

November 2011

# SIDE SHOTS

Professional Land Surveyors of Colorado

Volume 42, Issue 4



## The Colorado Spatial Reference Network: Past, Present & Future

Page 7



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# SIDE SHOTS

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Greetings to all. There are signs of fall in the air and the change of seasons was readily apparent on my recent trip to Grand Junction to attend the Western Chapter September meeting hosted by Peter Krick. Tom Sylvester and the Western Chapter Board of Directors hosted Mr. James A. Beckwith, Attorney at Law, who spoke on road rights-of-way. The meeting was very informative and I had the pleasure of reacquainting myself with many of our Western Chapter surveyors as well as meeting students from Colorado Mesa University (CMU) who were in attendance. It was exciting to see the outreach that is being accomplished by our Western Chapter.



The PLSC is participating in meetings at DORA with engineering and architecture representatives to discuss upcoming initiatives for the sunset review process. Monthly meetings have been attended by Diana Askew, Gene Kooper, and myself, so if you have any concerns please bring them to the attention of one of these representatives so that they can be voiced at future meetings.

Our "Surveyors Summit" meeting scheduled for next spring is well into the planning stages. Todd Beers is heading the effort and would appreciate any assistance to secure speakers and finalize arrangements that you are able to offer. Please contact Todd to find areas where he still requires assistance. The PLSC anticipates reaching out to potential survey clients in hopes of attracting more interest in our conference and to provide network opportunities for those hoping to secure new work.

The PLSC Board of Directors is currently working with Terry Maw, Treasurer and Diana Askew, Executive Director on next year's budget. We are working to maintain revenue and minimize expenses as we continue to struggle through financially challenging times. We will also be setting our 2012 strategic goals and would like any suggestions from our membership for consideration. We will settle on three primary goals to accomplish in the coming year.

A position letter from PLSC was sent to Colorado representatives regarding the Light Squared initiative. We have formally stated that we are against this initiative and will continue to monitor events and act in the interest of our surveyors regarding this matter.

Sincerely,  
Roger D. Nelson, PLS, CFedS

**IMPORTANT NOTICE - -**

Did you obtain this copy of *Side Shots* as a free courtesy copy? If so, *this will be your last printed issue.*

The Board of Directors decided, in their October 5th meeting, to discontinue courtesy mailings of *Side Shots* after this issue, as a way to curb expenses and to balance their budget. The mailed copies will only go to dues-paying members, beginning with the February, 2012 issue. The cost to layout, print and mail each issue is a considerable expenditure for the PLSC in a year when revenues are down sharply.

If you have paid your membership dues for 2012, or will do so soon, you will receive the paper version by mail as usual. But if you have been receiving courtesy copies by mail and wish to pay to receive them next year, send an email to Diana Askew, PLSC Executive Director, at [Diana.askew@plsc.net](mailto:Diana.askew@plsc.net)

Please keep in mind that anyone can access the .pdf version for free from the PLSC website (<http://www.plsc.net/sideshots/sideshots.htm>). Each issue is posted there two or three weeks after the paper version is mailed, so no one is being denied access to this publication. Some states have moved to an online-only version of their magazine, with no printed copies at all; the PLSC Board may yet move in that direction in the future. But some members derive considerable value from seeing *Side Shots* in their mailboxes four times each year. I would welcome your thoughts on this topic.

The real solution, over which we have no control, is a sharp upturn in the economy and the market for land surveying work in Colorado. Something else that would help with our finances, which is well within our control, is for each of us to take on the task of recruiting new members to the PLSC! The Western Chapter and CSRN (see the article in this issue by Brian Dennis) are good examples. They promote the benefits of PLSC membership at their conferences and workshops, and have been successful in bringing in new members. So take some action right now - put in a good, encouraging word to someone you know in our profession who has not yet joined, and direct them to [www.plsc.net](http://www.plsc.net) to sign up. You will be doing them a favor, and yourself as well in helping to secure the funding necessary to keep this professional society in operation. We are a group of unpaid, motivated professional surveyors working hard to secure proper legislation, work with the regulatory board on new rules, provide scholarships to the next generation, and above all else, provide excellent continuing education and networking opportunities throughout Colorado.



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JB Guyton,  
Editor, Side Shots

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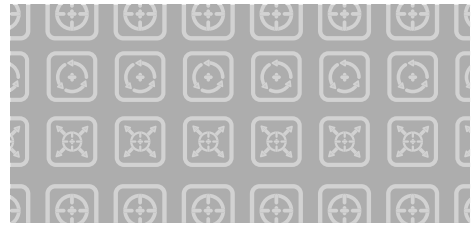
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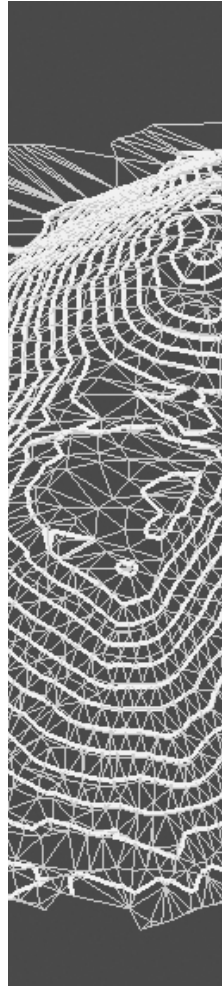
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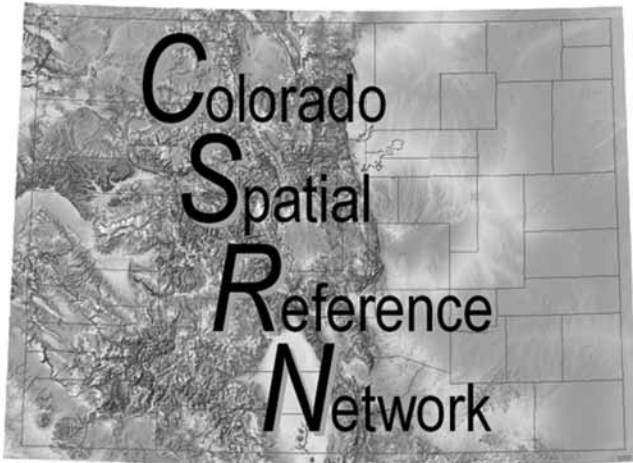
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# The Colorado Spatial Reference Network: Past, Present and Future

By Brian Dennis, PLS  
President, CSRN  
[www.csrn.us](http://www.csrn.us)

On August 20th, 2011 the Colorado Spatial Reference Network (CSRN) held its 2nd annual picnic in Highlands Ranch, Colorado. During the picnic I met with several new people who were interested in the CSRN. As we spoke about the current economic situation, job markets, and networking opportunities, I asked people a standard question: "Do you know what the CSRN is about and how did you hear about us?" Most replied that they had heard of the CSRN prior to the picnic announcement through various organizations or societies but did not know much about us and thought the event might be a good way to network. With each individual I explained the CSRN's purpose in present terms which usually sparked the question of, "How did it originally form?" This caught my attention and made me realize that the CSRN has gained name recognition within the GPS community, both surveyors and non-surveyors, but very few knew how we came to be. The CSRN along with the survey and geospatial community have had to evolve and change the way we do things in order to maintain relevance in these times. With that thought in mind, I decided to take this opportunity to explain where we came from, where we are now and where we are going, in order to illustrate that our evolution has been a good thing.

