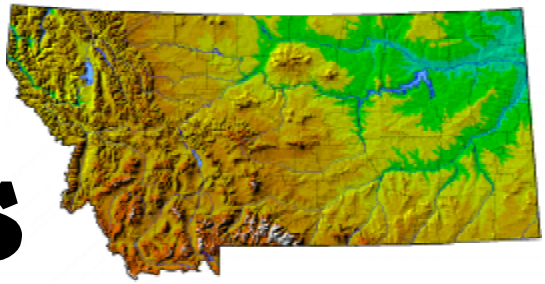
Montana GIS News



GIS Support for Firestorm 2000

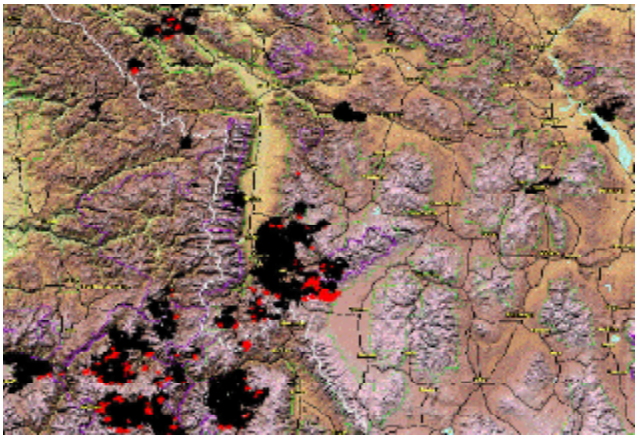
This article describes the experiences of four Montana agencies that provided GIS and mapping support to the fire suppression and rehabilitation efforts for Montana's worst fire season in ninety years.

The article provides perspectives of five agencies, their common experiences, unique experiences, the data that were important or helpful for response and planning, how the data were used, and lastly, a look to at ways the Montana GIS community can prepare for improved response to future disasters of any type.

The agencies described in this article are Gallatin County GIS, the Montana State Department of Commerce – Census and Economic Information Center (CEIC), City of Helena-Lewis & Clark County GIS, the Lolo National Forest Fire Mapping Center, and the Mobile Mapping Unit stationed to support the complex of fires in the Bitterroot Valley. Here are their stories:

City of Helena - Lewis & Clark County GIS by **RJ Zimmer**

The City of Helena-Lewis and Clark County GIS office has assisted the sheriff's office and local volunteer fire departments with custom mapping for fire response and search and rescue, on an incident-by-incident basis for the past two years. However, early in the 2000 fire season all those who are involved with emergency response were aware that this year was going to be a volatile one. Although we knew it was going to be a bad year, we didn't know how bad it would be, or when and where it would all begin.



Then on Sunday, July 23, I received a call from the Lewis and Clark County Sheriff's Office at 6:47 p.m, with a request for a map in response to a fire. The deputy described the area of the fire and said, "It looks like its going to be a bad one!" I met him at my office ten minutes later and we started to build a map of the area based on the field information coming in from the Under-sheriff who was on-site. We created a map that showed house locations, roadways, the Public Land Survey System (PLSS) and hydrography for a four square mile area, then sent the map to the plotter. Halfway through the plot we got a call over the radio that the fire had jumped the road and they now needed a map of a ten square mile area.

Then a call came in that there was *another* fire across the lake and they need maps for that too. These two fire were later named the Bucksnort and Cave Gulch fires and very rapidly became major incidents that mobilized thousands of people from all over the country, and included a multitude of agencies.

The county GIS office continued to provide map assistance for these fires and others as the fires spread and more agencies became involved. With the help of the US Forest Service offices for the **Lolo, Lewis & Clark and Helena Forests, NRIS, Broadwater County** and **CEIC**, our office created shaded relief Digital Elevation Model (DEM) maps of the areas overlaid with roads, structures, fire extents, PLSS, and hydrography. The maps were used in the

(Cont. on page 2)

In this issue…

(Fire Storm Cont.)
Emergency Operations Center, Incident Command Post and in the field for planning evacuations and fire response. The DEM-based maps helped the teams to see whether a road followed along a ridge or up a gulch or if houses where down in a hole that could be too hot for firefighters.

Maps were built on an 11x17 inch format and printed at that scale on an HP DesignJet ColorPro GA and at a 300% scaling on-the-fly to the HP 650c plotter. Thus the same map was printed at a size convenient for in-vehicle use and for wall-size.

