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# Engineering Field Notes

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## Engineering Technical Information System

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# Working Together

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Vaughn Stokes  
Director of Engineering  
Washington Office

As promised, the biographical sketch of our new Deputy Director, Sam Morigeau, appears in this issue. Sam has assumed his new role as Deputy Director and is intimately involved in all of the day-to-day activities.

This issue also features an article about the Forest Service's premiere role in security arrangements for the 2002 Winter Olympic Games through its Remote Sensing Applications Center.

Also in this *Engineering Field Notes (EFN)*, read our tribute on how each of the 2001 Engineers of the Year has consistently worked together with fellow employees in the Forest Service to forge their unique contributions.

We continue to work toward reauthorization of the transportation bill. As a public road agency, it is critical that we sustain our system of roads to provide for user comfort, safety, and environmental protection. Engineering has a pivotal role in these efforts.

We have recently participated in six national seminars: "Innovative Approaches to Transportation." I hope many of you were able to participate. The seminars highlighted the opportunities offered by the Transportation Equity Act for the 21st Century (TEA-21) to improve our capacity for joint transportation planning efforts between Federal, State, and local agencies and to leverage funding. Attendees received a comprehensive document that outlines existing funding opportunities and interacted with local entities and key players of partnership agencies. Effectively working together and maximizing funding resources furthers our goal of operating a seamless transportation network with other Agency partners.

An updated version of "Facilities Planning," EM-7310-4, is now available on the Forest Service Intranet at [http://fsweb.wo.fs.fed.us/eng/eng\\_man.pubs.htm](http://fsweb.wo.fs.fed.us/eng/eng_man.pubs.htm). The document defines the facilities planning process and explains how this interdisciplinary process relates to overall facilities management. This is a critical step in implementing the Working Capital Fund for facilities and in helping line officers manage their facilities.

Achieving a clean financial audit is and will remain a top priority for the Forest Service. Updating the Infra database with improvements made to our infrastructure and keeping good fiscal records is essential. How does this affect you? Make accurate fiscal records every day. Work together with your forest fiscal staff to develop a good working relationship so we can collect and document the required information once and only once. Readers can gain insights on how best to use the current version of Infra and what enhancements to expect in "Infra Celebrates Its 10th Anniversary" on page 4.

It is time to vote for your three favorite *EFN* articles for 2001 (see page 36). Reward those authors for sharing their insights with you. To refresh your memory, see the January-June and July-August 2001 issues on the Forest Service Engineering Intranet at <http://fsweb.wo.fs.fed.us/eng/pubs/efn/efn-cont.htm>.

The summer field season is off and running. I want to continue to place special emphasis on working safely. **Safety is the number one priority for all of us.** Don't hesitate to stop a potentially unsafe action. We must work together to prevent accidents.

Thanks again for your efforts in working together. Keep up the hard work, but do it **safely**.

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## Alexander G. (Sam) Morigeau

### Deputy Director of Engineering

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As Deputy Director of Engineering, Alexander G. (Sam) Morigeau provides staff assistance and support to the Director in support of U.S. Department of Agriculture (USDA) Forest Service management. He shares responsibility for providing leadership and guidance in engineering program development, direction, management, and evaluation.

Sam began his working career in ranching and worked in a Montana sawmill before joining the U.S. Navy in 1965. He served most of his tour on nuclear powered submarines off a sub-tender in Scotland and Guam and on a surface ship in the Mediterranean during his final year of duty. After his 1969 discharge, he attended Northern Montana College, where he earned an associate's degree in mechanical engineering. He worked as a machinist/fabricator until starting his USDA Forest Service career on the Lolo National Forest in 1974 as a civil engineering technician.

In 1977 Sam returned to school at Montana State University and received a bachelor's degree in civil engineering. Although he later worked as a production engineer for Procter & Gamble Co. in Green Bay, WI, in 1983 he returned to Montana and the USDA Forest Service as a civil engineer on the Gallatin National Forest. In 1988 Sam began his first tour of the Washington Office (WO) in the Engineering Program and Budget shop. While in the WO, Sam completed a legislative fellow assignment in the office of Congressman Sid Morrison of Washington State before going to the Siuslaw National Forest as the forest engineer. He later worked in Region 3 as the Deputy Director of Engineering. The call to return home to the Flathead Indian Reservation was strong, so in 1994 Sam accepted the Director of Natural Resources position for the Confederated Salish and Kootenai Tribes in Pablo, MT.

But in 1999 Sam again returned to the USDA Forest Service—this time as Deputy Director of Engineering in Region 1. He later moved to the WO in 2001 as the Assistant Director of Engineering, Capital Resources. In early 2002, Sam accepted his current position as Deputy Director of Engineering.

Sam Morigeau was born in St. Ignatius, MT, and was raised on his father's Indian allotment near Arlee on the Flathead Nation. He lives in Fairfax, VA, with Edie, his wife of 35 years, and a couple of tough mutts. Sam and Edie are very proud of their two sons—Stuart, who works at IBM in Colorado, and Ryan, a student at the University of Washington.

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## Infra to Celebrate 10<sup>th</sup> Anniversary and Launch Infra 5.0

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Claudine Bodin  
Marketing and Communication  
Geospatial Applications Infra  
Washington Office Engineering

In 2002 Infra celebrates its 10<sup>th</sup> anniversary. Infra has come a long way since its inception in 1992, when it was created to track constructed features on National Forest System (NFS) lands and at Research and Development (R&D) centers. Originally designed to operate on the U.S. Department of Agriculture (USDA) Forest Service's old Data General system, Infra's early releases supported functional business requirements for Recreation, Lands, and Engineering. In 1998, development of Infra moved to an IBM platform; since that important upgrade, the number of program areas supported by Infra has grown and the functionality provided by the application has increased with every successive release. Today, the Infra application encompasses a total of 20 integrated applications. Infra users will welcome the upcoming release of Infra 5.0, a major transformation and turning point for the application.

### Infra 5.0 Keeping Pace with New Technology and Providing More Powerful Tools

With the USDA Forest Service's support for Oracle 4.5 moving to Oracle 6i, now is the perfect time for Infra's development team to facilitate the transition from its use of Oracle 4.5 as the application's foundation to Oracle 6i. Infra users will see dramatic improvements in the look and feel of Infra. Other technical upgrades to Infra that will fundamentally improve and simplify data entry, data viewing, and data maintenance include Infra's upgrade to a more current version of Oracle's Report Writer. Also, Infra Geographic Information System (GIS) users will see more powerful and easy-to-use GIS tools as Infra employs the new ArcGIS software—ArcGIS 8. ArcGIS 8 has all the power of professional GIS, but with a user-friendly graphical interface for Windows 2000 computers. Infra will continue to support the existing Spatial Data Interface (SDI) and ArcView products, while moving key functions into the new ArcGIS Windows environment. Look for new ArcGIS versions of User Views, Theme Connections for linking GIS data to Infra, and a redesigned Data Catalog. (For more information about Infra GIS features visit the *InfraNet* and read "New Features of Infra GIS" on the "GIS Information" page under "Application Information.")

## Infra's Current Suite of Applications

Infra is more than one application—it is an integrated system providing the USDA Forest Service with a wide variety of tools tailored to meet specific business needs. Currently, Infra encompasses the following 20 applications:

- |                                |                               |
|--------------------------------|-------------------------------|
| 1. Real Property Management    | 2. Real Property Accounting   |
| 3. Grants and Agreements       | 4. Range Lands and Permits    |
| 5. Special Uses                | 6. Developed Recreation Sites |
| 7. Heritage                    | 8. Roads                      |
| 9. Trails                      | 10. Buildings                 |
| 11. Bridges and Major Culverts | 12. Dams                      |
| 13. Wilderness                 | 14. Visitor Use Permits       |
| 15. Mining Sites and Permits*  | 16. Water Systems             |
| 17. Waste Systems              | 18. Work Items                |
| 19. Enterprise Data Warehouse  | 20. Mobile Infra              |

\* *Application in initial design and development.*

## Ten Great Reasons to Get Excited about Infra 5.0

Here are 10 ways that Infra 5.0 is easier and more powerful to use:

1. **New Main Menu:** It is easier to find documents ranging from forms to reports. Infra applications and tools are organized by business area and include descriptions, links to new online help, and preview images. Frequently used programs can be indexed in user's Favorites for a customized list of database connections.
2. **Fewer, More Comprehensive Forms:** Tabs on forms mean fewer screens and easier navigation. More aspects of data on a topic are presented on one screen so all the elements of an application are visible at a glance.
3. **New Infra Explorer:** This tool allows users to find and see data in a familiar, spreadsheet-like format to easily sort existing data to find gaps. Users can make data changes in one fell swoop rather than having to access each record.
4. **New Data Warehouse Interface:** The warehouse enables any Infra user to see current or historic forest, regional, or national data in preformatted reports and spreadsheets. The warehouse's map and tabular query interface tools enable users to create custom Excel spreadsheets.

5. **Improved Reports:** Infra 5.0 provides better output formats and layouts, and reorganizes the reports page so descriptive names of reports precede “system names.” From the main menu, users will be able to preview any report with sample data. Also, if a user finds a problem with a report, the identified problem will immediately be fixed on Infra’s Web-based server. Users can then log onto that URL and run the corrected report. Before the report is permanently fixed in the next official Infra release, others attempting to run that report will see an alert, and the URL address will automatically pop up to tell them to run the report from the Web server.
  
6. **Export Data from Forms:** Users can transfer data from any Infra form to Excel for sorting, reporting, and subtotaling; or transfer data to WordPad for ad hoc reporting. Data collection in the field for later input will also be easier. Printouts of these form-based spreadsheets can be shared with the field to help with information gathering. This tool will also help sort or subtotal maintenance projects—a great improvement for those who are familiar with Excel but less so with Access.
  
