



Wisconsin MAPPING BULLETIN

Long-term Land Info Funding Progresses in Legislature

Assembly approves bill— Senate yet to consider

by Bob Gurda

Supporters of Wisconsin's program to modernize the handling of land information have moved another step closer to one of their key goals. Late in October, the State Assembly approved AB 662 by a two-thirds margin.

That bill, promoted by the Wisconsin Land Information Association and others, would lift the "sunset" currently scheduled to eliminate modernization funding in July of 1996. AB 662 cleared a related hurdle through approval earlier by the Joint Committee on Finance.

The bill was forwarded from the Assembly to the Senate, assigned to a committee, and might have been acted upon prior to the close of the most recent floor period. However, time was very short and many other issues were already under consideration.

The next floor period begins in late January and extends for two months. It appears likely that the Senate will take action at that time. In the interim, its committee may decide to hold a public hearing.

The sunset, if not lifted, will halt the collection of fees that support the state's program to modernize land information. These fees have been in place since 1990, and are collected as an increase in an existing fee on the filing of documents at county Register of Deeds' offices. Under the program, counties can retain two-thirds of the fees. The balance supports grants that are awarded by the Wisconsin Land Information Board, as well as the Board's administrative costs.

Since July of 1990, the program has generated approximately \$19 million. With 71 of the state's 72 counties participating in the program, local governments have retained \$12 million of this total and further benefitted from access to over \$5 million in the form of grants for specific projects. The program clearly is gathering momentum and has already led to higher quality, less redundant, and more

accessible land information. Its early investments are building an information infrastructure that will serve public and private users for decades.

Over the last year, the program has particularly benefited from strong real estate activity. An extended period of low mortgage interest rates has spurred home buying as well as mortgage refinancings. This activity results in document filings from which the program's revenues are generated.

Local governments, particularly many counties, have developed long-term plans based at least in part on continued access to the filing fees. Although the state program has demonstrated successes in numerous locations, the possibility still exists that its funding will not be extended beyond July, 1996.

For local administrators to prepare reasonably for this contingency, however, they need to have about two years lead time. Hiring, training, purchasing, and contracting decisions are some of the administrative considerations that come into play.

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STATE LAND INFORMATION NEWS

WLIB News

by Bob Gurda

Board Meetings

Since our last report, the Wisconsin Land Information Board has met twice, September 1 and October 25. The meetings earlier scheduled for August 9, September 13, and October 18 were either rescheduled or canceled. Future meetings are set for November 18 and December 13.

Grants

Local governments submitted during July grant requests totalling \$2,377,791. These came from various units of government in 28 counties. The board's Grant Scoring Committee reviewed the applications in September, and the board and committee together received additional information from applicants during a public hearing on October 25. Next, the committee will meet to reconsider the scores they developed earlier, and is expected to make final recommendations to the Executive Committee prior to the next November 18th board meeting.

Administration

On October 4, the WLIB's Chair, John Laub, announced that James Klauser, Secretary of the State Department of Administration, had transferred the WLIB's administrative staff between divisions. Its new home will be within the Division of Finance and Program Management (FPM), which also contains the Bureau of Information and Telecommunications Management (BITM). Previously, the staff had been part of DOA's Division of Energy and Intergovernmental Relations.

As part of this change, Pam Wegner, Division Administrator of FPM, is replacing Nat Robinson as DOA's voting representative on the WLIB. However, Wegner has just accepted an upper-level position with Wisconsin Power & Light Company in Madison. We do not know who her replacement will be.

It will likely be a minimum of several months before the effects, if any, of this switch in administrative home become clear. BITM has shown interest in GIS coordination, as evidenced by its inclusion of a "Statewide GIS Forum Project" in its information technology plan. That project at present is being covered by the activities of the WLIB's Integration/Clearinghouse Committee.

Integration/Clearinghouse Committee

This committee has been concentrating its efforts on developing a briefing and demonstration for heads of state agencies. This event was held on October 27, and was well attended. Department of Administration Secretary James Klauser had sent the agencies invitations that accompanied an interim report from the committee. The committee hopes that as a result state agencies will more equally participate in its work toward a joint land information integra-

tion plan. This plan would bolster ongoing efforts to build accessible land information that is needed by various users both inside and outside state government.

Countywide modernization plans

The board approved Trempealeau County's plan on September 1. This brings to 71 the number of counties fully participating in the state program. Only Vernon county remains as a non-participant.

Revenues

The program continues to benefit from an elevated level of document filings at county Register of Deeds' offices. The continued decline of interest rates appears to be maintaining a high level of mortgage refinancings, each of which generates document filings.

Technical issues

The board has established a small task force to report back on the potential for converting information about USGS 3rd order vertical geodetic control points (benchmarks) to digital form. At present, this information is available only in printed form.

Membership

The original appointments of three board members expired earlier this year. The governor has reappointed these members, Michael Hasslinger, John Laub, and Les Van Horn, for six year terms. The State Senate has not yet acted on the governor's appointments.

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NATIONAL POLICY NEWS

Recognizes state/local/private role

Gore report advocates NSDI

by Bob Gurda

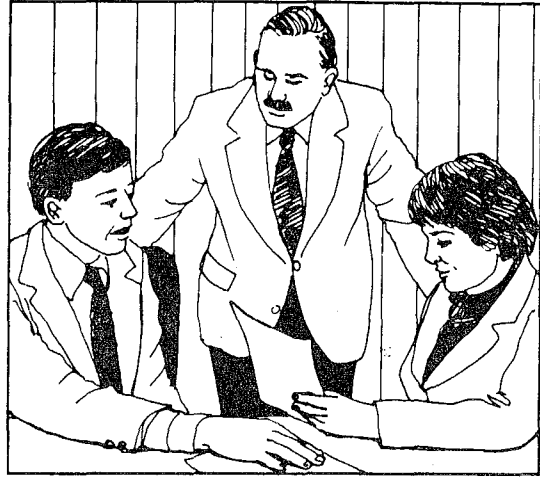
Vice President Al Gore has raised the visibility of ongoing activities to build and maintain a National Spatial Data Infrastructure (NSDI). One of the numerous recommended actions in his recent report on modernizing government reads, "In partnership with state and local governments and private companies, we will create a National Spatial Data Infrastructure."

Gore was directed by President Clinton to lead the National Performance Review. The report from that effort is available in many bookstores, and is titled *From Red Tape to Results: Creating a Government that Works Better and Costs Less*. In many ways, the concept of NSDI fits well with the goals of the Wisconsin Land Information Program. Gore's emphasis on working with non-federal participants is particularly encouraging, since traditional national mapping has rarely relied on these parties for data, but primarily to help set priorities and assemble cooperative funding.

Time will tell what actually develops from this particular recommendation in Gore's report. However, one indication of the administration's interest in the issue is expected to surface fairly soon. Activities are underway to modify the environment and/or authority of the Federal Geographic Data Committee (FGDC) which was formed as a result of a revised directive issued by the President's Office of Management and Budget three years ago.

The FGDC has representatives from a large number of federal agencies, and is attempting to improve coordination at that level by addressing a wide array of issues. However, progress on a broad national front (as compared to the federal front) has been slow due to limited opportunities for non-federal parties to participate in the routine work of the FGDC's various working groups and committees.

At present, the FGDC is chaired by the U.S. Geological Survey (USGS) and its staff is housed within USGS. There has been speculation that the FGDC function might be bureaucratically relocated up to the level of the Secretary of Interior. Outside advocates have also proposed spe-



Holland chosen President-elect

NSGIC convenes in Williamsburg

by Ted Koch

The National States Geographic Information Council (NSGIC), an organization with representatives from most of the fifty states plus a number of federal agencies and local and private firms, recently held its third annual meeting surrounded by the historic aura of Williamsburg, Virginia.

