopter approaches. This will improve patient access and the hospital's response to medical emergencies by allowing the helicopters to fly more quickly, efficiently, and safely in low visibility and poor weather conditions.

An earlier phase of the project succeeded in proving the effectiveness of GPS for narrowing the airspace required for helicopter approaches. Current tests being conducted at UW Hospital and three other sites focus on using GPS for "non-precision" approaches in congested areas. In urban areas with buildings and other obstacles, a much narrower approach path is required. Using GPS keeps the helicopters very close to the pre-planned path. A "non-precision" approach has precise horizontal guidance but does not have vertical guidance below 350 to 400 feet above the ground.

During the two week test period, Corporate Jets Inc., contractor to UW Hospital, is donating aircraft and 50 flights to test turns and rates of descent along the approach path. UW Hospital has been a leader in the use of instrument flight programs in the past, making them a natural candidate for testing the progression to GPS equipment.

The sites participating in this investigation will serve as a model for nation-wide implementation of similar GPS helicopter landing programs. A later phase of the FAA project will use differential and base station GPS techniques to test "precision" helicopter approaches with horizontal and vertical guidance down to 100 to 200 feet above the ground.

*(sources: FAA Approves GPS for Helicopter Approaches, GIS World, September 1994, Corporate Jets Inc.; Wisconsin Dept. of Transportation)*

## EVENT PROFILES

*Meeting set for Dec. 8-9*

### **WLIA to convene in Wisconsin Dells**

by Ted Koch

The Chula Vista Resort near Wisconsin Dells will be the site of the Wisconsin Land Information Association's next quarterly membership meeting. Scheduled for December 8 and 9, the meeting will follow the WLIA format of a free, two-hour Thursday evening workshop and a full-day program (nominal registration fee) on Friday. Non-members are welcome to attend any part of the meeting.

Thursday evening's program will be a panel discussion on integrating GIS and E-911 emergency management systems. Friday's program will feature a presentation on the use of street centerline information and its applications in E-911 systems. This section of the program will be presented by LOCALIS II, a consortium of eight Wisconsin counties and one municipality, coordinated through UW-Madison. Friday will also include an update of WLIB activities, and a presentation by the Wisconsin GPS Standards Work Group.

This meeting is the final WLIA event before the annual conference which will be held in Middleton, March 3-5, 1995.

For more information contact WLIA at 800/344-0421.

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*Surveying, Remote Sensing are topics*

### **EPD adds correspondence courses**

UW-Madison's Engineering Professional Development Program (EPD) has three correspondence courses available in the mapping field, with more under development. Enrollment is continuous.

The new courses are Elementary Surveying I, Elementary Surveying II, and Remote Sensing: Basics and Environmental Applications. A third surveying course is under development. (A photogrammetry course was announced earlier).

The surveying courses each require eight written assignments and one exam. These courses have been developed by Dr. Paul Wolf, recently retired from UW-Madison's Dept. of Civil & Environmental Engineering. The remote sensing course operates via computer programs and data contained on a CD-ROM; you need a moderately high-end IBM-compatible pc to run the course materials. There are no assignments, and the exam is supervised. The instructor, Dr. Thomas Lillesand of UW-Madison, is available for tutoring by electronic or ground mail.

For details, contact Judy Faber, EPD Correspondence Course Office, Room 315, 432 N. Lake St., Madison, WI 53706-1493. Telephone 608/262-1735 or fax 608/263-3160.

(source: EPD)



### **WLIA Fall Meeting Report**

by Diann Danielsen

Rhinelanders proved to be a beautiful and stimulating setting for the WLIA fall quarterly meeting on September 8 and 9. Over 75 WLIA members turned out for organization business and a rousing session on open records issues facing the land information community. In between events, WLIA members were able to enjoy the scenic lakeshore, walking and biking trails, and golf course of the Holiday Acres Resort.