Other maps produced were: "how to get to the base camp," aerial photography, satellite imagery, topographics, and public lands. After the initial maps were produced for the Bucksnort, Cave Gulch and a couple other smaller fires, the sheriff's office requested that a map series depicting the "basic set" of data be created for all the areas of the county that may be hit by fires. Thus a Fire Map series was created on 11"x17" format that was output as PDF files on the county GIS website (www.co.lewis-clark.mt.us/fire-map-index). That resource allows the sheriff's office to print a map for any area that a fire pops up. This worked well and was used on fires this season.

GIS Benefits Proven Effective for Incident Command in Gallatin County

by Allen Armstrong

During the "Hot August Nights" in Gallatin County, the GIS Department was an integral player in the **Emergency Operations Center (EOC) Planning Section**. Since before the Y2K paranoia, Gallatin County officials and Department Heads have been receiving training in the operations of the **Incident Command System (ICS)**, which is the recognized emergency management system nationwide. GIS is a critical component to the Planning Section of the ICS and supported those in charge throughout the fire season with up-to-date maps and database requests.

Throughout the "Hot August Nights," the EOC realized the benefits of GIS in the rapid reporting of data that could be presented at relatively short notice. When word came to notify individuals regarding potential evacuations by the Sheriff, the identified areas on the wall maps were queried in the database. The GIS quickly linked the telephone database with the structure database and presented the data using a Report Writer to the Sheriff's field personnel. Producing this information during past incidences used to take weeks to prepare. Precise Latitude, Longitude and Elevation structure coordinates were also reported in the event of a helicopter rescue.

Gallatin County GIS also displayed daily updated County fire status maps and Montana fires status maps in our Courthouse lobby for visitors. These maps were reviewed by all visitors to the EOC as well as the general public. Map data was collected from **the U.S. Forest Service**, the **National Oceanic and Atmospheric Administration** (NOAA), **Fire Management Teams** and EOC data collection efforts.

Our Public Information Officer (PIO) was outfitted with data collecting Global Positioning System (GPS) equipment for surveillance flights with the **Civil Air Patrol**. Upon return, data was processed and updated perimeter maps generated complete with acreage calculations and active burning locations defined.

CEIC's Role during the Fire Season,

by Allan Cox

Early in the fire season, the Census and Economic Information Center (CEIC) at the Department of Commerce helped local governments find data to use to create their own maps. Sometimes CEIC helped deliver GIS data among different entities to help ensure all organizations were working from the same information. For those counties that couldn't create maps, CEIC teamed with the **Natural Resource Information System** to secure data, and plot and deliver maps. These maps usually consisted of base data with fire perimeter information overlaid. CEIC also posted various maps on its' website and supplied a variety of maps to **Travel Montana** for use in its public information dissemination role.

As the season progressed, CEIC was asked to assist the EOC at the **Montana Disaster and Emergency Services** (DES) department. CEIC personnel provided support to the DES GIS manager to produce a variety of maps and GIS products. Using the Advanced Very High Resolution Radiometric (AVHRR) data from the **U.S. Forest Service**, a daily map of cumulative and active burning for Montana was created. This map was used for public information, agency briefings, and DES planning efforts.

At the request of DES and the **Governor's Office**, CEIC made a request to the **U.S. Census Bureau** for housing unit data from Census 2000 and for a speed up of the release of TIGER/Line 1999 data. The Census Bureau responded rapidly to the request and delivered housing unit counts for Census collection blocks and by placing Montana TIGER/Line 99 files on its web site. We then obtained potential fire path data from the **Northern Rockies Coordinating Center** in Missoula. Using the housing data

and the fire paths, CEIC and DES produced a series of maps that depicted and summarized numbers of houses exposed to fire at varying distances from a potential spread point. The housing unit data were also used to help generate statistics regarding the potential number of housing units exposed to threats of wildfire to support the application for a Presidential disaster declaration. The housing unit data were later supplied to the **Fire Science Laboratory** in Missoula for inclusion in its modeling of potential fire spread.

With the help of Tom Ring in the **Environmental Management Bureau at the Montana Department of Environmental Quality**, we obtained a data coverage of the major electrical transmission distribution lines. Working with **Montana Power Co**., CEIC and DES also created a data layer of critical microwave communications sites. On a daily basis, we then produced maps that overlaid the electrical distribution system and microwave sites with cumulative burned areas, active burning, and potential fire path information. These maps were used in the State EOC and by Montana Power Co. for planning and response efforts.

