

# Country Roads & City Streets

WV Local Technical Assistance Program

Spring 2005

College of Engineering & Mineral Resources

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## NEW LOGO. NEW NAME. SAME GREAT PROGRAM...

By: Emily Walters



New WV LTAP Logo

As everyone settles into the New Year, here at the T<sup>2</sup> Center we are settling into our new name – WV LTAP (Local Technical Assistance Program). As many of you already know, the national LTAP is composed of a network of centers, with one in every state, Puerto Rico, and seven regional centers serving tribal governments.

The decision to assume the national title was made for several reasons. One of the primary reasons was the desire to strengthen our identity with the national LTAP. The national LTAP, including our center, relies on congressional appropriations. We have found when educating elected officials, our constituents, and others about our program, that often individuals did not make the connection between the WV T<sup>2</sup> Center and LTAP. Also, while some people referred to us as the T<sup>2</sup> (Two) Center, others called us the T<sup>2</sup>(Squared), while technically, we

should have been the T<sup>3</sup> (Cubed) Center. WV LTAP is much easier!

The mission stays the same - just the official name and logo will change. *Country Roads and City Streets* will continue to have the same format. All seminars and workshops will proceed as usual and you will still see the same friendly faces. Please rest assured that the focus of the Center has been and always will be to bring you the latest technology and information. We feel our new logo is fresh, modern, easy to recognize, and accurately reflects our program. We plan to ease into our new name and make the process as painless as possible.

For those of you unfamiliar with LTAP, this program was established to serve West Virginia's municipalities by disseminating information on techniques for managing the roadway and street infrastructure. Our goal is to translate state-of-the-art technologies in roads and bridges for use by local highway transportation personnel.

The Federal Highway Administration and the WV Department of Transportation fund the Center. The Center has an Advisory Committee made up of sponsors and customers who provide feedback and guidance on Center services and activities. The Center is housed at West Virginia University in the Dept. of Civil and Environmental Engineering.



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## MEET THE INSTRUCTOR

**Meet the Instructor** is a new column we will include from time-to-time, highlighting a WV LTAP instructor. Our intent is for you to become better acquainted with these instructors and develop a broader understanding of their areas of expertise.



*Dr. Darrell Dean*

Surveying and Mapping are Dr. Darrell Dean's areas of specialty. Dr. Dean teaches surveying for WVU civil and environmental engineering students in addition to teaching another surveying course for forestry and landscape architecture students. All told, approximately 150 students take a surveying course in the CEE Department each year. Dr. Dean also serves in an administrative capacity as the associate chair in the Department of Civil and Environmental Engineering.

Dr. Dean has an undergraduate degree and a master's degree in forestry from WVU. As it turns out, it was the required courses in surveying and mapping in the forestry curriculum that sparked his interest in surveying. When he was an undergraduate, forestry students were required to take two courses in surveying and, in addition, undergraduates had to take a summer camp which had a considerable amount of surveying work in the program. Dr. Dean received his Ph.D. from Purdue University, where he studied surveying and mapping in the School of Civil Engineering. At the time, Purdue was one of only a few schools in the United States offering an undergraduate degree in surveying.

When asked, *What do you enjoy most about going out in the community?*

*Dr. Dean replied: It's always enjoyable to meet different people and renew old acquaintances. I like talking with the people I have had in class years before and hearing about what they are doing. It seems that most of the people taking the workshops are very serious about learning what I am presenting. I get a sense of satisfaction out of seeing others dig into my favorite subject, particularly when they learn something new. I learn something from them too. What I learn might be a different way of looking at a particular surveying problem, or it might not even be about surveying, it might be a lesson in life about truth, honesty, integrity, respect, or kindness. Also, knowing that I will be interacting with people, particularly people I have never met before, causes me to have a feeling of anticipation, alertness, and freshness. I like that.*

*The travel is enjoyable most of the time, except in the winter when the roads are slippery. It's not that the WVDOH doesn't do a great job of keeping our roads treated in the winter time, they do. It's just that because of Mother Nature's timing of winter storms, it sometimes makes it very difficult to manage treatment operations. But, the travel provides an opportunity to get a change in scenery and a break in the normal daily routine. I think when I come back to the classroom here at WVU after a workshop trip, I come back with a feeling of renewed vigor.*

*Finally, to teach non-traditional students, it's a challenge to set learning objectives, develop teaching materials, and deliver the package to the participants so that the objectives are met. My objective is to do this so that the participants enjoy it, and can take something back to their jobs and feel that their time was well spent. For some reason, I enjoy this challenge.*

*Country Roads and City Streets* is a quarterly publication of the West Virginia Local Technical Assistance Program (WV LTAP). The purpose of this newsletter is to provide information that is beneficial to highway construction and maintenance personnel.