The Thursday evening program was a mock trial based on a fictitious open records case developed by WLIB Director, Bill Holland. The case featured a petition by several parties (represented by Earl Epstein) seeking to acquire certain enhanced GIS data of Cork County. The County (represented by Bill Holland) was refusing to provide the data based on a contractual arrangement with a private firm to manage the sales of county data. The case was first judged by a jury of six of our distinguished peers, who found for the County based upon the contractual considerations of the case. Local Oneida County Judge Mark Mangerson presided over the mock trial and also ruled in the case. The Judge found for the plaintiffs based upon the fact that the County used the enhanced GIS products in the daily conduct of their business, making them subject to open records petitions.

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#### *A Continuing Education Course*

### **Digital Orthophotos and their use in GIS**

This course, to be offered at the UW-Madison Department of Civil and Environmental Engineering (CEE), will cover the technical aspects of digital orthophotos, their availability, and use in GIS applications. Instruction will include a combination of lectures and hands-on applications in a computer laboratory setting.

The course will begin at 1:00 p.m. on January 4th and finish at noon on January 6th. Included will be presentations by Professors Alan Vonderohe, Frank Scarpace and Paul Wolf of the CEE Department and Ted Koch, State Cartographer. Enrollment is limited to 32 students. The cost is \$250 if received by December 16; the fee after that date will be \$300 if space is available. For more information contact Professor Alan Vonderohe, UW-Madison CEE Department at 608/262-9854.

## CONFERENCES, TECHNICAL MEETINGS, AND CLASSES

November 2 & 16, **Navigating the Internet: Behind-the-Wheel Training** are "hands-on" DEMO/Lecture workshop (Mac and Windows) held in the Computer Science Bldg., 1210 W. Dayton Street, Madison, WI. Contact: Prof. Barry Orton at 608/262-2394 or Linda Jameson at 608/262-8612.

November 1-3, **Maximizing Your Profits with Satellite Imagery and GIS** will be held in the Tycon Building, Suite 180, 2070 Chain Bridge Road, Vienna, VA 22182-2536. Contact: SPOT Image Corporation Training Dept. at 1-800-ask-spot or 703/715-3100.

November 7, **Electronic Image Management Concepts** will be held at the U.S. Professional Development Institute in San Antonio, TX. Call: 301/445-4400, fax 301/445-5722.

November 7-8, **Fourth Annual GIS in Illinois Conference** will be held in Arlington Heights, IL. Contact: Richard E. Dahlberg, Northern Illinois University, Dept. of Geography, DeKalb, IL 60115 at 815/753-6827, fax 815/753-6872.

November 10, 15, 22 and Dec. 12, **Navigating the Internet: Behind-the-Wheel Training** are "hands-on" Macintosh workshops held in the Computer Science Bldg., 1210 W. Dayton Street, Madison, WI. Contact: Prof. Barry Orton at 608/262-2394 or Linda Jameson at 608/262-8612.

November 14-16, **Arc/Info Database Design**, ESRI, will be held in Denver, CO. Contact: 909/793-2853, fax 909/335-8233.

November 15-17, **Introduction to Wetland Remote Sensing and Mapping** will be held in Lafayette, LA. Contact: Pat O'Neil, National Biological Survey at 318/266-8500, fax 318/266-8513.

November 29-30, **Management of the Upper Mississippi River Basin: Current Issues and Future Options** will be held in the Twin Cities, MN. Contact: UMBRA, 415 Hamm Building, 408 Saint Peter Street, St. Paul, MN 55102

December 1, 6, 8, **Navigating the Internet: Behind-the-Wheel Training** are "hands-on" DOS/Windows workshops held in the Computer Science Bldg., 1210 W. Dayton Street, Madison, WI. Contact: Prof. Barry Orton at 608/262-2394 or Linda Jameson at 608/262-8612.

December 6-7, **ArcView 2 Class** will be held in Tucson, AZ. Contact: Skip Maselli, GIS Training and Applications Center, 4400 E. Broadway blvd., Suite 604 Tucson, AZ 85711 at 602/326-7005, fax 602/322-9700.