7. **Enhanced Query Mode:** For all fields that allow queries, the Binoculars button turns all the fields yellow and supplies a host of query options on the tool bar. Sort by using multiple fields and save queries to be reused later. Publish and share queries with other users on your database server.
  
8. **Integrated Summarization Tool:** This tool enables users to average, count, or total values in any numeric field; search quickly for minimum or maximum values, or perform other summary calculations on numeric fields.
  
9. **Integrated Calculator:** This calculator performs any calculation and copies the result into any field. The calculator is available whether or not you are doing data entry.
  
10. **Integrated Calendar:** This calendar selects a date via a familiar monthly calendar format and instantly returns that date into any date field. The calendar is available whether or not you are doing data entry.

## Infra’s Integrated Approach to Development

Developing applications that work well as one integrated enterprise system is the foundation for Infra’s growing relationship with other national applications, such as the Automated Lands Project (ALP) and National Resource Information System (NRIS).

Recently, ALP and Infra have worked together to build a single national system for consistently identifying, through a common list of values, the USDA Forest Service organizational structure. Infra applications will also use the spatial and



tabular data provided by ALP for geopolitical units and congressionally designated areas such as “wilderness.” For example, this shared data will enable Infra GIS to automatically update geographically based routes.

NRIS Terra and Infra have worked together to provide an integrated process for range data summarizations. Users will be able to build and work with both Infra range permit data and NRIS invasive species data summaries through a common set of forms and processes. Preliminary discussions are also under way to share a common main menu and some geodatabase design standards among all national applications.

### Infra Addresses National Application Integration as a Member of the Geospatial Advisory Committee

Infra is participating on the Geospatial Advisory Committee (GAC) to address natural resource application coordination. In response to field requests, the GAC chartered a Geospatial Technical Team (GEOTeam) to begin developing a common geospatial strategy for all Forest Service Natural Resource Applications (FSNRA). FSNRA is currently composed of Infra, NRIS, ALP, (Tim/FACTS), and several Fire and Aviation Management (FAM) applications. GEOTeam members are “application stewards” representing each of the FSNRA application groups.

Development of a common geospatial data approach in FSNRA has long been discussed, but has proven to be easier said than done. With the coming technology upgrade to ArcGIS 8 and geodatabases, the Agency has a unique opportunity to implement a common geospatial data approach *before* each individual application attempts to do that individually. It was decided that the GEOTeam would use contractors from ESRI and Oracle as technical experts for advice and counsel on helping identify alternatives for moving from our current environment to an integrated environment with emphasis on a geospatial interface.

The USDA Forest Service geospatial strategy will provide a framework to do the following:

1. Provide methodologies to access and integrate tabular and spatial data among the FSNRA.
2. Maximize reutilization of application components and data.
3. Tighten geospatial application and database development and implementation timeframes.

### Infra Ad Hoc Reporting— Tips and User Board Report

The Infra Training and Documentation Team has developed a new *QuickGuide* focusing on reports. *QuickGuides* are short references to keep on the user’s desk while working with Infra. This easy-to-follow, four-page *QuickGuide* walks the user through running reports—both canned and ad hoc. Find this and other Infra *QuickGuides* on the *InfraNet* at <http://pcs27.f16.r6.fs.fed.us/infra/training.htm>.

Also, those using Infra Users Boards are posting their own reports on their Web sites, which are linked to the *InfraNet*. Below is an example of the type of ad hoc reporting tools available on the Infra Travel Routes Roads Users Board Web site, which is accessible through the *InfraNet*.

Infra Roads users are developing SQL scripts and reporting tools to utilize Infra data in meaningful ways. The purpose of this section is to provide a repository for tools and scripts. If you would like to contribute a script or tool, please send the tool along with appropriate documentation on how to use the tool/script to [terkert@fs.fed.us](mailto:terkert@fs.fed.us).

| Tool                     | Description   | Author     |
|--------------------------|---|------------|
| <a href="#">RMO</a>      | A tool that reads Travel Routes data into a road management objectives format and starts a partially filled out RMO document. | Rob Aiken  |
| <a href="#">WinRoute</a> | Access front end application for query and reporting from Infra Travel Routes   | Tom Erkert |
| <a href="#">MURT</a>     | Multi-Unit Reporting Tool. To aggregate Infra data from multiple forest databases.  | Tom Erkert |

Warning: These tools and scripts are provided as is and are not sanctioned by the Infra Program or Infra HelpDesk. Contact the author if you have questions about the tool.

Visit the *InfraNet* for Information about Infra

For more information about Infra, including the Infra Training Calendar or how to contact the Infra HelpDesk, visit the InfraNet at <http://pcs27.f16.r6.fs.fed.us/infra>.

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# Satellite Remote Sensing for the 2002 Winter Olympic Games

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**Paul H. Greenfield, P.E.**  
**Program Leader**  
**Remote Sensing Applications Center**

## Introduction

The fanfare is over, the athletes have gone home, and life has returned to normal in Utah. By all indications, the 2002 Winter Olympic Games proved to be a success with the only real controversy centering around the judging of some events. Before and during the games though, there was a great deal of concern about security. Following the tragic events of September 11, 2001, the world's eyes were on the United States as we were slated to host a major international event. Could we achieve the level of security necessary for our visitors and residents? Many similar questions were foremost on the minds of Olympic organizers, public officials, and a very concerned public.

The U.S. Department of Agriculture (USDA) Forest Service had a premiere role in Olympic security for the Snowbasin, UT, venue. Snowbasin was the site of the men and women's Alpine ski events, including the downhill, giant slalom, and super-G. Because the Snowbasin Ski Area was located almost entirely on National Forest System (NFS) lands, primary responsibility for the venue's security fell on the USDA Forest Service and the Weber County Sheriff's Office.

## Engineering Assistance

The USDA Forest Service Remote Sensing Applications Center (RSAC) became involved with Olympic security after being contacted by Kim Christensen, Region 4 Law Enforcement and Investigations (LEI) and lead USDA Forest Service representative for Olympic security at Snowbasin, and Russ Arthur, R-8 LEI. Russ was involved in security arrangements for the 1996 Summer Olympic Games in Atlanta. RSAC has had an active program supporting USDA Forest Service law enforcement for many years and has been involved with airborne and satellite imagery applications for marijuana detection, timber theft, arson, and other special projects. Operating under the direction of the United States Secret Service, USDA Forest Service LEI was designated as the lead Federal Agency for the 2002 Olympic security at the Snowbasin venue.

Specifically, LEI needed imagery and image-derived products for security planning, officer orientation, and operational use during the games. RSAC had previously collected airborne imagery for road construction related to the access for Snowbasin, but now needed an entirely different product. Because the imagery would be used for different purposes, it was desirable for it to be digital and geo-corrected. That way, many different products could be generated without a great deal of image processing.

## The Solution

A relatively new satellite to acquire high-resolution imagery was selected as the most flexible tool. Space Imaging, Inc., had successfully launched the world's first commercial high-resolution satellite in September 1999. Known as IKONOS, this satellite has the capability to image roughly township-size areas, approximately 11 by 11 kilometers, at 1-meter spatial resolution in

black-and-white, and 4-meter resolution in color. RSAC had prior experience with IKONOS imagery and had used the products for various natural resource applications. One 11-by-11-kilometer digital scene costs about \$3,500.

One advantage of a stable space-based platform is its ability to produce a geo-corrected image product. Space Imaging claims a 12-meter geolocation accuracy for horizontal distances and a 10-meter accuracy for vertical distances, both without ground control. These are specified as 90 percent circular error for horizontal distances (CE90) and 90 percent linear error for vertical distances (LE90). This means that 90 percent of all measured horizontal points should be within 12 meters of their true location on the Earth. This level of accuracy was important to our intent of using digital elevation models (DEMs) to create a 3-D rendition of the ski area. Unless correlation of the imagery to the elevation data was good, features would not appear as correct.

Traveling at a velocity of 4 miles per second, and at an altitude of 423 miles above the Earth, the IKONOS satellite captured our image of Snowbasin on the morning of August 28, 2001 (figure 1). The image showed the new construction around the base facilities at Snowbasin and did a good job of accentuating the new asphalt concrete (AC) pavement forming the bus turning loop. This was a newly constructed area directly related to the 2002 Olympics that would enable spectators to pass through security before boarding buses at a distant location. Spectators could disembark from these “secured” buses without the need to pass through security clearance again.

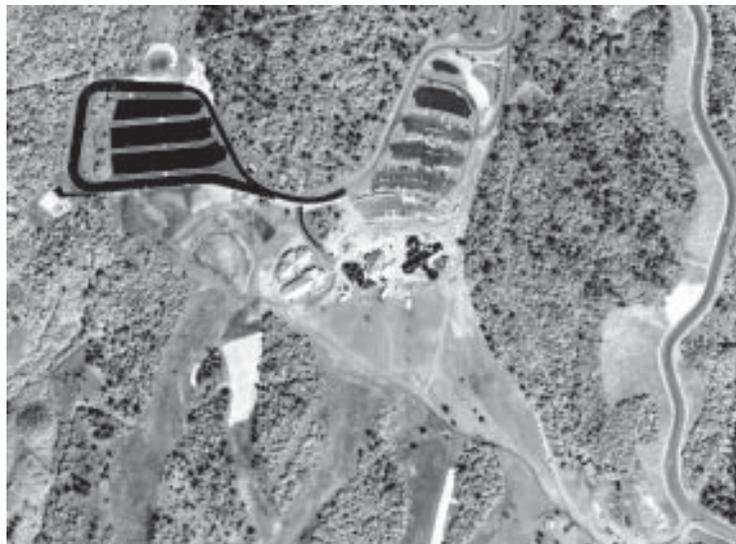


Figure 1. IKONOS satellite image of Snowbasin base facilities.