Wisconsin was represented by Bill Holland, the Executive Director of the Wisconsin Land Information Board, and myself. Bill was chosen as the Council's President-elect for this next year. He has been a member of NSGIC's Board of Directors for the past year, and will assume the NSGIC presidency at the October, 1994 meeting.

The council, which was created two years ago, provides its members the opportunity to discuss and present geographic information issues, accomplishments, and problems primarily affecting the states. In addition, it provides the states an opportunity to present a unified view and voice on the issues of geographic information activities and policies, plus to stress involvement of the states in the activities and policy decisions of the federal government.

The Williamsburg meeting, which was held in late September, had representatives from 36 states, plus another 50 representatives from federal agencies and the private sector. Issues of highest concern at the meeting revolved around geographic information standards, development of the National Spatial Data Infrastructure, and intergovernmental relations. The council has planned active committee work in all of these areas for the upcoming year.

AERIAL PHOTOGRAPHY

Four of five areas are 100%

NAPP coverage rises to 99%

by Bob Gurda

As a result of reflights this spring, NAPP photography over Wisconsin is almost complete. Aerial photographs for four of the five contract areas are now 100% accepted. The remaining contract area is still only at 94% completion. The missing 6% is all in one area which should be reflown next spring and available next fall.

NAPP is the National Aerial Photography Program. Its original acquisition over Wisconsin was in the spring of 1992. As a result of those flights, about 5% of the photographs statewide were rejected for unacceptable quality. Reflights were scheduled for the spring of 1993, with follow-on quality inspection this summer.

We now have flight-line and frame number information for the accepted reflight areas. Contact us if you need this information to order imagery products. As with the initial NAPP acquisition, various print and transparency products are available from either of two federal labs. Negatives will be delivered to Wisconsin DOT later.

Only one area remains without NAPP coverage: a strip, several flight-lines wide, including the western part of Rock County and adjoining eastern edge of Green County, extending northward into Dane County. Contact the SCO if you need to know the exact areas involved.

Some may be turned into orthophotos

Photos planned to assess flooding

by Bob Gurda

A number of counties in the southwestern part of the state have been targeted by the USDA's Soil Conservation Service (SCS) for an aerial photographic survey next spring. Plans call for the acquisition to follow standards of the National Aerial Photography Program (NAPP). This would be leaf-off, using black-and-white panchromatic film.

The record flooding events of last summer triggered SCS's decision to acquire fresh photography over all of the counties in the Mississippi River basin that had out-of-bank flooding in 1993. Those parts of Kansas, Missouri, and Illinois are having photographs acquired this fall; Iowa, Minnesota, and Wisconsin will be done in the spring, under a separate contract.

The Wisconsin counties to be flown are: Jackson, Juneau, Adams, Sauk, Columbia, Dane, Green, LaFayette, Grant, and Crawford. If the acquisition is successful, photographs might become available by late summer.

The second phase of this initiative involves production of digital orthophotos from the photographs. Full federal funding would only cover the areas represented by the 7.5-minute quadrangles within which there was flooding. At this point, funds for the orthophotos is not certain.

Coverage still not statewide

Most DNR forestry photos acquired

by Bob Gurda

Cloudy weather always interferes with aerial photography acquisitions. This summer, which of course featured many cloudy days and lots of rain, limited the scheduled completion of statewide aerial photography contracted by the Wis. Dept. of Natural Resources' Forestry Bureau.

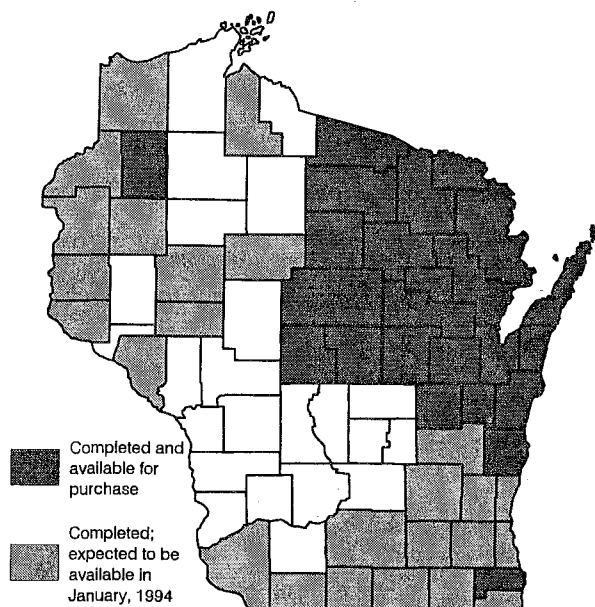
Nevertheless, enough progress was made that 49 counties now have full coverage. Half of this is available immediately, with the balance to be available in January. The map below indicates the counties in each category.

Twenty-three counties remain uncompleted, despite contract language specifying the end of the 1993 summer as deadline. Completion rates for these counties varies from 0 (three counties) up to 99%. It is hoped that by the end of next summer the project will be complete. DNR does not make photographs for a county area available until coverage is complete.

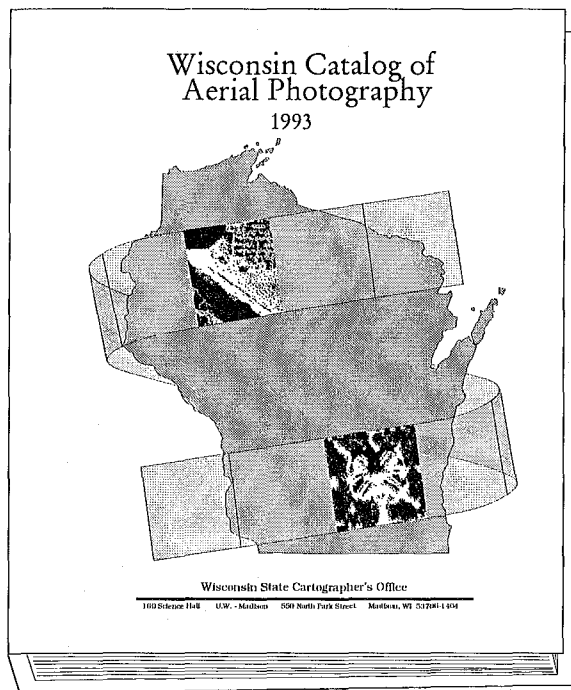
This "forestry photography" uses black-and-white, infrared film, which helps discriminate various types of vegetation. Each negative covers about 4 square miles at a scale of 4" = 1 mile; however, the east-west flight lines are not necessarily aligned to the Public Land Survey system grid.

You can order available photographs from a contractor which provides this service to DNR. An order form provides product options and prices. Flight indexes, from which frame numbers can be identified, are housed at various DNR offices for the convenience of local residents. The SCO also has a set of indexes. For complete information, contact Willard Kiefer of the DNR in Superior at 715/392-4764.

Status of DNR Forestry Bureau's aerial photography project as of October, 1993



AERIAL PHOTOGRAPHY and ORTHOPHOTOGRAPHY



SCO aerial photo catalog proves popular

Our recently published *Wisconsin Catalog of Aerial Photography - 1993* has been well received by a wide variety of organizations. We have filled numerous orders from government offices, libraries, engineering firms, and environmental consultants.

With over 1,000 individual aerial acquisition projects since 1936 documented, the catalog helps you identify photographs for a variety of purposes. It also steers you to locations where you can view and/or purchase copies.

The catalog's listings are organized by county. Within each county's listing the projects are in chronological order. Projects extending across multiple counties are listed under each of the affected counties. Shorter sections describe cross-referenced multi-county projects and contact information for the offices that hold copies for viewing or that service orders for contact prints or enlargements.

For purposes of environmental auditing, it is increasingly important to be able to locate older photographs. Visual evidence can be a valuable aid in reconstructing the conditions at a particular site at some point in the past. Photographs do not always happen to have been acquired at the most appropriate time, from the most appropriate flying height, or with the film type of choice. However, a wealth of information can be extracted from the thousands of photographs that have been retained over the decades.

