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“NRCS *Technology News*,” provided by Science and Technology, delivers pertinent information to our customers about new technology, products, and services available from the Soil Survey and Resource Assessment and the Science and Technology deputy areas.

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Lawrence Clark



Maurice Mausbach

MESSAGE FROM THE DEPUTY CHIEFS

New Emphasis on the Watershed Approach Lawrence E. Clark and Maurice J. Mausbach

Have you ever done a Google search using the words watershed approach? We did, and in 0.50 seconds, we got 604,000 listings. Two years ago, a similar search yielded 262,000 listings. This increase could stem from several factors, but our general interpretation is a rapid growth in the approach's acceptance. This increased interest in watershed based solutions aligns with the Chief's commitment for our conservation efforts to be resource oriented.

Watersheds are now recognized globally as one of the basic planning and implementation units to improve natural resources and solve land and water related problems. In addition to traditional watershed activities and approaches utilized by NRCS for years, the Conservation Effects Assessment Project is watershed based and the new Conservation Security Program is being implemented using a watershed approach.

The wisdom of the watershed approach is gaining worldwide acceptance. One excellent example of this is the Australian Landcare movement and its "catchment" initiative. Seeking to expand the effectiveness of its Landcare effort, the Australian government has provided incentives to develop watershed or catchment scale plans to address natural resources problems. Local Landcare groups are given priority for funding of projects that address the resource concerns identified in the catchment plans. The catchment-based approach will continue to use the local Landcare group principles. However, assessing problems at the catchment scale allows local Landcare groups to act in a coordinated manner that will accelerate remediation of watershed scale high priority natural resource problems.

The Conasuaga River Watershed Alliance in Georgia is an example of a Landcare-like watershed project. The Alliance consists of more than 30 agencies and private organizations including universities, the Dow Chemical Company, non-profits like Trout Unlimited and the National Wild Turkey Federation, as well as government agencies. The mission of the project is to promote and coordinate efforts between private citizens and government agencies to maintain and improve the quality of the Conasuaga River watershed while protecting landowner rights. Another example of the watershed approach is the Duck Creek Watershed near Juneau, Alaska. The Duck Creek Watershed stakeholders employ innovative techniques to support the restoration of water quality and fish habitat.

For the past several years the Environmental Protection Agency (EPA) has been promoting the watershed approach with the "Surf Your Watershed" and the "Watershed Information Network" Web sites. Just this past month, EPA announced the selection of 14 watersheds eligible for \$15 million from EPA's Targeted Watersheds Grant Program. The Targeted Watersheds Grant Program was proposed in 2002 to encourage successful community-

based approaches to protect and restore the Nation's watersheds. This competitive grant program provides needed resources to those watershed organizations whose restoration plans set clear goals and objectives. Special consideration is given to plans with water quality monitoring, innovation, a public education component, and strong community support.

Underscoring the importance of a watershed approach, NRCS is implementing the Conservation Security Program using watersheds. This past year, 18 watersheds were selected for funding, and farmers and ranchers have just completed the sign-up phase of the program. The Conservation Technology Information Center, supported by the National Association of Conservation Districts, has encouraged watershed protection through its "Know Your Watershed" initiative.

Using the watershed approach has numerous advantages over less coordinated conservation efforts. One advantage is that it improves the ability to measure improvements in water quality—either by modeling or monitoring—since it targets efforts geographically as well as in terms of specific pollutants. Another advantage of the watershed approach is that with limited public and private funds the watershed approach can place field-level conservation actions in a larger watershed context, which can help develop strategies that are more cost-effective and more likely to create measurable outcomes.

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Darrel Dominick

CONSERVATIONIST'S CORNER

Soil Survey Development on CD-ROM Format

M. Darrel Dominick, State Conservationist, Oklahoma

Soil surveys have been produced for more than 100 years in the United States. For most of this period, the soil survey publication format has been bound hardcopy with text and maps. In 1995, the Natural Resources Conservation Service (NRCS), through the work of the National Soil Survey Center and the National Cartography and Geospatial Center, began the SSURGO (State Soil Survey Geographic Database) digitizing initiative with a goal of getting all published soil surveys in electronic format. This required the soil lines to be digitized and projected over the photographic image (the SSURGO spatial data layer). This spatial data can be linked with the tabular data (NASIS – National Soils Information System), which can be used in a Geographic Information System (GIS).