In early September, CEIC personnel were requested to join a **Type II Team (Corbin)** to provide GIS services at the **Maudlow/Toston Fire Camp**. CEIC set up GIS services at the Townsend fair grounds using ArcView 3.2 on a notebook, a HP 1220 printer (for 11"x17" maps) and an HP 655 plotter for large maps. During a seven-day assignment there, a variety of maps and databases were produced. These maps included:

- 36"x48" daily briefing maps of the entire fire area,
- a daily 11"x17" incident action plan map accompanied by 8 original, large scale 11"x17" daily shift maps (175 black/white photocopies were then made daily of the shift maps and incident action plan map for distribution to fire crews),
- a fire line and dozer line database and rehabilitation status database was created and updated on a daily basis to guide and monitor the rehab efforts, and,
- Using the Montana cadastral data for **Broadwater County** and other information for adjoining counties, large scale ownership maps were created and plotted to support rehab efforts and land owner relation and contact projects.

Feedback from the GIS Fireline in the Bitterroot Valley

by Mike Sweet

In the last week of August, I spent an afternoon visiting with personnel at **the Lolo National Forest Fire Mapping Center**, and a second afternoon with Jim Kniss at **a Mobile Mapping Unit** stationed to support the complex of fires in the Bitterroot Valley. At each visit, my objective was to discover what worked and what didn't work in regard to the use of GIS for disaster response and incident management. In both situations, the GIS specialists at these sites produced value-added maps. They relied heavily on the existence of digital basemaps to which they could overlay incident mapping. The Lolo National Forest had the advantage of having the first all digital National Forest map in Region 1. In the Bitterroots, Digital Raster Graphics (DRGs) provided the starting point.

When Jim Kniss arrives on the fire scene with his Mobile Mapping Unit, he seeks out topography (contours), background images, and attributed roads to provide incident commanders with status maps every 12 hours. He will look next for maps of structures like homes and businesses. If he's lucky he will throw in the 'luxury' databases like ownership (state/federal/local/private), fire history, and vegetation (presence/absent and life-form) required to respond to emergencies. Equally important is access to a resource list of people, services, and equipment that can be ordered quickly to support incident mapping.

What we learned from the experiences:

Data sets:

Needed to have: Structures, Roads, Telephone Database, Boundaries, PLSS

Was Nice to Have: Shaded Relief, Hydro, Land Ownership, DRG, Digital Ortho Quarter Quads (DOQQ)

Would Like to Have: Complete Land Ownership, Good utility data—power lines, communication towers, pipelines, etc.

When asked about their number one frustration, all GIS groups said "data that was not in the same projection." There was also little agreement on what that projection should be. The data flowed among state, county and federal agencies and many of these used different projections, in fact this was true even among different national forests. Fortunately no agency was using a non-standard projection/coordinate system, so projections could be performed with standard tools. Jim Kniss, who is a GIS specialist with the Ventura County Fire Department (see Geopspatial Solutions, June 2000, pp. 24), noted that when arriving on site with their 'GIS van' they typically look for images – like digital raster graphics or digital orthoquads – and begin projecting vector data to the same projection as the imagery.

(Cont. on page 4)

(Fire Storm Cont.)

Another frustration was that map distribution was not well coordinated. Maps were highly prized items and those who had them would not readily part with them. Not everyone who needed maps had what they needed, even if the maps were available.

Another consideration was that the mapping efforts were not well coordinated. There were many agencies (federal, state and county) working independently on the same fires. In some cases similar maps were being produced and in other case different maps were produced that would have been valuable to the other agencies but as stated above distribution was an issue

Opportunities for improvement:

1. There should be a more coordinated mapping/GIS effort for disaster response so that data, personnel and resource sharing is improved. Some staff put in long hours while other resources were not even used.

2. There are many talented and experienced GIS professionals in the state who can contribute directly to fire and other disaster response. However, many of the command teams and centers that managed fire information and conducted GIS applications recruited people from out-of-state. Although these individuals were quite talented and made significant contributions, they lacked local knowledge of the state as well as links to local individuals who could provide technical assistance and data. We recommend that more in-state GIS professionals be used on the teams and at regional command centers. When out-of-state teams are brought in with their own GIS staff, local GIS practitioners could still be used with those teams to provide technical assistance and play a local liaison support role.

3. One of the most needed data layers was accurate housing locations, yet this information was not always available. Some counties had good data while others had none. A good, statewide house location data layer would be a valuable asset for wildfire response as well as for other population protection needs (floods, earthquake, toxic release emergencies, etc.).

4. Ownership data is useful for population protection planning as well as rehab management and land owner relations, but this data set is also incomplete. We need a complete, comprehensive and consistent cadastral layer for the state.