## Product Development and Use

RSAC began working on image-derived products immediately after receiving the imagery, with Jan Johnson, an RSAC image analyst, performing the work. RSAC used GIS coverage, obtained from Region 4, to attribute the image with the locations of observation posts, helicopter landing zones, the downhill courses themselves, and other facility information. One of the more experimental products developed was a “fly-through” movie (figure 2). RSAC envisioned this overview product as an orientation tool for security

personnel who were unfamiliar with the Snowbasin site. RSAC hosted a meeting with representatives from USDA Forest Service LEI, the U.S. Secret Service, and the Weber County Sheriff's Office to discuss appropriate products and how they could be used. A high degree of enthusiasm was generated for the fly-through movie files and RSAC agreed to develop the agreed-upon products.

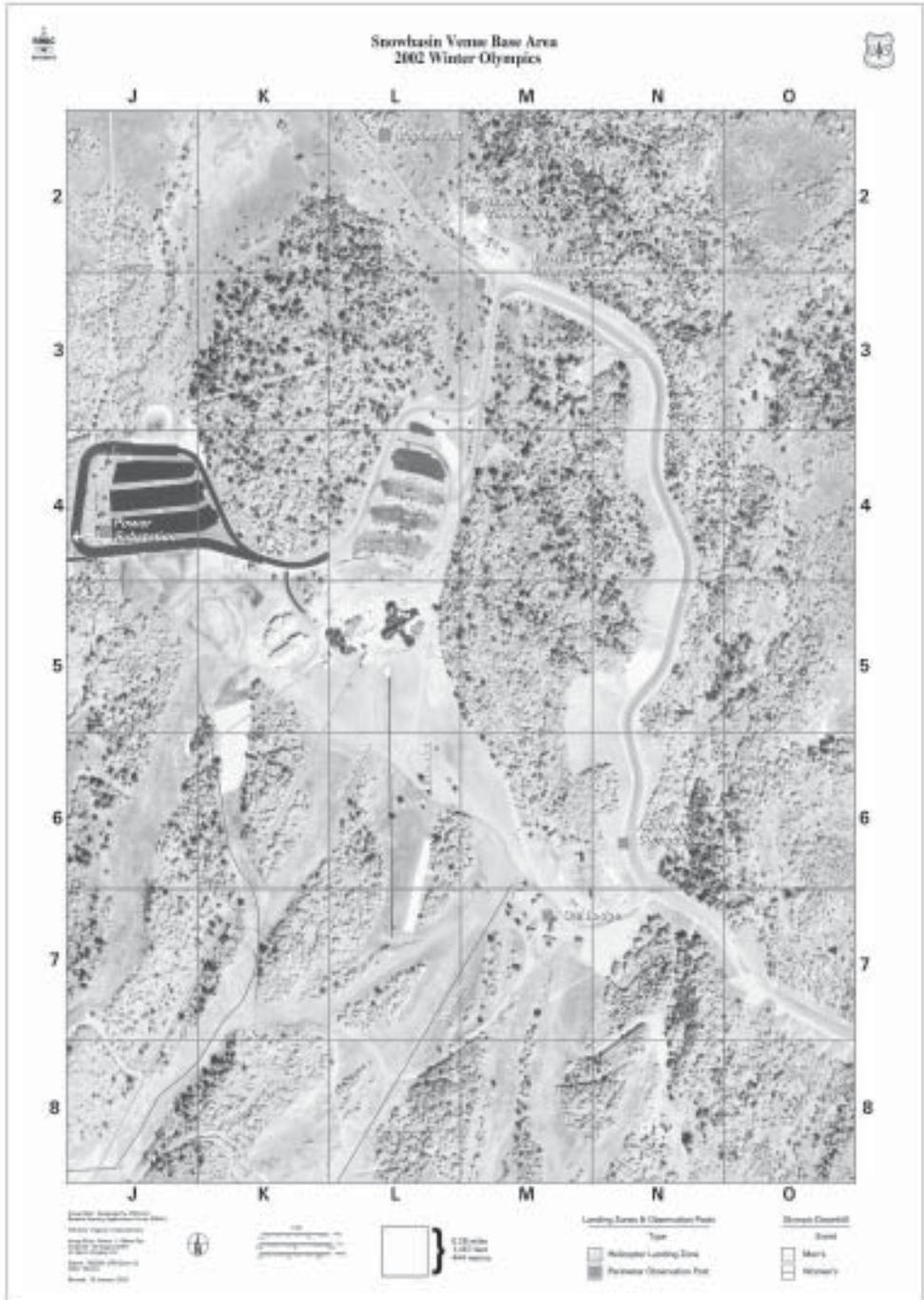


Figure 2. Screen capture of 3-D movie file used for orientation.

The movies for this project consisted of (.AVI) files that were produced with ERDAS IMAGINE software. ERDAS IMAGINE is the USDA Forest Service corporate image-processing software available under the IBM contract. Generating the fly-through movies requires the virtual GIS module, also available under the IBM contract. Preparation of the imagery consisted of draping it over a DEM in ERDAS IMAGINE and then positioning the virtual camera to various locations above the terrain with settings established for the view angle, field of view, and path. The advantage of an .AVI file is that it will run on almost any personal computer (PC) and can be paused on a scene to discuss individual features. The disadvantage of the .AVI file is that the person who generates the video movie sets its view. It is not possible to stop the view and rotate to some other area of interest. For that type of flexibility, one approach is to use ERDAS IMAGINE and Virtual GIS together running an Open Graphic Language application. Then the operator can move the virtual camera to any position and view a three-dimensional scene as desired.

For planning and operational use, the RSAC staff produced large 36-by-33-inch images depicting the Snowbasin venue overview (figure 3) and detail (figure 4) of the base facilities. In addition, the center staff also produced small 8-1/2-by-11-inch copies of the overview imagery for each officer to carry in the field and to be positioned in portable remote post stations. Further enhancements to the images included grid squares with letters and numbers along the edges so security personnel could relay position and traffic reports keyed to locations on the imagery.



Figure 3. Olympic venue overview map produced from satellite imagery.

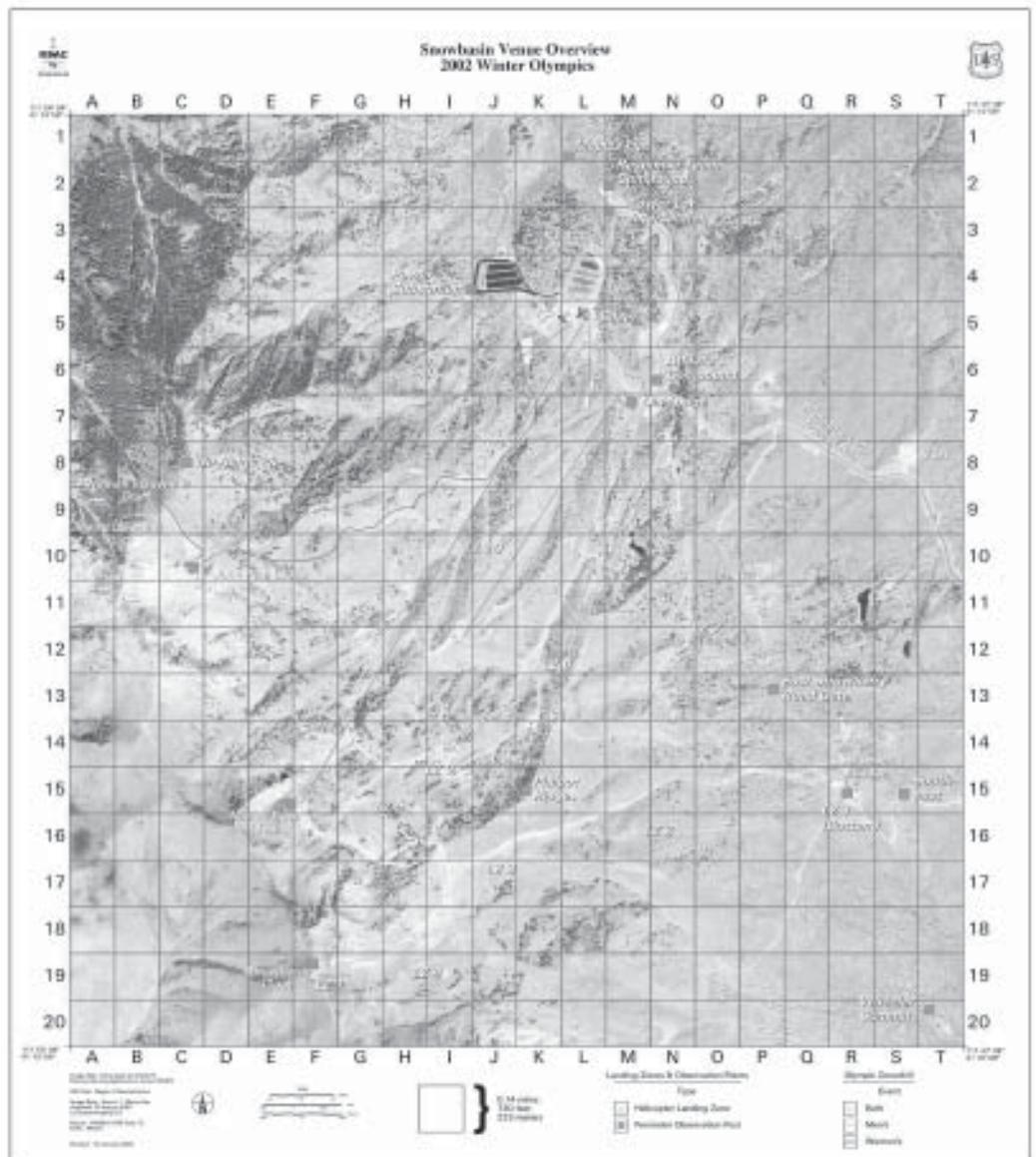


Figure 4. Olympic venue base facilities map produced from satellite imagery.