## Where we came from –

The GPS Users Group, an informal group, began in January of 2005. This group was created by Pam Fromhertz, Dan Smith and many others in the survey and geospatial community within Colorado. This group was formed to investigate the level of interest and needs of a Colorado Real Time Network (RTN). Within the short time frame of a few meetings, it was clear the interest for a Colorado RTN was high with over 100 people in attendance at meetings and an email distribution list of over 200. Based on the level of interest the group then looked for ways to formalize and by a member vote renamed G2 in late 2006. In November of 2006 the group voted to organize either as a non-profit, as a

stand alone organization, or join with an already established Colorado non-profit related to GIS or the surveying community. The group began looking at the Professional Land Surveyors of Colorado (PLSC). In December 2006, G2 presented a proposal to the PLSC at the PLSC Fall Technical Session General Membership meeting held at the School of Mines in Golden, CO. JB Guyton was the PLSC President at the time and became very interested in the idea of a Real Time Network for Colorado sponsored by the PLSC. JB was aware of several other states already implementing these networks that were administrated by private companies or Departments of Transportation and of the potential benefits to GPS users. JB appointed Russ Clark (a PLSC Director) to lead and form a working committee to review the possibility of creating and administrating a Colorado statewide Real Time Network.

Russ recruited Brian Dennis, Roger Nelson, Dan Smith, Tom Adams and Pam Fromhertz to form this working committee. We were called the Real Time Reference Network Implementation Committee (RTRN). We researched the potential cost and quickly determined that the PLSC alone would not be able to fully fund this endeavor. It became clear that we were going to need assistance from the survey and GIS communities. This included donated equipment and the installation of the GPS base stations. Monitoring of servers would have to be accomplished through volunteers in the short term until a long term solution was derived. We discussed various ideas for the initial implementation of a GPS network. First, receive or purchase equipment and install GPS base stations in strategic locations to develop our own network or secondly, partner with other groups that already had base stations in place such as Mesa Counties network and CDOT's network and we could establish base stations in between that would eventually link the two networks together. In order to accept equipment and money through donations and subscriptions, we needed a vehicle for tax purposes. This provided us with two options; create and



incorporate as a non-profit organization or become a chapter of the PLSC. The easiest and quickest way was to become a chapter of the PLSC.

For the next challenge, we needed a name to be a chapter. Since we were not geographically bound by region as most chapters are, we wanted a name that did not confine us but instead illustrated that we were a statewide group. We agreed on the “Colorado Spatial Reference Network” (CSRN). We then requested that the PLSC Board consider the formation of a new PLSC chapter. For that we needed PLSC member sponsorship, so we made the calls. The founding members of the CSRN became: JB Guyton, Russ Clark, Dan Smith, Roger Nelson, Tom Adams, Kevin Hoffman, Larry Connolly, Frank Kochevar, Warren Ward, John Noonan, Brian Dennis and Pam Fromhertz. The PLSC Board of Directors voted its approval and a new chapter was formed in May 2007. The founding CSRN Board became Russ Clark, president; Dan Smith, vice president; Tom Adams, treasurer; Pam Fromhertz, secretary; and Brian Dennis, Roger Nelson, Larry Connolly, Kevin Hoffman and Frank Kochevar, directors. We finally completed the processes for a chapter creation (constitution, bylaws and Board creation) and then we were hit with news that changed everything. A private firm was launching a Real Time Network in the Denver metropolitan area, Leica’s Spidernet Network. Soon afterwards we heard Trimble was launching a VRS network also in the Denver metro area. Now we had a problem! This forced us to ask the question, “How does a volunteer group based mainly on donated equipment, money and resources compete with multi-billion dollar private companies who also manufacture the equipment?” Answer —We don’t!

Our original purpose was now unrealistic. Do we

change or evolve, or dismantle the chapter? After several meetings and discussions we decided our bylaws allowed us to also be an advisory panel for outreach and education. We had a new direction! We felt the GPS networks were a great advantage to the surveyor and non-surveyor but also were a very dangerous tool if their functionality was not understood. We were going to focus on education to the GPS users about the networks and their potential applications (pros and cons). We needed a new vehicle to get the information about the networks out to the GPS community and to be a clearinghouse for information. Through Roger Nelson and Merrick and Company we then purchased the domain name [www.csrn.us](http://www.csrn.us) with an email address of [info@csrn.us](mailto:info@csrn.us) and Merrick and Company became the first company to host the CSRN website. Now we had a place to post information about the networks which is still today our main vehicle for information sharing. To maintain credibility as an advisory panel and information clearinghouse we voted to remain vendor/manufacturer neutral and we still are today, allowing us to maintain good communications with the vendors and manufacturers of the Colorado Real Time Networks, which is essential to our function.

### Where we are now –

Since the beginning days, we have had to evolve numerous times to remain current with the membership needs and to address new Real Time Network concerns as they arise. Our clearinghouse, education and outreach focus for the GPS community has remained constant, and we are now 800 members strong and growing. Keep in mind this group is only five years old. Imagine where we will be in another five years. Our membership numbers confirm that our purpose of information and education is both needed and wanted by the GPS



*CSRN represented Colorado for the NSPS “Surveying USA” event in April, a nationwide effort by NSPS for simultaneous GPS observations to expose the public to the land surveying profession. CSRN expanded their audience to include the youth and novice GPS users or surveyors: the Boy Scouts, Girl Scouts and TRIGStar students.*



communities. Our members are composed of surveyors and non-surveyors, all with an interest in GPS and real Time Networks. Through the efforts of the CSRN to be an inclusive group for GPS users, we have the support of the National Geodetic Survey (NGS), Curtis Sumner, Executive Director of American Congress of Survey and Mapping (ACSM) and the National Society of Professional Surveyors (NSPS) and TJ Frazier, an editor of Professional Surveyors Magazine (PSM).

We have spoken or sponsored tracks at the PLSC Technical Sessions and the GIS in the Rockies Conference discussing GPS, Real Time Networks and Land Surveying. We most recently represented Colorado for the NSPS "Surveying USA" event in April, 2011. This was a nationwide effort by NSPS for simultaneous GPS observations to expose the public to the land surveying profession. For this event the CSRN expanded our audience to include the youth and novice GPS users or surveyors. This included the Boy Scouts, Girl Scouts and TRIGStar students. This event was held and sponsored by the Colorado Department of Transportation (CDOT) at their headquarters in Denver, Colo. We had over 120 attendees. We had stations with surveyors and non-surveyors talking about surveying, GPS basics, GPS Networks, NGS activities, and the many GPS applications. Our attendees were comprised of Professional Land Surveyors, Land Surveyors in Training, GISP's, GIS technicians, geocachers, scouts, students, parents, survey and GIS instructors from local schools, GPS vendors, GPS manufacturers, network administrators, engineers and others. Due to the success of the event, the CSRN voted to hold this event annually. By expanding our focus and allowing the event to evolve into a larger focused group, we created national interest. As a result, the CSRN was invited to write an article for Professional Surveyor Magazine detailing our success story. Then we were invited to be a guest of Curtis Sumner of ACSM for his weekly radio show, "ACSM Radio Hour". Our efforts and successes have now been noticed abroad, to the point that I have heard from TJ Frazier and Curtis Sumner that they believe the CSRN Chapter should become the model for all society chapters regarding our inclusive nature for outreach and education. Whether you are a Surveyor or GIS or in machine control grading or agriculture, if you are a GPS user or want to be a GPS user, we are interested in you and believe we are of value to you!