5. Reprojecting data occurred every time data were exchanged with federal agencies, and in some cases other state and local agencies. A single projection for the data would save valuable time.

6. Protocols and standards for file naming and methods for documenting rapidly created data and related computer files to make team transitions and data sharing easier and more accurate.

7. Effort should be invested ahead of time to research and develop guidelines and standards for map design for black/white reproduction so maps can be photocopied for wide distribution.

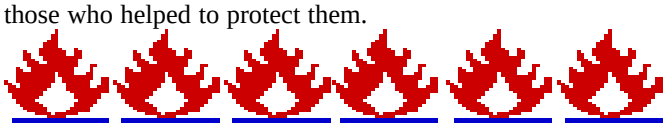
8. Metadata were critical to documenting data sources and map products as they were produced. Many felt that the daily incident maps would eventually find their way into future litigation. Metadata were critical to interpretation as well as documentation of their suitability. Shapefiles and GPS geographic coordinate files were the most common data formats used by contractors to deliver spatial data from ground or air collection instruments.

9. Software expertise: Jim Kniss noted that he lacked access to GIS professionals who were proficient in ESRI's ArcView GIS. ArcView was fundamental to the success of operating a field station mapping unit. Of course, there was also the need for training, training, and more training. Probably the most significant cartographic challenge mentioned by both mapping centers was an effective means to present the cumulative day-to-day fire perimeters as a time-series.

10. Montana should continue to work to break down inter-governmental barriers to cooperation in regard to spatial data. Jim Kniss suggests that the Montana GIS community invite Dave Delsordo to share his knowledge in this arena. Dave is **a National Park Service** representative to the regional FireScope group (http://firescope.oes.ca.gov/) in California that investigates issues related to inter-governmental emergency preparedness for wildland fires.

Conclusion

This was the first time GIS was employed for fire response on such a large scale and GIS played a vital (possibly, life-saving) role during this summer's fire season and it proved its' worth many times over. In the words of one fire chief, "your maps saved our bacon!" Flexible and mobile GIS tools for data acquisition (GPS) and map production (e.g. ArcView on a laptop) facilitated the rapid flow of critical information. Many people in many locations all over the country worked together with a sense of community and a strong desire to help. That commitment contributed to the success of the response. Over all, this effort demonstrated the value and potential for GIS in responding to wildfire needs and highlights the critical role that technology plays in disaster response. GIS helped to reduce the loss of life and property of those who where in harms way as well as those who helped to protect them.



ITWG Revises MOU

Foundation Strengthened to Meet the Future of GIS

by Steve Henry, Past ITWG Chair

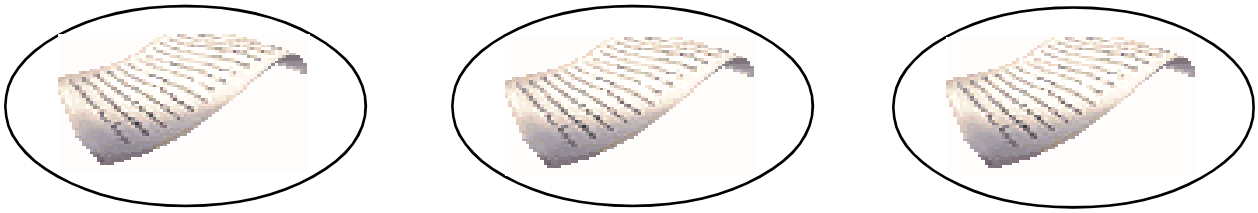
The *Montana Interagency GIS Technical Working Group* (ITWG) recently completed the first revision of its Memorandum of Understanding (MOU) since the Group was founded in 1989. While ITWG's MOU does not expire, a general provision requires that the agreement be reviewed at least every five years to "assess its adequacy, effectiveness, and continuing need." This periodic review provides ITWG with the opportunity to reevaluate its mission and remain focused in the rapidly developing field of GIS. During this review several areas for growth and improvement were identified. The following important changes were made to the MOU:

- Institution of a mutually agreed upon membership fee to cover administrative expenses (initially set at $100/Signatory/year);
- Creation of a Secretary/Treasurer position;
- Replacement of the Steering Committee with a structure in which Signatories act through designated ITWG Representatives;
- Expansion of ITWG membership to welcome academic, tribal, and private sector interests; and
- Development of Standard Operating Procedures (SOP) to provide long-term guidance and continuity.