This catalog costs \$25.00 plus tax and shipping. The price covers our costs of printing its 450+ pages, plus three-ring binder with dividers. We would be happy to send you an order form.

Approaching 20% of state

Digital orthophoto production grows

by Bob Gurda

Fueled primarily by federal agency orders, the number of digital orthophotos scheduled for production over Wisconsin has taken another jump. All work scheduled to date is based on photographs acquired as part of the spring 1992 National Aerial Photography Program (NAPP) acquisition over our state.

The new areas that have been added lately include Green Lake County, northwestern Douglas County, and parts of the St. Croix and Mississippi Rivers. These bring to about one-fifth of the state that is scheduled for development of precision-corrected airphoto images in computerized form. Each of the approximately 750 images now set for the production pipeline will depict an area of 3.75 minutes of latitude and longitude (a quadrant of a typical USGS 7.5-minute map) at a ground resolution of 1 meter.

Actual production is proceeding or scheduled along several different pathways; some work is being done in-house at specialized federal facilities, and other work is being contracted to private companies. As a result, the digital orthophoto image files and the related digital elevation model files will become available at different times, and probably beginning no earlier than the spring of 1994.

The primary federal agencies involved in funding the scheduled work are the U.S. Geological Survey (USGS), the state office of the Soil Conservation Service (SCS), and the Chequamegon National Forest. SCS may be initiating additional in 1994 following new photography of areas flooded this summer.

Several counties in Wisconsin are looking into cooperative funding arrangements with the USGS to convert NAPP photographs into digital orthophotos. In most cases, a coalition of local organizations is seen as the means to assembling the needed funds. Doing the work for each quarter quadrangle typically costs about \$500 with USGS matching that amount.

At least two Wisconsin counties are also considering the costs and benefits of producing digital orthophotos from more detailed (lower altitude) photography than that being used by the federal agencies. Resolutions in the range of 1 foot (compared to 1 meter for the federal standard) are being considered. While such images would be substantially sharper, they would cost several times more to produce, and would require about 10 times more computer disk storage space.

Thoughts on the National Spatial Data Infrastructure

by Nancy Tosta*

For the last year and a half, a seemingly esoteric topic, the National Spatial Data Infrastructure (NSDI), has been the subject of much debate in geographic information circles. Last spring, approximately 750 people attended the National Geo-Data Policy Forum to discuss policies related to the NSDI. In September 1993, the Clinton Administration issued a report on approaches to reinventing government, and identified creation of the NSDI as one of the key initiatives. Numerous activities are now underway to help build and evolve the NSDI.

Given the flurry of discussion and action, is there agreement on what NSDI is, who should take action, what must be done, and what the ultimate goals are? In short, not really.

The "what" and "why" of NSDI

Within Vice President Gore's *National Performance Review* report, the development of the NSDI, based on partnerships with non-Federal sectors, was recognized as key to minimizing redundancy in the creation of geospatial data and facilitating means of access to these data for solving critical problems. The Federal Geographic Data Committee (FGDC), created by the President's Office of Management and Budget (OMB) in 1990, was recognized in the new administration's plan as the entity responsible for helping to guide development of the NSDI.

The FGDC is in the process of facilitating, through a series of open discussions, a strategic plan identifying tasks, time frames, and responsibilities for the NSDI. If NSDI is to succeed, numerous sectors, organizations, and agencies must play key roles.

The FGDC has described the NSDI as "a framework, within which organizations and technology interact, to foster more efficient use, management, and production of geospatial data. The NSDI is not real, or tangible, but conceptual - an umbrella of policies, standards, agreements, and partnerships among a variety of sectors and disciplines that will promote more cost-efficient production, ready availability, and greater use of higher quality geospatial data". (1)

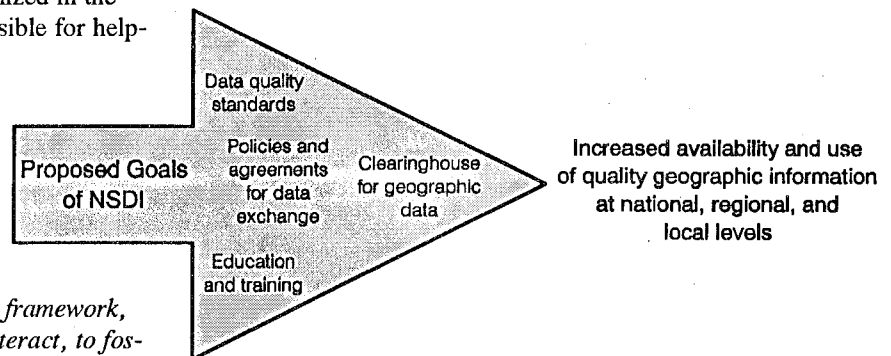
The Mapping Science Committee (MSC) of the National Research Council has defined NSDI as the "means to assemble geographic information that describes the arrangement and attributes of features and phenomena on the Earth. The infrastructure includes the materials, technology, and people necessary to acquire, process, store, and distribute such information to meet a wide variety of needs". (2)

Most people agree that the NSDI currently exists in an ad hoc way, with standards in various stages of development, large volumes of analog geospatial data (paper maps), and some sharing of existing digital data. The drive to evolve the NSDI stems from the growing application of

The NSDI will promote development and maintenance of, and access to data sets that are needed for national, regional, state, and local analyses.

GIS to increasingly complex environmental, economic, and social issues tied to locations on the earth, and the need to make substantial but wise investments in geospatial data to help deal with these issues.

The major objectives of the NSDI are to better manage existing geospatial data and to promote the collection of new geospatial data in ways that maximize their usefulness and accessibility to multiple users. The NSDI will promote development and maintenance of, and access to data sets that are needed for national, regional, state, and local analyses.



What is FGDC's role?

In meeting these objectives, the FGDC's role is to foster coordination among federal agencies, to assist in the development and promulgation of standards, to assist in the identification of requirements for data, to promote education and training activities, and to facilitate and foster partnerships and alliances within and among various sectors to accomplish all of these activities. The FGDC is focussing attention on several aspects of the NSDI, including the need

continued...

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for and development of various standards, the need for and development of a framework of basic geospatial data, the development of specific themes of geospatial data, and the

To expect that one "anything" will be in charge is unrealistic.

creation of a distributed clearinghouse for finding and accessing geospatial data. All these activities require participation of and partnerships with the non-federal sectors.

Who should be responsible?

All other sectors, state and local governments, private, and academic, have roles and responsibilities within NSDI. State and local governments and, in some cases, the private sector, are making significant investments in the development of digital geospatial data. A person representing a state recently told OMB that, given the large volumes of digital geospatial data produced by state and local governments, perhaps the Federal Government should not be investing in its own base data production, but instead should establish more effective means for data sharing. Others take issue with this, arguing that one of key components to helping evolve NSDI is a national framework of quality digital geospatial data, that can only be developed with some level of Federal investment. Data sharing is of critical importance, but if basic data do not exist, there is no benefit to sharing. Issues of who pays, funding sources, cost-recovery, copyrights, liability, and ownership are prevalent in most NSDI discussions.

During the Geo-Data Forum last May, the question often was raised, "Who's in charge?". The implication was that without some entity, individual, or organization leading the NSDI cause, nothing could be done. I disagree

Numerous entities are "in charge" of different pieces.

with this. I think that the NSDI is so pervasive, that geospatial data are critical to so many different applications, levels of government and sectors, that the potential number of beneficiaries of a robust NSDI is so great, that to expect that one "anything" will be in charge is unrealistic.