With the advent of this digital spatial data availability and the widespread use of computer technology, the quickest and easiest method of reprinting out-of-print surveys is in electronic CD-ROM format. The Oklahoma NRCS Soil Survey Staff and GIS Section developed the capability of taking the digital spatial data, tabular data, and text files and converting them to PDF files, which can be written to a CD-ROM format. With the soil

survey information available in electronic format, it is no longer necessary to publish in a hardcopy format that becomes obsolete when tabular or spatial changes are made to the soil survey data. For existing hardcopy soil surveys, it is logical to use the most current tabular and spatial data to create a supplement to the published soil survey on CD-ROM format. It will give users current soil information packaged in a self-contained product.

Oklahoma has made an effort to have user-friendly soil survey information accessible to the public, especially to those users with limited resources. We have utilized available technology to develop soil surveys in a CD-ROM format. The CD-ROM contains PDF files of the text generated from the NASIS database and the certified SSURGO soil lines (maps projected on current digital orthoquad photography). However, instead of using the full or quarter quad sheets from the SSURGO product, the maps are clipped to 2 X 3 section maps and saved to PDF files. These maps can then be viewed on screen or printed to scale on any printer on 8.5 X 11 inch paper. The CD also contains the compressed digital orthophotography county mosaic coverage, public land survey, transportation and hydrology layers, and the capability to use ArcExplorer and ArcView files for users with some GIS skills. Adobe Acrobat software is needed to operate the CD and is pre-installed on the CD.

Oklahoma NRCS staff, partners, and customers are very appreciative of the data and quality assistance provided by NRCS Science and Technology, including “The Leader in You” program sponsored by the Social Sciences Institute and the National Employee Development Center. The vast knowledge and expertise that is available through the Centers and Institutes have helped Oklahoma NRCS extend its capabilities and deliver quality technical products.

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WEB-BASED TECHNOLOGY

#1 Data Mining the NSSC Soil Survey Laboratory Soil Characterization Data

The Soil Survey Laboratory (SSL) has developed a Web site (<http://ssldata.nrcs.usda.gov/default.htm>) to access soil characterization data. One feature of the Web site is the ability to query the soil characterization database. Two forms of query are possible. The first is a simple query form (<http://ssldata.nrcs.usda.gov/querypage.asp>) based on geopolitical boundaries (country, state, county) and/or soil series name, user pedon identifier, and laboratory pedon number. This form is sufficient for most queries.

The second query form (<http://ssldata.nrcs.usda.gov/advquery.asp>) adds SSL project, site, and pedon information to the query. The results of either query are displayed as pedon number, user pedon identifier, and series name. A maximum of 100 pedons are returned for each query.

The results of a query generate a report for display or download data to your computer. The report selection Web page allows users to view up to four reports. The download option has more report choices than the generate report option. By default, the name of the file is download.tar. Use a program, such as WinZip®, to extract the files within the download.tar file. The most common destination for the extracted files is a spreadsheet program.

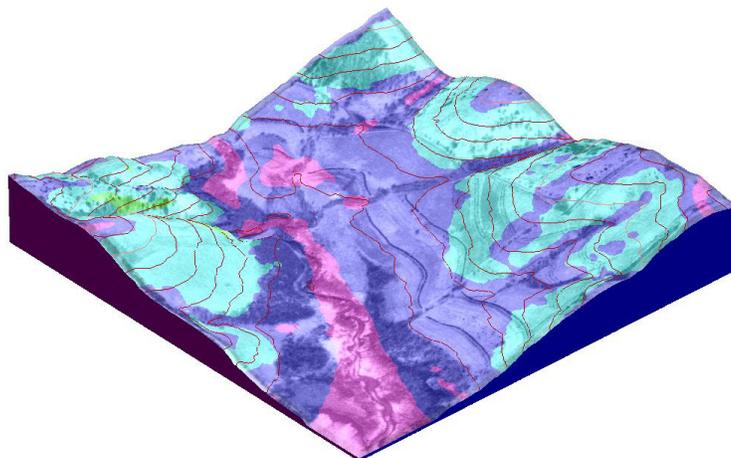
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#2 New Soils Software is CCE Certified

A new development in GIS technology of interest to soil scientists was created specifically to aid in soil survey digitizing. 3dMapper® version 3.05 has been CCE certified. This GIS software is designed for landscape visualization/mapping and allows fast terrain overlay with digital soils and other layers. 3dMapper® utilizes digital elevation model (DEM) data to generate several map layers including slope, aspect, elevation, planform curvature, and profile curvature. It also provides extensive digitizing capabilities in a three-dimensional viewing environment, a feature not available from any of the current ESRI products.