## Where are we going –

The CSRN will continue its role as an information clearinghouse and advisory panel for education and outreach. However, we will also continue to evolve our approach to remain relevant and expand our ability to get information to the GPS user's community. For example, the CSRN will be further introducing the value of the CSRN to the GIS community at the GIS Colorado General Membership meeting in October. This

expands on our continued efforts to illustrate the CSRN's value to GPS users within the Geospatial communities. The CSRN has also committed up to 16 track hours at the upcoming 2nd annual Rocky Mountain Surveyors Summit presented by the PLSC, Northern, Central, Southern, and the CSRN Chapters in March, 2012. We are looking into speaking at local colleges such as Metro State and Westwood for the GPS component of the curriculum. We are also looking into speaking engagements at local elementary, junior high and high schools and attending local scout troop meetings to introduce the youth to GPS.

The CSRN Board is always evaluating how to enhance our efforts to assist the GPS community. Asking the questions of, what information is out there and what are we hearing from GPS users that they are struggling with or the lack of information on a particular GPS subject or application or industry. Technology is always evolving and so we must evolve with it or get left behind. The operation of the GPS system has not changed but the technology in which we receive, interpret or manipulate the data is in a rapid state of evolution. That thought alone could sustain the CSRN, but evolution, new ideas and membership participation will keep us relevant.

The past and current CSRN Board members have always maintained that the chapter is to be member driven. That means the CSRN Board is not to be a



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# 2012 Colorado Land Surveying Refresher Course

The Professional Land Surveyors of Colorado are offering a comprehensive Land Surveying Refresher Course beginning January 4, 2012. This course offers a review and self-study plan for those taking the National Council of Examiners for Engineering and Surveying (NCEES) **Fundamentals of Surveying (FS)** and **Principles and Practice of Surveying (PS)** examinations. The course is designed to aid candidates in developing and expanding exam-taking proficiencies.

## Fundamentals of Surveying

<u>Session</u>	<u>Date</u>	<u>Topic</u>
1	Wed., Jan. 4	Overview of NCEES Examination Basic Calculations/Use of Calculator
2	Wed., Jan. 11	Basic Calculations
3	Wed., Jan. 18	Horizontal and Vertical Curves
4	Wed., Jan. 25	Field Data Acquisition and Reduction
5	Wed., Feb. 1	GIS, State Plane, Geodesy
6	Wed., Feb. 8	Boundary Law I
7	Wed., Feb. 15	Public Land Survey System

## Principles of Practice and Colorado Specific

<u>Session</u>	<u>Date</u>	<u>Topic</u>
8	Wed., Feb. 22	Boundary Law II
9	Wed., Feb. 29	Colorado Survey Law I
10	Wed., Mar. 7	Colorado Survey Law II
11	Wed., Mar. 14	Professional Practices
12	Sat., Mar. 17	<b>Mock PS and FS Examinations</b>

The Wednesday evening classes will be 3 hours in length, starting promptly at 6:00 PM. The Saturday, March 17 session will consist of a mock FS and PS (including Colorado Specific) NCEES examination. The exam will start at 8:00 a.m. and end at 12:00 noon.

The fee for the entire course is \$400, or \$75 per 3-hour block taken individually. Online Registration will begin October 25, 2012. Visit <http://www.plsc.net/> to register and for further information. Classes will be held in the Fairmount and Morrison Rooms of the Jefferson County Courts and Administration Building (The Taj Mahal), 100 Jefferson County Parkway, Golden, CO. Use the parking lot and main door on the east side of the Admin and Courts building. Signage will lead you to Room 1552/1565. Contact Randy Bloom, 303-239-3856 for questions.

small group that decides for everyone but instead that our members give us feedback and direction. So here is my challenge to you! Help us with the direction for the future of the CSRN by emailing us at [info@csrn.us](mailto:info@csrn.us) with your ideas and thoughts. Let us know you want to participate and how.

Here is an example of an idea to help the GPS community:

Have the CSRN website consolidate GPS Network information for each state into one place. For example, you primarily work and live in Colorado but you have a project in Nevada. I believe it could be beneficial to have a website i.e. [www.csrn.us](http://www.csrn.us) that had an interactive map that listed the GPS Networks in Nevada to see if there is a network in the area you are working in. With that listing would be the GPS equipment and software/firmware that comprises the network, the network administrator with name and contact information, whether the network is radio or cellular or both and if the network is subscription based or free along with a network coverage map.

How do we implement this? Who researches the other states for networks and contacts each for permission and information to post? How do we maintain this and keep up with the networks as they change? Who can create an interactive map where each state is a hyperlink with sub-hyperlinks allowing the user to drill down through the information? Is this overreaching and do we need to simplify the idea to be reality? This is an example of an idea that may help us to help you but we need feedback and people willing to participate to implement such ideas, and continue our process of evolution.

We look forward to hearing from you soon!



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# Theodolites vs. Cameras

By Harold Schuch, GeoCounsel, Inc.

How does one tell that a dinosaur was in the fridge? By the fingerprints in the butter. So, how does one tell that it was in Morrison? They left tracks in sand about 100 million years ago which is now part of the Dinosaur Ridge. Located in Jefferson County Open Space and lying within the borders of Morrison, Colorado, it represents proof that a big chicken did indeed cross the road. A group called Friends of Dinosaur Ridge administers the place and tries to protect it.

This exciting record of life was since folded upward to about 36 degrees of slope as the Rockies broke through the earth's crust, and overburden was washed away. What is left today (also partly due to excavation) is a flat piece of sandstone that shows the footprints left by various dinosaurs, worms and plants on what was a level piece of flat land. The large quantity of tracks indicates that this area was once teeming with life.

So, how does one create a time-stamped record of the location and condition of the tracks if:

- (a) The surface is only 100 feet wide and deep, and very hard to walk on?
- (b) It is not even clear what all there is to protect, given the rich record?

It is created through terrestrial photogrammetry.

*Figure 1* shows a photo of the track site (the bare surface to the left) as seen from the road during Vette day in Morrison in July 2011. The camera was on a 20 foot pole. C-470 is to the right. You are looking north.

*Figure 2* shows another view, now straight toward the site from across the street. The tracks are frequently rubbed in with charcoal to make them easier to see. Also note that the view is obstructed by fences, signs, and structures.



**Figure 1.** General view of the site, illustrating the photos taken up and down the road for control purposes.

What would make this a “professional” project, and not just pretty pictures? Let’s go through the process as if it were a survey project.

*Figure 3* (page 13) shows the main survey instrument: A Sony NEX-5 camera with a 14.2 Mpixel image, plus a fixed 16mm lens and a 18-55mm zoom. The size of the camera sensor and the image resolution (14.2 Mpixel) results in a pixel size of 5 microns on the sensor surface. Also note that behind the camera there is one of the 16 black and white targets that were used for camera calibration.