Interdependency leads to partnership

The problems many of us are trying to solve are more complex than ever before, and the tools we are trying to use to solve them are more sophisticated. In many cases, we have become more dependent on other organizations, because few of us have the ability or resources to develop

and then maintain all of the data necessary for our analyses. No longer do organizations sit in isolation, collecting one small piece of information that is not seen as useful by other agencies. Increasingly, organizations are linked electronically. "Partnership" is a key concept as we evolve the NSDI. Each party has responsibilities and shares the risks.

So who ought to be "in charge"?

We are living in a world, where "who is in charge?" is not a relevant question. The evolution of technology and telecommunications has made this so. No longer are there just a few individuals or organizations that control access to or use of information. We are rethinking our bureaucra-

We are all responsible for making the NSDI succeed.

cies, rethinking our hierarchical organizations and models. In fact, our organizations are being "reinvented" for us, as computers and networks spread throughout agencies.

"Partnership" does not imply that anyone entity is "in charge". Numerous entities are "in charge" of different pieces. The keys to making all of this work effectively and efficiently are good communication and shared vision.

I believe that we are challenged to find new ways for our organizations to interact. We must develop and share a common vision of what the ultimate goals are related to use, production, and management of geospatial information, and then we must act responsibly individually and as agencies. All of our concepts of information ownership, control, privacy, and security are being changed with the evolution of technology.

No one is in charge of all this. No one could possibly be. But we are all responsible for making the NSDI succeed.

(1) "A Strategic Plan for the National Spatial Data Infrastructure: Building the Foundation of an Information Based Society", Draft 10/19/93.

(2) "Toward a Spatial Data Infrastructure for the Nation", National Research Council, Mapping Science Committee, National Academy Press, 1993.

Editor's note: see related articles on NSDI on page 3.

GEODETIC CONTROL



NGS state advisor program a success!

by Diann Danielsen

Last year's threat to the NGS State Geodetic Advisor Program appears to have subsided. W. Stanley Wilson, National Ocean Service (NOS) administrator, declared the program to be safe at an NGS Strategic Plan meeting of NGS state advisors and project directors last April. The meeting was held in response to concerns raised at the NGS Forum held at the ACSM/ASPRS Annual Convention in New Orleans.

At the time of that meeting, the State Geodetic Advisors Program was being considered for abolishment due to NOS budget shortfalls. The meeting resulted in a loud and clear voicing of approval for the program and the need for it to continue. The State Advisor Program is funded by state and federal governments on a 50-50 basis and has participation in 25 states. Wisconsin is one of those participating states, having a very active State Advisor. Wisconsin has reaped the advantages of this program numerous times over the past years. Loss of the program would have hindered cooperative efforts and liaison with the NGS concerning geodetic activities in Wisconsin.

Also in response to the ACSM/ASPRS meeting and NGRS user concerns, Wilson has formed a National Spatial Reference System Committee that includes NOS, ACSM, ASPRS, federal agency, and state and local government representatives. The committee will provide feedback to NOS on behalf of the geodetic data user community. Their input will be used by NOS to develop a comprehensive strategy on the National Spatial Reference System, and will be incorporated in NOS's revised NGRS Action Plan.

(source: ACSM Bulletin, July/August 1993 and September/October 1993)

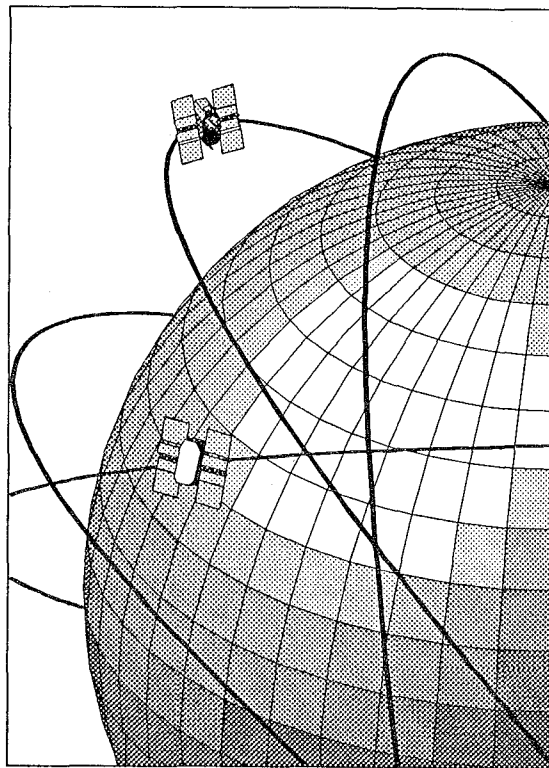
Federal government forms GPS task force

U.S. Secretary of Defense Les Aspin and Secretary of Transportation Federico Pena agreed in March to establish a jointly chaired Task Force to examine the operational, technical, and institutional implications of increased civilian use of the Global Positioning Satellite (GPS) system. The task force will conduct its meetings throughout the summer and make recommendations later this year.

An additional recent federal activity was U.S. Senator Jim Exon's (D-Neb.) address to the Senate on the future of GPS. Exon chairs the Armed Services Committee subcommittee with jurisdiction over GPS. Exon said that a U.S. GPS initiative could provide substantial benefits to U.S. industry and the world economy as a whole, as well as welcome relief to the U.S. taxpayer. U.S. taxpayers have invested more than \$10 billion in the system, providing GPS positioning signals to the entire world for free.

Exon asked the Senate to consider whether the system should be under civilian or military jurisdiction; how the U.S. could seize a competitive advantage in the development, use and manufacture of GPS consumer equipment; and whether the civilian beneficiaries of GPS technology should share in the deployment and maintenance costs of the system. Space-based air traffic control and intelligent vehicle highway systems are two areas that could benefit greatly from GPS in the near future.

(source: GIS World, August 1993)



GEODETIC CONTROL

State considers GPS base stations

by Ted Koch

A year-old interagency task force created to evaluate the potential of installing and maintaining one or more permanent Global Positioning System (GPS) receivers in Wisconsin is about to release its final report. Essentially, the consensus of the task force is that the most desirable alternative for meeting the state's current GPS base-station needs is to use the base stations presently being deployed and operated by various public organizations.

Four federal agencies—Coast Guard, Army Corps of Engineers, National Geodetic Survey and the Federal Aviation Agency—are all pursuing plans to install base stations whose range will cover significant portions of the state. Because of good working relationships between these agencies and the state, the task force believes achieving arrangements to use the federal stations, when they become operational, is an obtainable goal.

Base stations are permanently located and positioned receivers designed to receive and store multiple GPS satellite radio signals continuously, 24-hours a day. Essentially, a base station serves as an anchor point in determining the precise differential position of other mobile GPS receivers. A permanently operated receiver may be operated in "real-time" when supported by direct radio or telephone contact, or in a "post-processed" mode where data can be stored and accessed at a later time.

GPS base station receivers provide significant efficiency and cost savings to data collectors and users of GPS satellite signals. With a base-station in place, users of mobil GPS collectors can obtain more precise positions with a single receiver vs. a minimum of two. Resulting savings come from investing in fewer receivers, and spending less time and effort with receiver set-up.

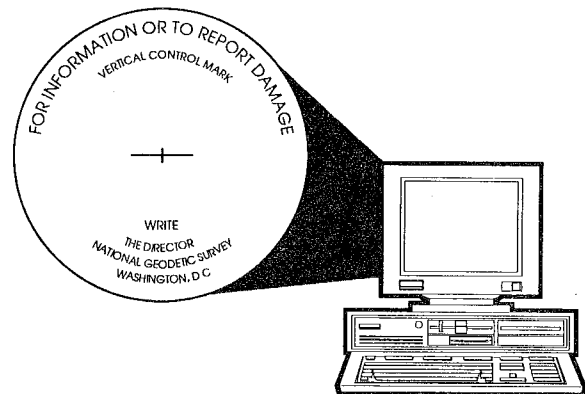
During the past year, the Wisconsin task force has worked closely with a similar group in Minnesota. Dixon Hoyle, the National Geodetic Survey State Advisor in Minnesota, who is a member of the Minnesota group, has attended most of the Wisconsin task force's meetings. With agreement between the two groups, Wisconsin analyzed the alternatives available with "post-processed" data, while the Minnesota group focused on the potential of "real-time" data reception. Information on these contrasting methods of data handling were shared between the two state groups.