3dMapper® is a commercial software package that can be purchased directly from Terrain Analytics at <http://www.terrainanalytics.com>. Development of a new version is also nearing completion and will include some significant enhancements. Upgrades to version 4.01 will be free for those who purchase version 3.05 now. Please obtain technical approval from Steve Webber at ITC before purchasing the software.



3dMapper® screenshot of slope classes and contour lines draped over orthophotograph

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TRAINING

#3 New Digital Soil Survey Mapping Course Announced

A new course titled, “Digital Soil Survey Mapping and Updating” will provide training in the use of GIS software for onscreen soil survey mapping and editing. It will focus on enabling soil survey project offices to efficiently produce quality SSURGO (State Soil Survey Geographic Database) products. The training will cover advanced features of the most current GIS software, such as ArcGIS 8.3® and 3dMapper®. Prerequisites include ArcGIS training and access to ArcGIS software.

Information about the “Digital Soil Survey Mapping and Updating” training is in the NRCS National Employee Development Center course catalog at: <http://www.nedc.nrcs.usda.gov/catalog/soildigit.html>.

For information about the prerequisite training, visit these Web sites: National Cartography and Geospatial Center GIS training at <http://www.ncgc.nrcs.usda.gov/branch/gdb/products/training/> or the ESRI online training Web site at <http://campus.esri.com/>.

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NEW PERSONNEL APPOINTMENTS

#4 Technology Development Team and Remote Sensing Leaders Announced

Three National Technology Support Centers (NTSC) will be established in September. They are located in Greensboro, North Carolina (East Region); Fort Worth, Texas (Central Region); and Portland, Oregon (West Region). The East NTSC director is William E. Puckett. Ronald C. Williams has been selected director of the Central NTSC, and Bruce J. Newton will direct the West NTSC.



New Technology Support Center Directors – The directors of the new National Technology Support Centers (NTSC) are (l-r): William E. Puckett, East NTSC; Ronald C. Williams, Central NTSC; and Bruce J. Newton, West NTSC

The primary functions of the National Technology Support Centers are to provide technological direct assistance and technology transfer to States, the Pacific Basin, and Caribbean Areas. In addition, these centers will collaborate with others for technical training and will acquire and/or develop new science and technology to provide innovative technological support. They are also charged with developing and maintaining national technical standards and other technological procedures and references.

In addition to core staff, each center has three technology development teams and a remote sensing laboratory. Five of the nine team leader appointments have been made. At the East NTSC, William H. Boyd is the animal waste utilization team leader. Frank B. Clearfield was selected as the social sciences team leader. The soil quality team leader position is vacant at this time. Javier E. Ruiz is the remote sensing lab leader.

George L. Peacock, Jr., grazing lands, and Billy M. Teels, wildlife, are the team leaders at the Central National Technology Support Center. The wetlands team leader position has been advertised. Jeanette J. Bradley is the remote sensing lab leader.

Stefanie G. Aschmann is the bioenergy team leader at the West NTSC. The water quality/quantity and the air quality/atmospheric change team leaders will be filled soon. The remote sensing lab leader is Cory E. Brockmann.

Interested employees should watch the NRCS vacancy announcements at my.NRCS for future job opportunities with the National Technology Support Centers.

HONORS

#5 Heard to Receive 2004 Award for Sustained Achievement



Pete Heard

L. Peter Heard, director of the Wildlife Habitat Management Institute, has been selected by the Renewable Natural Resources Foundation (RNRF) to receive its 2004 Sustained Achievement Award. The award recognizes the long-term contributions and commitment to the protection and conservation of natural resources by an individual. It will be presented at the annual meeting of the RNRF Board of Directors on October 27, in Potomac, Maryland.

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#6 Peterson Nominated for Service to America Medal

Congratulations to Scott Peterson, director of the NRCS National Plant Data Center, and the center staff! The team was nominated for a 2004 Service to America Medal. The awards program is sponsored by the Partnership for Public Service and the magazines of the Atlanta Media Company (Government Executive, National Journal, and The Atlantic Monthly.)

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Scott Peterson

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NRCS TECHNOLOGY NEWS

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