The material and opinions contained in this newsletter are those of the West Virginia Local Technical Assistance Program, and do not necessarily reflect the views of the Federal Highway Administration or the WV Department of Transportation. Material contained in *Country Roads and City Streets* is a combination of original and borrowed material. Every effort has been made to ensure the integrity and accuracy of this material. However, the West Virginia LTAP does not assume responsibility for any incorrect material.



## GPS/GIS COURSE CONDUCTED FEBRUARY 10, 2005

The WV LTAP Center sponsored a six-hour workshop on the Global Positioning System (GPS) and the Geographic Information System (GIS) on February 10, 2005, at the West Virginia Division of Highways District 10 headquarters in Princeton. Dr. Darrell Dean, Associate Chair and Professor at the West Virginia University Civil and Environmental Engineering Department, was the course instructor. Participants listened to presentations and conducted both lab and field exercises to help them learn more about these technologies and their potential application to the transportation field.

A simulated sign inventory and management program was the application used to teach participants how to collect location data with an inexpensive GPS

receiver. In the computer lab, queries, such as *Where is the location of all the regulatory and warning signs with engineering grade sheeting?* were made with the location results shown on a map displayed on the computer screen. A GIS viewer downloaded from the web was used to display maps and make the queries.

Others interested in having this workshop or other LTAP surveying workshops conducted at their facility may contact the WV LTAP for more information. Dr. Dean is available to teach the following courses:

- **Surveying Methods 1**
- **Highway Horizontal Curves**
- **GPS/GIS: The Basics**
- **Other topics considered upon request**



*Course attendees brave the cold, snowy weather during the hands-on portion of the workshop.*

## GPS/GIS CAN BENEFIT ROADWAY AGENCIES

*By: Darrell Dean and Kim Carr*

### What is the Global Positioning System?

The Global Positioning System, which is commonly referred to as GPS, is a world-wide radio-based navigation and precise-positioning system. Composed of 24 satellites and five ground stations, it was developed in 1973 by the U.S. Department of Defense at a reported price tag of \$12 billion. The initial concept was to provide the military with a navigation system. Today, GPS has numerous recreational, commercial and scientific applications, ranging from finding trout streams, to measuring earthquake motions, to helping local, county, or state roadway agencies manage inventories.

### GPS Components

- 1. Space:** This includes the 24 satellites sending radio signals to Earth, with each signal containing information specific to each satellite.
- 2. Ground:** The five ground stations monitor the GPS satellites. Automated computer systems retrieve and analyze data received at the five ground stations. Once this data is processed, it is made globally available to GPS users.
- 3. User Equipment:** GPS ground-based receivers can detect these satellite signals and calculate pseudo range or distance. With distances to three satellites known, trilateration can be used to calculate a receiver's speed, latitude, longitude, and/

GPS uses the basic equation of:  
**Distance = rate x time.**

The approximate rate for radio waves = 186,000 miles per second.

Each satellite transmits a signal with a time code, and the receiver locks onto this code.



or height position. Since each signal contains a coded sequence, by comparing the received coded sequence with the internal coded sequence, the amount of time it takes for the signal to reach Earth from the satellite can be determined by incorporating a fourth satellite.

### Roadway Agency Applications

#### *So how can local and state roadway agencies take advantage of GPS technology?*

Roadway agencies are responsible for managing and maintaining numerous fixed assets, such as traffic signs, sidewalks, storm water drains, street lights, traffic signals, water and sewer lines, etc. This is a tremendous responsibility. Not only is it important from a fiscal perspective, but also from a safety and liability perspective. By using GPS/GIS technologies, agencies have the ability of mapping, tracking, and utilizing databases to store, manage, analyze, and query spatially referenced data.

Traffic sign management is an important component of every roadway agency's job. It's important to make sure that signs are in good condition; meet the Manual on Uniform Traffic Control Devices (MUTCD) guidelines; and are placed in appropriate places. It's a given that inclement weather deteriorates signs, some signs will be stolen or displaced and infrastructure changes will impact sign placement. By using portable GPS units to collect data, also known as attributes, for each and every sign, agencies can make their operations more efficient and cost-effective. Collected attributes could include retro-reflectivity level, overall sign condition, next inspection date, sign replacement priority – the possibilities are endless.