The big difference is that each “camera station” is NOT a known point as with the theodolite, and the set-up over a known point and the recording of the instrument height are NOT required. The camera station coordinates are determined after the fact through “block adjustment”. So, through a good block adjustment, each camera station is computed in terms of the X, Y, and Z of the camera perspective center and the direction in which the camera is pointing (the “look angle”). So, “instrument set-up”, including the “leveling”, is essentially non-existent with a camera, something hard to accept by many surveyors. Also, “instrument set-up” quality then becomes only possible through (a) good camera calibration, and (b) good block adjustment. All necessary data, like “perspective centers”, are calculated through resection after the fact.

In terms of project accuracy, one of the most critical aspects is camera calibration. Unfortunately, “calibration” is no longer part of the general surveying vocabulary. When was the last time you calibrated a GPS, a robotic total station, a steel tape, or a level (peg test)? With older theodolites one could take “direct” and “reverse” readings, and thus determine, for example,



**Figure 2.** Expanding control over the surface

instrument errors caused by maladjustment and/or trunnion wear.

With a theodolite one measures horizontal and vertical angles while rotating the telescope around a known point (X, Y, and Z as corrected by the instrument height). Also, during observations, one is using only a small center portion of the lens system (where cross-hairs cross), and therefore lens distortion in a theodolite is not an issue. In the camera, one uses the whole width and height of the image coming through the lens, and each image pixel represents a horizontal and vertical angle from the perspective point, measured horizontally and vertically from the camera axis. Each pixel in a photo relates to a different portion of the camera lens, and therefore knowledge of camera lens distortion and how to correct for it is critical.

If the photos overlap, then each observed point is akin to a separate theodolite observation (a horizontal and a vertical angle from an observation point). As such, one observes several horizontal and vertical angles by digitizing points (the same visible ground feature on two or more photos). Or, potentially, each photo holds as many horizontal and vertical angles as there are pixels in the image. The camera's ability to measure angles precisely then depends (in part) on its pixel size.

The block adjustment process then calculates intersections between lines in space to calculate coordinates of ground objects, plus the position and orientation of each camera station (of which hundreds were used for this project). The lines are "resected" in space. This resection depends heavily on the quality of the image (how much it is distorted by the lens) and on the actual focal length value. "Camera calibration", then, means precisely determining lens distortion over the whole image, plus the precise determination of the focal

length. Without this preparatory step, one would be unable to assess accuracy.

The camera that was used has many settings, and changing several of them during the project would invalidate calibration. This included all the digital processes that change the images in some way, from smile detection to motion blur removal, and all of them were deactivated. This also included the mechanical settings that change internal camera geometry, such as focus and aperture. That is why the camera focusing was set to manual, and the focusing ring was clamped so it couldn't move (with the yellow ring in Figure 3). Lens aperture was also set to manual and left at f-stop 8. During the photo shoot, only exposure time was changed.

After fixing camera settings, a grouping of 16 calibration panels (as in Figure 3) was prepared using special software and was arranged over an area of about 10' x 10'. This grouping was photographed 12 times (from its 4 sides, while rotating the camera). Camera calibration was calculated using software that detects the target shapes automatically. These calculations gave the focal length within +/- 0.002 mm (RMS). The maximum lens distortion detected was 0.11 pixels.

After completing the calibration, the site images were collected without changing camera settings. This calibration field is locked to each image that is taken and the corresponding corrections are made automatically to each point measured.

However, first things first. Prior to taking the site images, a solid ground control field had to be established. This was done by using a 100' steel survey chain and an automatic level plus rod. A group of six points was marked on the road in front of the site and surveyed (distances and elevation differences). From this, six sets of X, Y, and Z coordinates were calculated (to within 0.01 foot). Only a local system was needed for this (one of the points was given the coordinates 1000, 1000, 6000). Each control point was fitted with a photogrammetric target.

Then it was time to take the site photos. Three distinctly different groups were taken. First, photos were shot up and down the road to cover the control targets and some of the slope. Then a second grouping was shot upslope to the site, done to transfer the control field up the track slope. Then many detail shots were taken, where most were somewhat more perpendicular to the surface, to the extent possible.

The above groups were adjusted as progressively larger blocks (more than 100 blocks were completed), ensuring that any problems were gradually removed. For example, it was noted that natural features look sufficiently different at various angles, and so their selection had to be done carefully. The adjustment results were that, for the overall block, RMS errors for pass points were invariably less than 0.3 pixels. The biggest surprise was that the largest point residuals were found



**Figure 3.**  
*The camera that was used*

for the control panels, which means that they will have to be re-designed.

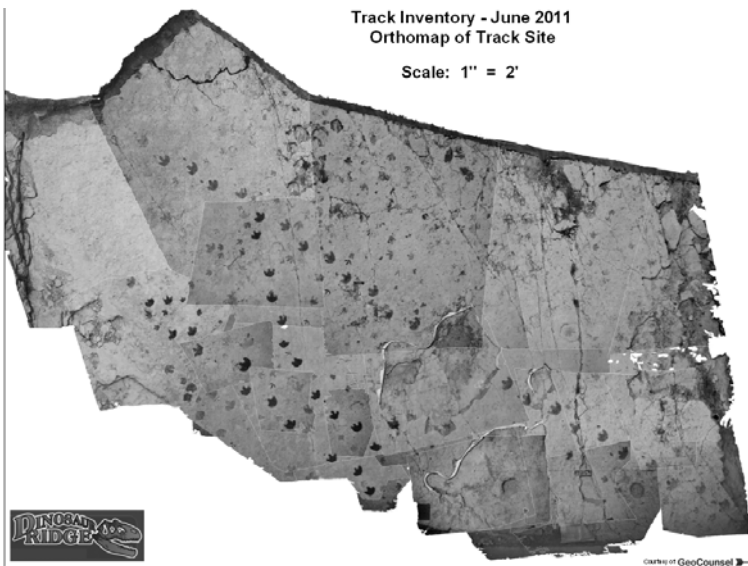
The ortho-images were extracted to create a planimetrically correct ortho-mosaic as shown in **Figure 4**. Over 100 digital photos were taken from different directions and distances. This orthoimage product is a .pdf file, plottable on a 36"x48" sheet at a scale of 1"=2'. Each orthoimage patch contains a 3D point cloud of between 100 thousand to 2 million space points. Image content was draped over this cloud. The resulting positional accuracy is +/- 0.1 foot (RMS or 68% confidence interval). The largest error on the orthoimage is about 0.2 feet.

The second product consists of a conventional AutoCAD contour map (5-foot interval) that was pre-

pared for construction planning purposes. The quality of the output could have been used for 1-foot contours. The third product is a front view (orthographic, not perspective) of the site, showing structures and contour lines. See **Figure 5**.

In conclusion then, if one is ready to apply rigorous professional principles to such an endeavor, regardless of the tools used, it is possible to achieve professional results.

To read the full article with additional images, please go to [www.geocounsel.com/dinos](http://www.geocounsel.com/dinos).



