



Wisconsin MAPPING BULLETIN

Orthophoto Activity Continues to Expand

by Bob Gurda

Digital orthophoto images of over one-half of Wisconsin may be available within a year. Beyond the images already in hand, continuing production on committed projects is steadily building the coverage. Additionally, the next few months is likely to see numerous new projects move into the work phase.

An orthophotograph is derived from a standard aerial photograph which has been scanned into computerized form. Then, geometric distortions common to all such photographs (due to terrain and other factors) are removed, producing an image that has the scale accuracy of a map.

The combination of delivered products, work in progress, and serious project plans now represent approximately 50% coverage of the state. Each of the various initiatives falls into one of several general approaches. The primary differences between these categories involves the original scale of the photographs, which controls how small a ground area can be represented by a single "pixel" (picture element) in the computerized image's grid.

Digital orthophoto products already available (12% of the state) were developed as part of the National Digital Orthophoto Program (NDOP), which uses 1992 photographs acquired at moderately high altitude (scale is 1:40,000, resulting in 1-meter image pixels). Digital images generated as part of this program are produced in a quarter-quadrangle (3.75-minute) format, to NDOP specifications. Additional work under this program is in progress (an additional 20% of the state), with delivery times ranging from this May onward.

Several counties (Waupaca and Shawano) are moving forward to convert 1:20,000-scale 1994 photographs (that carry twice the detail of the national imagery) to orthophotos (3% of the state). Each photograph comfortably covers 4 square miles, although the orthophoto product may be broken down to land sections (approx. 1 sq. mi.)

The Southeastern Wisconsin Regional Planning Commission (SEWRPC) has set a similar (1:19,200-scale) photography acquisition for this spring, with the intention of producing digital imagery over their entire 7-county service area. About 60% would be ortho-corrected (3% of the

state), and the balance partially corrected digitally in a process similar to traditional rectification.

Another major initiative involves a consortium of 6 counties in the southwestern part of the state (Dane, Green, Lafayette, Iowa, Grant, and Vernon). This group is aiming for spring, 1995 photography at 1:31,860-scale. The photos would be converted to digital orthophotos, each covering one-quarter of a township, for use as an image base map (9% of the state). Some of the counties will use the digital files to produce hard-copy base maps, rather than investing initially in the significant computer resources necessary to handle the digital files effectively.

The National Program is moving forward over other parts of the state. Several counties will be completed to achieve 100% coverage where federal production has already resulted in partial availability (Brown, Outagamie). Several additional counties with no existing coverage are considering going with the National Program in cooperation with the National Resources Conservation Service (formerly SCS).

Funding for these various activities comes from a variety of sources. The national work currently enjoys a 50% federal cost share. Some counties are attempting to secure grant funds from the Wisconsin Land Information Board. And others are utilizing traditional local cooperators.

In our next issue we will carry a state index map illustrating digital orthophoto project status: finished, started, and otherwise committed. Please keep us informed so that we can convey the latest to our readers! You can also access our BBS (*see p. 16*) to post or check for late-breaking news.

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WLIB News

by Ted Koch

Board Meetings

The Wisconsin Land Information Board (WLIB) met on January 17 in Madison. This was the Board's first meeting since October 13, which we reported on in our last issue. The next gathering of the Board will be "Breakfast with the Board" on Friday morning, March 3 at the WLIA Annual Conference in Middleton. (For more on the upcoming WLIA meeting see page 14). April 6 is the next regularly scheduled formal Board meeting.

County Plans

At its January 17 meeting, the Board approved amendments to county-wide plans for Marathon, Outagamie and Sawyer Counties. All three counties amended their plans to include the investigation, testing and implementation of electronic document imaging and retrieval as new objectives in their land records modernization process.

Grants

For the January, 1995 semi-annual submission period, the Board received 32 grant applications requesting a total of \$2,851,366. These applications will be evaluated and scored in early March. The Board's hearing on these grants is scheduled for Friday, March 24 at the Mead Inn in Wisconsin Rapids. Full Board consideration of recommended grant awards is planned for the April 6 meeting.

GPS Standards Work Group

At the January 17 meeting, the GPS Standards Work Group presented its first report to the Board. This group is a task force of the WLIB with representation from the Wisconsin County Surveyors Association, the Wisconsin Society of Land Surveyors, and the Wisconsin Land Information Association. For more details on the report, see page 13.

Procurement Task Force

WLIB's Procurement Task Force held meetings on November 17 and December 22. It has developed a draft document for procurement procedures to be used by counties when buying outside contractual services using WLIB grant funds. The draft document is currently undergoing further review and refinement. The Task Force will present the document for public review on Friday, March 3, at 1:30 pm, at the Holiday Inn West in Middleton (immediately following the close of the WLIA Annual Conference). Additional public reviews are being scheduled.

Staff

As part of the Legislature's action last year to make the program's funding permanent, the WLIB's support staff positions were converted to permanent status. This precipitated formal steps to fill the positions through a standard state hiring process. The WLIB is currently developing official job descriptions as a first step.

SCO News

Continuous publication

Bulletin is 20 yrs. old

by Bob Gurda

January, 1975. Some readers of this newsletter weren't even born yet. Gerald Ford was President.

That's when the first *Wisconsin Mapping Bulletin* rolled off the press. It was a single sheet, printed on both sides from largely typewritten copy. From that basic start, 1975 saw three additional issues, and a tradition was begun.

Since that time, the *Bulletin* has grown in several respects, but has been published continuously. Its purpose from the beginning has been to inform the community of people interested in mapping and related fields in Wisconsin. Now we head into the 21st year.

This issue marks my 30th as your editor. I'm pleased that we've been able to expand the group of people contributing to this newsletter's content, to implement desktop publishing, to refine the design, and to improve the printing quality over these 7 years. And there's been no shortage of news to report!

Brenda Hemstead has ably handled the preparation of the camera-ready copy during my stint here, which coincidentally was the first issue the office produced with desktop publishing methods. She quickly made that adjustment at the same time as dealing with a new editor, just as she had smoothly negotiated earlier transitions. We have now gone through several upgrades of publishing software, and are about to go through another.

So whether we talk about the pulling together of facts on mapping developments, or condensing the wisdom of experts in various specialties, or the art and mechanics of getting words and pictures ready for printing, the flow goes on. In many ways, the more things change, the more they stay the same.

SCO News continued on page 14...

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The Path not Taken

by Dave Fodroczi*

A year ago on this page, my predecessor as WLIA President, Nancy von Meyer, characterized our collective land records modernization activities as the Wisconsin Land Infor-

Embarking on a journey suggests that we know where we're going and how to get there.

mation Journey. She focused her observations on the relevance of data, funding, policies and procedures to the Journey. I would like to address the path that we might take to get where we're going on our Journey.

Embarking on a journey suggests that we know where we're going and how to get there. The Land Information Journey should lead us to a multipurpose land information system that provides or supports the product, service, management and decision needs of all of its users. The path would be a series of design, implementation and related financial decisions that build the system that we are trying to reach at the end of our Journey.

My experience to date suggests that the path of our Journey is not short or straight. The surface is often rough. There are many curves. Occasionally we encounter detours. Sometimes we even have to back up to go forward again. Some tell us that the Journey never

...we have experienced a healthy tension over which path is the right path for our Journey.

really ends! However, the accomplishments along the way and the evolving vision of the system at the end of our Journey usually sustains us.

Throughout the history of our Wisconsin Land Information Journey, we have experienced a healthy (usually) tension over which path is

the right path for our Journey. The surveyors, engineers and facilities managers advocate a path that includes large-scale mapping and positional accuracy for the management of parcels and pipes, with an emphasis on property and facilities. Much of this path is embodied in the multipurpose cadastre concepts as published by the National Research Council (1983 and earlier) and some of the system concepts identified by the Wisconsin Land Records Committee (1987). This approach emphasizes the development and use of large-scale base maps to map and organize geographic features. Build

Must we all choose one path to follow together, regardless of how long it takes and how much it costs to complete?

them first. Then you can aggregate and integrate at any lesser scale and accuracy.

On the other hand, planners, resource managers and public safety professionals have often advocated a path that includes medium-scale mapping with less positional accuracy that can be used for planning and analysis of areas and regions, with an emphasis on communities and environmental systems. They contend that important public and private decisions about community development and natural resources can't wait to complete a more rigorous path. With the rapid improvements in the cost and performance of land information technology, they say that their path could be completed and pay for itself long before the other path is finished, particularly in nonurban areas.

Which path is the right path for our Journey? Must we all choose one path to follow together, regardless of how long it takes and how much it costs to complete? I think not.

I would advocate that multiple paths are not only appropriate, but necessary. The key is to keep our

multiple paths complementary, parallel, coordinated and convergent on the same Journey's end. Such

Multiple paths on our land information Journey aren't only appropriate, but necessary.

an approach would seek to avoid the duplication and inefficiencies that we have recognized in the past. We can accomplish these objectives as our understanding and technology advance, but it can only take place with open communication and cooperation.