The MOU was revised by a committee of ITWG members and went through several rounds of internal and public review. The revised MOU was formally approved at the July 2000 meeting and is currently being resigned by Signatories. ITWG believes that the changes made will strengthen the Group and promote the organization's continued growth and success. ITWG's core mission remains to "provide a technical forum in Montana where issues related to the collaborative development and distribution of geographic information systems (GIS) can be discussed and acted upon." The revised MOU, coupled with recent advancements in GIS coordination, will benefit both ITWG Signatories and the Montana GIS community for much time to come.

The new MOU is available online from the ITWG website (mtgeo.org/itwg). Feel free to contact myself or Bob Holliday (current ITWG Chair) for additional information. New Signatories are especially encouraged to consider membership in ITWG. As GIS expands into many new areas, ITWG is well positioned to remain a valuable GIS resource for Montana.

I would like to thank all those who commented on the MOU. Special thanks go to Bob Holliday, Jeff Hutten, Kris Larson, Tom Potter, and Mike Sweet for volunteering their time and efforts to serve on the MOU Review Committee.



NRIS Receives IMLS Grant

By Duane Anderson

NRIS received word in September that we have been awarded a $238,000 National Leadership Grant award in the Research and Demonstration category from the Institute of Library and Museum Services (IMLS). NRIS was one of 10 recipients of awards from 32 applications. The two year project, entitled '*Development and Demonstration of a State Lead-Library Model for Providing Effective Public Access to Digital Map and Related Spatial Data Through the Internet'* will focus on designing and developing a user-friendly, web-based distribution system for providing Internet access to digital spatial and related information, including extensive attribute data. The system will also provide patrons with essential tools for manipulating, interpreting and analyzing the information. NRIS will provide much of the power and functionality of a full-fledged GIS system to a broad community of users requiring nothing more than a current Internet browser. Work on the project will begin this fall.

GIS Education for K-12 in Montana

By Christine Erlien, Lauren Mackay, Kris Larson, and Allan Cox

There is a lot going on in the state of Montana with GIS in education. Montana State University has a program that trains K-12 teachers in the use of ArcView, and the EOS program at the University of Montana provides GIS training as well. NRIS provides introduction to GIS materials, and the GIS Toolbox is sponsored by Montana GIS Users' Group.

Montana State University

Montana State University faculty and staff, as well as pilot teachers from Montana schools, offer workshops entitled "Changing Instruction: GIS A Tool for Teachers". These workshops, sponsored by the Upper Midwest Aerospace Consortium (UMAC;), are geared toward educators interested in Geographic Information Systems, Global Positioning Systems, Remote Sensing, and Curriculum Integration. Teachers are encouraged to attend as a team. The goals of the workshops are to learn to integrate powerful mapping and analysis software into current curriculum, to examine topics relating to earth science, remote sensing, imagery acquisition, precision farming, and Global Positioning Systems (GPS), and to explore the creation of map representations and visualizations using color. To date, approximately 75 Montana K-12 teachers have received ArcView training through this program.

The cost for these workshops is $300 per 2 person team from a single school. Additional team members are $100 each. Enrollment is limited to 10 teams or 20 participants per site. Teams will be given preference over individual teachers. The workshop will be filled on first come, first served basis. Participating schools will receive instruction by UMAC ArcView trainers, an ArcView Building Site License, a series of hands-on classroom-ready materials, and the Prairie to Mountain Explorer spatial data CD set for the UMAC region (MT, ND, SD, ID, WY). The cd set was created by the EdPARC, the education branch of UMAC. For more information about the EdPARC, see http://nasc.uwyo.edu/ essip or http://www.umac.org/education/. The next EdPARC workshop will be held November 9-11 in Miles City.

University of Montana

The National Lewis and Clark Education Center, located at the University of Montana, hosted an Education Symposium, July 31st - August 4th, 2000. Teachers learned about GIS, GPS, and Internet technology, interacted with NASA scientists, traveled the Lewis and Clark trail, and shared their experiences with teachers from around the country. The National Lewis and Clark Education Center is currently planning additional Lewis and Clark teacher education symposia for the summer months of 2001. Please check back for dates, fees, and agendas. Teachers will be able to register online. To learn more please contact Lauren Mackay, or call 406-243-6703.

University of Montana will hold a workshop on GIS Day, Wednesday, November 15 during Geography Awareness Week. Since 1987, the National Geographic Society has sponsored Geography Awareness Week to promote geographic literacy in schools, communities, and organizations, with a focus on the education of children. Geography Awareness Week will be held November 12-18, 2000. To learn more please contact Lauren Mackay, or call 406-243-6703.