The imagery had a chance to shine at an event before the Olympics began. It was used to brief Attorney General John Ashcroft when he visited Salt Lake City to review security for the games. The large-image prints with attribute information were used to review security measures with the Attorney General (figure 5). Ashcroft had some very positive comments about the USDA Forest Service's use of these products and the preparation and precautionary measures the Agency's law enforcement personnel had taken.

Another story associated with these image products occurred when RSAC used a local shop to laminate the large prints and personal copies. RSAC personnel requested permission from the shop owner to "stand guard" during the lamination process to ensure that no copies were unaccounted for. Because the prints contained the mountaintop locations of security personnel and the radio call names for the facilities, there was keen interest in protecting this information.



Figure 5. Attorney General John Ashcroft (second from left) being briefed on security at the Snowbasin venue during his pre-Olympic visit.

## Summary

The purchase of relatively inexpensive commercial satellite imagery resulted in multiple field uses. The final products were used in a variety of vital roles including the everyday planning of multiagency special operations, guidance for USDA Forest Service LEI and other Federal and State officers positioned in remote posts, dispatch controls, relief and response positions, and for briefing and planning with the Olympic event managers. They were effective tools for presenting overviews to visiting department and agency heads. The products were placed inside the Olympic command center in Salt Lake City, as well as at the onsite command station at the venue (figure 5).

As it turned out, only a few minor intrusions occurred at the venue, and onsite personnel handled them easily. Quantifying the benefits of these imagery products is difficult. However, if any major problems had occurred, these products would have been heavily used by field officers and command personnel. The command dispatchers used the imagery products daily for tracking officers and assigning locations. The products proved invaluable to the dispatchers because they allowed a view of the topography to those unfamiliar with the terrain.

More and more specialists and resource managers are expecting accurate information about the lands we manage. Remote sensing often can provide agency personnel with relevant geospatial information that serves us well in a variety of unexpected ways, such as for the 2002 Olympics. The old adage “a picture is worth a thousand words” still holds true today as advanced satellite imagery is used to collect data on complex terrain and vegetation features.



Figure 6. Onsite command station at the venue with image products in the background.

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## 2001 Forest Service Engineer of the Year Awards

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Congratulations to the following winners of the 2001 Engineer of the Year awards:

- Managerial Engineer—Edward A. James from the Regional Office, Region 5
- Technical Engineer—Richard M. Wisheart from the Regional Office, Region 5
- Engineering Technician—Ginger Gilmore from the Colville National Forest, Region 6
- Engineering Applications—Jim Colborn from the Regional Office, Region 9
- Engineering Applications—Jeanne A. Zschaechner from the Regional Office, Region 4

The winners, selected from a list of excellent candidates, were honored at the U.S. Department of Agriculture (USDA) 2001 Forest Service Engineer of the Year award luncheon held in the Secretary’s Dining Room in Washington, DC, on April 8, 2002. USDA Forest Service Chief Dale Bosworth welcomed the winners and applauded their achievements as the winners’ families, also attending the ceremony, looked on. Director of Engineering Vaughn Stokes presented each winner with a special plaque and cash award, commending them for their outstanding contributions. A summary of the winners’ accomplishments appears on the following pages.

Congratulations to the regional candidates for the 2001 Forest Service Engineer of the Year awards. The finalists in all categories include the following:

| Managerial             | Technical            | Engineering Technician  | Engineering Applications |
|------------------------|----------------------|-------------------------|--------------------------|
| Terry Brannan, R-3     | Kurt Anderson, R-2   | Rodney Blessing, R-1    | Jerry Harmon, R-5        |
| Roy Grant, R-1         | Tom Erlert, R-6      | Wayne Hersel, R-4       | William Krausmann, R-3   |
| Kim Martin, R-4        | John Jansen, R-9     | Gregory Mendonca, R-3   | Carol Russell, R-1       |
| Esteban Rodriquez, R-8 | Linda Lanham, R-1    | Ernie Nauman, R-2       |                          |
| Nancy Rydquest, R-9    | Steven Lewis, R-8    | Jonathan Sylvester, R-9 |                          |
|                        | Doug Schmidgall, R-3 | Dennis Thrall, R-5      |                          |
|                        | Thomas Watson, R-4   |                         |                          |



Director of Engineering Vaughn Stokes is flanked by award winners Ginger Gilmore and Richard M. Wisheart to the left and Edward A. James and Jeanne Zschaechner to the right.

# Edward A. James

## 2001 Managerial Engineer of the Year



Edward A. James is a program budget coordinator for engineering and recreation on Region 5's public use and facilities staff in Vallejo, CA. Ed has consistently exhibited leadership qualities for managing people and programs through his aptitude for juggling responsibilities for a variety of tasks, persuading partners to

accomplish Agency goals, mastering and sharing new technology and incorporating it in program planning, and initiating innovative solutions to better align program and fiscal capabilities.

Dual responsibility for Region 5's engineering and recreation programs keeps Ed busy in three regions, three forests, and in Washington Office (WO) Engineering covering road, campground, boat ramp, and resource-related projects. He helped plan and implement on-the-ground burn rehabilitation projects to protect a local community from the Big Creek Fire. He was the team leader of large value analysis projects involving a major recreation area complex, an airtanker facility, and a fueling project. The WO selected him to present a program at the National Scenic and Long Distance Trails meeting. On a WO detail, Ed initiated a process to use USDA Forest Service funds to complete Emergency Relief Federally Owned (ERFO) projects until Federal Highway Administration (FHWA) funds became available.

Ed's outstanding ability to manage and plan multiyear, large, complex programs worth nearly \$100 million was recognized with a Quality Step Increase and selection as the Regional Office "Top Supporter" for fiscal years 1996 and 1999 by the Forest Engineers. He was recognized previously as 1999 Managerial Engineer of the Year, and in 2001 he received two additional citations for extra effort in program management. Region 5 also awarded him a certificate of merit for his work on the Timber Sale Program Information Reporting System (TSPIRS) Implementation Team and another for work on the Development and Budget Program staff for the Budget Formulation and Execution System (BFES) implementation.

By working closely with the regional INFRA coordinator and deferred maintenance data stewards and serving on an Agency task force to develop a method for computing historical road costs, Ed is helping to attain USDA Forest Service goals for improved financial health. He is recognized regionally and nationally for his leadership in developing and implementing the Budget Formulation and Execution System (BFES) and Primary Purpose definitions for the roads budget line item (BLI) and other critical national issues. Under Ed's management, Region 5's Capital Investment Process, in which panel members serve as advocates for forest projects and evaluations, he worked to advise the forests of their projects early in fiscal year (FY) 2001. As a result, Region 5 spent or obligated 97 percent of its Title IV

Wildland Fire Emergency Appropriation funds and awarded all Title IV planned projects in FY 2001. The region also spent or obligated 99.8 percent of its Title VIII Land Conservation, Preservation, and Infrastructure Improvement funds in that fiscal year.

During his time with the Sierra National Forest, Ed gained recognition as the task force leader for completing National Environmental Policy Act (NEPA) requirements for reissuing several Special Use Permits and for an extended detail as acting district ranger on the Mariposa Ranger District. He received two certificates of merit, one for his performance as Supervisor of the Year and another for his role as Organization Review Team Leader in FY 2001 in a Roads Program Review on the Stanislaus National Forest, and as a member of the Los Padres General Management Review (GMR) Team.

Ed also earned a certificate of merit as the assigned manager for the Fresno Airtanker Base Project, in which he was asked to resolve an impasse among the three partner agencies. He coordinated efforts with the agencies, the design team, and a female civil engineer to improve the working environment and refocus project efforts. In a letter to the Sierra National Forest Supervisor, Charles Horel, Chief Engineer for the California Department of Forestry (CDF) commended Ed's effort "as the single greatest reason for the project design being completed on time and within budget," through exhibiting exemplary conduct and outstanding skill "in handling pressure to produce a quality project . . . under challenging circumstances" and exercising "his ability to organize and to communicate effectively both orally and in writing."

His experience with managing the Fresno project provided Ed with insight into the logistics of fire operations from dispatch, crew support, and aircraft operations vantage points. He continues to put that experience to good use on the fireline, at fire camp, and most recently, on the expanded dispatch team.

Ed received a certificate of appreciation for his role in constructing new forest facilities to accommodate the full spectrum of employee diversity. He helped define Region 5's goals in the area of diversity and affirmative action. Under Ed's supervision, two employees with disabilities were awarded certificates of merit for the quality of their project support. Every team that he assembles is comprised of men and women of diverse ethnic backgrounds and includes people with disabilities. Ed has created detail opportunities for women, as well as securing a position for an African American female. He also supervises and mentors an Asian American female and a GS-11 Department of Defense female employee. Ed personally arranged for Lotus spreadsheet training and a full-time interpreter for a hearing-impaired Sierra National Forest employee through an adult education program.

Region 5's management team selected Ed for collateral duties as supervisor of the Universal Access Program Manager for 4 years. He supervised and mentored the program manager, helping her to overcome conflicting priorities and to establish a rapport with all 18 forests in Region 5. This led to her success in developing, designing, and launching the regional access program. Effective teamwork resulted in Region 5's strategy to make all programs and facilities accessible by creating Forest Transition Plans (legal

documents outlining each forest's plan to comply with Federal laws) and Forest Action Plans (for long-term, 20-year scope). To ensure the Universal Access Program's viability and longevity, Ed initiated the development of a funding strategy to complete Forest Transition Plans and to earmark accessibility as a Capital Investment Fund emphasis item.