It should be no secret that the tension among multiple paths grows strongest when the discussion turns to funding. Allocating funds to develop projects on one path can be viewed as a diversion of funds from another. Shame on us who think that way! We are all on the same Journey, regardless of the path we take.

We must temper our attachment to different conceptual models with concerns for practical realities and

We are all on the same Journey, regardless of the path we take.

equity. For those who insist that we must all be on one path, who will help them when they fall during the Journey? More importantly, what good will be accomplished if the only "right path" remains... "the path not taken."

**Dave Fodroczi has been Planning Director for St. Croix County since 1990, and is concluding his term as President of the Wisconsin Land Information Association (WLIA). Prior to moving to Hudson, Dave served in Madison as Executive Director of the State of Wisconsin's Farmland Preservation Program for seven years. He also served as Chair of the Wisconsin Land Records Committee's Task Force on Local Institutional Arrangements (1985-87).*

Remote Sensing & Aerial Photography News

Report to Congress

OTA evaluates remote sensing

by Jim Jordan

How many remote sensing satellites are circling the earth? What kind of information do they collect and how does it relate to what I read about climate change, deforestation, or next week's weather? How much overlap is there between government and civilian satellite programs? Who has access to satellite data? What can the next 20 years of remote sensing data tell us about the earth's history and future?

These are just a few of the questions that a recent series of publications by the federal government's Office of Technology Assessment (OTA) attempts to answer.

In October 1994, OTA completed a three volume report that examines the nation's civilian remote sensing programs and systems. Congress ordered the study to be performed in 1992 by OTA, its analytical branch, to provide an overview of remote sensing technology, applications and current management.

The OTA study recommends that a government-coordinated plan for the future of U.S. remote sensing programs should accommodate the needs of government and nongovernment data users, improve the efficiency and reduce operating costs of the programs, incorporate international programs, and guide technological developments.

OTA concedes that government involvement in such a plan is a double-edged sword - while coordination and guidance of remote sensing programs can result in increased efficiency and decreased redundancy, government involvement could inhibit the development and adaptations of new technologies, and increase the vulnerability of remote sensing programs to federal budget cuts.

These reports offer a comprehensive background on the U.S. civilian satellite remote sensing program from its inception to the present. They can be ordered from the Government Printing Office at (202) 512-1800.

"The Future of Remote Sensing From Space: Civil Satellite Systems and Applications" (OTA-ISC-558: \$14 - July 1994).

"Remotely Sensed Data: Technology, Management, and Markets" (OTA-ISS-604: \$13 - September 1994).

"Civilian Satellite Remote Sensing: A Strategic Approach" (OTA-ISS-607: \$12 - October 1994).

(source: OTA)

Numerous projects finished/planned

New aerial photography

by Bob Gurda

Aerial photography, a basic ingredient in many mapping projects, is alive and well in Wisconsin. Since we published our 500-page *Wisconsin Catalog of Aerial Photography* 18 months ago, a number of major acquisitions have been completed, and others are on tap for 1995.

On the facing page is a simplified listing of the completed projects we know of. These acquisitions were arranged for various purposes, and by various organizations.

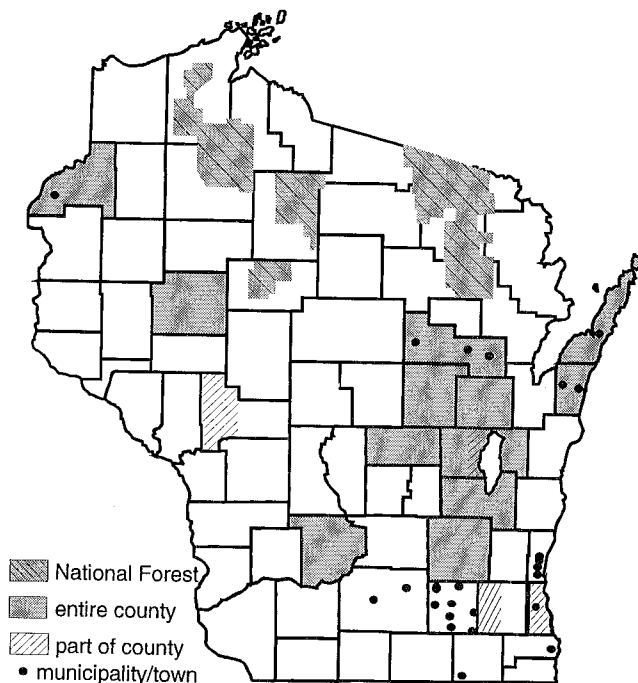
For additional details, such as where to view samples, from whom various products are available, etc., contact us at the SCO. Note that we typically have not attempted to keep track of the numerous aerial photography projects that cover small areas, such as commonly support localized construction.

In addition to those listed, DNR's statewide Forestry Photography Project is complete. For details, consult our October, 1994 issue or contact us at the SCO.

For 1995, projects are scheduled or under serious consideration for:

- full counties (Buffalo, Calumet, Chippewa, Dane, Dunn, Eau Claire, Grant, Green, Kenosha, La Crosse, La Fayette, Milwaukee, Ozaukee, Pepin, Racine, Sheboygan, Vernon, Walworth, Washington, and Waukesha);
- partial counties (Ashland, Bayfield, Taylor); and
- municipalities (Oconomowoc, River Falls)

If you know of projects that have been completed, or that are being planned, but which are not on our list, please let us know.



1993 and 1994 aerial photography projects

Aerial Photography Reports: 1993 -1994

Full or sub-county projects

County	Yr.	Season	Scale	Film	Area
Burnett	94	spring	10,000	B&W	entire county
Burnett	94	spring	5,000	B&W	Village of Grantsburg
Calumet	94	spring	20,000	B&W IR	entire county
Calumet	94	spring	72,000	B&W IR	entire county
Chippewa	93	fall	20,000	B&W	entire county
Dane	94	spring	5,000	B&W	City of Middleton (city plus .5 mi to N & W)
Dane	94	spring	5,000	B&W	entire City of Sun Prairie + 1/2 mi. beyond
Dodge	94	spring	20,000	B&W IR	entire county
Dodge	94	spring	72,000	B&W	entire county
Door	94	spring	20,160	B&W	entire county
Door	94	spring	10,080	B&W	City of Sturgeon Bay
Fond du Lac	94	spring	20,000	B&W IR	entire county
Fond du Lac	94	spring	72,000	B&W IR	entire county
Jackson	94	spring	12,000	Color	western half
Jefferson	94	spring	10,000	B&W	cities of Jefferson, Ft. Atkinson, Watertown, Lake Mills, Waterloo, Sullivan, Johnson Creek, and Palmyra
Kewaunee	93	spring	20,400	B&W	entire county
Kewaunee	93	spring	7,200	B&W	Cities of Algoma, Kewaunee, and Village of Luxemburg
Milwaukee	92-3	spring	6,000	B&W	20-25% of county area; (total of 60-70% since '90)
Milwaukee	94	spring	2,000	B&W	entire City of Wauwatosa + 1 mi. beyond
Outagamie	93	spring	20,000	B&W IR	entire county
Outagamie	93	spring	72,000	B&W IR	entire county
Ozaukee	93	spring	9,600	B&W	City of Mequon, including the Village of Thiensville
Ozaukee	94	spring	9,600	B&W	Towns/Villages of Cedarburg, Grafton, and Saukville
Racine	94	spring	9,600	B&W	City of Racine: 12 sq. mi. of urban fringe
Sauk	93	spring	19,200	B&W	entire county
Shawano	94	spring	20,000	B&W	entire county
Shawano	94	spring	10,000	B&W	City of Shawano plus Shawano Lake; also Villages of Wittenberg & Bonduel
Walworth	94	spring	9,600	B&W	Town of Sharon
Waukesha	92-4	spring	9,600	B&W	parts of the west half
Waupaca	94	spring	20,400	B&W	entire county
Waupaca	94	spring	20,000	B&W IR	entire county
Waupaca	94	spring	72,000	B&W IR	entire county
Waushara	94	spring	20,000	B&W IR	entire county
Waushara	94	spring	72,000	B&W IR	entire county
Winnebago	94	spring	10,080	B&W	entire county
Winnebago	94	spring	10,080	Color	urbanized eastern half

Projects by National Forests, each covering parts of several counties					
Chequamegon NF	93	fall	12,000	Color	entire forest (parts of Ashland, Bayfield, Price, Taylor, and Sayer Counties)
Nicolet NF	93-4	spring	16,000	CIR	entire forest (parts of Oconto, Forest, Langlade, Florence, Oneida, and Vilas Counties)
Ottawa NF	94	spring	16,000	CIR	in Upper Michigan, but abutting Vilas, Forest, and Florence counties

B&W = black-and-white panchromatic; IR = Infrared; Color = Natural Color; CIR = Color Infrared

People & Organizations

Returns from WGNHS

Bohn in new role with DNR's GIS

by Bob Gurda

Michael Bohn has been appointed as manager of the Technology Integration Unit in the Wisconsin Department of Natural Resources' (DNR) Geo Services Section. For the last 8 years, he served as GIS Specialist for the UW-Extension Wisconsin Geological and Natural History Survey (WGNHS). Prior to joining WGNHS, Mike worked for DNR's Bureau of Water Resources.