NRIS

The Natural Resource Information System (NRIS) at the Montana State Library in Helena was recently identified as the state's GIS data Clearinghouse. GIS practitioners from around the state contribute metadata (data documentation or "data about the data") and sometimes the GIS layers themselves to be hosted on the NRIS web site. Someone looking for map information can then search the site, in much the same way that they would search a conventional library's card catalogue. A user can often download the data from a link within the metadata. To check out the site, go to http://nris.state.mt.us/gis/gis.html and choose the "Browse the GIS Data List" or "Search for GIS Data" option. The NRIS staff can help you to step through the process or may be able to point you to other resources not yet on the Clearinghouse Node. Call 406-444-5354 if you have any questions or problems.

The Montana State Library Clearinghouse Node is one of 209 National Spatial Data Infrastructure (NSDI) Nodes around the country. Other nodes that may be helpful to you if searching for Montana data include the University of Montana School of Forestry, Helena National Forest, Greater Yellowstone Area Data Clearinghouse, and national sites such as the USFS and USGS.

CEIC

The Census and Economic Information Center (CEIC) at the Montana Department of Commerce operates a clearinghouse of information "concerning the significant characteristics of the state, its people, economy, land, and physical characteristics." (MCA 90-1-109) Along with distributing data, CEIC provides technical expertise in using the information. CEIC assists individuals, businesses, governments, communities and economic development efforts by providing Montana demographic and economic information and statistics. CEIC is the official source of US Census Bureau data for Montana. CEIC maintains a collection of documents and digital files that address the economy and population of the state (historical as well as current).

CEIC provides a variety of mapping, geographic, and geographic information system (GIS) data and services. We provide assistance to users to identify, acquire, and use data in a GIS; a clearinghouse of data and maps from the Census Bureau and other agencies; technical assistance to develop GIS applications related to demographic and socioeconomic needs; and, technical assistance for users to prepare and integrate CEIC data into their GIS applications. The Census and Economic Information Center's comprehensive web site (http://commerce.state.mt.us/ceic) allows clients to research and gather data in an easily accessible, accurate and timely manner, 24 hours/day 7 days/week.

For GIS Day, CEIC will present GIS demonstrations and workshops at the Clancy Elementary School, and participate in a GIS Fair—an exhibit of hands-on GIS activities, demonstrations, posters, and experts sharing their GIS work. CEIC will also help organize and coordinate GIS Day activities in the Helena area. If you are interested in participating or attending, please contact Allan Cox at 406-444-4393 or acox@state.mt.us.

To contact CEIC: **Census & Economic Information Center,** Montana State Data Center, Montana Department of Commerce, 1424 Ninth Ave., Helena, Montana 59620-0505. Phone 406 444-2896, fax 406 444-1518, or email acox@state.mt.us.

GIS Toolbox

The GIS Physical Toolbox was developed by the Education Subcommittee of the Montana GIS User's Group. The toolbox is designed to provide GIS project-oriented curriculum for teachers to incorporate into existing curriculum. Items in the toolbox include GIS workbooks, tutorial CDs, games, mapping materials, GIS data, and Global Positioning Systems (GPS) units. The components are accompanied by lesson plans. The Montana Natural History Center in Missoula houses the GIS Toolbox. You can obtain it for your classroom by contacting Post Headquarters Bldg. T-2, Fort Missoula Rd Missoula, MT 59804. Call (406) 327-0405 or e-mail at

Conservation District Ownership Maps Updated

By Bob Holliday

Introduction

In June 2000, The State of Montana Information Services Division's GIS Section (ISDGIS) was contacted by the Broadwater and Meagher County Conservation Districts inquiring about methodologies for updating their ownership maps. These maps have traditionally been popular with hunters. Both Districts' maps were quite dated and the firm who had produced them in the past was no longer in business.

Initially ISDGIS focused on developing an application for allowing each conservation district to produce its own maps. After assessing budget constraints, software, and computing capacity in each district it was agreed that ISDGIS would produce these maps under contract to each conservation district.

Overview

These projects combined parcel data from the Montana Cadastral Project with Computer Aided Mass Appraisal System (CAMAS) data from the Department of Revenue and Digital Raster Graphic (DRG) images from the Montana Natural Resource Information System (NRIS) to produce maps that depict Land Tenure for parcels greater than 40 acres. The DRGs provide a familiar base map.

Methods

A CAMAS dataset for each county was linked to that county's cadastral database. The landowner information was extracted from the CAMAS data, duplicate owner names were removed, and a unique identifying number was assigned to each landowner.