Ed's commitment to quality program management and to creating opportunities for employees to achieve their full potential is well known. He has demonstrated this commitment by doing the following:

- Using his assignment as supervisor and mentor to an employee assigned to a 2-month National Park Service Team Leadership Program to successfully encourage the employee to participate in and enhance her career development.
- Supporting his primary assistant in advancing her career to a more responsible budget position by writing a letter of recommendation to the National Park Service when she was displaced by a regional office move.
- Arranging annual details for forest employees to the regional office to work on the program management staff to provide a positive work experience for employees and to enhance their career development.
- Encouraging his current staff to take full advantage of workshops to improve their software mastery and to share that knowledge at the forest and regional levels.
- Cochairing a Region 5 joint meeting of the Forest Engineers and Recreation Staff Officers to foster teamwork between the program areas that hosted 85 attendees.

To reinvigorate a stalled Engineering Skills Plan (ESP 2000), Ed volunteered to write the regional office section. He crafted a product that set a standard for the five provinces and ultimately led to full approval by the Regional Forester's Team. Deputy Regional Forester Jim Lawrence cited it as one of the best efforts in reviewing both USDA Forest Service organization and skill needs for the 21st century.

The USDA Forest Service is not the only recipient of Ed's efforts. For his community service during Portfolio Day at Clark Junior High School, he received a certificate of appreciation. From the Indiana Institute of Technology, Ed received the Scholar/Athlete Award and Most Valuable Baseball Player and was welcomed to an honorary engineering fraternity for scholastic achievement.

Ed takes pride in volunteering as a former coach to his daughter's highly successful fastpitch softball team and assisting with his son's basketball, baseball, and soccer teams as scorekeeper, concessionaire, and field marshal. Ed is the treasurer for his son's Cub Scout den and has planned and led several badge activities and outings. Ed and his family attend the U.S. Coast Guard Training Center Chapel in Petaluma, CA, where his wife is employed as chapel musician.

As a firm believer in keeping his knowledge current, Ed serves as an officer of the Fresno, CA, branch of the American Society of Civil Engineers. In 1995, he was the keynote speaker at the Fresno State University Engineering Banquet. He is a registered Civil Engineer in the State of Utah. Ed continues to attend a variety of classes and seminars including a management policy seminar, a National Forest Lands Program correspondence program from Colorado State University, and a class in

timber design. He continues to refine his technology skills for better delivery of his lively trademark presentations chockfull of visuals, graphics, and sound applications.

Ed James has earned a reputation in the USDA Forest Service and among other natural resource agencies for his willingness to exercise leadership in resolving challenges in multiple arenas, in achieving engineering excellence through managing resources, and in initiating strategies to develop the full potential of employees and partners at the local, regional, and national levels.

# Richard M. Wischart

## 2001 Technical Engineer of the Year



Richard M. Wischart is the zone geotechnical engineer for four national forests and one management unit in the Vallejo, CA, Region 5 office. During his USDA Forest Service career, Richard has become a recognized expert in geotechnical engineering for slope stability analyses, ground water hydrology assessment, seismic foundation

design, and airport pavement design. He is known for ferreting out and applying new techniques, materials, and cost-effective technologies that result in high-quality projects and for effectively sharing his knowledge with neighboring regions and the WO Technology and Development (T&D) Centers.

Richard received the 2001 Technical Engineer of the Year Award from Region 5. In 1999, he earned an extra effort cash award from the region for his willingness to use his Professional Engineer (P.E.) license to author and stamp 54 Spill Prevention Control and Countermeasures Plans for Region 5's national forests, rather than procuring these services from a private contractor. He saved an estimated \$35,000 for the forests' hazardous materials program. In 1996, the regional engineer presented Richard with a Forest Award for his outstanding performance and lasting contribution to the hazardous materials program.

Recognition for Richard's contributions extends beyond Region 5. He received a letter of appreciation from the Director of the National Interagency Fire Center in Boise, ID, for his stint as Public Affairs Officer during the fires of 2000 and a certificate of appreciation from the regional engineer for his 2000 fire response in Region 1. In 1994, Richard earned another certificate of appreciation from three sponsors—the California Department of Forestry and Fire Protection (CDF), Fresno-Kings Ranger Unit, and the Sierra National Forest—for his geotechnical engineering efforts on the Fresno Airtanker Base design plans. Also in 1994, the former Soil Conservation Service (SCS), now the Natural Resources Conservation Service (NRCS), sent Richard a letter of appreciation for his participation in the Midwest Flood Emergency Watershed Protection Program in Illinois.

To improve the quality of design, construction, and operations for conducting USDA Forest Service projects, Richard has prepared a variety of presentations to technical specialists, civil engineers, and technicians at regional and national meetings. Topics cover geotechnical and materials engineering, including slope stability analyses, aggregate management, retaining structure design, geotextile use, and pavement design and management.

Richard leads by example. He uses his excellent communication skills to resolve issues and share information. As a strong advocate of

professionalism within the USDA Forest Service, Richard promotes attendance at professional conferences and the pursuit of practical, technical training. He maintains an extensive technical library to stay attuned to the latest developments and actively shares this information with associates. He introduces new USDA Forest Service engineers to geotechnical engineering and mentors others by including them in his field investigations and design efforts. He has twice been selected for details as forest engineer, once for the Lake Tahoe Basin Management Unit and once for the Stanislaus National Forest.

His work in slope stabilization, investigation, design, and construction for more than 25 years has established Richard as an expert. He produced watershed slope stability assessment maps of two watersheds on the Klamath National Forest, and in 1973, addressed the 24<sup>th</sup> Highway Geology Symposium (HGS) in Sheridan, WY, on this subject well before watershed level analysis was recognized as the proper level of study. He performed subsequent studies in Region 5 and was asked to provide slope stability assessments for several watersheds in North Carolina. A citation in the May/June 1998 issue of the now-defunct *California Geology* magazine honored him for developing slope stability data for the former State of California Division of Mines and Geology, for the assessment of the landslide closure of Highway 50, the major route leading to the Lake Tahoe region.

Richard continues to encourage USDA Forest Service employees to pioneer in the use of new or different materials and technologies to achieve more cost-effective, high-quality projects. When magnesium chloride was first considered as a dust abatement material, he conducted tests to determine whether it would perform as intended and then developed proper application rates for different soil types. He circumvented the costly standard practice of importing commercial aggregate to protect roads during salvage timber sales after the extensive 1987 fires on the Stanislaus National Forest by locating, designing, and developing local pit-run sources as an alternative. Although these alternative sources would not meet USDA Forest Service specifications, he determined that they would serve the intended function for at least the duration of the sale and convinced management to proceed, with an estimated savings of more than \$500,000.

Richard's innovative use of technology did not stop there. He introduced 20-foot and deeper cutoff trench drains to stabilize slopes; installed geocomposite drainage in retaining wall backfill; and installed less costly, but equally effective, backhoe test pits rather than conventional boring with the hollow-stem auger for foundation investigations.

Richard operated one of the first pavement deflection-testing machines used by the USDA Forest Service. With this device, he was able to evaluate pavement condition for determining the least expensive maintenance requirements for prolonging pavement life. When the Central Tire Inflation Program was under development, he was the onsite geotechnical contact with the U.S. Army Corps of Engineers for its tests at the Waterways Experiment Station (WES) in Vicksburg, MS. Richard selected a suitable forest test development site to assess the potential for reinforcing unstable soil masses during the Launched Soil Nail Project. During field tests of the Long-term Performance of Geocomposite Sheet Drains Project, he provided

a site and monitored the performance of one of the drains being evaluated.

In 1994, when the Agency began developing new airtanker bases or modifying existing ones, Richard recognized the need to modify the Federal Aviation Administration's (FAA's) pavement design methods for application to USDA Forest Service air traffic. He also provided the complete geotechnical work for other aspects of the base. As a result of this and subsequent design work on 12 bases in 5 western States valued at approximately \$50 million, Richard has become the primary USDA Forest Service expert in this area.

Richard had the foresight to recognize the critical importance of developing skills and knowledge on effective handling of hazardous materials and hazardous waste for the USDA Forest Service and took it upon himself to master that knowledge. His expertise helps Region 5 keep abreast of current regulations and requirements.

With his blend of skills, education, and experience in geotechnical engineering and engineering geology, in tandem with his ability to anticipate and meet future needs of the USDA Forest Service, Richard's services are invaluable in assisting forest engineering, ecosystem, watershed, and resource projects in the following areas:

Geotechnical Project Investigation and Design for landslide and slope stabilization; retaining structures; subsurface investigations, including drilling and trenching; building and bridge foundations; seepage and subsurface drainage analysis; location and development of ground water sources; dam design and maintenance; and other projects.

Materials Management, including locating, developing, and restoring quarry and borrow sources; establishing and maintaining materials source inventories; performing economic analyses for optimum use of available materials; developing California Surface Mining and Reclamation Act (SMARA) plans; and supervising operation of the now-defunct Materials Testing Laboratory.

Road Design that encompasses using, designing, sampling, and testing roadway materials; developing appropriate design and construction specifications; establishing surface and subsurface drainage requirements; determining structural section design for aggregate surfacing and pavements; formulating dust palliative and bituminous surface treatment selection and design; and performing surfacing standards economic analysis.

Watershed Restoration and Erosion Control for surface slope stabilization and erosion control measures, biotechnical slope protection, road obliteration or closure, check dam use and gully control, and adaptation of geotextiles and biotechnical stabilization measures. Richard was selected to perform watershed analysis and restoration in cooperation with the Guam Forester and his staff for the Cotal National Forest in Guam under Region 5's State and Private Forestry (S&PF) responsibilities. He presented his recommendations in a report to the former Guam Division of Forestry.