In his new position, Bohn will oversee DNR's GIS research, development, and database library. He can be reached at 608/264-8557. According to Paul Tessar, Chief of the Geo Services Section, "Mike brings experience with GIS applications and abroad understanding of natural resources to our team. These qualities became increasingly important as our staff has grown in response to the agency's needs for GIS support in many different programs."

WGNHS Assistant Director Ron Hennings reports that the Survey expects to hire a database administrator to assume part of the role that Bohn filled. In the interim, people needing information about WGNHS activities in GIS related to geology or groundwater should contact Hennings at 608/263-7395.

AM/FM Int'l.-Wis. selects 1995 leaders

Lori J. Ashley was recently chosen as President-elect of the Wisconsin Chapter of AM/FM International. Ashley is Director of Quality Management at Intelligraphics International in Waukesha.

Also selected as board members were Mike Hasslinger (Waukesha County Register of Deeds), Doug Fuller (Aerometric Engineering), Bob Haizel (Intergraph Corp.), and Dave Casper (Wis. Dept. of Transportation).

AM/FM is a non-profit association in the field of Automated Mapping/Facilities Management (AM/FM) and GIS. For information on the Wisconsin Chapter's activities, contact Ashley at 414/574-9000.

(source: *Intelligraphics*)

USDA makes changes

SCS gets new name, state leader

by Bob Gurda

The federal agency responsible for soil mapping has a new name. Formerly the Soil Conservation Service (SCS), it has been renamed as part of a reorganization within the US Department of Agriculture (USDA). It is now the National Resource Conservation Service (NRCS).

The State Office of NRCS continues to operate in Madison, and is now led by a new State Conservationist, Pat Leavenworth. She was chosen to replace Earl Cosbie who transferred to Georgia late in 1994.

Tracking gypsy moths and groundwater

DATCP begins to implement GIS & GPS

by Bob Gurda

The Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) is implementing automated mapping technology to support its Gypsy Moth Program and the Agrichemical Management (ACM) Bureau. Both Geographic Information System (GIS) and Global Positioning System (GPS) technologies are involved.

Initially, DATCP utilized pcARC/INFO software for its GIS applications. In August, 1994, it purchased a SUN SPARC workstation and upgrades for two "X-terminals" in its Madison office. Pc-based applications and data layers are being transferred to the workstation.

Gypsy Moth Program

Wisconsin trees are being threatened by the gypsy moth, already a serious defoliator of trees in northeastern states. DATCP's Gypsy Moth Program monitors the potential movement of gypsy moth populations in Wisconsin through intensive trapping (e.g., 40,000 - 60,000 traps annually) and surveying.

The Program uses GIS tools to manage and analyze trap data and to develop subsequent survey, control, and regulatory strategies. The program also treats selected sites (120,000 acres in 1994) using contracted aerial applicators. Aerial GPS provides navigation and data logging of flight lines during treatment flights. This information is used to ensure complete treatment coverage and quality control.

The Gypsy Moth Program has identified additional GIS and GPS applications to be implemented in 1995. For example, GPS technology will be used to locate egg masses, pupal states, and other aspects of the pests. GIS data layers will be generated from these data. Contact Nick Clemens (608/224-4585) for further information.

Monitoring & managing chemicals

The ACM Bureau regulates the use, storage, and disposal of chemical pesticides and fertilizers to protect humans and the environment, including groundwater. Currently the bureau uses GIS tools to manage and analyze data related to nitrates and pesticides in wells for regulatory and non-regulatory purposes. For example, these data are used to establish atrazine prohibition areas.

In 1995, ACM plans to conduct a pilot study using GPS to locate licensed pesticide facilities, pesticide mixing and loading areas, agrichemical spills, land spreading sites for agrichemically contaminated oils, and similar features. Data from the GPS will be downloaded to create ARC/INFO "coverages" of these features. In addition, ACM is redesigning its case tracking system with the intention of linking investigation information with various GIS data layers to track pesticide use history and environmental quality at specific sites. Lisa Morrison (608/224-4504) is ACM's GIS contact.

(source: *DATCP*)

Bulletin Board Update

by Brenda Hemstead

Welcome readers! I am the SCO's BBS "system operator" (Sysop), taking over the challenging role that our former Sysop, graduate student Jim Lacy, did so well. It's been a year now since we announced in our January, 1994 *Bulletin* the debut of our electronic Bulletin Board System. Since then, our users have called in over 1125 times. Let's double that figure in 1995!! For starters, how about introducing yourselves to me?

All you need is a modem, connected to a relatively modest computer!

If you don't already have a modem, my advice to you is not to consider anything slower than a 14,400 baud! The prices of high-speed modems have dropped even further over the last year. A new, high quality "14.4K" modem can be had for under \$150. Most can also send and receive faxes.

Accessing our BBS

For those of you who already have a modem and haven't yet dialed our BBS, *you know who you are*, it's time you give it a try.

If you have called, but have been "on vacation" for a while, take another look to find all the new items.

The BBS runs 23 hours a day, seven days a week. (The Board is "down" between 3 and 4 a.m. every day for routine maintenance.) **There is no charge to use the BBS;** you pay only for your telephone connect time (assuming a long-distance call).

What's new on the BBS?

Our BBS is logically organized using a series of menus and submenus. **Would you like information** on aerial and satellite imagery? Surveying and geodesy? Maps and mapping? Digital data? GIS/LIS? Metadata? Legal issues? If you view the technical briefs submenu you will find information about these topics and many others.

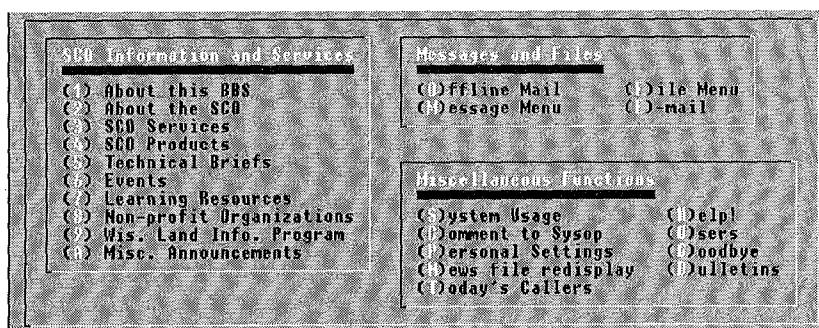
Since our last issue of the *Bulletin*, we've posted over 90 new topical information files. Of these new files, many of them are about surveying and geodesy in Wisconsin including topics such as:

- about geodetic control,
- accuracy and standards,
- geodetic monuments,
- geodetic control and the PLSS,
- the NGRS,
- geodetic surfaces,
- horizontal & vertical control networks,
- WHPGN densification,
- GPS,
- users and producers of geodetic control,
- horizontal & vertical datums,
- latitude and longitude,
- map projections,
- various coordinate systems.

Another group of new files covers various aspects of landscape mapping, including landuse, landcover, vegetation, groundwater, and floodplains.

If you are interested in keeping up-to-date with listings of upcoming conferences, classes, and workshops, trying looking under the **Events** menu. I compile these listings from various publications, periodicals, and notices sent to our office. In this menu, we have categorized them into separate files, **Foreign, National, and Wisconsin Conferences**. These files can also be downloaded from this menu as well.

If you want to publicize an event, let me know. We are interested in listing even small committee meetings so that the broader community of users can avoid unnecessary conflicts when scheduling events.



Try posting a message!

We welcome any thoughts, opinions, comments and/or suggestions, good or bad, you may have about our BBS. Let me know about your experience in "cruising through"

our BBS. You can post comments in a variety of public message bases by selecting the (M)essage base option from the main menu. We currently have 28 message areas. **To post a message**, first select an (A)rea, then choose (P)ost. You will be prompted to specify another user as the "receiver" (type 'all' to send a message to all users), and to identify the message's subject. Note: a message entered in a public message base is visible to all users, even if it is addressed to a specific individual.

Visit our booth at the WLIA Conference

The Wisconsin Land Information Association's (WLIA) eighth annual conference will be held at the Holiday Inn West in Middleton, WI from March 1-3, 1995 (see article on page 14). We'll have the BBS there, running on a computer for you to try out.

I am looking forward to communicating with you on the SCO BBS or give me a phone call at 608/262-3065.

State Cartographer's Commentary

USGS about to be abolished?

by Ted Koch

Abolish the U.S. Geological Survey? Wow, what a surprising idea! We in the mapping professions rely on U.S. Geological Survey maps for many uses. The name USGS is synonymous with maps; what would we do without this agency's products?



Of course USGS does more than mapping; it seems whenever there is an earthquake, the USGS scientists appear in the media, offering their expert analysis of the earth's movement.

In mapping circles, the USGS acronym pops up regularly. Topographic quads, orthophoto quads, digital line graphs (DLGs), geologic maps—they are all standard USGS products. Is it okay if USGS is no longer around to revise or produce them?