In addition to relying on the potential of using federally operated receivers for Wisconsin's base-station needs in the future, the task force made a number of other recommendations:

- Continue the GPS Task Force with a modified structure. Each agency currently involved in the task force should assign a representative who has GPS knowledge and is aware of agency GPS needs and data collection commitments.

- The new task force should assign a project team to work with the federal organizations to resolve technical details and negotiate agreements for providing both real-time and post processed information to Wisconsin agencies.
- A project team should be formed to draft a Request for Proposal (RFP) for purchase of GPS receivers, evaluate vendor responses to the RFP, and form a state procurement bulletin for GPS receivers. Factors to be evaluated will include accuracy, ease of use, documentation, support for standards, available training, vendor support, ability to upgrade, and cost.

The final report of the current task force will be presented shortly to the Wisconsin Department of Administration. It is expected that a newly created task force will begin its work early in 1994.



New geodetic data for 10 counties

by Diann Danielsen

We have received new digital files containing datasheet information for geodetic control points for 10 Wisconsin counties. These are:

Adams	Milwaukee
Crawford	Richland
Dane	Rock
Lincoln	Taylor
Manitowoc	Trempealeau

The National Geodetic Survey issues new digital information on a periodic basis, reflecting the most recent corrections, updates, and data from their database. The changes contained on these 10 county disks incorporate corrections for discrepancies found on datasheets (incorrect county designations, cap stampings, and edits to the station description, etc.), as well as other recent information and additions to the datasheet.

These datasheet changes also impacted the SCO digital file containing the 98 WHPGN high precision stations. That data set has been recompiled to contain the most recent information. For information on ordering updated digital files, contact the SCO.

STATE CARTOGRAPHER'S COMMENTARY

New mapping technology emerges

by Ted Koch

Within the past 15 years many "gee-whiz" technical advances have had a profound affect on the efficiency and speed with which we are collecting, storing and analyzing geographic and land information. It seems that we move from one generation of technology to the next at an increasingly rapid pace.

The complex and costly computing machines that once resided in glass enclosed, air-conditioned rooms, and were accessed only by a select group of operators and programmers, have today often been replaced by small desktop computers. These new speed demons now permeate our offices, and are available to and used by nearly everyone involved with accessing and processing geographic formation.

Within the surveying profession, devices that had been the norm for decades have been rapidly replaced for many applications with total stations and GPS receivers. In fact, we are probably in error in referring to the older surveying techniques as "conventional". GPS surveying is becoming so commonplace that it is nearly the "convention" and not the new, "gee-whiz, cutting-edge" technology that it was just a few years ago.

Like the examples mentioned above, new technological developments are affecting the practice of photogrammetric mapping, which is significantly changing the way mapped data are handled, analyzed and presented. Photogrammetry, if you're not familiar with the term, is the art and science of recording, measuring and interpreting aerial photographs to produce highly precise, detailed and accurate base maps. These techniques have been used widely for several decades to produce a variety of maps, ranging from the popular 7.5-minute topographic quadrangles, to very large-scale, detailed maps of small areas or sites.

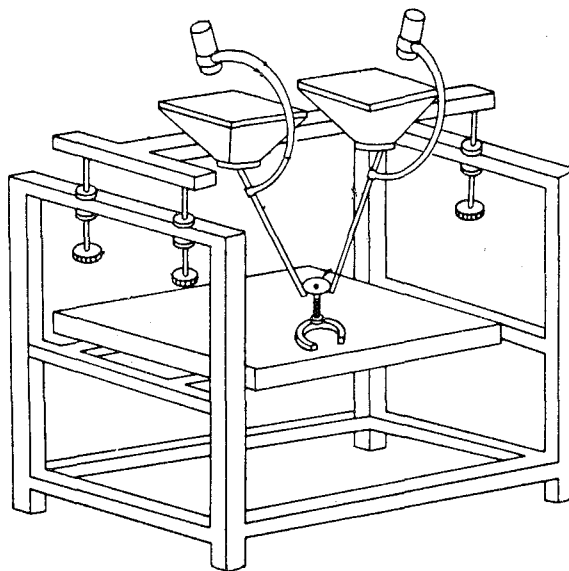
Traditionally, photogrammetrically prepared maps have been produced with complex instruments operated by highly trained and dedicated operators. Photogrammetric plotting instruments (called stereoplotters) are optical and mechanical devices built to a high degree of precision. When calibrated properly, they can produce highly accurate maps. These machines have generally been limited to a small number of private-sector firms, and the state highway departments, who have a need for detailed maps for highway design and planning.

Within the past year or so, "softcopy photogrammetry", billed as the next generation of technology for producing maps from aerial photographs, has emerged. Several such commercial systems are now on the market, awaiting the user community's analysis of their value and application. In the "softcopy" process, nearly all of the optical/mechanical components of the traditional stereoplotter are replaced by digitally scanned photos and computer processing of the scanned images. Through this new process, digital planimetric and topographic maps can be built, and digital terrain models and orthophotos generated. Paper maps are an optional by-product.

Some people, primarily those who are continually looking toward the future, foresee softcopy photogrammetry as the opportunity to bring photogrammetry to the GIS "desktop". This would be revolutionary, but similar in many ways to the expanded opportunities that changes in personal computers and GPS receivers have already brought to GIS. Other people are not so optimistic, feeling that the skills of photogrammetric map creation and aerial photo interpretation require much training and experience, and are better left to specialists.

Currently, several UW-Madison professors and students within the Civil and Environmental Engineering Department are undertaking studies to evaluate the use of softcopy photogrammetric systems for producing digital orthophotos, and for producing detailed maps for highway design purposes. This latter study is being funded by the Wisconsin Department of Transportation. Overall, these studies will be extremely valuable to the GIS/LIS community, and should be a significant beginning in the process to assess the value and place that the softcopy photogrammetric process may occupy in the GIS office of the future.

Stay tuned!



New county plat books

The following Wisconsin County Land Atlas and Plat Books are now available for 1993 for \$25.00 plus tax and shipping: Adams, Buffalo, Dane, Door, Dunn, Eau Claire, Florence, Fond du Lac, Iowa, Iron, Jefferson, Waushara, and Wood Counties. In addition, Ozaukee-Washington sells for \$35 plus tax and shipping. For ordering details contact: Rockford Map Publishers, Inc., P.O. Box 6126, Rockford, IL 61125, phone (orders only) 800/447-2222; for customer service information call 815/399-4614.

PROJECT REPORTS

To complement state highway map

Wisconsin cultural map in the works

by Ted Koch

Work has begun on a map that will attempt to unveil some of the mystery and invisibility of Wisconsin's cultural variety and history. With the help of a \$35,000 grant from the Wisconsin Humanities Committee, UW-Madison Geography Department faculty members David Woodward and Robert Ostergren have set off on a two-year project to create a cultural map of the state of Wisconsin.

The map, designed as a companion to the state highway map, will show the varied cultural landscape of the state. That landscape will include significant historical sites of ethnic importance, archeological areas, and prominent places with literary, musical, artistic, or architectural significance. The intent is to present a local sense of place through a well-designed cartographic portrait.

The first year of the project will include a thorough search to identify the places, features and events that are candidates for inclusion on the map. Due to limitations arising from the map's size, selection of a subset of all potential candidates will probably be necessary. The search will eventually include a series of public hearings across the state to garner local input and thoughts on the map's concept, content and design.

The map which will also include a background of shaded relief, will be produced in the UW-Madison Cartographic Laboratory. The project is aided by a broadly-based advisory board which includes the State Cartographer's Office.