The mapping portion requires an individual to take a GPS unit to each physical site in order to obtain the

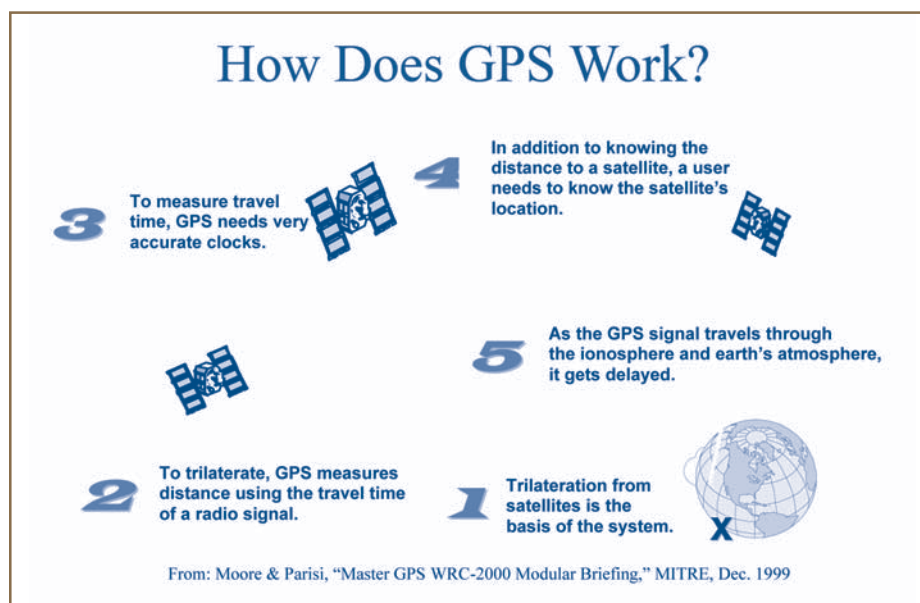
geographic location of the sign. Once the GPS unit connects with the satellite and the sign's position is obtained, the data collection process and sign inventory can begin. Each sign should be given a unique identification number, which is physically attached to the sign. In instances where multiple signs are located on the same post, the roadway employee would need to collect the GPS point for each individual sign. The sign data obtained from the on-site visual inspection could then be entered for each sign.

Once the data has been gathered, it can then be uploaded into a GPS/GIS software program, where the GPS data can be corrected, analyzed, and queried to produce useable reports.

Inventory of traffic signs is an ongoing process and it is extremely important to keep the database updated and maintained. Any time a sign is replaced, repaired, removed, relocated or added, the GPS data would need updated.

### Conclusion

Planning and decision making may be expedited when both the GPS and GIS technologies are applied to problems having a spatial component. With the GPS technology, a user is able to determine, with relatively low cost, the geographic coordinates of fixed assets in the field. These assets might include guard rails, signs, manholes, power poles or other components of the infrastructure. At the same time the asset locations are obtained, the attributes – e.g., date of installation, condition, date last inspected, etc. – of the asset are also recorded. Mapping of the assets is possible when their coordinate locations are known. While in the office, GIS technology enables users to store, organize, edit, query, analyze, and display on maps or other media these infrastructure components and their attributes. Combining the technologies is what makes it possible for planners and decision makers to efficiently answer questions like: "Where is it, what if, how far, how long ago?"



## APWA WEST VIRGINIA CHAPTER REVITALIZATION

*By: Emily Walters*

The American Public Works Association (APWA) spoke to the Advisory Board Members of the West Virginia Local Technical Assistance Program (WV LTAP) and other attendees at the 2005 WV EXPO in an effort to increase support to reconstitute the WV chapter of APWA.

Noel Thompson, APWA's Regional Director, gave a Power Point presentation on what Public Works does and the experience members can gain from it. "I believe the impact of a noble act is far-reaching," said Thompson, "Public Works is nothing more than numerous noble acts."

APWA currently has 27,000 members from 67 chapters in the United States and Canada. The WV chapter of 23 members has been inactive for several years. Thompson encouraged those present to consider volunteering for open positions including chapter delegate, chapter treasurer and/or web master. As an incentive to get people

involved in the WV Chapter, APWA is offering a three-month trial membership. If the WV Chapter does not take off, then another possibility would be to become a branch of another state or regional chapter.

An important program of APWA is their grading system. They send out a report card for each Public Works chapter on how well they are doing. That way each chapter can see how it measures up to other chapters. The report cards can be viewed online.