As maps, USGS products are familiar, widely available, and have been produced for decades. What hunter, hiker, or for that matter, anyone interested in the details of the natural and cultural landscape, hasn't used a USGS topographic quad? These maps have served as the standard.

So, back to the first sentence, the one about the USGS being abolished. Where has this idea come from? To begin, we can look back to the Republican Party's March 1994 Alternative Budget, a proposal that laid the foundation for the well publicized "Contract with America". This budget called for abolishing the USGS in addition to a number of other federal agencies. In the USGS instance, the proposal suggested that some of its functions be distributed to other agencies, and some to the private sector, with a resulting presumed federal savings of \$3.3 billion over five years.

So, is the potential demise of the USGS a good idea, and, will it happen? The USGS has been in existence for more than 120 years. It functions as a low-profile, scientific agency that in many instances acts as a neutral collector and evaluator of scientific and environmental data.

However, in recent years, many in the mapping and GIS/LIS professions, in particular, have been critical of the USGS approach toward cooperatively creating and funding products to effectively meet the needs and demands of programs at the state and local levels. These critics have often reported being frustrated by lack of flexibility on the part of USGS, which traditionally has operated on the basis of standard national product specifications.

In the last two years, as the coordinator of the Federal Geographic Data Committee (FGDC), USGS has led the

charge to begin building the National Spatial Data Infrastructure. Ironically, as the USGS has been at the forefront of the national dialogue to develop more effective means of collecting, recording and distributing spatial data, its continued existence is being seriously threatened.

Since the 95-96 federal budget is still being debated, it is really too early to clearly predict the USGS' fate. If the USGS is not completely abolished, it seems certain that its mission and structure will be significantly altered.

As the dialogue about this agency's future progresses, it is critical that state and local viewpoints be heard. We have to assure that the changes, if and when they occur, result in effective solutions that provide the best value for the public users of maps and digital spatial data.

Local modernization coordinators

Work with your LIO!

Included in this issue of the *Bulletin* is a directory of local Land Information Offices (LIO's) in Wisconsin. These offices, which each of the 72 counties has chosen to establish, operate as part of the Wisconsin Land Information Program. The Program is modernizing land information across the state, particularly at the local level.

Each LIO has a variety of roles. Among these is acting as a county-wide coordinator. This entails working with all county government offices as well as other governmental jurisdictions, and with private interests. The LIO also functions as a local clearinghouse for information on land information and land information systems.

A county designates an official contact for purposes of the Program. These individuals are the ones listed in the directory. Additional people are typically active in land information modernization within any given county, and the LIO can direct inquiries to the appropriate person.

We previously published a similar listing in July of 1992. Since that time, there have been a number of changes to the entries.

WISCONSIN COUNTY LAND INFORMATION OFFICES

Source: Wisconsin Land Information Board

Current as of January 1995

For information on the Wisconsin Land Information Program, call (608) 267-2722.

<u>County</u>	<u>Type of Office</u>	<u>Contact Person</u>	<u>Address</u>	<u>Phone Number</u>
Adams	County Board Planning and Zoning Committee	Linda S. Madland Real Property Lister	P.O. Box 470 Friendship, WI 53934	(608) 339-4205
Ashland	Register of Deeds	Wendell R. Friske Register of Deeds	201 W. Main Street, Rm. 206 Ashland, WI 54806	(715) 682-7008
Barron	Land Information Office	Steve Johnson Barron County Surveyor 1220 Wickre Drive Cumberland, WI 54829	Courthouse 330 E. LaSalle Ave., Rm. 238 Barron, WI 54812	(715) 537-6385 (715) 822-4970 fax
Bayfield	Land Information Office Register of Deeds	Shirley Haugen Real Property Lister	Bayfield County 117 East 5th Street P.O. Box 878 Washburn, WI 54891	(715) 373-6132 (715) 373-6183 fax
Brown	Committee	Chris Knight, Director Planning Commission	100 N. Jefferson St., Room 608 P.O. Box 1600 Green Bay, WI 54305-5600	(414) 448-3400 (414) 448-3123 fax
Buffalo	Land Information Committee	Patricia Wodele County Treasurer	Buffalo County Courthouse 407 2nd Street Alma, WI 54601	(608) 685-6215
Burnett	Committee	Kathy Swingle Surveyor/Land Records Supervisor	Burnett County Government Center 7410 County Road K, #103 Siren, WI 54872	(715) 349-2599
Calumet	County Board Land Information Study Comm.	Patricia Wettstein Real Property Lister	206 Court St. Chilton, WI 53014	(414) 849-2361 x204
Chippewa	Committee	Dennis G. Mickesh Land Information Coordinator	711 N. Bridge Street Chippewa Falls, WI 54729	(715) 726-7928
Clark	Register of Deeds	Eugene Oberle Register of Deeds	517 Court Street, Room 303 Neillsville, WI 54456	(715) 743-5162 (715) 743-5154 fax
Columbia	Land Information Study Committee	Todd Halvorson Director of Land Information Services	400 DeWitt St. P.O. Box 177 Portage, WI 53901	(608) 742-2191 (608) 742-1605 fax
Crawford	Land Conservation Committee	Delores Bonney Real Property Lister	220 N. Beaumont Road Prairie du Chien, WI 53821	(608) 326-0221
Dane	Committee	Howard Braunschweig Director of Information Management	210 Martin Luther King Blvd., Rm. 524 Madison, WI 53709	(608) 266-5663
Dodge	Committee	Garland G. Lichtenberg Board of Supervisors	Dodge County Courthouse 127 E. Oak St. Juneau, WI 53039	(414) 386-3531
Door	Committee	Joseph LeClair Data Processing Manager	Door County Courthouse 138 S. 4th Ave. P.O. Box 670 Sturgeon Bay, WI 54235	(414) 743-5511
Douglas	Land Information Office County Clerk	Raymond H. Sommerville County Clerk	1313 Belknap Street Superior, WI 54880	(715) 394-0341
Dunn	Committee	Rick Mechelke Land Records Coordinator	Agriculture Center 390 Red Cedar Street, Suite C Menomonie, WI 54751	(715) 232-1496

<u>County</u>	<u>Type of Office</u>	<u>Contact Person</u>	<u>Address</u>	<u>Phone Number</u>
Eau Claire	Land Information Office Department of Planning and Development	Richard A. DeVriend, Supervisor	Eau Claire County Courthouse 721 Oxford Ave, Room A180 Eau Claire, WI 54703	(715) 839-4743
Florence	Committee	JoAnne Friberg	501 Lake Avenue P.O. Box 410 Florence, WI 54121	(715) 528-3201
Fond du Lac	Committee	Mary A. Brickle Register of Deeds	160 S. Macy St. P.O. Box 509 Fond du Lac, WI 54936-0509	(414) 929-3018
Forest	Land Information Office	Paul Aschenbrenner Register of Deeds	Forest County Courthouse Crandon, WI 54520	(715) 478-3823
Grant	Committee	Marilyn Pierce Register of Deeds	P.O. Box 391 Lancaster, WI 53813	(608) 723-2727
Green	Register of Deeds	Marilyn Neuenschwander Register of Deeds	Green County Courthouse 1016 16th Ave. Monroe, WI 53566	(608) 328-9439 (608) 328-2835 fax
Green Lake	Committee	Shirley Williams Register of Deeds	492 Hill St. P.O. Box 3188 Green Lake, WI 54941	(414) 294-4024 (414) 294-4009
Iowa	Land Records Committee	Marion Raess Acting Register of Deeds	Iowa County Courthouse 222 N. Iowa Street Dodgeville, WI 53533	(608) 935-5628
Iron	Register of Deeds	Bob Traczyk Register of Deeds	Iron County Courthouse 300 Taconite St. Hurley, WI 54534	(715) 561-2945
Jackson	Land Information Office	John Ellingson Land Information Coordinator	Courthouse 307 Main Street Black River Falls, WI 54615	(715) 284-0221
Jefferson	Real Estate Description	Andrew J. Erdman Supervisor of Real Estate Description	320 S. Main Street Jefferson, WI 53549	(414) 674-7146
Juneau	Register of Deeds	Jerilynn Kolba Register of Deeds	Juneau County Courthouse P.O. Box 100 Mauston, WI 53948-0100	(608) 847-9325
Kenosha	Land Information Office County Planning & Development	George Melcher, Director Kenosha County Planning & Development	912-56th Street Kenosha, WI 53140	(414) 276-0770
Kewaunee	Register of Deeds	Marilyn G. Mueller Register of Deeds	Kewaunee County Courthouse 613 Dodge St. Kewaunee, WI 54216	(414) 388-4410 x126
LaCrosse	Land Information Office	Jeffrey M. Bluske Land Information Coordinator	Land Title and Mapping Dept./Land Information Office County Courthouse 400 North 4th Street, Room 105 LaCrosse, WI 54601	(608) 785-9637 (608) 785-9704 (fax)
Lafayette	Committee	Joseph Boll Register of Deeds	P.O. Box 170 Darlington, WI 53530	(608) 776-4838 (608) 776-4808 fax
Langlade	Land Records and Regulation Dept.	Rebecca J. Frisch Zoning Administrator	Langlade County Courthouse 800 Vermont St. Antigo, WI 54409	(715) 627-6206
Lincoln	Committee (of County Board)	Diane Hansen Land Records Officer	1110 E. Main Street Merrill, WI 54452	(715) 536-0301