**Figure 4.** Orthomap of the track site



**Figure 5.** Engineering elevation of the track site



***“It Had Nothing to do with Rod and Chain, but much to do with the Metes and Bounds of the Union.” ~ Edward Fitzgerald Beale (1822-1893)***

## **An Air Force Base Grounded in Survey History**

**by Jacob S. Frisch, PLS, CFedS**

### **Beale Air Force Base, Yuba County, California**

During World War II Camp Beale’s 86,000 acres were home for more than 60,000 soldiers, a prisoner-of-war encampment and a 1,000-bed hospital. In 1948, the camp transferred from the Army to the Air Force. Beale Air Force Base is one of the few Air Force Bases not named after an aviator. Edward Fitzgerald Beale, appointed Surveyor General over California and Nevada by Abraham Lincoln in 1862, was also a naval officer, military general, explorer, frontiersman, Indian affairs superintendent, California rancher, (and) diplomat. Beale fought for his country and risked his life to save his troops in the battle of San Pasqual. He was instrumental in the expansion of the western frontier. President James Buchanan appointed Beale to survey and build a 1,000 mile wagon road from Fort Defiance, New Mexico to the Colorado River, on the border between Arizona and California. Incorporated into this survey was an experiment in using camels in the desert to replace Military Mules, of which Beale was an avid supporter. Today, the general route of the Beale Wagon Road was followed by U.S. Route 66, the Santa Fe Railway, and Interstate 40. The commissioning of Merrick and Company to perform a recordable legal survey of the now 23,000 acre plus Beale Air Force boundary was a challenge, and an honor to perform. The specifics of our survey are outlined below.

Overall, the project required: Discovery and placement of monuments at 150 locations; coordination with multiple entities and individuals including Mike McBurney, PLS, CFedS, USACE, Mobile District, Anthony Ortiz, 9 CES/CEAO, Beale Air Force Base Real Estate Officer,

Anissa Williams, 9 CES/CEAO, Beale Air Force Base Community Planner, the Bureau of Land Management, California State Office, Yuba County Department of Public Works, State of California - Department of Transportation, Union Pacific Railroad and Pacific Gas and Electric.

### **Project Considerations**

Beale Air Force Base was an active military installation used in part for training and maneuvering of combat troops, and a bombing and gunnery range. Portions of the base are subject to contamination by the introduction of unexploded and dangerous bombs, shells, rockets, mines and other charges. The rough terrain and distances to be traveled mandated the use of a variety of transportation methods including all-terrain vehicles (ATVs), truck, and hiking. Local thorny bramble bushes provided for difficult access into some corners, and a portion of this work was performed during the flood season when visibility due to fog was minimal and vehicle access was limited due to mud. The objective was to establish a recordable legal survey of the base boundary. Original GLO corners were established in the late 1800’s to early 1900’s, and therefore any existing corner evidence lying inside the original Camp Beale Boundary (since 1942) had most likely not been recovered for more than 70 years. In addition, a portion of Camp Beale encompassed a portion of the Johnson Rancho, a Mexican Land Grant given in 1844 before the Public Land Survey System was introduced to the area.



*The rough terrain and distances to be traveled mandated the use of a variety of transportation methods including ATVs, truck, and hiking.*

## Schedule

Research and project planning started in July of 2010, with field work beginning at the end of August, 2010. Data acquisition was completed in early October, 2010. A final mobilization to establish boundary corners was conducted in the first part of 2011 with electronic deliverables sent to the client in late February, 2011.

## Project Planning: Research

The first step in beginning the project was to gather Deeds, Judgments, Lis Pendens, etc. for the original 86,000 acres of land acquired for Camp Beale in the early 1940's. The second step was to gather all the quitclaim deeds for the disposal of Camp Beale land (now Beale Air Force Base), the majority of which were sold during the early to mid-1960's. After the determination of the approximate Beale Air Force Base Boundary we contacted the Bureau of Land Management (BLM) California State Office to acquire existing original, dependent, and independent resurveys of the project area and their corresponding field notes. Land Survey Plats, Subdivision Plats, and Corner Records were acquired through Yuba County, California and evaluated. California Department of Transportation provided necessary right-of-way maps, and railroad maps were purchased through Union Pacific Railroad. Pacific Gas and Electric provided information to help in determining the location of some section corners near existing transmission and distribution lines.

## Project Execution

Beale Air Force Base control coordinates were given to us and surveyed with relation to NAD 83 California State Plane Zone 2 horizontal datum and EGM96 vertical datum (per base requirements). Aliquot corners, Beale Air Force Base Boundary Monuments (typically a 6" X 6" square concrete block with a nail), Right-of-Way monuments, and adjoining property pins were surveyed and analyzed to determine their validity. In addition, various land use such as roads, fences, field lines & utilities were evaluated in conjunction with found monumentation and public records to determine the location of lost corners.

The project required processing of field data each night. Field notes with photos were scanned and electronically transferred to our Colorado office. Evaluation of boundary data had to keep up with field progress. Access into many areas was difficult and daily strategies were developed to help maintain efficiency. Monthly progress reports were sent to the US Army Corps of Engineers, Mobile District.

## Office Calculations & Deliverables

As the field data was received, the survey technicians began building the AutoCAD files for the boundary. Skeleton drawings detailing the as-measured monument relationship to the record measurements were evaluated by the professional land surveyor (PLS) to determine acceptance. Additional evidence was needed

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in some instances to determine positions. Many locations were represented by found General Land Office (GLO) /BLM monuments, State Highway Right-of-Way monuments, and private surveyor property monuments.

Requirements on the deliverables from the client included a report of survey, Record of Survey plats, digital Survey Mark Forms (monument record with photos) for all monuments found or set along the boundary, scanned or digital field notes, Excel spreadsheet digital files on all boundary corners and control points, metadata files adhering to current Federal Geographic Data Committee (FGDC) standards and GIS shape files of the boundary and corner point entities, scanned or digital copies of all reference documents that support the survey process and evidence of recorded survey plats at appropriate County Clerk and Recorder Offices.

Constant communication with the office personnel and the field crew were vital for managing and developing strategies to complete different tasks associated with this project. The overall success of this boundary survey was due to the daily strategies in the field and in the office for achieving and maintaining high efficiency during production.

## Summary

Although Edward Fitzgerald Beale had nothing to do with the actual land that is now home to Beale Air Force Base, he had a significant impact on the surveying profession, on the military, and in California. He

went where he was needed and did what was needed to build this country. Much like Edward Beale, the base is and has served the needs of the country, whether it be through the Army or the Air Force, the home to armored divisions, infantry troops, air commands, Aerospace, a support base for the Titan I missile, the home for B-52 Squadrons, or the SR-71 "Blackbird", and today Beale AFB is again the home for two extraordinary aircraft, the U-2 and the RQ-4 (Global Hawk unmanned) reconnaissance aircraft and the T-38 jet trainer. In the 1850's Beale helped to commission a humanitarian policy towards Native Americans and established the Sebastian Indian Reserve, one of the most successful in the State of California. Today, the base proudly maintains 38 Native American sites, 45 homestead sites, and 41 World War II sites. During his time as Surveyor General, Beale purchased four Mexican Land Grants in Kern County, California, known today as Tejon Ranch and is the largest private land holding in the United States. Because of this purchase, President Lincoln was known to have said, "Beale became master of all he surveyed." Beale only replied, "Someday the archives of our country will tell why Lincoln made me Surveyor-General. It had nothing to do with the rod and chain, but much to do with the metes and bounds of the Union."

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# STATE BOARD UPDATE

By Angie Kinnaird Linn, Program Director  
State Board of Licensure for Architects, Professional Engineers,  
and Professional Land Surveyors

The Survey Quorum, AES Board, and Board Staff would like to express their deep appreciation to Bryan Clark, PLS, who recently completed his 2nd term on the Board. Bryan has been a dedicated participant of the Quorum and the Board, despite a heavy travel schedule with his "day job." His thoughtful, reasoned expertise has been integral to many deliberations over his eight-year tenure and his dry sense of humor will be missed at our monthly meetings. Thanks Bryan, and we wish you all the best with all that extra time you now have!