The Center has a special place in APWA's hearts because LTAP and APWA have had a formal relationship for several years. Thompson called the WV LTAP an "essential entity."

If you would like to learn more about becoming a member, visit the website online, [www.apwa.net](http://www.apwa.net) or to find more information on the WV chapter go to <http://westvirginia.apwa.net>.

### APWA CHAPTERS

According to the APWA website,

*Chapters are the essential element in APWA's service delivery system for its members. They offer one of the most immediate, easy and cost-effective opportunities to exchange information with colleagues and to keep up to date on the latest public works technologies and management trends. Organized within nine regions, APWA's 67 chapters are located throughout North America and serve virtually every metropolitan area, state, province and region on the continent.*

*Chapters engage in the same educational, networking and public service activities as the national organization, but they do so close to home where members can easily take advantage of them. Chapters offer members the opportunity to attend educational programs, equipment shows and the chance to network with their colleagues and peers in a professional setting.*

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## THE 26TH ANNUAL WV EXPO AND SKUUP THE SKUNK!

### WV LTAP ADVISORY BOARD

**Robert Amtower**  
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Burlington, WV

**Kevin Burgess**  
FHWA  
Charleston, WV

**Michael DeMary**  
Public Works Director  
Fairmont, WV

**Bob Gordon**  
Region 9 Planning and  
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**Ed Grace**  
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**Kathy Holtsclaw**  
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**Pat Parsons**  
Asphalt Pavement Assoc.  
of West Virginia  
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**Buddy Shreve**  
Public Works Director  
Philippi, WV

**Donald Williams**  
WVDOT  
Clarksburg, WV

**Gary Winter**  
WV Governor's Highway  
Safety Program  
Charleston, WV

*By: Emily Walters and Kim Carr*

The weather was warm and hordes of people wandered around with cotton candy, snow cones, and popcorn. No, it wasn't a county fair; it was WV Expo time again!

The 26<sup>th</sup> Annual West Virginia Equipment, Technology, & Design Exposition was held at the Charleston Civic Center in Charleston, WV, March 23 and 24. The WV LTAP shared a booth with the WV Division of the Federal Highway Administration (FHWA) and was just one of over 400 other booths. With so many other companies and agencies exhibiting, we wanted to make sure our booth stood out and attracted an audience. It was important to us to be able to educate as many attendees as possible about FHWA and WV LTAP programs and services.

So what did we come up with? We borrowed – that's a nice word for stole – the idea of *Skuup the Skunk* from the Vermont LTAP. (*Vermont's was actually Skoop the Skunk.*) Skuup the Skunk represented the unglamorous job that many road crew employees have to tackle – scooping up smelly road kill and disposing of it. Fortunately, though, participants who engaged in our road kill game had a much more pleasant and better-smelling experience than they face in the real world! Each participant had three tries to scoop a stuffed skunk off the ground with a shovel and toss it into a bright pink bucket. For each bucket made the participant would receive goodies such as a Swiss army knife or work gloves.

WV LTAP staff, along with several staff members of the FHWA WV Division, worked diligently encouraging onlookers to participate and learn more about FHWA and LTAP. In addition to the Skuup the Skunk activity, an educational video from FHWA titled, *Highways or DieWays* played on a small television,

illustrating the dangers of not obeying driving laws. Attendees also received pamphlets, newsletters, and other educational materials from FHWA and LTAP, in addition to a staff member personally explaining our programs.

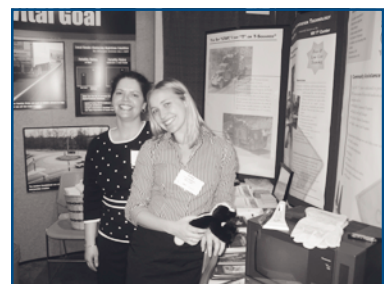
The WV LTAP sends a big *Thank You* to Sally and the Vermont LTAP for permission to steal this great idea, to the individuals who participated in this activity and stopped by our booth, and to all of the staff from FHWA who helped set up and staff the booth.



*The fine art of Skuup the Skunk*



*Ron Eck, Wanda Collins and Jeannie Simms take time to pose for the camera.*



*Kim and Emily are ready for a fun-filled day at Expo.*



## NEW FACES AT THE WV LTAP



**Emily Walters**  
*PR Intern*

I want to introduce myself and tell you a few things about me since I am invading your newsletter this spring. My name is Emily Walters and I am a junior public relations major at West Virginia University. Since graduation is little more than a year away, I wanted to obtain additional hands-on job experience; so I applied for an internship here at the Center. I am very excited to be a part of the LTAP team, especially with all the new ideas that are being implemented this season.