<u>County</u>	<u>Type of Office</u>	<u>Contact Person</u>	<u>Address</u>	<u>Phone Number</u>
Manitowoc	Committee	Preston F. Jones Register of Deeds	P. O. Box 421 Manitowoc, WI 54221-0421	(414) 683-4012
Marathon	Committee	Lorraine Beyersdorf County Treasurer	Marathon County Courthouse 500 Forest Street Wausau, WI 54401	(715) 847-5246
Marinette	Committee	Melanie Huempfer Register of Deeds	Marinette County Courthouse 1926 Hall Ave. P.O. Box 320 Marinette, WI 54143	(715) 732-7551 x273
Marquette	Committee	Bernice M. Wegner Register of Deeds	P.O. Box 236 Montello, WI 53949	(608) 297-9132
Menominee	Land Information Office Office of County Coordinator	Ray DePerry Administrative Coordinator	P.O. Box 279 Keshena, WI 54135-0279	(715) 799-3024
Milwaukee	Register of Deeds	Walter R. Barczak Register of Deeds	Register of Deeds Office Courthouse 901 N. 9th St., Rm. 103 Milwaukee, WI 53233	(414) 278-4021
Monroe	Committee	Lorraine A. Mattheisen	P.O. Box 222 Sparta, WI 54656	(608) 269-8730
Oconto	Land Information Office	Mark Teuteberg County Surveyor	Courthouse 300 Washington Street Oconto, WI 54153-1621	(414) 834-6820
Oneida	Department	Michael J. Romportl County Cartographer	Courthouse Bldg. P.O. Box 400 Rhinelander, WI 54501	(715) 369-6179 (715) 369-6168 fax
Outagamie	Committee	Gerald Tate Assistant Planning Director	Outagamie County Courthouse 410 S. Walnut Street Appleton, WI 54911	(414) 832-5255
Ozaukee	Committee	Ronald A. Voigt Register of Deeds	121 W. Main St. P.O. Box 994 Port Washington, WI 53074-0994	(414) 284-9411 x261
Pepin	Land Information Office	Betty A. Plummer	Land Conservation Office P.O. Box 39 Durand, WI 54736	(715) 672-8665 (715) 672-4344 fax
Pierce	Department of Land Management and Records	Jim Hulbert, Department Administrator	Planning Office P.O. Box 647 Ellsworth, WI 54011	(715) 273-3531 x333
Polk	Land Information Office	Craig Hinzman	Land Information Office P.O. Box 624 Balsam Lake, WI 54810	(715) 485-3161
Portage	Committee	Charles P. Kell County Planning	1516 Church Street Stevens Point, WI 54481	(715) 346-1334
Price	Committee	Judy Chizek Register of Deeds	Price County Courthouse Phillips, WI 54555	(715) 339-2515
Racine	Land Information Office	Arnold L. Clement Planning & Development Director	14200 Washington Ave Sturtevant, WI 53177	(414) 886-8470 (414) 886-8480 fax
Richland	Committee	Paul Klawiter Real Property Lister	Richland County Courthouse P.O. Box 348 Richland Center, WI 53581	(608) 647-3658 (608) 647-6134 fax
Rock	Committee	Paul Clayton Real Property Lister	Rock County Courthouse 51 S. Main Street Janesville, WI 53545	(608) 757-5510

<u>County</u>	<u>Type of Office</u>	<u>Contact Person</u>	<u>Address</u>	<u>Phone Number</u>
Rusk	Register of Deeds	David Kaiser County Surveyor	311 East Miner Ave. Ladysmith, WI 54848	(715) 532-2165
Sauk	County Administrative Coordinator	Theodore Brenson Sauk County Cartographer	515 Oak Street Baraboo, WI 53913	(608) 356-5581
Sawyer	Land Information Office Register of Deeds	E. Louis Lindholm Register of Deeds	Sawyer County Courthouse 406 Main P.O. Box 686 Hayward, WI 54843	(715) 634-4867
Shawano	Land Information Office	Ron Ostrowski Land Conservation Office	Shawano County Courthouse 311 N. Main St. Rm. 107 Shawano, WI 54166	(715) 526-9239
Sheboygan	Land Information Office	Ed Harvey, Jr., RLS/PE County Surveyor	Sheboygan County Highway Dept. 1211 North 23rd Street Sheboygan, WI 53081	(414) 459-3822
St. Croix	Land Information Office	David Fodroczi Planning Department	St. Croix County Planning Dept. 911 Fourth Street Hudson, WI 54016	(715) 386-4672 (715) 386-4628 fax
Taylor	Committee	Sally Strassburger Register of Deeds	Taylor County Courthouse 224 S. 2nd Street Medford, WI 54451	(715) 748-3131 x126
Trempealeau	Committee	James A. Drost Land Records Modernization Coordinator/Zoning Administrator	Trempealeau County Courthouse Information Office P.O. Box 67 Whitehall, WI 54773	(715) 538-2311 x259 (715) 538-4210 fax
Vernon	Land Information Office	Jeff Hastings County Conservationist	834 N. Main Street Viroqua, WI 54665	(608) 637-8323 (608) 637-8322
Vilas	Committee	Coureen Rogers Mapping Coordinator	P.O. Box 369 Eagle River, WI 54521	(715) 479-3655
Walworth	Committee	Lois Ketterhagen Register of Deeds	P.O. Box 995 Elkhorn, WI 53121	(414) 741-4214
Washburn	Land Information Office Land Records Office	Craig Conroy Zoning Administrator	Zoning 110 W. Fourth St. P.O. Box 338 Shell Lake, WI 54871	(715) 468-2666
Washington	Land Information Office	Dorothy C. Gonnering Register of Deeds	432 E. Washington St. P.O. Box 1986 West Bend, WI 53095-1986	(414) 335-4318
Waukesha	Register of Deeds	Michael J. Hasslinger Register of Deeds	1320 Pewaukee Road, Room 110 Waukesha, WI 53188-2485	(414) 548-7583
Waupaca	Land Information Board	Clyde Tellock Land Information Board	P.O. Box 307 Waupaca, WI 54981	(715) 258-6215 (715) 258-6209 fax
Waushara	Committee	Orville W. Lehr Register of Deeds	Courthouse P.O. Box 338 Wautoma, WI 54982	(414) 787-4631 x252
Winnebago	Land Information Office Planning & Zoning Department	David Schmidt Director of Planning & Zoning	415 Jackson Street P.O. Box 2808 Oshkosh, WI 54903-2808	(414) 236-4837 (414) 236-4799 fax
Wood	Planning and Zoning	Michael W. Hansen	Wood County Courthouse 400 Market Street P.O. Box 8095 Wisconsin Rapids, WI 54495-8095	(715) 421-8469

?

I am trying to find more information about Public Land Survey System (PLSS) corners set in my county during the 1930's. I believe these were set by the Civilian Conservation Corps (CCC). Where can I get more information on PLSS work done by the CCC?

The CCC did a significant amount of PLSS remonumentation work in Wisconsin at the time you note, especially in northern forested counties. The work, in fact, was typically done under the supervision of the County Forester or the County Surveyor since it was concentrated on county forest lands. The first place to look for these records is in those offices.

Other sources of information are the State Archivist at the State Historical Society, and the Chicago regional center of the National Archives. The latter agency holds the records that were returned to the federal government when the CCC (a federally funded project) program was ended. The State Archivist can assist with National Archives searches.

In addition, the State Historical Society holds an interesting collection of information entitled the "**Inventory of the County Archives of Wisconsin**". This historic records survey was taken during the 1930's by the CCC, and was published in the 1940's. For some counties, the inventory is quite large. This inventory could list holdings such as the field records of the CCC surveys. (*Readers: What other records might be listed here that a county might like to locate or identify?*)

Finding information on any corners set by the CCC or the Works Progress Administration is traditionally a difficult problem. Since these projects were a mix of federal, state, and local government efforts, the records have wound up in a variety of locations. The surveys were not of federal public lands, so neither the General Land Office (GLO), now the Bureau of Land Management, nor Wisconsin's Office of Commissioners of Public Lands is a repository.

In some cases, the CCC monument locations have been found to be in conflict with the GLO notes and plats, yet they have a long history in surveys and property descriptions. Thus it is important to track down the original field records and resolve these discrepancies.



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.

?

I have a DNR Landnet coverage in WTM and would like to work in UTM Zone 15. What is the shift between these two coordinate systems?

We assume that you want to use this data in a GIS or other automated mapping system. You should be able to perform a high-quality transformation between the WTM and UTM coordinate systems, within your software.