Project Environmental Analysis for projects for consultation on material source use, opportunities, and needs; roadway location, stabilization, and drainage needs; identification of geologic resources and hazards; and interdisciplinary team action.

Dams Operation and Maintenance that encompasses the inspection and recordkeeping of the Stanislaus National Forest's more than 25 dams, despite severe funding constraints, in consultation with Federal and State agencies. In FY 2001, he performed maintenance and safety inspections on 12 of 18 dams, which are located within wilderness areas that are under intense environmental scrutiny.

Hazardous Materials Program Management for the Stanislaus National Forest, with environmental engineering leadership, for conducting annual hazardous materials storage, use, and disposal inspections of forest facilities; providing right-to-know training for new employees; coordinating with the county environmental health department for hazardous spill incidents on the forest; and serving as Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Superfund on-scene coordinator for abandoned uranium mine remediation.

Firefighting responsibilities for providing engineering remedies to aid watershed rehabilitation following wildfires as part of a burned area emergency rehabilitation (BAER) team and for serving as a public information officer during fires, sometimes furnishing technical information to national and international media from the National Interagency Fire Center during fire assignments. Richard holds Information Officer Type 2 (IOF2) credentials.

Storm Damage Repair Program responsibilities for damage assessment and repair design for sites in the work zone. Richard also volunteered as a key member on a team of geotechnical engineers to a forest outside his zone that sustained over 1,000 damaged sites in one storm year.

Richard is no stranger to serving the community. He volunteers at the Tuolumne County Women's Crisis Center and provided pro bono engineering design work for a local community bridge deck replacement project. He has coached Little League baseball and soccer teams and volunteered with various scout groups.

No formal honors heralded Richard's most satisfying personal achievement. A hazardous natural rock crevice below the surface of the Stanislaus River had caused 25 drownings from 1961 to 1991. Richard devised a plan to fill the rock crevice with concrete through the use of labor provided by a California inmate crew. On the day before Christmas 1991, he received permission to supervise the work and arranged with the operator of McKays Point Reservoir upstream of the project to suspend releases for 24 hours. Since filling the crevice 11 years ago, not one drowning has occurred at the site.

Richard holds degrees from various branches of the University of California, including a Bachelor of Science degree in Geology, Master of Science degrees in Geology and in Geotechnical Engineering, and a Certificate in Site Assessment and Remediation. He continues to take courses and attend technical seminars and conferences. He is a licensed Registered Civil

Engineer, Professional Engineer (P.E.), Registered Geologist (R.G.), and Certified Engineering Geologist (C.E.G.) in the State of California and retains a USDA Forest Service CERCLA On-Scene Coordinator Certificate. Richard is a past member of the Association of Engineering Geologists (AEG) and a member of the University of California, Berkeley, Geotechnical Engineering Society. He is also an accredited California Community College Instructor.

Richard Wischart's professionalism, attention to detail, and leadership in envisioning and developing workable solutions in the application of new technology and materials in the field of geotechnical engineering have earned the respect of his coworkers and peers within the USDA Forest Service, with other agencies, and throughout the private sector.

# Ginger Gilmore

## 2001 Engineering Technician of the Year



Ginger Gilmore is a road development engineer for the Colville National Forest transportation systems and development staff from Region 6 in Washington State. Ginger is an acknowledged technical expert in the contracting arena and a recognized leader in furthering civil rights efforts throughout the USDA Forest Service. As an outstanding employee who has risen through the ranks to her current professional responsibilities, Ginger's willingness to share her knowledge and experience and her ability to effectively manage challenging projects with limited staff and funding are invaluable in mentoring others and in promoting effective training and career opportunities for all USDA Forest Service employees.

Several certificates of merit in 1983 punctuated Ginger's odyssey from entry level employee to well-respected professional. She was recognized for outstanding performance in testing/debugging the Contract Information Management System (CIMS) and data entry operations and by the regional office for exceptional achievement and contributions assisting in developing, piloting, and implementing CIMS. In 1987 Ginger received the People Serving People Award for planning and executing the "Challenging the Future" conference. She earned a 1989 certificate for planning and executing the "Strength Through Diversity" conference.

From the 1990s to the present, Ginger continues to maintain her high standards. She earned certificates of merit for dedication in the 1991 formation of the Child Care Facility for the Colville National Forest, for the quantity and quality of her work in 1994 and 1996, for planning support of the Bead Lake Boat Launch in 1995, for conducting contract administration training in 2000 and 2001 as a cadre member of E63, for participating on the Orient School Curriculum Committee and School Improvement Team in 2000, and for furthering forest civil rights in 2001.

Ginger's ability to resolve complex problems has contributed greatly to the successful operation of the Colville National Forest, Region 6, and other forests in engineering and other disciplines. Her mentoring has enabled the Colville National Forest to manage one of Region 6's largest road-related timber programs. Ginger supervises a small staff of student employees and technicians with limited experience in planning, implementing, and administering road maintenance that encompasses road development for the entire forest. She has strengthened the program through applying development skills and mentoring, despite downsizing, attrition, series and program changes, and new employees from outside the USDA Forest Service. She represents the forest's timber resource group in establishing targets and priorities.

Her small staff supports the entire Colville National Forest timber program through efforts in the transportation systems and development section. In FY 1999 the Colville National Forest development section constructed 17.7 miles of new road and reconstructed 98.3 miles; in FY 2000 the section constructed 18.5 miles of new road and reconstructed 113.5 miles. None of this new and reconstructed development was designated as “Roadless.”

As a testimonial to her contracting expertise, Ginger has served for more than 5 years as a recognized member of the Regional Engineering Cadre Team, which is responsible for teaching standard procedures and techniques in construction contract administration. She has also served on the Regional Contract Road Implementation Cadre Team for 6 years.

Ginger has applied her keen knowledge of contracting principles to understanding and implementing recommendations of the regional geotechnical engineer in forest designs and contract packages. Her efforts in performing scoping, issue identification, alternative development, and implementation of the Bead Lake Recreation Site and the Scatter Creek Environmental Assessment are examples of how her technical skills complement her contracting ability. By conducting effective time and equipment studies, Ginger buttresses her ability to determine appropriate cost estimate standards, contract modifications, and design changes for road construction projects.

She has continued to learn, apply, and share new software and hardware technology skills with Colville, Okanogan, and Wenatchee National Forest employees. Ginger’s technology support ranges from participating in beta testing new software to effectively training others for applications ranging from the CIMS program to the Forest Level Road Design System (FLRDS); participating as a team member in creating the Transportation Information System (TIS) user’s guide; and contributing technical knowledge, communication skills, and a thoughtful perspective while holding full membership rights in a bridge position on the Forest Leadership Team from 1991 to 1993.

Ginger’s technical ability does not overshadow her concern for fellow employees. She has championed regional and forest civil rights efforts for many years as an individual, as a member of the Regional Civil Rights Action Group for 3 years, and as chairperson of that group for one of those years. Ginger was also the Federal Women’s Program Manager. As training coordinator for the forest engineering program, she encouraged the Regional Director of Engineering to convert an employee from a technician to a professional series after successful completion of technical educational training. She continues to foster employee development opportunities for successful careers through mentoring and providing work experience.

Ginger draws on 20 years of designing road and drainage structures experience to train and mentor other road designers in the region and the forest. She continues to enrich her experience by completing full training to achieve a professional understanding of the design criteria of Infish, the Clean Water Act (CWA), Best Management Practices (BMP), the Department of Ecology’s Memorandum of Agreement with the USDA Forest Service, and the Memorandum of Understanding with the U.S. Fish and Wildlife Service (USFWS). Ginger represents engineering interests on interdisciplinary NEPA

teams. She has expanded her expertise beyond her program area to encompass the mineral materials program. Despite the absence of a working geology program, she works to ensure safe, practical, development plans by learning to identify field situations that require geotechnical expertise.

Since 1999, Ginger has been instrumental in dramatically improving the Colville National Forest Engineering Certification Program. She has personally mentored and trained forest employees to achieve an almost 100 percent passing rate in 2001, the highest percentage of forest employees to successfully pass the National Engineering Certification Program exams in the region. Ginger's followup assignment to initiate, complete, and coordinate a regional project to replicate certification successes on a larger scale increased the passing rate of the Engineering Representative (ER) certification test from 35 percent in FY 2000 to 80 percent in FY 2001.

Away from the office, Ginger helps work a cattle ranch with her husband and three children. She is an active member of the Orient School Curriculum Committee and School Improvement Team and a member of Bobcat Boosters, which initiates fundraisers to support local children.

# Jim Colborn

## 2001 Engineering Applications Employee of the Year



Jim Colborn, who has photogrammetric responsibilities for the Milwaukee, WI, Region 9 office, has provided exemplary service throughout his career in resolving technological challenges for engineering, cartography, photogrammetry, surveying, and other disciplines, even as demands for more and more rapid, complex, and accessible technology have escalated. In 1980 he was designated U.S. Department of Agriculture Handicapped Employee of the Year. Jim received a letter of recognition in 1985 from Ray Allison of the USDA Forest Service

WO for his photogrammetric work using the large format camera with space shuttle aerial photography. Jim reported on this work in a paper to the American Society for Photogrammetry and Remote Sensing (ASPRS).

In 1992 Jim received one award for his work on converting analytical stereoplotter software from a minicomputer platform to a personal computer, and another award for his assistance to Region 6. Recognition of his outstanding achievements continued with special act or service awards and performance awards for above average performance in fiscal years 1996, 1997, 1998, and 1999. In FY 2001, Jim earned the Eastern Region Honor Award for Technology Applications Person of the Year.