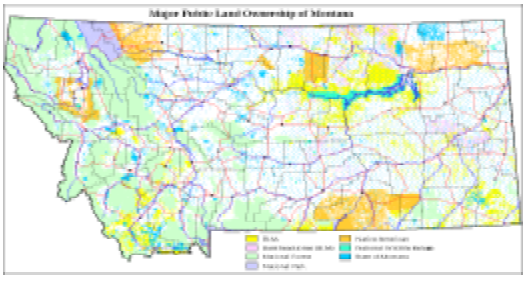
The county cadastral dataset was then queried for parcels greater than 40 acres. Each selected parcel was then assigned a number based on the owner's name. If any of the chosen parcels were contiguous, the common boundary was removed. A tracts dataset was then created.

DRG processing was a three-step procedure: 1) The individual 1:100000 scale DRGs had their collars removed; 2) The individual DRGs covering a counties extent were merged; and 3) The merged DRG was then clipped to the counties extent. Steps one and two were accomplished using a program provided by Gerry Daumiller of NRIS.

Product

The final product for each of these projects was a county map that depicts public and private land ownership for tracts of land greater than 40 acres overlain with DRG data. Each landowner is identified and the sections within which each landowner has property are listed.

For more information, contact Bob Holliday at rholliday@state.mt.us or 406.444.0770.



A Collaborative Multi-jurisdictional Approach to Building a Geospatial Gound Transportation Database for Montana

by Michael Sweet

In August 2000 the Federal Geographic Data Committee notified the Montana Transportation Working Group that they would receive a $50,000 matching grant award under the National Spatial Data Infrastructure Funding Program 2000 Cooperative Agreements Program (see www.fgdc.gov). This grant is one of four awarded nationally within the FGDC Framework Demonstration Projects Category. These projects demonstrate GIS decision support through collaborative creation, use, and maintenance of high-quality basic geospatial data to solve a host of community problems.

The goal of this project is to advance the capacity of users to access and use digital, geographic, ground transportation databases to meet their information needs. This project, a multi-jurisdictional collaborative undertaking, will seek to leverage existing transportation data holdings by employing the NSDI Framework Transportation Identification Standard – Version 3 (July 22, 1999) as a unifying concept that brings data creators and user together. It will attempt to discover and advance the technical methodologies and institutional arrangements necessary to create and maintain a multi-jurisdictional geographic ground transportation framework in Montana.

The project has four major objectives:

1. Determine if NSDI Framework Transportation Identification Standard – Version 3 (July 22, 1999) can help define and formulate the technological and institutional framework necessary for integrating ground transportation data from multiple jurisdictions.
2. Provide recommendations to GIS coordinating groups, and public and private entities in Montana on the development, institutionalization and sustainability of a statewide geospatial ground transportation framework.
3. Evaluate how ground transportation framework data integrates with other ongoing framework efforts in Montana such as the Montana Cadastral Project.
4. Facilitate a shared understanding of the terminology and concepts associated with a ground transportation framework.

The Montana Transportation Working Group has defined the following management structure to successfully execute this collaborative project. Duane Anderson, of the Montana Natural Resource Information System (NRIS) at the Montana State Library will be the project's technical lead. Duane will be responsible for day-to-day coordination of tasks, technical oversight, and compilation of final technical reports. Stu Kirkpatick, GIS Coordinator for the State of Montana with the Department of Administration, will be responsible for monitoring the budget, making appropriations as necessary to meet project objectives, and filing financial reports or claims. Michael Sweet, GIS Coordinator for the School of Forestry at The University of Montana, and Doug Burreson, GIS Coordinator for Missoula County serve as co-Chairs of the Montana Transportation Working Group. These individuals will monitor and assess progress on this project, provide and maintain a website on the activities of the Working Group and this project, as well as schedule, facilitate, and document coordination meetings and workshops. In addition to the management structure described above, the Montana Transportation Working Group has identified the following jurisdictions as site participants. The site participants will have primary responsibility for implementing the investigation and developing prototypes. These included, but are not limited to, the City of Helena, City of Bozeman, Lewis and Clark County, Gallatin County, Montana Department of Transportation, U.S. Forest Service Helena and Gallatin National Forest, and Yellowstone National Park.

The project is already into the third phase of its work. The group has selected an initial pilot area in the City of Helena. This pilot area encompasses many of the challenges of feature representation, process and organization the group has identified as potential barriers to a unified approach to digital ground transportation data. The working group will hold an open workshop in January to present its findings on the early phases of the project. During this workshop we will also discuss and select projects for the follow-up phases of the project.