December 7-9, **GIS in Forest Management** will be held in Fort Collins, CO. Contact: GIS World, Inc., Training Division, 155 E. Boardwalk Drive, Suite 250, Fort Collins, CO 80525 at 303/223-4848, fax 303/223-5700.

December 8-9, **Wisconsin Land Information Association (WLIA) Quarterly Membership Meeting** will be held in Wisconsin Dells, WI. Contact: WLIA at 800/344-0421.

December 8-9, **Avenue for ArcView 2 Class** will be held in Tucson, AZ. Contact: Skip Maselli, GIS Training and Applications Center, 4400 E. Broadway blvd., Suite 604 Tucson, AZ 85711 at 602/326-7005, fax 602/322-9700.

December 12-14, **5th Annual Nevada State GIS Conference** will be held in Sparks, NV. Contact: Mark O'Brien at 702/785-6440 or Lorri Peltz-Lewis at 702/887-7619.

December 13-14, **Introduction to Metadata for Natural Resources** will be held in Lafayette, LA. Contact: Pat O'Neil, National Biological Survey at 318/266-8500, fax 318/266-8513.

### 1995

January 4-6, **Digital Orthophotos and Their Use in GIS** will be held at Room 1249, Engineering Hall, UW-Madison, Madison, WI. Contact: Prof. Alan Vonderohe at 608/262-9854.

January 25-27, **46th Annual Wisconsin Society of Land Surveyors Institute Convention** will be held at the Holiday Inn in Stevens Point, WI. Call 414/549-1533 for details.

February 27-March 1, **Twelfth International Symposium on Computer-Assisted Cartography** will be held in conjunction with the ASPRS/ACSM Convention in Charlotte, NC. Contact: Donna J.

Peuquet, Auto-Carto 12, Dept. of Geography, 302 Walker Bldg., Pennsylvania State Univ., University Park, PA 16802 at 814/863-8017, fax 814/863-8018.

February 27-March 2, **ASPRS/ACSM Annual Convention '95** will be held at the Charlotte Convention Center, Charlotte, N.C. Contact: Denise Cranwell, ASPRS/ACSM '95, 5410 Grosvenor Lane, Bethesda, MD 20814-2112, 301/493-0200, fax 301/492-8245.

March 1-3, **Wisconsin Land Information Association's Annual Conference** will be held in Middleton, WI. Contact: WLIA at 800/344-0421.

March 7-9, **Advanced Wetland Photointerpretation** will be held in Lafayette, LA. Contact: Pat O'Neil, National Biological Survey at 318/266-8500, fax 318/266-8513.

March 14-18, **91st Annual Association of American Geographers Meeting** will be held in Chicago, IL. Contact: AAG, 1710 16th St., N.W., Washington, DC 20009-3109 at 202/234-1450, fax 202/234-2744.

March 20-23, **AM/FM International Annual Conference XVIII** will be held in Seattle, WA. Contact: AM/FM International, 14456 E. Evans Ave., Aurora, CO 80014, 303/337-0513; fax 303/337-1001.

March 27-30, **Ninth Annual Symposium on Geographic Information Systems** will be held at the Vancouver Trade & Convention Center. Contact: GIS '95 Symposium, 207-1102 Homer Street, Vancouver, Canada V6B2X6, 604/688-0188, fax 604/688-1573.

April 2-5, **GIS for Transportation Symposium** will be held at the Sparks Nugget Hotel in Reno, NV. Contact: David Moyer, Wis. D.O.T., P.O. Box 7910 Madison, WI 53707, 608/266-3919, fax 608/267-1515.

April 2-5, **GIS in Business '95** will be held in Chicago, IL. Contact: GIS World, Inc., Training Division, 155 E. Boardwalk Drive, Suite 250, Fort Collins, CO 80525 at 303/223-4848, fax 303/223-5700.

April 11-13, **Introduction to Orthophoto Basemap Development** will be held in Lafayette, LA. Contact: Pat O'Neil, National Biological Survey at 318/266-8500, fax 318/266-8513.