Jim revels in technological challenges. He is always willing to help coworkers resolve difficulties presented by new software for engineering, cartography, photogrammetry, surveying, and other disciplines. His fearlessness has made him proficient in training others in ARC/INFO, ArcView, ERDAS image processing software, Bureau of Land Management's (BLM's) Geographic Coordinate Data Base (GCDB) Measurement Management (GMM) and other software.

Jim also thrives on refining his photogrammetric skills. His hands-on approach and ability to learn from photogrammetric mapping projects give him an exceptional practical understanding of all phases of photogrammetric mapping. He knows what approaches, techniques, and procedures work on day-to-day, real-world projects. His proficiency in aero-triangulation helps to minimize the impacts of ground control surveying on the forests.

His national recognition for outstanding photogrammetric skills, earned Jim an appointment to the National Image Processing Procurement Team in 1997. He helped the USDA Forest Service acquire the ERDAS image

processing software needed to manipulate remotely sensed imagery for the Geographic Information System (GIS) spatial data collection, forest planning, fire management, and other areas. In 1998 he received an award for his contributions in writing the technical software contract specifications.

Jim's mastery of new computer programs, such as the photogrammetry software ARC/INFO and ArcView, led to his assignment to test beta photogrammetry software on the Whittlesey Creek (Wisconsin) Stream Rehabilitation Project. The partnership with the NRCS, USFWS, State and local governments, and the private sector aims to reestablish one of the most prolific fish-spawning streams in northwestern Wisconsin. Jim used the latest photogrammetric technology to produce digital terrain data and orthophoto mosaics of the Whittlesey Creek watershed. These products could significantly impact the project's success and affect how Federal, State, and local governments manage the watershed and reestablish the creek's spawning capability.

With his knowledge of surveying and willingness to learn ARC/INFO and GMM, Jim is enabling the region to meet its Automated Lands Program (ALP) implementation targets while identifying and resolving Public Land Survey System (PLSS) complexities in the eastern United States. In 2001 Jim began using Region 9's Wayne National Forest's Cartographic Feature File (CFF) and the Midewin National Tallgrass Prairie's (Illinois) Bureau Land Management (BLM) records to build the foundation data for the region's ALP and GIS databases. This was no easy task.

The Wayne National Forest PLSS uses at least three, and sometimes four, survey schemes and its early CFF data contained a significant number of data errors. Jim showed his usual versatility by mastering the GMM software, removing multiple vectors representing the same ground feature, entering the proper PLSS corner identifiers, updating the existing CFF ownership, and entering the identifiers needed to link the Land Ownership System (LOS) records to ALP. Working with the Region 9 boundary manager, he resolved the problems created by three conflicting GLO surveys and processed the data through the GMM software to make it GCDB compliant.

Decisions made and work completed on the Wayne National Forest and Midewin National Tallgrass Prairie landline data conversion projects are likely to significantly improve the quality and quantity of each unit's ALP and GIS databases, enhance natural resource management and quad mapping programs, and provide more accurate information on the location of their landlines, natural resource boundaries, and natural and cultural landscape features in the Eastern and Southern Regions. The data provided to the Geospatial Service and Technology Center (GSTC) will produce better CFF data, generating faster, more accurate reporting of resource information to the WO, USDA, and Congress.

Jim was instrumental in Region 9's acquisition and use of a close-range camera for the structural documentation of historical buildings. His knowledge and skill were critical to identifying and resolving an incompatibility between the camera's calibration information and the region's analytical stereoplotter software. His abilities were equally critical in converting the US-2 Analytical Stereoplotter application software from the Digital Equipment Corporation (DEC) minicomputer's RSX operating system

to a personal computer's DOS operating system. During the conversion he learned and used FORTRAN, BASIC, and C++ programming languages to recode the application software. In conjunction with the stereoplotter's manufacturer, he wrote the code to enable the personal computer to communicate with the stereoplotter and ensured that the converted software was photogrammetrically correct.

A willingness to help others characterizes Jim's behavior in his community as well. He is a participating member of the National Spinal Cord Injury Association of the Greater Milwaukee Area, which is dedicated to helping Americans cope with the results of spinal cord injury and disease. The association works through local chapters, support groups, and a toll-free help line to educate and help survivors of spinal cord injury and disease to achieve and maintain a high level of independence.

Jim serves as a member of the Paralyzed Veterans of America (PVA), an organization that addresses the special needs of Armed Forces veterans who have experienced spinal cord injury or dysfunction by helping them obtain good-quality health care and raising funds for spinal cord injury medical research and education. The organization helps members secure military service benefits and increase awareness of their civil rights opportunities.

Jim and his wife Cindy support the Elmbrook Humane Society, a self-sustaining organization with no taxpayer funding, by participating in fundraising events such as dog walks and bake sales. Jim and Cindy also support other local humane societies.

By maintaining his certification as an ASPRS certified photogrammetrist since 1995, Jim refines his professional skills. He has become a recognized expert photogrammetrist whose signature and certification number are required on landline location projects on the Chequamegon-Nicolet, Chippewa, Monongahela, and Superior National Forests by the Region 9 Office and forest land staffs.

To our knowledge, Jim is the only person who has created a photogrammetric product derived from the black-and-white, 9-by-18-inch format imagery taken by the large-format camera used on the space shuttle. He aero-triangulated photography, produced an orthophoto of the White Mountain National Forest, and presented a paper on the project at a meeting of the Western Great Lakes Chapter of the ASPRS.

Jim Colborn has consistently demonstrated leadership in embracing, implementing, and sharing engineering applications throughout the USDA Forest Service and beyond.

# Jeanne A. Zschaechner

## 2001 Engineering Applications Employee of the Year



Jeanne A. Zschaechner is a visual information specialist on Region 4's Ogden, UT, Engineering Cartography and Graphics Department staff. Jeanne earned an award for stellar accomplishments in 2001 that included designing and implementing the first functional monitoring Web page that will help guide the future management of the Intermountain Region National Forests and Grasslands, preparing the report and presentation to showcase the Greys River Road as the first USDA Forest Service gas tax demonstration project to earn the Build America Award, and compiling information for 57 public USDA Forest Service roads.

Jeanne's supervisor awarded her the highest possible performance rating for her effective and efficient management of her program responsibilities in creating outstanding visual aids for all Region 4 staffs as well as for other regions and agencies. In addition to receiving certificates of merit and spot awards from several regional office staffs, year after year Jeanne receives peer awards for her outstanding work and good attitude. In the spring of 2001, Jeanne was recognized for her marketing and computer graphic support at the Leadership Improvement Conference, attended nationally by U.S. Department of Agriculture and U.S. Department of Interior agencies, State agencies, and private corporations.

Her mastery of the ever-changing technology of computer hardware and software enables Jeanne to produce state-of-the-art designs, documents, and graphics and to provide technical support. She regularly attends training sessions and maintains a network of people with whom she exchanges information on the newest computer technology and various media products. Jeanne freely shares her ideas and knowledge with coworkers from across the Nation who solicit her advice on how to present information and on how to best use software to complete their work.

Jeanne has established herself as the Regional Office photographer for digital and 35mm photography and for highlighting local events such as campground, plaque, and display dedications. She also maintains a photographic display of all Regional Office employees.

She is in demand for presentations on using visual aids and about the products and capabilities of her staff. Her educational background includes 2 years of fine arts study at Earlham College in Indiana and a Bachelor of Science degree in natural resources management from the University of

Idaho. This training gives Jeanne an edge in communicating with professionals and in understanding today's issues to create professional, creative, positive visuals that reflect the USDA Forest Service mission.

The engineering program managers rely on Jeanne's expertise to plan and develop her staff's budget and program of work. She is responsible for maintaining this visible program at a high level of precision and professionalism.

The Director of Information Systems selected Jeanne to serve on the Regional Office Monitoring Team for designing and implementing its first functional monitoring Web page, which helps guide the future management of the Intermountain Region National Forests and Grasslands. Jeanne designed and implemented Web pages for the Engineering Monitoring Web staff, for her own staff, the Interagency Leadership Improvement Training (LIT) Group, and many others.

Jeanne supports the entire engineering staff and other regional and forest staffs. She advises her customers on how best to portray their message and determines the appropriate design and layout. Her expertise with design, computer software and hardware, and achieving the most optimal final products helps them complete work assignments quickly and well.

She routinely creates a wealth of official documents such as vehicle inspection forms, posters, flyers, and brochures. Jeanne designed the National Geospatial Conference brochure for the GSTC and an array of displays for internal and external exhibitions that encompass Historic Geographic Names Mapping and geospatial highlights for international meetings, water protection and fire prevention, and the nationally acclaimed Henry Fork's display. Jeanne also prepares electronic and other presentations for information dissemination and training, facility improvement projects, and bridge projects. She is responsible for logo and pin designs and a wide variety of visual aids for all Region 4 wilderness areas, customer service, LIT, Continuous Improvement Program (CIP), fire emphasis areas, and budget materials.

Jeanne created the reports and visuals to present the national model for the pilot gas tax project for the Greys River Road reconstruction, the region's public road inventory summary, and the roadless initiative. She assisted the regional engineering director in compiling information for the proposal of 57 public USDA Forest Service roads. Her efforts in preparing the report and the presentation to showcase the Greys River Road as the first USDA Forest Service gas tax demonstration project awarded and completed played a large role in the project's earning of the Build America Award.