Patrick Buckley, Public Member and Building Official with Commerce City, was not able to be reappointed due to other obligations on his plate. He also provided a terrific perspective through his term and was invaluable in that regard.

The Governor reappointed

Board member Larry Connolly, PLS Member from Durango, to a second term on the Board. We are grateful to have Larry continue with the Board. He also appointed new members Daniel J. Swallow, Public Member from Greeley, and Earl F. Henderson, PLS Member from Boulder.

Mr. Swallow has been doing code consulting for many years and just recently returned to doing that fulltime with his own company, Swallow Inspection Services. In this capacity, he is the contract Building Official for the Town of Berthoud and does inspections and plan review for the City of Brighton. He also contracts with Sunrise Engineering for their plan reviews, as well as conducts building inspections for the private sector. Previously, he was the Building Official for the City of Evans.

Mr. Henderson started his surveying career in Maryland in 1988, and then spent nine years surveying in central Virginia. He and his family moved to Boulder in early 1999 and worked with Drexel, Barrell & Company for five years before starting his own firm. He has been active at the local, state, and national level of surveying organizations, as many of you know, including the National Society of Professional Surveyors, the American Congress on Surveying and Mapping, the Professional Land Surveyors of Colorado, and the Central Chapter of PLSC.

**Westwood College Associate of Applied Science Degree in Surveying Approved By Quorum and Board**

For some time, the Westwood A.A.S. degree in Surveying has been viewed by the AES Board as



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an approved 2-year surveying degree in line with §§12-25-212 (2)(b)(II) and 214 (2)(b)(III)(A), C.R.S. and Board Rule 4.7.2.2. It had been quite a while since the Quorum or the Board had reviewed the curriculum to determine if it still met the requirements in the Board Rule and it is poised to undergo some changes in January.

At the Quorum's September meeting, Lynn Patten, the senior faculty member for this program, presented detailed information about the degree requirements and the changes anticipated for January 2012. The Quorum, and subsequently the Board, once again approved the curriculum as being a Board-approved 2-year surveying program.

The Quorum and the Board appreciate the time and effort extended by Mr. Patten to provide information about the Westwood surveying degree program and look forward to continuing to work with him in the future.

### Computer Based Testing Coming for the Fundamentals of Surveying Examination in 2014

At the August 2010 NCEES (National Council of Examiners for Engineering and Surveying) annual meeting, the state licensing boards that make up NCEES voted to begin converting the Fundamentals of Engineering (FE) and Fundamentals of Surveying (FS) exams to a computer based format. The decision followed a prolonged study by a task force convened to research the issue. This transition will allow greater scheduling flexibility for examinees, more uniformity in testing conditions, and enhanced security for exam content.

The exams will be delivered through Pearson VUE's owned-and-operated network of Pearson Professional Centers and other select locations as determined by NCEES. Pearson VUE is a global leader in computer-based testing, with the world's most comprehensive and secure network of testing centers across 165 countries. It provides testing services for academic, gov-

ernment, and professional testing programs, including licensure exams for the National Council of State Boards of Nursing and the National Association of Boards of Pharmacy, as well as the GMAT. Pearson VUE is part of Pearson plc, the largest commercial testing company and education publisher in the world.

The NCEES Computer-Based Testing Task Force is developing a comprehensive plan and timetable for the conversion. Currently, the plan is for the FE and FS exams to be offered in a paper-and-pencil format for the last time in October 2013. The computer-based exams will then begin being offered in early 2014.

The PE and PS exams, which engineering and surveying candidates are required to take after completing work experience requirements, will continue to be paper-and-pencil exams for the foreseeable future.

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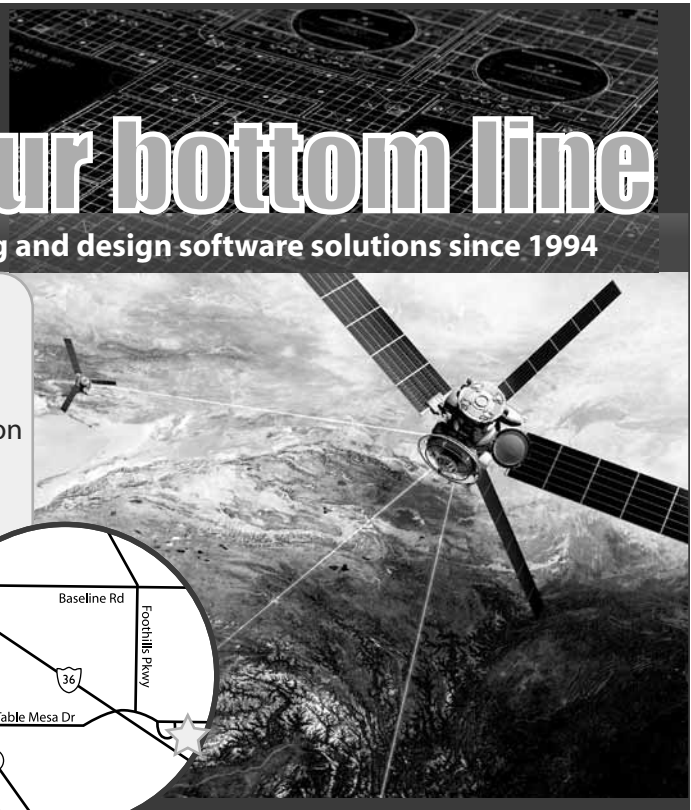
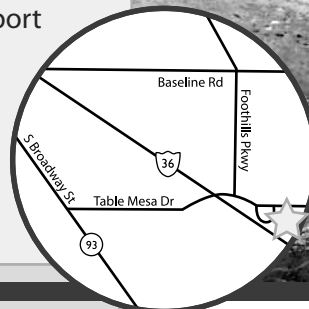
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# In Memoriam

## John Christopher Noonan, PLS March 10, 1953 to June 15, 2011



John died in a tragic accident in the Yampa River on June 15, 2011. He was a vice president of the PLSC Northwest Quarter chapter and former president. Please see Brian T. Kelly's tribute to John in this issue's NW 1/4 Chapter News.

Land Surveyors, and served on that board from 1981 to 1985. Fred was elected and served as Pueblo County Surveyor from 1980-1988.

He was born in Minneola, Kansas and moved to Pueblo at an early age. He was a beloved father to Valerie, Michael and Mark and a proud grandfather. Fred served in the Air Force and attended Southern Colorado State College thereafter. He began his surveying career in 1966.

Fred had a great enthusiasm for the surveying profession and encouraged younger people in the field to become licensed professionals. He was always well-prepared and ready to tackle difficult survey problems. He was a well-respected and eager mentor. Thanks to Fred for all the support and knowledge he so graciously shared with those who knew him.