(source: *Wisconsin Week*)

Designed to promote data sharing

DNR offers guide to GIS data

by Bob Gurda

The Wisconsin Department of Natural Resources' GEO Services Section has published the first edition of its *GIS Database User's Guide*. With 5 chapters and 6 appendices totalling over 200 pages in a loose-leaf binder, it provides a wealth of information on GIS data that the DNR has developed and collected. You can obtain a copy for \$25.

The guide, designed and produced by John Laedlein of the GEO, begins with an explanation of the concepts, terms, and conventions upon which DNR has built its first generation GIS database. A database overview follows, prior to content listings of the various cultural and environmental data layers.

Appendices cover additional details of the data layers such as processing history, availability, item definitions, and code tables. The guide closes with options for, and instructions on acquiring copies of the data. A copy of DNR's datasharing policy is included along with an order form.

For an order form or further information, contact John Laedlein at 608/264-8916.



Land cover mapping set to start

WISCLAND makes strong progress

by Bob Gurda

Statewide land cover mapping is about to begin. The WISCLAND Project, initiated earlier this year, has developed enough momentum to start the production process of analyzing satellite images.

WISCLAND is an acronym for the Wisconsin Initiative for Statewide Cooperation on Land cover ANALysis and Data. Several major federal cooperators have joined with the Wisconsin Department of Natural Resources to fund the first year of WISCLAND's work.

Articles of Participation have been drafted with the assistance of Bill Holland and Georgia Hopf, staff to the Wis. Land Information Board. Several agencies have already signed this document. A Steering Committee, chaired by the SCO, is being formed.

Additional funds are being sought from cooperators in state government and the private sector. Other cooperators will be contributing information they maintain or can collect on characteristics of the land cover at specific locations across the state; this information is essential for quality control of the semi-automated image analysis.

The federal agencies involved in funding WISCLAND's early work include the U.S. Fish & Wildlife Service, the Environmental Protection Agency, the Soil Conservation Service, the Chequamegon National Forest, and the Water Resources Division of the U.S. Geological Survey. A related federal initiative to purchase nationwide Landsat satellite imagery is also benefitting WISCLAND.

DNR GEO Services has hired Robert Goldmann as the land cover mapping project's manager; he will transfer from DNR's Forestry Bureau. Image analyst Heather Reese is joining Goldmann's team, and Dave Nagle will be added in January.

Although the loss of Landsat 6 (see adjoining column) is a disappointment, it does not directly affect WISCLAND plans. Land cover interpretation was scheduled to use existing satellite data collected in 1992 by Landsats 4 & 5. As newer technology becomes available, it may be used for future revisions of WISCLAND's initial mapping which will take place from 1993-1996.

For further information on WISCLAND, contact Bob Gurda at the SCO.

Questions & Answers

?

How long is the Great Lakes shoreline of Wisconsin?

To our knowledge, no one has attempted a detailed ground survey to measure the shorelines of Lakes Superior or Michigan. While some sections might be relatively easy, imagine the challenges of dealing with rocky coastlines such as Door County or the Apostle Islands.

Estimates of the distances can be extracted from any one of several maps. The accuracy of the result depends both on how and from what data the map was made and how measurements are taken from the maps to construct the distance.

Based on digital versions of USGS maps, the Wis. DNR's GeoServices Section calculated the following (in miles) for the Wisconsin portion of the Great Lakes shoreline, including islands:

Map scale	Shoreline
1:2 million	816 mi.
1:100,000	950 mi.
1:24,000	1017 mi.

Why are these results so different? Mostly, this is because the three map series span a wide range of scales, and therefore have different limits to the amount of detail that they can show. The smallest scale map (1:2 million shows Wisconsin in an area less than 1 foot square) is highly generalized, and as a result depicts only major shoreline irregularities. This degree of smoothing makes the length appear much shorter than actual.

Theoretically, one could map the shoreline's detail down to the level of the shapes of individual rocks. A shoreline distance measured this way could easily exceed 2,000 miles. All of this discussion goes to show that measuring natural features relies on standards which must be followed consistently to end up with a result that is acceptable for the purpose at hand.

?

Where could I get a map of the entire state showing the townships, or a map of county boundaries and/or with some roads and cities on it?

Many of your requirements can be satisfied by one of several maps produced by the Wisconsin Department of Transportation. Specifically, they have maps showing either government townships (from the original Public Land Survey) or modern civil towns (often made up of several government townships in the northern part of the state). They also have maps showing county boundaries, cities, and roads. Some maps show various combinations of these themes, and several of them are available in more than one size.

The DOT's Maps and Publications Sales Office is located at 3617 Pierstorff Street (53707-7713) on Madison's east side. Their telephone number is (608) 246-3265. They can send you an order form that lists the various products they have available. Included are county maps, district maps, highway plat maps, various reports, and the free state highway map.

?

Where can I buy a county plat book in Wisconsin?

There are a number of places you can try. While there is no place we know of in Wisconsin where you can purchase all of the plat books for the state, there are numerous local outlets.

One of the most common places where plat books are sold is the county courthouse. The county clerk's office or the county land information office would be places to try first. Realty offices sometimes also carry plat books.

A county plat book is typically composed of standard 8-1/2" X 11" sheets, each carrying a map of property ownership for one survey township of about 6 X 6 miles. These maps are not intended to precisely depict the extent of any particular parcel's boundaries. Additionally, where numerous small parcels exist in an area, they will not be depicted individually.

A few counties produce their own plat books. Private companies are free to collect the necessary publicly available information to develop their own plat books. One of the more active companies in the Wisconsin market is Rockford Map Publishers, Inc., in Rockford, IL. Their telephone ordering number 800/447-2222.

?

Why didn't the Wisconsin High Precision Geodetic Network (WHPGN) result in precise coordinates referenced to the old NAD27 datum?

WHPGN could be directly related to the new NAD83 datum because both that datum and the satellite orbits have earth-centered definitions. By contrast, NAD27 is centered on a single station located in Kansas.

To get NAD27 coordinates for a new point using the Global Positioning System (GPS), one existing station with NAD27 coordinates must be occupied. This will result in an *absolute* position for the new point no better than the NAD27 position of the existing point, and may have some azimuth inaccuracy. Tying to more than one NAD27 station will improve the azimuth uncertainty but will degrade the GPS accuracy because the NAD27 positions are based on older and less accurate measurement and adjustment techniques.

The longer the distances between NAD27 stations, the more significant the errors that are likely to be introduced. According to the Wisconsin Department of Transportation, responsible for establishing the WHPGN, such an adjustment of NAD27 would not make sense for Wisconsin. The WHPGN resulted in an accuracy level of 1 part in a million or better, while an NAD27 readjustment based on WHPGN would at best produce results of 1 part in 25,000. Such a readjustment would also degrade the *relative* positions of points so that the network would no longer be "high precision".

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.

EVENT PROFILES

Designed for decision makers

Executive program set for January in Milwaukee

A focused, one-day Executive Program tailored to address the interests of elected officials from local, state, regional and federal government agencies, as well as private sector professionals, has been scheduled for January 13, 1994 in Milwaukee, Wisconsin.

Organized by the Urban and Regional Information Systems Association (URISA), the Wisconsin Land Information Association (WLIA) and the Wisconsin Chapter of AM/FM International, the Executive Program offers participants a unique opportunity to learn from leaders in the GIS/LIS and AM/FM fields.

Experts from the fields of geographic information systems (GIS) and information technology (IT) and others will be on hand to offer new ideas and proven approaches focusing on the importance of GIS and IT in an era of tight budgets. Attendance will be limited to encourage executive-to-executive networking in a roundtable setting.