Jeanne chaired the marketing committee for the Regions 4, 5, and 6 LIT Training Conference for 2 years. The cadre relies heavily on her expertise to develop an effective marketing image. She created the LIT World Wide Web page and compiled, designed, and handled the printing and production of the promotional materials (brochures, pins, flyers, and posters). She also designed, produced, and constructed a 20-ft-by-12-ft stage backdrop. Jeanne has consistently demonstrated the ability to forge effective relationships and achieve consensus with partners from national, State, and local government agencies, private companies, and contractors to generate products that best convey the desired message.

Advising and assisting fire staff specialists with fire effects and activity visuals and fire prevention messages are primary responsibilities for Jeanne during the fire season. She also creates educational material for special events such as the National Rural Fire Department Conference and the National Fire Prevention campaigns.

Jeanne designed and produced the visual aids used by Regional Forester, Jack Blackwell, which contributed significantly to the successful funding allocation by Congress for fire support for the 2001 fire season. She designed the Fire 2000 awards and medallions and handled the bidding and procurement process for these 15,000 regional awards.

The Human Resource staff and the Civil Rights staff depend on Jeanne to assist them with presentations, special emphasis displays, documents, and awards that comply with and promote affirmative action and Equal Employment Opportunity (EEO) standards. For 3 years Jeanne served as the Regional Office Civil Rights Action Team representative.

Jeanne's work is result oriented. She works under tight timeframes and meets deadlines promptly. She visualizes, creates, plans, designs, and executes illustrations and graphics required to transform conceptual ideas into artistic graphic display products. Jeanne provided graphic expertise for international projects such as the "Ecosystem and Scale Concepts: Effect on Environmental Information Management" publication; determined the message and design for U.S. Agency for International Development (USAID) posters to promote visitor opportunities in Panama; and customized a design to convey information and portray the best USDA Forest Service image to international visitors at the Snowbasin Ski Resort. Her designs and production work spawned displays, graphics, brochures, posters, and other visual aids and interpretive information for the 2001 World Cup Downhill Skiing, the America's Cup, and the 2002 Winter Olympic Games. She has completed special projects, including devoting time over several years to creating graphics for the publication "Monitoring the Vegetation Resources in Riparian Areas," preparing the State and Private Forestry staff's proposals for the Utah Community Forest Partnership—Trees America Planting Projects, and creating displays for multicultural celebration events.

Jeanne is active in the USDA Forest Service Women's Association and in her community. She has been a supporter of the Ogden Trail Network for the past 7 years and has helped keep the trails clean and safe. She is a captain and organizer for the Women's City Tennis League. She has contributed heavily to Big Brothers and Big Sisters of America, the Salvation Army, and local shelters. For the past several years she has befriended and been the main caregiver to an 83-year-old woman who struggles to live alone. She supports and contributes to the local "Sub For Santa," local theatrical organizations, community youth programs, community education programs, the Pregnancy Care Center, American Lung Association, Avon Breast Cancer Walk, local church organizations, the Ogden Nature Center youth program, and the New York City relief fund.

Jeanne is a lifetime member of the Richmond Indiana Arts Association and is also involved in the local artist community and galleries. She attends

training and conferences to stay on the cutting edge with the full spectrum of visual information components. She also owns a small business in the field of writing, design, and photography and has a commercial World Wide Web domain. Both commercial operations afford Jeanne opportunities for interacting with people outside the USDA Forest Service to share ideas, discuss relevant issues, and embrace a variety of perspectives that stimulate her creativity.

Jeanne Zschaechner has demonstrated exceptional ability in refining project concepts and translating them through the visual arts into a substantial graphic legacy that effectively portrays and furthers engineering's multifaceted efforts on local, national, and international fronts to achieve the USDA Forest Service mission.

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## 2001 Engineering Field Notes Article Award Nominations

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A special thanks goes to each of our authors and readers for making *Engineering Field Notes* (EFN) 2001 a valuable resource. Authors highlighted innovative engineering work on trails, bridges, fleets, and toilets; encouraged young students to explore the world of engineering; and reported on improved engineering tools, such as the Road Analysis Policy. Through EFN, authors can and do share their knowledge, experiences, and insight as U.S. Department of Agriculture (USDA) Forest Service engineers at all levels and from all regions.

Please take this opportunity to select the top three articles for 2001. Remember, this is a one-person, one-vote system. Your vote counts! Tell us which articles you found the most informative, beneficial, and interesting; which articles helped your unit save money; and which articles helped you develop more effective ways of getting your work accomplished.

Please complete the nomination form by rating the articles from 1 (best) to 3 (third best). Note whether you believe an article has helped or will help the USDA Forest Service save money or resources. To send the form, cut along the dotted line, fold and tape or staple it closed, and mail it to us; or e-mail your first, second, and third article selections to Sandy Grimm at [SandraGrimm/WO/USDAFS@FSNOTES](mailto:SandraGrimm/WO/USDAFS@FSNOTES) or [sgrimm@fs.fed.us](mailto:sgrimm@fs.fed.us). **Please vote by September 15, 2002.**

Help us tailor *Engineering Field Notes* to meet your needs by contacting Sandy Grimm at the e-mail address above. Would you like to share some of your experiences? Are there articles that you would like to see? Have you submitted project reports in your region or for professional meetings that other USDA Forest Service engineers would appreciate? If so, you may have a potential EFN article.

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## 2001 Engineering Field Notes Article Award Nominations Form

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| Article  | Author                       | Choice<br>(1,2,3) | \$ Saved<br>( ) |
|--|------------------------------|-------------------|-----------------|
| January–June   |                              |                   |                 |
| Road Analysis Process—What Makes It Work?                            | Dale Horn<br>Richard W. Sowa | _____             | _____           |
| ATV Trail work on the Allegheny National Forest, Summer 2000         | Don Clymer<br>Mark Conn      | _____             | _____           |
| The Tale of Two Bridges and a Bean                                   | J. Keith Schnare             | _____             | _____           |
| Documenting Leased Vehicle Condition During Emergency Events         | Frank Votapka                | _____             | _____           |
| Choices: Composting or Installing a Vault Toilet                     | Bill Hamele                  | _____             | _____           |
| July–December  |                              |                   |                 |
| Transformers: From Student Vision to Engineering Marvel              | John R. Kattell              | _____             | _____           |
| Evaporator Vault System—An Innovative Alternative for Waste Disposal | Marina S. Connors            | _____             | _____           |

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Comments: \_\_\_\_\_

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Name \_\_\_\_\_

(OPTIONAL)

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USDA Forest Service  
Engineering Staff  
Stop Code 1101  
1400 Independence Avenue, SW  
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USDA Forest Service  
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1400 Independence Avenue, SW  
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# Engineering Field Notes

## Guidelines for Authors

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Proposed articles should be submitted in double-spaced text in 10- or 12-point Arial or Helvetica type fonts, left-margin justified. To ensure that design layout conforms to USDA Forest Service publication standards, submit graphic elements, such as tables, charts, and photographs, as separate files. Submit manuscripts as Microsoft Word documents (either Macintosh or Windows format) on 3.5-inch floppies, Iomega products (ZIP 100), or recordable CDs, or send by e-mail.

When soliciting photographs for your document, encourage photographers to capture the sharpest image possible by moving close to the primary subject so that it fills at least three-quarters of the frame. Request vertical and horizontal photos of at least three different exposures for each subject to ensure maximum design flexibility. (For cameras without adjustable F-stop lens settings, use the +/- exposure adjustment for different exposures.)

Photographers must use digital cameras that provide print- or publication-quality images. Provide 1-megabyte .jpeg files (for electronic use) or 5-megabyte .tif files for print publications. Designers can convert jpegs into .tif files for professional page layout.

The use of Kodak photo CDs, agency-provided desktop scans, or images from online sources is not recommended. Such images often lack sufficient clarity (required minimum resolution is 300 dpi or dots per inch.) Internet photos generally have a resolution of only 72 dpi.

Provide sources for all photographs and secure written permission for the use of non-USDA Forest Service material. (Standard permission forms are available.) The EFN editor will clear all photographs through the USDA Forest Service—Office of Communication and USDA Photo Division.

**Follow USDA guidelines on including photographs in your document.** See [www.usda.gov/agency/oc/design/](http://www.usda.gov/agency/oc/design/) for current information.

- 1. Slides** (originals or first-generation duplicates, preferably multiple frames of each subject) should be housed in a protected box or archival slide sheet.
- 2. Transparencies** (4 by 5 inches or larger, preferably multiple frames of each subject) should be housed in archival slide sheets.
- 3. Prints** (4 by 5 inches or larger, glossy finish, black-and-white format) are preferred for *Engineering Field Notes* and other one-color publications.

For additional information on preparing documents for the Engineering Management Series, contact Sandy Grimm, Engineering Publications, by phone 703-605-4503 or by e-mail: [SandraGrimm/WO/USDAFS@FSNOTES](mailto:SandraGrimm/WO/USDAFS@FSNOTES) or [sgrimm@fs.fed.us](mailto:sgrimm@fs.fed.us).





## Engineering Field Notes

### Administrative Distribution

- The Series      The Engineering Management Series is published periodically as a means for exchanging engineering-related ideas and information on activities, problems encountered and solutions developed, and other data that may be of value to engineers Servicewide.
- Submittals      Field personnel should send proposed articles for *Engineering Field Notes* (see Guidelines for Authors on page 39) through their regional information coordinator for review by the regional office to ensure inclusion of information that is accurate, timely, and of interest Servicewide.
- Regional Information Coordinators
- |     |                           |      |               |
|-----|---------------------------|------|---------------|
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| R-5 | Gwen Harris-Nishida       | WO   | Tom Moore     |
- Inquiries      Regional information coordinators should send material for publication and direct any questions, comments, or recommendations to the following address:

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Washington, DC 20250-1101

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E-mail: Sandra.Grimm/WO/USDAFS@FSNOTES or sgrimm@fs.fed.us.

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