## Fred Lewis Adams, PLS February 23, 1941 to July 22, 2011



Fred was an honorary life member of PLSC, having been an original incorporator of the PLSC on February 16, 1981. Fred served as the first president after incorporation in 1981 until November of that year. He became a board member on the State Board of Registration for Professional Engineers and Professional

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# PLSC Board of Directors Meeting Minutes

August 17, 2011; 4:00 p.m.: Conference Call

## Call to Order: 5:05 PM

Recognition of PLSC Board Members and Officers:

## Present:

Officers; Roger Nelson, Mike Bouchard, Terry Maw,

Board: Todd Beers, Bill Buntrock, Gary Gable, Patrick Green, Peter Kent,

Exofficio: Parker Newby, Kayce Wohlman

Nonvoting: Warren Ward, J.B. Guyton

## Absent:

Diana Askew, David DiFulvio, Gene Kooper, Peter Krick, J.J. Rihaneck, Stan Vermilyea.

Meeting was called to order at 4:02pm - A Quorum was present.

## Welcome of Guests: Brian Dennis

Additions, deletions and modifications to agenda:

No deletions or modifications – agenda approved.

## Secretary - Treasurer; Terry Maw

Approval of Minutes from previous meeting (6/10/2011): Motion by Buntrock to approve minutes as written, second by Wohlman . Discussion: No discussion, the motion was called. The 6/10/2011 BOD Meeting Minutes was approved unanimously.

Bob Stollard's House: Beers moved to table discussion until Diana can comment on status, Buntrock seconded, there being no discussion, motion passed unanimously.

PLSC 2011 Budget: Terry and Diana are working on 2012 budget, Todd will supply 2012 Summit budget, Roger needs budget as soon as it is ready; tabled.

2013 Sunset Review Process: Roger, Gene, and Diana attended 1st meeting – not much discussed, mostly procedural matters, Gene and Diana attended the 2nd meeting – no report.

Status of research pertaining to Warren Andrews letter regarding donation for memorial for past PLSC Presidents – PLSC would look at the possibility of a plaque, Stan will take the lead – no discussion – tabled.

2012 Surveyor's Summit Status: Todd – had a couple of planning meetings – trying to set up an executive planning committee – did not have much attendance at either meeting – need attendance and participation. Have sent ideas to acting executive planning committee, consisting of Terry Maw, Brian Dennis, Pam Fromhertz, and Todd Beers. Todd wants to block in speakers. Speakers so far – Gary Kent: 2 days, 8 hrs on ALTA's, 4 hours on field procedures, and 4 hours on survey reports, cost \$1,800 per day plus travel: Dennis Moulard, 2 days PLSS for the 21st Century 8 hours, Federal and State Law – 4 hours, Thinking beyond the 21st Century – 4 hours: Randy Bloom – no subject: NGS – OPUS workshop 4 or 16 hours: Dave Pehr – 4 hours on liability and 4 hours on easements. Possible other subject matters outside surveying to increase attendance, was request for basic surveying, possible training class. October 1st set for summit information and schedule. Parker – IRWA (International Right-of-way Association) could be asked to participate. Gary and Kayce would volunteer to assist the Summit committee. Todd wants to have participants have a Thursday meeting with the Board of Directors at the Summit.

Fred Adams and John Noonan Passing: Discussion - Do we want to get a final point monument for Fred Adams? Todd – has there been criteria for a final point contribution to PLSC, Warren – No specific criteria or program has been set up to bring attention to the family for recognition for service to PLSC. J.B. – Has 1/4 page memoriam for Fred Adams to be placed in the next issue of *Side Shots* and sent to the family. Roger – The cost of a final point is +/- \$300. Any opposition to

get a final point monument for John Noonan? Warren Ward will procure a final point Monument. Beers moved to buy a final point monument for John Noonan, Bouchard 2nd. There was no discussion, motion passes unanimously.

## Reports:

*President* – Trying to make at least one visit to each chapter. Next chapter meeting will be September 14th with the Western chapter's conference.

*Vice President* - No report

*Secretary-Treasurer* – See reports

*Executive Director* – no report

*NSPS Governor* – NSPS conference – July 8-10. There will no longer be an ACSM. NSPS is our national society. 50 delegates meet 2 times a year. Next meeting December 2-4 in Washington, DC. NSPS will lobby congress on surveying issues. Does PLSC want to send Warren to the meeting? Probable cost \$800.00.

Look at the letter supplied concerning Lightsquared. If approved we should send the letter to our District 6 representatives.

The Four Corners brochure has been completed and is ready for copies to be made. The final bill is \$800.00. The four state societies need to divvy up their share. Our cost will be \$200. Todd asked, is the brochure ready – yes and can we get copies or make copies for PLSC events to show value of PLSC membership. Roger asked is this going to be a reoccurring expense – no.

Letter about Lightsquared - Gable moved that Roger sign letter as suggested by Warren. Buntrock 2nd. Discussion – Gary – send letter to all Colorado representatives. Mike – OK to send to all representatives, need more explanation. JB – grammatical errors – will revise.

Roger – Any objections to JB redrafting letter? There were none.

Contributing \$200 for time and expense for the Four Corners brochure. Green so moved, Kent 2nd. Being no discussion, motion called, passed unanimously.

NSPS lobbying meeting. Beers moved that we fund \$800 to send Warren to the December 2-4 NSPS meeting in Washington DC. Green 2nd. Being no discussion, motion called, passed unanimously.

Westfed –Michael Bouchard - covered in report sent to Board of Directors. Next meeting in Seattle in September.

MSCD – no report

**Committees**

Legislative – no report

Survey Monumentation and Standards – no report

Membership – no report – suggestion for a poster board with 5,10,15, 20, 25-year PLSC members displayed. E-mail to past members to rejoin.

Ethics and Fair Practices – no report

Education – no report. Todd – at the conference have a meeting about PLSC status, participating chapters, what is coming up, update from committees, lobbyist, etc.

Liaison– no report

Special – no report

Trig Star – no report

GIS-in-The-Rockies – more education on QBS needed.

**Chapters**

Southern – no report

Central – no report

Northern – publication of Law book held off until next conference. GIS in the Rockies - August 31/September 1st – need old equipment for display at the PLSC booth.

Northwest 1/4 – no report

Western – no report

Southwestern – no report

CSRN – picnic at Redstone Park, August 20 11:30am to 1:30pm.

**Next Meeting Date and Location**

October 5, 2011, 5:30pm Merrick conference room.

Being no further business Maw moved and Beers 2nd to Adjourn.

Adjourned at 5:40 pm

Terry R. Maw  
Secretary PLSC

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## CCPS

Well the year is almost gone. CCPS is looking for Directors so please get in touch with one of the current Directors and put your name in the hat.

Our October 27th general meeting at the Table Mountain Inn just south of Foss Drug on Washington Street in downtown Golden will feature Ken Wright, PE of Wright Water Engineers and a co-presenter, Dr. Kim Malville, who is an archaeoastronomer. They will be giving a presentation on the ancient civilization of Moray. This should be a very interesting look at surveys and surveying of old. Hope to see a lot of people there.

James (JJ) Rihaneck, PLS  
CCPS President

## CSRN

We held our 2nd annual Summer Picnic on August 20th in Highlands Ranch at Redstone Park. We had several new people from the GIS community attend and several brought their spouses and children. We had good food, games and social networking. Everyone in attendance seemed to have a good time and is looking forward to next year's picnic.

The CSRN has committed to presenting up to 16 hours of tracks for the upcoming 2nd annual Rocky Mountain Surveyors Summit in Arvada, CO, March 1-3, 2011. We will be presenting on GPS as an overall, GPS functions, applications and GPS networks in the state of Colorado. We will also be presenting on the relationship between surveyors and GIS and how we can supplement each other to provide better service and products to our clients.