Using IT and GIS to improve the efficiency in productivity, management and decision-making is impacting all levels of government and a wide spectrum of private sector companies. The Executive Program will address such issues and topics as: *A Look at Information Technology, GIS Management Issues, and Increasing Revenue Through Auditing.*

In-state speakers include David Baraniak (Ruerkert & Mielke, Waukesha), Randy Gschwind (City of Milwaukee), and William Holland (Wisconsin Land Information Board, Madison). Visiting speakers include David Nystrom (USGS, Reston, VA), Kenneth Topping (consultant, Pasadena, CA) and Peirce Eichelberger (Orange County, FL).

To register or to receive more information, call the URISA Secretariat at (202)289-1685. The Executive Program is \$130 for those registering by November 24, 1993, and \$160 thereafter. The Executive Program will be held in the Hyatt Regency Milwaukee.

(source: URISA)

Major conference opportunity

URISA calls for presentations in Milwaukee next summer

The Urban and Regional Information Systems Association (URISA) is holding its 32nd Annual Conference and Exposition at the MECCA in Milwaukee from August 7-11, 1994. Through December 13, you can submit proposals for individual presentations, theme sessions, panels, or Project Showcase posters. To receive a brochure outlining thematic tracks and including a presentation application form, contact URISA at (202) 289-1685.

Eau Claire to welcome WLIA

by Ted Koch

December 9 and 10 are the dates for the next membership meeting of the Wisconsin Land Information Association. The meeting will be held at the Eau Claire Holiday Inn Convention Center located on Barstow Street in the downtown area.

Following the pattern of recent WLIA quarterly meetings, this event will begin with a free, two-hour Thursday evening seminar, followed by a full agenda of activities during the day Friday. The Friday portion requires a modest registration fee that covers lunch and other costs.

Thursday evening preview

Two presentations will be featured on Thursday evening's program. The first half will be led by John Weisenberger, a professional computer applications manager, who will unravel some of the mysteries of computer structure, operations, management and costs. Covering the range from micro- to mini-computers, John will discuss capabilities, memory requirements, costs of components, and the power of relational databases.

The second half of the Thursday evening program will feature a discussion of issues concerning the applications of relational database design for Geographic Information Systems. Lynn Martens, Data Processing Administrator for Oneida County, will be the speaker for this segment of the program. Her emphasis will be on integration techniques between a variety of machines including PC's, minicomputers and workstations.

Friday events

The highlight of Friday's general membership meeting will be a presentation by Lori Peterson Dando on the legal issues of information management, covering the issues of public access, open records, copyright and cost recovery. Dando currently serves as the Assistant Attorney for Dakota County, Minnesota. She has studied, written and spoken widely on issues concerning accessibility, copyright, and open records laws related to geographic information. Specifically, a number of her articles on these issues that have appeared recently in the *URISA Journal* and the *URISA News*.

In addition to her county position, Lori also serves as Chair of the Minnesota Governor's Council on Geographic Information, and recently was elected a member of the Executive Board of the National States Geographic Information Council.

Also included on Friday's program are a presentation of metadata issues prepared by WLIA's Metadata Task Force, updates on legislative activities concerning the Land Information Board and program, and WLIA committee meetings. To round out the day, an Eau Claire area Project Showcase will have two sessions featuring four Eau Claire area GIS projects and developments in GIS education.

For further information call WLIA at 800/344-0421.

REMOTE SENSING

Cause of demise is unclear

New Landsat vanishes after launch

by Bob Gurda

Landsat 6, the United States' only remote sensing satellite to be launched in the last 9 years, is nowhere to be seen or heard. Shortly after its launch on October 5, the \$220 million device could not be located by tracking or communications stations. It appears to have been lost.

The failure to realize the long anticipated capabilities of this satellite is sending shock waves through the US remote sensing community. There is no replacement satellite built (or in the works), and Landsat 7 is still several years away. Landsats 4 and 5 continue to operate, but well beyond their anticipated lifetimes. Landsat 6 was expected to take over much of the observing load from 4 and 5, and had an enhancement that would provide twice the current resolution in black-and-white.

Alternative sources of remote sensing data are available, including France's SPOT and others. (*note: SPOT 3 was successfully launched on September 25*). Some of these provide crisper images than Landsat has to date. However, the Landsat satellites have supported superior discrimination of multiple bands of wavelengths reflected from the earth, greatly aiding in detecting patterns in vegetation, geology, and water quality.

While there is no conclusive evidence as of yet, indications are that the multi-stage Titan 2 rocket carrying Landsat 6 may not have achieved a proper orbit and as a result plunged back through the atmosphere into the Pacific Ocean. The rocket in question was a reconditioned ICBM, and one of its sections reportedly had been replaced earlier this fall after concerns for its quality. Several other Titan launches have had problems this year.

The Landsat 6 satellite itself was built by a subcontractor for EOSAT Corporation, the company that holds the government contract to provide commercial access to data from the Landsat series of satellites. There is every indication that the satellite, had it been successfully placed in orbit, would have operated perfectly.

Several boards of inquiry are being formed to investigate the events surrounding the launch. Beyond the specifics relating to Landsat 6's demise, there may be a silver lining to these recent events. Particularly since the Department of Defense is involved with NASA in planning for Landsat 7, there may be increased attention paid to what many observers have long considered to be a lack of resolve by the federal government to adequately fund civilian remote sensing technology. There also may be more attention paid to this potential market by private entrepreneurs.

(sources: EOSAT, NOAA, NASA, Aviation Week & Space Technology)

SCO NEWS

State Cartographer role is 20

It's been twenty years since the Wisconsin Legislature crafted language to establish the mission of the state cartographer. The position was actually not formulated and filled until 1974. Upon Art Ziegler's move from St. Louis to Madison, the university formed the SCO as its entity supporting the role of the state cartographer.

Our concerns to former employee

by Brenda Hemstead

Craig Williamson, the husband of former SCO Assistant State Cartographer Christine Reinhard, is believed to have been abducted nearly two months ago. Craig, a 48-year old Clintonville, WI fish farmer, vanished during a business trip to Colorado Springs, CO.

Christine last spoke to her husband on August 30. He told her he was planning to return his rental car that evening, but the vehicle was never returned. His credit cards showed up in El Paso, TX, on August 31 and the rental car was discovered in Juarez, Mexico on September 13.

Virtually no clues to his disappearance have been reported to police. For details on how to help, contact Christine at 715/823-5810, fax 715/823-6210. We join Christine and her other friends and family in hoping that she locates Craig soon.

After leaving the SCO in the summer of 1987, Christine moved to Olympia, Washington to become the State Cartographer there. She returned to Wisconsin in 1990 with Craig to begin an aquaculture business, GEMMA, in Clintonville. A Craig Williamson search fund has been established at the Dairyman's State Bank in Clintonville.

SCO staff changes

Some of you who have called or visited our office in the last three months have already been become acquainted with Sharon James. She is our new half-time Program Assistant, helping with general clerical duties and working with Brenda on specific projects. Sharon works Monday-Friday, 9am - 1pm.

Since our last issue, we have had several changes in our student staff. Tim Ruhren, who coordinated our aerial photography inventory and catalog project, finished his master's degree in civil engineering; he has taken a job with the New York Department of Transportation. Rob Carnachan, who wrote our soil mapping guide and drafted a guide (still in work) on geologic mapping, finished his master's degree in water resources management and now works for the Wis. Dept. of Natural Resources. We have hired Rajendra Bachracharya, a civil engineering graduate student, to work on further automation of geodetic control point information.

CONFERENCES, TECHNICAL MEETINGS, AND CLASSES

November 15-19, **Introducing pcArc/Info** will be held at Madison, WI. Contact: Tom McClintock, UW-Madison at 608/263-5534, fax 608/262-5088.

December 7-9, **US Geodata Database Access via CD-ROM Technology**, USGS, will be held at the Stennis Space Center, Mississippi. Contact: 601/688-3541.

December 9, **Wisconsin Land Information Association Seminar** will be held in Eau Claire—free from 7-9pm.