The Montana Transportation Working Group formed in early-1999 out of a mutual interest by members of the Montana Interagency GIS Technical Working Group and the Montana Local Government GIS Coalition to investigate a standard data exchange model for geospatial ground transportation data. It is our collective hope that a standard ground transportation data exchange model will eliminate redundancy in data collection and provide timely and accurate information to community decision processes. The working group maintains a web site at http://mtgeo.org/Framework/Transportation. Our working group welcomes participation by any entity with similar goals or interest.

NRIS Develops Web Based Thematic Mapper

By Duane Anderson

NRIS will soon deploy a new class of Internet mapping application that has been under development for the past year or so. The new mapping tool (as yet unnamed) allows users significant GIS capabilities over the web using nothing more than a standard web browser. Built using ESRI's MapObjects, MapObjects IMS, and Spatial Database Engine (SDE) the mapping application provides on the fly spatial data queries and spatial and attribute data extraction. The mapper is controlled by database entries called *map profiles* which provide instructions to the mapper on how to build a given map, what layers to filter, and what active reports should be made available. By using this architecture, we can provide customized maps and reports, using any data layers in the NRIS clearinghouse simply by adding new profiles to the database. The mapper can then read the new instructions and produce the map and reports. The map interface provides many of the common GIS functions that users are used to including pan, zoom, identify etc. Users can turn on the DRG's as a background layer for any map and can download a shape file of the filtered theme for the area selected. Users can query using points, lines, or polygons (all with buffers) and the system can filter (clip) points, lines, and polygons on the fly. For example, a user can select a stream with a 1/2 mile buffer, then begin viewing the various map profiles of that area. If the user selects Land Ownership, the mapper will clip the polygon coverage for the buffered area, render the map to the browser, and the system will provide an active server report which shows the percentage of land ownership within the zone selected. Adding new themes or maps to the system is as easy as loading new layers into the SDE database, adding a new map profile, and adding a link to the web page. No additional coding is required. Look for the new application (with several different front ends) soon at the NRIS web site!

An Arc8 Metadata Trick

By Kris Larson

If you're not interested in importing NRIS metadata into Arc8, STOP READING RIGHT NOW!!! That said, there may still be a few of you reading this. Perhaps you acquired some data from NRIS, modified it a bit, and now want to basically use the NRIS metadata, but add a couple of additional processing steps to it. Or perhaps you just want to ensure that the metadata always travels with the data, whether you export your data for another user or just do something like project the data for internal purposes. Okay, okay, you got the point… Why don't I just tell you the steps to go through? Let's imagine that you downloaded the county lines from the Montana State Library (either through the Clearinghouse or by Browsing the GIS List):

1) The online metadata for the counties is http://nris.state.mt.us/nsdi/nris/ab30.html
2) If you simply substitute "text" for "html" (as in "http://nris.state.mt.us/nsdi/nris/ab30.text"), you will be prompted about where to save the metadata. A logical place would be the same directory where the coverage (theme, layer, whatever you like to call it) is stored.
3) Start Arc Catologue
   3a) Select the "text" option under the Import Function.
   3b) Import ab30.text
   3c) Viola!! Edit away.

If you have questions about this process — or any other metadata questions — please contact Kris Larson at klarson@state.mt.us or 406-444-5691.

Intermountain GIS Users' Conference Update

By Margie Lubinski

Conference planning is under way for next year's Intermountain GIS Users' Conference to be held in Boise, ID. The theme for this conference is "GIS in Our Backyard ": to explore (through presentations, workshops and consensus building action sessions) the weaving together of the common threads of GIS technology and data, to support both the opportunities and responsible use of GIS. It will be held at the Boise Center on the Grove from April 30 - May 3, 2001. Pre and post conference workshops will be held on the 30th and the 3rd and we hope to have lots of great papers to present. The website for the conference is:

http://www.intermountaingis.org

Keep checking the website for updates as the planning continues. The Call for Papers and Posters will be out this fall so be thinking about topics you'd like to present. If you'd like to be involved in the year 2001 or if you have ideas to share, you can contact any of the following people:

Program Coordinators: Dennis Hill, hilldenn@ci.pocatello.id.us
Janet Cheney, jcheney@co.bonneville.id.us

Vendor Coordinators: Catherine McCoy, cmccoy@esri.com
Liza Fox, lfox@adm.state.id.us

MT GIS Board Members: Lydia Bailey, mrisfwp@digisys.net
Margie Lubinski, mlubinski@fs.fed.us
Gretchen Burton, burton@guava.giac.montana.edu

Montana GIS Users' Group
Montana State Library
Natural Resource Information System
P.O. Box 201800
Helena, MT 59620-1800