On October 7th, 2011, we will be presenting at the GIS Colorado general membership meeting in Brighton, Colorado. This will be an introduction to the CSRN for the GIS community. We are always looking to further expose the value of the CSRN to the GPS user communities. If you are a member of an organization that you believe the CSRN may also be of value, contact us at [info@csrn.us](mailto:info@csrn.us) for a group introduction or presentation on GPS or GPS networks.

We will have a board and general membership meeting in Denver, CO on October 19, 2011. This will be a CSRN brainstorm session to discuss future events and activities for the CSRN to sponsor or participate in. You do not need to be a member to attend. Come and see what we are up to and see if this group is something of

interest to you, to join or participate in. We welcome all surveyors and non-surveyors! The location will be set soon. Once the location is set, we will send an email with the meeting location and time. We look forward to seeing you there and hearing your thoughts and ideas!

## NC-PLSC

The Northern Chapter is back in full swing after our summer break. Educational presentations have been arranged for the next several meetings with the exception of December. Our December meeting, as usual, will be a Christmas dinner provided to all chapter members, free of charge. This event has been incredibly fun in years past so I hope you can join us. Details for the Christmas dinner will be arranged and emailed to all constituents in time.

For those members unable to attend our monthly meetings, you should be expecting something in the mail. In past Side Shots chapter updates, we've mentioned to our readers that our chapter has put together a booklet containing Colorado land surveying laws, amended or adopted rules & polices, surveying related court judgments along with other information which affects our profession. This handy, small, spiral bound booklet will be provided to all chapter members free of charge; however, there is a request. Our hope is that you will use this booklet and provide us with your ideas on how to improve it for next year.

Keep your eyes peeled for another Summit Conference in March of next year when four Colorado chapters team together to put on this event! Todd Beers has been heading the daunting task of putting this all together but has made incredible headway. The speakers currently lined out will provide surveyors at all levels with something to see!

Kayce D. Wohlman, PLS  
President, NC-PLSC

## NW 1/4 CLS

As the NW1/4 has not met since July, I thought it best to perhaps use this space as an additional testimonial to the life and career of John Noonan, Land Surveyor. John would have been our President as of this writing, if a drowning accident in the Yampa River in mid-June of this year had not taken him from us. That duty has now befallen me and I hope I can mimic the dedication and love John had for the surveying profession.





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John was one of the founding members of the NW1/4 over ten years ago and his surveying career actually got off to a somewhat late start. He started learning the ropes in the early 90s, working at Emerald Mountain Surveys in Steamboat Springs and worked his way through the ropes. At that point, he was in his late 30s, but that did not deter him. His higher education at CU gave him a broad based outlook on surveying, that it was not as simple as applying math to what were really legal or procedural questions. By the mid-2000's, having been licensed for a few years, he decided to start up his own surveying company, which became known as Storm King Surveys, Inc. He purchased AutoCAD, a robotic total station and a GPS system and he was on his way.

John was also very much a self-taught individual. Although he learned AutoCAD from other users and many land surveying practices from those he worked with, his increasing involvement with the PLSC furthered his quest for additional knowledge. He served on the Board of Directors of the PLSC for three years and the individuals he met there, JB Guyton, Diana Askew and Art Hipp, to name a few, inspired him to learn further about the world of surveying. There never was a time I could not call John about a surveying matter and he would not drop everything he was doing to ponder the question. John was the epitome of a lifelong learner.

His love of the outdoors was unmatched. I knew I could count on the privilege of digging more than my fair share of snow holes in the winter, looking for property corners, because John was doing more than his fair share of skiing on the mountain! He also enjoyed hut trips on the 10th Mountain Trail.

And so his time with us has ended. I was informed a few weeks ago by JB Guyton and Warren Ward that NSPS had honored John

Noonan with a Final Point. This survey marker will be mounted at the location where John left us, which is only fitting. There was a trackhoe in Soda Creek yesterday, where John entered the river system for the last time. It was not there to prevent a future accident, but to maintain the drainage of the Box Culvert under US Highway 40. I believe John would find it fitting that life carries on and the rivers and outdoors he loved so well would be enhanced for future generations.

Brian T. Kelly, PLS  
President, NW1/4

## SCPLS

The 23rd Annual Paul Grout Memorial Golf Tournament & Picnic was held on Saturday, August 13th at the Hollydot Golf Course in Colorado City. It was a great opportunity to get together with other surveyors from around the region to play golf and catch up with each other at the picnic afterwards. Many thanks to all the teams that participated. And thanks to all the hole sponsors, also.

This year the Southern Chapter will be electing several officers. Nominations are currently being sought. The results of the election will be available after the first of the year.

Plans are underway for our annual Christmas Party on December 2nd at La Renaissance in Pueblo. This is a great opportunity to enjoy a wonderful meal and refreshments and also to swap stories. After dinner there will be a Chinese auction. Please plan on joining us. It is always a great time.

Mark Johannes  
President, SCPLS

## SWC/PLSC

The SW Chapter had its regularly scheduled meeting on September 13th, 2011 at Moreno Surveying in Durango. Members in attendance were Ed Young, Dave Seiler, Josh Casselberry, Rob Trudeau, Parker Newby, Billy Foster, Mike Boeckman, Tim Vallou, Tim Solinski and guest speaker Bob Greene with Vectors. The minutes from the June 1st, 2011 meeting were read and approved.

Parker Newby gave a report of the August 25th, 2011 PLSC Board of Directors meeting.

Dates of the 2012 seminar are tentatively set for June 15th and 16th.

Our guest speaker was Bob Greene with Vectors Inc. He gave an informative presentation on the current state of the Lightsquared movement along with the newly updated NGS OPUS website.

Next meeting location and date TBD.

Rob Trudeau  
President, SWC/PLSC

## WCLS

Summer has come and gone with (almost) snowflakes flying outside the window. My how time flies!

At our September 14th meeting, Jim Beckwith, an attorney specializing in various road rights-of-way issues gave an excellent presentation. He covered two cases, one from Mesa County, Colorado and one in eastern Utah. In the Colorado case, he has been able to demonstrate that Mesa County has jurisdiction of a certain road across BLM land. The Utah case involved defeating the designation of certain "Class

D" roads as public roads. Each case touched on such things as RS 2477 roads, what are public roads, how to research public roads, is it really a public road, etc. Of note, the presentation folder he provided for the attendees contained a picture of the Oregon, California, and Mormon Trail as it climbs South Pass in Wyoming. As he said, this is probably one of the most important roads for the development of our great nation, but it is NOT a public road.

We had an excellent turnout for our meeting and enjoyed the attendance of our esteemed PLSC State President, Roger Nelson. I know that it is a long way over the mountains to make our Western Colorado Land Surveyors meetings. We were honored that he took the time to visit us.

We just informed Mr. Tim McCracken that he will be the recipient of the WCLS/PLSC \$1500 scholarship to be presented at our November 9, 2011 meeting. A big thank you is extended to Les Doehling and Jon Kobylarz for pulling this program together, and seeing it through to the finish.

Peter Krick has just been selected to fill the recently vacated PLSC Board of Directors position. A hearty congratulation goes out to Peter. I know the Board and our profession will be greatly enhanced by Peter's participation.

Hope to see everyone at our November meeting.

Thomas W. Sylvester,  
P. E. & P. L. S.  
President, WCLS

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