December 10, **Wisconsin Land Information Association (WLIA) Quarterly Membership Meeting** will be held in Eau Claire, WI. Contact: WLIA at 800/344-0421.

December 12-14, **Electronic Government, Policies for Redesigning Government and the Workplace and for Improving Communications with Citizens** will be held at the Hyatt Regency on Capitol Hill, Washington, DC. Contact: Bob Boerner at NCSL, 303/830-2200.

December 13, **Introduction to Digital Cartography for the Casual User**. (See listing in February for contact information).

December 14, **Introduction to Digital Data for GIS and Other Mapping Applications**. (See listing in February for contact information).

December 15, **Learning the Fundamentals of GIS through Topology and Queries**. (See listing in February for contact information).

December 16, **Hands-On Introduction to GPS and Its Integration with GIS**. (See listing in February for contact information).

December 17, **Basic Concepts of Remote Sensing and Its Integration with GIS for Management Resources**. (See listing in February for contact information).

December 14-18, **Introduction to ARC/INFO, ESRI**, will be held in Minneapolis, MN. Contact: 714/793-2853.

1994

January 10-12, **Introducing ArcCad for Land Records Modernization & Natural Resource Management** will be held at Madison, WI. Contact: Tom McClintock, UW-Madison at 608/263-5534, fax 608/262-5088.

January 13, **Executive Program on Information Technology** will be held in Milwaukee, WI. Contact: URISA at 202/289-1685, or WLIA at 800/344-0421.

January 13, **Workshop on ArcView for Natural Resource Management & Land Records Modernization** will be held at Madison, WI. Contact: Tom McClintock, UW-Madison at 608/263-5534, fax 608/262-5088.

January 14, **Workshop on Building ArcView "Views"** will be held at Madison, WI. Contact: Tom McClintock, UW-Madison at 608/263-5534, fax 608/262-5088.

January 25, **Application of Airborne Video Remote Sensing with GPS** will be delivered live via satellite from the UW-Madison. Contact: Robert Fey at 608/262-8592 or 800/462-0876.

January 26-28, **Wisconsin Society of Land Surveyor's Annual Institute Conference** will be held at the Holiday Inn, Stevens Point, WI. Contact:.....

January 27-28, **International Symposium on Remote Sensing and GIS** will be held in San Francisco, CA. Contact: Marsha Firman at 215/299-5478.

January 28-29, **33rd Annual Surveying Engineering Conference** will be held at the California State University, Fresno, CA. Contact: James K. Crossfield at 209/278-2889, fax: 209/278-6759.

January 31-February 2, **2nd Thematic Conference on Remote Sensing for Marine and Coastal Environments** will be held in New Orleans, LA. Contact: ERIM Conferences, phone 313/994-1200 ext. 3234, fax 313/994-5123.

February 2-3, **Requirements for Integrated GIS (IGIS), ISPRS Commission II Working Group II/2** will be held in New Orleans, LA. Contact: David R. Steiner, Secretary, WGII/2, +49-4441-15422.

February 20-24, **GIS '94** sponsored by *Forestry Canada and Polaris Conferences* will be held in Toronto, Ontario, Canada. Contact: 604/688-0188; fax: 604/688-1573.

February 21-23, **Introduction to Relational Database Design for GIS Applications** will be held at UW-Milwaukee Civic Center Campus. Contact: Steve Scott at 414/227-3115.

March 21-23, **Wisconsin Land Information Association's Annual Conference** will be held in Stevens Point, WI. Contact: WLIA at 800/344-0421.

March 21-24, **AM/FM International Annual Conference XVII** will be held in Denver, CO. Contact: Paula Delie, AM/FM International, 14456 E. Evans Avenue, Aurora, CO 80014-1409, 303/337-0513; fax 303-337-1001.

April 10-13, **GIS-T 1994, Annual Symposium on GIS for Transportation** will be held in Norfolk, VA. Contact: Jim Dolson, 605 Suwannee St., MS43, Tallahassee, FL 32399, 904/922-6918.

April 13-15, **GIS Data Management Capture and Conversion** will be held in Madison, WI. Contact: 800/462-0876, fax 608/263-3160.

April 23-28, **1994 ASPRS/ACSM Annual Convention** will be held in Reno, NV. Contact: ACSM '94, 5410 Grosvenor Lane, Bethesda, MD 20814-2122, 301/493-0200; fax 301-493-8245.

May 2-4, **1994 Mid-America GIS Symposium** will be held in Kansas City, MO at the Hyatt Regency Hotel at Crown Center. Contact: Urban and Regional Information Systems Association at 202/289-1685, fax 202/842-1850.

May 9, **10th Thematic Conference of Geologic Remote Sensing** will be held in San Antonio, TX. Contact: ERIM Conferences at 313/994-1200 ext. 3234, fax 313/994-5123.

May 9-13, **GPS/GIS '94** will be held at the Ritz-Carlton (Tysons Corner) near Washington, DC. Contact: GPS/GIS '94, Conference Coordinator, c/o GeoResearch, Inc., 115 North Broadway, Billings, MT 59101, 406/248-6771, fax 406/248-6770.

June 5-8, **GIS in Business '94 Conference and Exposition** will be held at the San Francisco Hilton and Towers in San Francisco, CA. Contact: GIS World 303/223-4848.

June '94, **The Fourth International GPS/GIS Conference** and training program will be held in Washington, D.C. Contact: Conference Coordinator, GPS/GIS '94 at 202/434-8910, fax 202/434-8911.

June '94, **Wisconsin Land Information Association (WLIA) Quarterly Membership Meeting** will be held in Oshkosh, WI. Contact: WLIA at 800/344-0421.

August 8-12, **URISA '94, Urban & Regional Information Systems Assn.**, will be held in Milwaukee, WI. Contact: The Urban & Regional Information Systems Assn., 900 Second St., N.E., Suite 304, Washington, DC 20002, 202/289-1685.

September '94, **Wisconsin Land Information Association (WLIA) Quarterly Membership Meeting** will be held in Rhinelander, WI. Contact: WLIA at 800/344-0421.

October 23-28, **GIS/LIS '94 Annual Conference & Exposition & ACSM/ASPRS Fall Convention** will be held in Phoenix, AZ. Contact: GIS/LIS '94, 5410 Grosvenor Lane, Suite 100, Bethesda, MD 20814-2122 at 301/493-0200; fax 301/493-8245.

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 four people—Ted Koch, State Cartographer (608/262-6852), Bob Gurda, Assistant State Cartographer (608/262-6850), and Program Assistants Brenda Hemstead and Sharon James (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.

The Office answers a wide range of inquiries ranging from simple to complex, in the following general categories:

1. Geodetic Control—Requests for surveying information which has been established by some office or agency, and upon which the requestor wishes to base a survey or map.
2. Aerial Photographic Coverage—These are requests for information about existing or planned aerial photographic coverage which can be utilized for a variety of projects. These requests, in many instances, are motivated by the desire to avoid the exceedingly more costly option of acquiring specifically flown photography.
3. General Map Coverage—The requestor is seeking map coverage to fulfill a specific need, from utilization as a base map upon which other information can be compiled, to determination of location or extent of a resource such as wetlands, to use as a recreation guide.
4. Specific Unique Data—These types of requests change as various programs are implemented. Examples include magnetic declination (for land surveying), and latitude/longitude (federal requirement for placement of sending satellite dishes or radio towers).
5. General Requests—Such as size of an area, height of a particular feature, location of a named feature, explaining contours, digital methods, software, hardware, etc.
6. Activities of Other—This provides access to publications, news, anecdotal information, and referrals to appropriate agencies, programs, organizations, or individuals who may be able to provide the information being sought.

For more information, call the SCO at 608/262-3065. You can request a free brochure profiling the SCO in more detail, and listing available publications.

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 7, 1994

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