Most GIS software packages include a transformation module that automates conversion between commonly used coordinate systems. UTM is very standard, while WTM is less well known. However, you should be able to key in the coordinate system parameters for WTM if it isn't included in the package. These parameters are all listed in a forthcoming SCO publication entitled *Wisconsin Coordinate Systems*. That handbook will explain the basics of coordinate systems and their relationships to map projections, datums, and the ground surface.

Coordinate "shifts" actually are the result of a combination of factors, some of which are constant over an area and some of which vary by location. A fixed shift in coordinates to get from one system to another may provide acceptable results for some applications, but we advise you to avoid this approach. Since you can never predict how your data might be used in the future, it is good policy to perform a high-quality transformation whenever possible. On the other hand, the Landnet data is derived from USGS 100,000-scale maps (nominal accuracy of 167 feet). As a result, a transformation method that yields approximate results would probably be sufficient.

As background, each coordinate system is basically a rectangular grid placed upon a flat representation of a portion of the earth. The flat representation is achieved by projecting the curved earth's surface, and this always introduces distortions which vary across a region. However, you can "unproject" coordinate values from one system, back to the curved surface (where coordinates are expressed in latitude and longitude), and then reproject them into a different coordinate system. As a result of this process, which is purely mathematical, the errors that were in your data as it was automated from the map are not increased.

The last consideration is our old favorite, the "datum thing". You must always be aware of the datum to which a data set is referenced. If your Landnet coverage is referenced to NAD 27, and you are happy working in UTM Zone 15 under the same datum, no shift is involved beyond those described above.

However, if you want to change datums, such as from NAD 27 to NAD 83 (1991), the only practical way to do so with your data is to perform an approximate transformation. This may also be supported by your software. Since recent datum redefinitions and readjustments have also removed geodetic network errors, there is no exact datum-to-datum transformation.

WTM and datums are discussed in a related article on in this issue of the *Mapping Bulletin* (see page 13). Also in that article, please note the recent redefinition of the WTM coordinate system for the NAD 83 datum. This will introduce yet another shift in coordinate values.

Publications and Products

New SCO Publications list available

by Brenda Hemstead

We now have available a 4-page flyer describing publications and products that we carry.

Some of the items listed are free, while others have a cost. All items may be ordered by mail or obtained over-the-counter at the SCO. If you are interested in learning more about what is available from the SCO, call us at 608/262-3065 or fax 608/262-5205, and ask for the *Publications* list.

Seven state landscape maps included

WGNHS offers set of page-size maps

by Bob Gurda

You can now purchase a set of small state maps of seven different themes, as a package from the Wisconsin Geological and Natural History Survey (WGNHS). The set, all page-size (8.5 X 11 inches) comes packaged in a plastic sleeve, and sells for \$1.50.

The themes included are: bedrock geology, early vegetation, groundwater contamination susceptibility, ice age deposits, landforms, soil regions, and thickness of unconsolidated deposits. The maps vary in vintage from 1964-1983, and in some cases are reduced versions of larger-scale originals. The resulting scale of this series is approximately 1:2,730,000 (1" = 82 miles).

Each map is printed in several colors, and five are oriented in "portrait" mode while two are in "landscape" mode.

For further information on the maps' contents, ordering/shipping details, or other WGNHS products, contact their Map and Publication Sales office at 608/263-7389.

Covers East and Southeast Asian cultures

History of Cartography Project publishes new volume

by Bob Gurda

Volume 2 of Book 2 has been published by the long-term History of Cartography (HOC) Project. It covers mapmaking in China, Japan, Korea, southeast Asia, and other island nations in the region. The first volume of Book 2 addressed traditional Islamic and south Asian societies.

This third book in the Project's series contains 1,032 pages, 40 color plates, and 300 halftone images. For information about ordering books, contact the University of Chicago Press, 11030 S. Langley Ave., Chicago, IL 60628, telephone 800/621-2736, or fax 312/660-2235.

The HOC Project is coordinated by Professor David Woodward at the University of Wisconsin-Madison's Geography Department.

(source: HOC Project)

New State Highway Map Released

by Ted Koch

Availability of Wisconsin's new 1995/96 Official State Highway Map has been announced by the governor's office and the State Department of Transportation (WisDOT). As in the past, copies of the folded paper version are free.

The map comes in two versions; the familiar folded paper copy which measures 26 X 34 inches, and a plasticized wall-sized version of the state-map side only, measuring approximately 3 X 4 feet. Both are produced by WisDOT using automated mapping techniques.

This new edition carries a transportation theme of "Wisconsin Makes It Easy". The reverse side of the folded map includes a generalized multimodal transportation map showing the state's intercity bus routes, Corridors 2020 backbone highway routes, Amtrak passenger rail routes, scheduled passenger service airports, public ferries, and communities with bus and shared-ride taxi service.



The reverse side also has the traditional block of detailed insets covering the state's 16 metropolitan areas with combined populations over 30,000, information on state parks, forests, and trails. Special blocks help locate veteran's sites, including memorial bridges, highways, and museums.

Two million copies of the new map have been printed, at a cost of \$258,400. The folded version is prepared for free distribution to the public. Copies may be obtained from WisDOT transportation district offices and motor vehicle service centers; by writing Highway Map, PO Box 7713, Madison, WI 53707; or by fax request at 608/246-5632. The larger wall map costs \$6.00 plus tax and is also available from WisDOT (contact their Maps and Publication Sales at 608/246-3265).

(source: DOT)

Publications and Products

To scan topo maps in color

USGS develops quad image program

by Bob Gurda

A new digital map product, derived from topographic quadrangle maps by scanning, is being initiated by the U.S. Geological Survey. USGS will scan their quads in full color, producing a single digital file of each in raster format, specifically TIFF (Tagged Image File Format).

USGS has named this new product the Digital Raster Graphic (DRG). It will be packaged on CD-ROM, with the files compressed. Maps will be scanned as is, that is, without any content revision beyond the most recent printed edition.

There are not any DRG projects underway for Wisconsin quads at the moment. Given the modest development cost (\$50 per map sheet, matched with an equal amount by USGS), this may become a popular product. A variety of basic needs can be met with the DRG, including using the quad map image as a simple illustration or base image upon which to display other information.

Technically, DRG's are scanned at 500 dpi, resampled to 250 dpi in TIFF 6.0 format, then subjected to a lossless compression (Packbit). The resulting file for a single map sheet ranges from 10-15 megabytes.

As simply computerized versions of the printed maps, DRG's are not GIS files that encode geographic features and their attributes. However, DRG's can be integrated with other computerized files including those developed through GIS, to great effect.

For instance, a DRG can be merged with selected point features and with an orthophoto depicting the same area; the merger can be in various proportions of the two image files, say 30% and 70%. A digital elevation model (DEM) is another candidate for merger; in this case, the DRG can be draped over the DEM. The DEM can also be analyzed to determine terrain illumination, which then can be added to the DRG; the resulting image would be a shaded relief topographic map.

To illustrate some of these potential combinations, USGS has produced a sample CD-ROM. This first demonstration disk includes no display software, but any program that can handle TIFF files will suffice. A second demo disk, which will contain display software, is in preparation; reportedly it will contain, among other things, images of the 50 quads that include each of the state capitols.

Addresses resource data collection

BLM book covers geo-positioning technologies

by Bob Gurda

The federal government's Bureau of Land Management has published a guide to spatial data collection for resource management. This publication describes and compares a wide range of technologies and approaches, including use of maps, aerial photography, and conventional and GPS positioning.

The Geo-Positioning Selection Guide for Resource Management includes explanations of the techniques, and both photographs and drawings as illustrations. It totals 64 pages, including references, a list of acronyms, and a 12-page glossary.

A highly valuable resource that comes with this guide is a wall chart listing the various data collection technologies and compares their spatial accuracies and typical applications. Titled *Geo-positioning Selection Guide*, this chart measures 24 X 31 inches.

Copies of the guide and its accompanying chart are available free from the BLM. To order a copy, mail a letter (on business letterhead) requesting *Technical Note 389* to:

(PMDS)

Bureau of Land Management, SC-657B
Denver Federal Center, Bldg. 41
Denver, CO 80225-0047

Alternatively, you can fax a letterhead request to 303/236-0845.



For DNR's forestry photos

Whoops...correct that number!!!

In our October '94 issue, we reported on the completion of the Wis. DNR's statewide forestry photography project. The telephone number we listed for the contact person in DNR was wrong, specifically the last digit. The correct telephone number for Nicole Merryfield is 608/266-5202.

Geodetic Control

Modernizing USGS benchmark information

Broad support for USGS Transfer Project

by Diann Danielsen

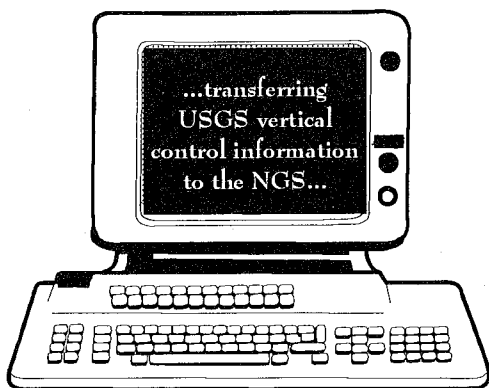
A Task Force of the Wisconsin Land Information Board (WLIB) has been investigating the feasibility of developing a cooperative federal/state effort to transfer USGS vertical control information to the NGS. Doing this would automate the USGS data, better preserve the information, make it more accessible to the public, and include an adjustment to the NAVD 88 datum.