May 7-10, **1995 National Geodata Forum** will be held at the Hyatt Regency Hotel, Crystal City, VA. Contact: The Federal Geographic Data Committee at 703/648-5755.

May 7-12, **48th Annual Conference, Society for Imaging Science & Technology** will be held in Washington, DC. Call 703/642-9090, fax 703/642-9094.

May 16-17, **Introduction to National Wetland Inventory Classification System** will be held in Lafayette, LA. Contact: Pat O'Neil, National Biological Survey at 318/266-8500, fax 318/266-8513.

May 22-26, **ESRI 15th Annual User Conference** will be held at the Wyndham Hotel and Palm Springs Convention Center in Palm Springs, CA. Contact: Environmental Systems Research Institute, User Conference Registration, 380 New York Street, Redlands, CA 92373 at 909/793-2853, fax 909/.

June 5-8, **A/E/C/ Systems '95** will be held in Atlanta, GA. Contact: Sharon Price, A/E/C/Systems '95, Box 310318, Newington, CT 06131-0318 at 800/451-1196, fax 203/666-4782.

June 8-9, **Wisconsin Land Information Association Quarterly Membership Meeting**. Contact: WLIA at 800/344-0421.

June 13-15, **Integrating Remote Sensing and GIS for Natural Resource Management** will be held in Lafayette, LA. Contact: Pat O'Neil, National Biological Survey at 318/266-8500, fax 318/266-8513.

August 13-17, **URISA '95 Annual Conference** will be held in San Antonio, TX. Contact: Urban & Regional Information Systems Assn., 900 Second St. N.E., Suite 304, Washington, D.C., 202/289-1685.



## About the SCO...

The State Cartographer's Office (SCO), established in 1973, is a unit of the University of Wisconsin-Madison. The SCO is located on the 1st Floor of Science Hall.

Our permanent staff consists of five people—Ted Koch, State Cartographer (608/262-6852), Bob Gurda, Assistant State Cartographer (608/262-6850), Diann Danielsen, Outreach Specialist (608/262-8776), and Program Assistants Brenda Hemstead and Liz Krug (608/262-3065), plus several part-time graduate and undergraduate students.

The State Cartographer's position and mission is described in Wis. Statute 36.25 (12m). In addressing this role, the SCO functions in a number of ways:

- publishes the *Wisconsin Mapping Bulletin*, catalogs, guides, brochures, and other documents to inform the mapping community.
- inventories mapping practices, methods, accomplishments, experience, and expertise, and further acts as a clearinghouse by providing information and advice in support of sound mapping practices and map use.
- participates on committees, task forces, boards, etc. The State Cartographer is one of the 13 voting members of the Wisconsin Land Information Board.
- develops experimental and prototype products.
- serves as the state's affiliate for cartographic information in the U.S. Geological Survey's Earth Science Information Center (ESIC) network.

## **Wisconsin Mapping Bulletin**

Published quarterly by the Wisconsin State Cartographer's Office. A University of Wisconsin-Madison outreach publication distributed free upon request.

News is welcome on completed or ongoing projects, published maps or reports, or conferences/workshops. Local and regional information is especially encouraged. The Editor makes all decisions on content. Deadline for the next issue is January 6, 1995

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## About our BBS...

The SCO has an electronic bulletin board system (BBS), as another means of making information available. You can use it to browse standard information, check on late-breaking news and upcoming events, download copies of our files and free software, and to interact with other BBS users on various mapping-related topics as they emerge.

You access our BBS with a telephone call from any remote computer that is connected to a modem and operated through basic communications software. An ordinary personal computer will suffice; a modern modem will give you faster response and reduce the length of your connect time.

The telephone number is 608/265-2807, and your modem settings need to be N, 8, 1; the modem on our end operates up to 14.4 K baud. Don't try calling the BBS directly from your telephone!! If you need help getting started, contact us at 608/262-3065.

On your first call to the BBS, you will enter your name and choose a password, then be briefed on how the BBS works, and then you can go exploring.



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