I know you're probably wondering how a PR major comes about getting involved with the Local Technical Assistance Program. Even though at the moment I am as green as can be when it comes to some of the stuff we're doing, I am very interested in learning more about what our program does and how we can help you. I will be writing articles for *Country Roads & City Streets*, assisting with events, helping promote our new name and logo, and much more. I have dozens of ideas swirling around in my head and I am very eager to set them into motion!



**Sherry Williams**  
*Program Assistant*

Sherry Williams is our second new face at the WV LTAP, and she has been a true blessing! When Keith Bryant, our technical assistant, finished up his course work and became gainfully employed with a private consultant, we were left with a temporary staffing void.

After a little arm twisting by me (Kim), Mike, and Ron, we convinced Sherry that she would love working with us for a couple of months. Sherry graduated from WVU with a bachelor's degree in civil engineering, and prior to getting married and having her beautiful daughter, she worked for thirteen years at the WV Division of Highways. Sherry has been a tremendous help in registering and scheduling course attendees, administering the database, researching questions, and keeping us all sane, as the last few months have been jam-packed! Sherry will be leaving the Center this summer, and we'll all be very sad to see her go. *Hmm. We may have to do some arm twisting again...*

## ACCOLADES

*Recently, three members of the Center's Advisory Board were promoted to either permanent or interim positions within the WV Division of Highways. Congratulations and best wishes in these professional endeavors!*

- **Marvin Murphy** was recently promoted to the position of State Highway Engineer for the WV Division of Highways. Prior to this, he served as the District Engineer for District 4, Bridgeport. Marvin has served on the Center's Advisory Board since its inception in 1984.
- **Robert Amtower** has been named interim District Engineer for District 5, Burlington.
- **Don Williams** has been named interim District Engineer for District 4, Bridgeport.

The West Virginia LTAP Center is a part of the nationwide Local Technical Assistance Program (LTAP), which is funded by the Federal Highway Administration. The Center also receives funding from the West Virginia Department of Transportation.

### **Mission:**

The mission of the West Virginia LTAP is to foster a safe and efficient transportation system. The LTAP Center's mandate is to improve the transportation system by improving the professional skills of those involved in highway design, construction, and maintenance, and to act as a resource for them by keeping up-to-date training libraries and constantly seeking/developing new technologies.

### **Overall Goal:**

The Center's overall goal is to improve the transportation system by focusing on professional training, technical assistance, and information dissemination.

To achieve this goal, the WV LTAP does the following:

- Provides on-site training and demonstrations
- Publishes a quarterly newsletter
- Maintains a video, CD-Rom, and publications library
- Provides technical assistance via mail, telephone, fax, email, or site visits.

**WEST VIRGINIA STORM WATER WORKSHOP SERIES**

The West Virginia Department of Environmental Protection's Office of Innovation and Division of Water and Waste Management have teamed up with the Canaan Valley Institute, West Virginia Rivers Coalition, West Virginia Chamber of Commerce and National Environmental Services Center to sponsor a series of workshops in 2005 that focus on important storm water issues.

Workshop descriptions, speakers, and training location details will be added to the National Environmental Services Center's web site as they are made available. See **WHAT's NEW** at [www.nesc.wvu.edu](http://www.nesc.wvu.edu).

**MAY - AUGUST 2005 SCHEDULED COURSES**

**Experiential Erosion and Sediment Control:**

**May 16-17, 2005** – Mine Safety & Health Admin. Library, Beckley, WV

**June 22-23, 2005** – Ramada Inn, Morgantown, WV

**Advanced Storm Water Management:**

**August 3, 2005** – Benedum Center, Bridgeport, WV

**August 4, 2005** – WVDEP Headquarters, Charleston, WV

*Choose from two locations and dates for each of these two courses!*

All inquiries should be directed to  
[workshop@downstreamstrategies.com](mailto:workshop@downstreamstrategies.com) or phone **304-291-8205**.

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*Change Service Requested*

Our email domain names  
have been changed – a  
*change beyond our control.*

Our new email domain names  
use the following format:  
[firstname.lastname@mail.wvu.edu](mailto:firstname.lastname@mail.wvu.edu)

*Please see page 5 for  
complete contact information.*