Many of you received the survey questionnaire distributed by the WLIB last fall to solicit input on the project from Wisconsin's geodetic user community. The majority of the survey responses came equally from private sector surveying, engineering, and consulting firms, and from county government representatives such as LIO's, County Surveyors, and County Zoning Administrators.

The results of the survey were overwhelmingly in favor of moving ahead on the project and completing the transfer of Wisconsin's information. 83% of the respondents felt that Wisconsin should assist the federal agencies in this effort since this would assure completion of the project and speed up the process. 87% felt that this was a technical issue impacting the Wisconsin Land Information Program, and that the WLIB should contribute to the project.

Expanding the scope of the project to include a field inventory of the benchmarks and automating the station descriptions was an area that attracted a high level of interest from respondents. Since these activities were outside of the original scope of the project and its cost estimates, and since these activities received the most offers of in-kind contributions, the activities would probably have to be organized as a volunteer effort.

Other offers of in-kind contributions to the project came in the form of equipment, office space, and labor for some portions of the project. The WLIB Task Force will re-contact some parties to get more details concerning their possible contributions. This information, along with further analysis of the survey results, will be used to prepare a detailed summary report and recommendations for WLIB consideration. Contact the SCO for more information on the USGS Transfer Project.



A new blue booking process

NGS revises data submission requirements and specifications

by Diann Danielsen

The National Geodetic Survey (NGS) has published an updated user's guide to the formats and specifications for entering geodetic data into NGS's database. This guide is commonly called the "Blue Book", and covers conventional and GPS horizontal geodetic data, vertical geodetic data, and gravity data. Survey data that are formatted according to the Blue Book are entered into the NGS database and incorporated into the National Spatial Reference System (formerly known as the National Geodetic Reference System).

It is important to note the recent change in the minimum accuracy requirements for data submission. Effective July 1, 1995, survey data must meet the following minimum accuracy requirements to be accepted for inclusion into the NGS database:

- Conventional or GPS Horizontal Surveys - First Order horizontal accuracy standards
- Conventional Vertical Surveys - Second Order, Class II vertical accuracy standards
- Gravity Surveys - Third Order gravity accuracy standards

Contact the SCO for ordering information.

(source: National Geodetic Survey)

Internet connection to data and products

NGS "ramps up" to the Information Highway

by Diann Danielsen

NGS recently announced the availability of agency-developed software and GPS data via the Internet World Wide Web (WWW). The software includes survey computation and adjustment programs, datum transformation packages, and other specialized geodetic software. Data from NGS Continuously Operating Reference Stations (CORS), geoid height models, and information about the NGS and its products and services are also available over the network.

To access these NGS products using WWW browsing software, use the NGS URL address:

<http://www.ngs.noaa.gov>. Software files can also be accessed via ftp at <ftp://ftp.ngs.noaa.gov> in the pub/pcsoft directory. CORS data is found at [cors.grdl.ngs.noaa.gov](ftp://ftp.ngs.noaa.gov/cors.grdl) in the dist/cors/rinex directory.

(source: National Geodetic Survey)

Geodetic Control

Report from GPS Standards Work Group

Densification standard submitted to WLIB

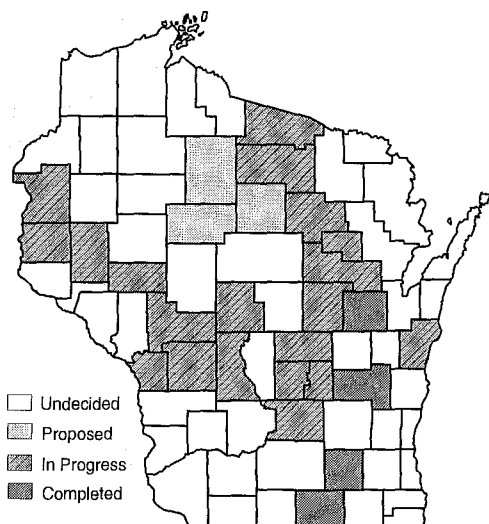
by Diann Danielsen

The Wisconsin GPS Standards Work Group has submitted its first report, entitled *Guidelines to Support Densification of the Wisconsin High Precision Geodetic Network (WHPGN) Using Global Positioning System (GPS) Technology*, to the WLIB for consideration as a standard within the Wisconsin Land Information Program. The report includes a discussion of many issues related to current county control densification projects in Wisconsin. (Thirty counties have made plans to densify the WHPGN for local use. See the accompanying graphic on this page.)

In addition to a general discussion of issues, the report proposes specific guidelines for conducting these densification surveys. The standard is based upon the Wisconsin Department of Transportation's *Standards and Specifications for Transportation Improvement Projects Using GPS Technology*, which were in turn developed from the Federal Geodetic Control Subcommittee standards and specifications for GPS control surveys.

The WLIB will conduct a series of public hearings on this standard over the next few months in order to receive input from the land information community. The hearings, along with an educational session on WHPGN densification, are scheduled for Hayward (March 21), Marshfield (March 22), and Madison (March 23). Contact the WLIB at 608/267-2707 for further details. Written comments on the standard may also be sent to the WLIB at P.O. Box 7844, 101 E. Wilson Street, 8th Floor, Madison, WI 53707-7844, comments must be received by April 14th.

Copies of the report may be obtained from the WLIB. For further questions, please contact the WLIB or Work Group Co-Chairs, D. David Moyer at 608/266-3919 or Diann Danielsen at 608/262-8776.



Status of local densification of the WHPGN

New parameters for NAD 83

WTM coordinate system redefined

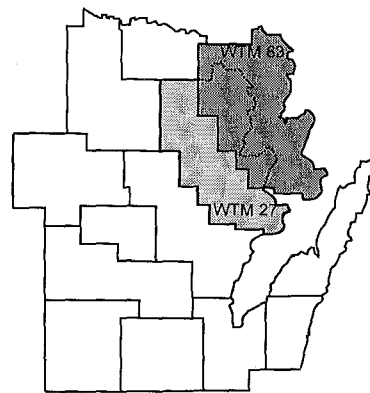
by Diann Danielsen

The Wisconsin Transverse Mercator (WTM) Coordinate System was recently redefined for the North American Datum of 1983. WTM is a UTM-like coordinate system originally developed by the Wisconsin Dept. of Natural Resources. WTM is centered on the 90th meridian west, thereby covering the state with one zone (sometimes referred to as zone "15-1/2" since it lies mid-way between UTM zones 15 and 16). WTM is frequently used with statewide digital data sets.

Similar to the State Plane Coordinate System redefinition for the NAD 83 datum, WTM has now been redefined to avoid confusion between WTM coordinates on the NAD 27 datum and WTM coordinates on the NAD 83 datum. The original WTM system has been renamed WTM 27, and continues to have a false easting definition of 500,000 meters and a false northing definition of -4,500,000 meters.

The WTM 83 coordinates are larger by approximately 20,000 meters, and are based on a false easting of 520,000 meters and a false northing of -4,480,000 meters. (These changes arose from discussions over several months by the Wisconsin State Interagency Data Sharing Workgroup.) All other coordinate system parameters remain the same for both WTM 27 and WTM 83.

Without a redefinition of these values, the coordinate system "shift" between WTM coordinates on NAD 27 and NAD 83 was so small as to easily cause confusion for users. The datum differences in WTM coordinates (the same difference seen in UTM coordinates) is approximately 200 meters in northing and 10 meters in easting. This difference is due to the use of different ellipsoid definitions for the two datums, as well as removal of network errors. The difference is small enough that it may not have been noticed on regional or statewide data sets, and coordinates based on two different datums could easily have been mixed inadvertently. The new shift between WTM 27 and WTM 83 is much more noticeable, somewhat more than 12 miles in both northing and easting. An example of Marinette County is shown above.



Marinette County, showing shift between WTM 27 and WTM 83

The WTM 27 and WTM 83 coordinate system parameters are included in a SCO handbook under preparation, entitled *Wisconsin Coordinate Systems*. Contact the SCO at 608/262-3065 for ordering information.

Events

Workshops on February 28

Middleton to Host WLIA March 1-3

by Ted Koch

The Holiday Inn West in Middleton will again be the site of the annual conference of the Wisconsin Land Information Association (WLIA). March 1-3, 1995 will mark WLIA's eighth annual conference, and the third time in the last four years that the meeting has been held at the Middleton location. This gathering is expected to draw more than 500 people, and feature more than 35 exhibitors.

The conference theme, "Exploring New Horizons; Beyond the Sunset", will include 33 presentations in 20 different technical sessions. Demonstrations of products and services by fourteen WLIA business members will run concurrently with the technical sessions.

New to the conference this year is the inclusion of six pre-conference workshops on Tuesday, February 28. Five of the workshops will be a half-day in length, while a sixth, entitled Introduction to GIS, and sponsored by the Urban and Regional Systems Information Association (URISA), will be a full day in length. The five half-day

workshops will cover themes of spatial metadata, document imaging, digital orthophotos, the RFP/RFQ/QBS procurement process, and the lifecycle of typical GIS/LIS projects.

The conference will open on Wednesday morning, March 1, with concurrent orientation sessions, one sponsored by the WLIA and the other by the Wisconsin Land Information Board (WLIB). These sessions will be followed by the opening luncheon, and the conference keynote speaker, George Meyer, Secretary of the Wisconsin Department of Natural Resources. Meyer will speak on the converging issues of land use and land information in Wisconsin.

On Wednesday evening, WLIA Business exhibitors will sponsor the conference's opening reception. The next evening will feature a public open house in the business exhibit area. The conference will conclude Friday morning, March 3, with three events; breakfast with the WLIB Board of Directors, a member forum/town meeting, and the annual business meeting.

....continued from page 2

Now set for mid-March

UW-Madison reschedules orthophoto course

A University of Wisconsin-Madison short course, "Digital Orthophotos and Their Use in GIS" has been rescheduled for mid-March. Originally planned for January 4-6, the rescheduled course will begin at 1:00 p.m. on Wednesday, March 15th and finish mid-day on Friday the 17th.

This course, offered by the UW-Madison Department of Civil and Environmental Engineering (CEE), is designed for people wanting an understanding of the technical basics of digital orthophotos, and for those planning to integrate digital orthophotos into GIS their database applications.

The course will cover the geometry of aerial photographs, ground control needs for building orthophotos, digital elevation models, the softcopy approach, and the use of DTMs and digital orthophotos. Instruction will include a combination of lectures and hands-on applications in a computer laboratory setting.

Course instructors include Professors Alan Vonderohe, Frank Scarpace, James Scherz and Paul Wolf of the CEE Department, and Ted Koch, State Cartographer. The cost of the course is \$250 if received by February 10; the fee after that date will be \$300. Course enrollment is limited to 32 students. For more information, contact Professor Alan Vonderohe, UW-Madison CEE Department at 608/262-9854.

SCO News

SCO staff changes

by Bob Gurda

As users of our BBS already know, Jim Lacy has finished his Master's degree and with that, his two-year part-time stint with the SCO staff has also concluded. Jim maintained and advanced our various computer systems over that period, including the installation of a network to link our computers as well as development of our BBS. Upon graduation Jim moved on to a full-time position at the University of Nebraska as support staff in their Center for Advanced Land Management Information Technologies (CALMIT).

We have a new system manager, Barri Babow, who is working on a Master of Science degree in the Business School, specializing in information systems. She will be working at 45%-time.

Brenda Hemstead, who has the most years of service of the entire SCO staff, has become the System Operator ("Sysop") of the BBS (see article on page 3). Barri and fellow graduate student Jim Jordan will provide support for various aspects of Brenda's overall BBS management.

As profiled in our previous issue, the SCO has begun a major research project, aimed at developing a prototype land information clearinghouse over the next 9 months. We have hired Hugh Phillips, a Master's candidate in Cartography, to carry out much of the technical support for the project. Hugh began in January, at 50%-time.

Selected* Conferences, Technical Meetings, and Classes

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.

February 27-March 1, **Twelfth International Symposium on Computer-Assisted Cartography, ACSM/ASPRS**, Charlotte, North Carolina. Contact: Duane F. Marble, 614/292-2250; fax 614/292-6213.

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

March 10-12, **National States Geographic Information Council's mid-year meeting** will be held in Rosemont, IL. Contact: NSGIC Administration at 603/643-2325.

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 15-17, **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.

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

March 20-23, **Modern Analytical Photogrammetry** will be held in Corvallis, OR. Contact: Conference Assistant, Oregon State University, College of Forestry, Peavy Hall 202, Corvallis, OR 97331-5707, 503/737-2329.

March 21-23, **Wisconsin Land Information Board's GPS Standards Work Group** will hold public hearings on its *Guidelines to Support Densification of the Wisconsin High Precision Geodetic Network (WHPGN) Using Global Positioning System (GPS) Technology* in Hayward (3/21), Marshfield (3/22), and Madison (3/23). Contact the WLIB staff at 608/267-2707 for further details.

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.

March 29, **The Use of Geographical Information Systems and Remote Sensing Technologies in Analyzing Land and Natural Resource Tenure Issues: Possibilities and Prospects** will be held at the Land Tenure Center, UW-Madison Campus. Contact: Jim Gage or Steve Leisz at 608/232-5538.

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 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 5-6, **Earth Observations and Global Change Decision Making: A National Partnership, NASA, NOAA, ERIM** will be held in Washington, DC. Contact: Robert Rogers at 313/994-1200 etc. 3453; fax: 313/994-5123.

April 10-13, **Introduction to Global Positioning Systems (GPS)** will be held in Room 1610 Engineering Hall, 1415 Johnson Drive, UW-Madison Campus, Madison, WI. Contact: Program Director, Robert T. Fey at 608/262-8592 or Program Assistant, Jane Sauer at 608/263-3162.

April 18-19, **Wisconsin Automation Users Group (WAUG)** will be held at the Holiday Inn Holidome in Stevens Point, WI. Contact: George F. Glocka, R.A. Smith & Associates, Inc. at 414/786-1777.

April 20-21, **GIS in Action '95** will be held in Portland, OR. Contact: Tom Pagh at 503/223-6663.

May 7-10, **1995 National GeoData Forum** will be held at the Hyatt Regency Hotel, Crystal City, VA. Contact: The Federal Geographic Data Committee Secretariat, 590 National Center, Reston, VA 22092 at 703/648-5755, fax 703/648-5755.

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

May 24-26, **Mobile Mapping Symposium** will be held at the Hyatt on Capital Square in downtown Columbus, OH. Contact: Kathleen R. Wallace, Center for Mapping at 614/292-4897 or e-mail them at mms@cfn.ohio-state.edu.

May 24-28, **Canadian Cartographic Association Conference** will be held in Calgary, Alberta. Contact: Michael R. C. Coulson, University of Calgary, Dept. of Geography, Calgary, Alberta, Canada T2N 1N4, 403/220-5584, fax: 403/282-6561.

June 6-9, **Eighth Annual Towson State University GIS Conference (TSUGIS '95)** will be held in Baltimore, MD. Contact: Jay Morgan, Dept. of Geography and Environmental Planning, Towson State University, Baltimore, MD 21204-7097, 410/830-2964, fax: 410/830-3888.

June 7-9, **Use of GIS, Remote Sensing and Simulation Models in Watershed Planning** will be held in St. Cloud, MN. Contact: GIS Center, St. Cloud State University, St. Cloud, MN 56301-4498, 612/654-5270, fax: 612/654-5198.

June 8-9, **Wisconsin Land Information Association Quarterly Membership Meeting** will be held at the Best Western Hudson House Inn, Hudson, WI. Contact: WLIA at 800/344-0421.

June 11-12, **The 7th International Conference on Geomatics** will be held in Ottawa Congress Centre. Contact: Rose Barthe, Conference Manager, 615 Booth Street, Ottawa, Ontario Canada K1A 0E9, phone: 613/996-2817, fax: 613/947-7059.

June 13-16, **GIS/LIS '95** will be held in Budapest, Hungary. Contact: International Secretariat, P.O. Box 5738, Bethesda, MD 20814, 301/951-0480, fax: 301/951-0499.

July 15-20, **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., 20002, 202/289-1685.

August 6-9, **4th International Symposium on Large Spatial Databases '95** will be held in Portland, ME. Contact: Kathleen Hornsby at 207/581-2149, fax: 207/581-2206.

September 3-9, **17th International Cartographic Conference, "Cartography Crossing Borders"** will be held in Barcelona, Spain. Contact: A. J. Kimerling, fax: 503/737-1200.

September 7-8, **Wisconsin Land Information Association Quarterly Membership Meeting** will be held at the Grand Geneva Resort & Spa in Lake Geneva, WI. Contact: WLIA at 800/344-0421.

November 13-17, **GIS/LIS '95 Annual Conference and Exposition, AAG ACSM, AM/FM International, ASPRS, and URISA** will be held in Nashville, TN. Contact: GIS/LIS '95, 5410 Grosvenor Lane, Bethesda, MD 20814-2112, 301/493-0200, fax 301/492-8245.

December 7-8, **Wisconsin Land Information Association Quarterly Membership Meeting** will be held at the Heidel House Resort and Conference Center in Green Lake, WI. Contact: WLIA at 800/344-0421.

**For more complete and/or more current listings, separated into Foreign, National, and Wisconsin, consult the SCO's BBS (see p. 16)*

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 Daniels, 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.

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. Then you can go exploring.



Wisconsin Mapping Bulletin

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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 April 7, 1995.

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