

Volume 32: Issue 3  
July, 2021



# LINES & POINTS

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On The Cover

The Lincoln Memorial  
photo by Brad Neumiller

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by: Jack Studley, PLS

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PLSW (Professional Land Surveyors of Wyoming; PO Box 8, Cheyenne, WY 82003) is a statewide organization of Land Surveyors registered to practice in the Equality State of Wyoming. PLSW is dedicated to improving the technical, legal, and business aspects of surveying in the State of Wyoming. PLSW is affiliated with the National Society of Professional Surveyors (NSPS) and the Western Federation of Professional Land Surveyors (WestFed).

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Digital-ready, full-color advertising with payment should be mailed to Lines & Points, P.O. Box 8, Cheyenne, WY 82003.

Advertising rates are as follows:	Year	Issue
Full Page	\$810	\$210
Half Page	\$540	\$140
Quarter Page	\$310	\$80
Business Card	\$40	\$10
Employment	Free	Free

Special Rates apply for PLSW Chapters and cover placements.

For more information please contact Jack Studley.

Greetings all,

As summer is underway and we are all navigating the construction season, I hope you all have had a chance to reach out help the schools educate the youth about surveying. It has been a little different this year with some of the restrictions within our school districts but this is no time to loose the contacts and relationships we have built up over the past several years. I know there have been a few fun projects and some Casper surveyors are assisting with a week long navigation class with the Science Zone and the summer camp they are having on Casper mountain this year. I look forward to hearing about what others might have done around the state.

Mark Corbridge is retiring and headed out on the road! I would like to congratulate Mark and thank him for his years of service to PLSW. Mark has been our TrigStar contact and the WFPS delegate for several years now and has been a great person to work with not only here but through WYDOT projects as well. John Lee has stepped up and is the new WFPS delegate for Wyoming, any future questions or comments can be directed to him. Again, thank you both for everything you do to help the PLSW and the profession.

Fall tech session is well underway in its planning and as of right now will be a full in person event this year. Tony Cavell will be this years speaker and the venue will be the Clarion Inn located in Casper Wyoming. I would hope everyone is gathering up items for the silent auction, polishing up their Corner Records, and thinking of raffle ideas so we can have a great time when we can all get together in November. Remember, the raffle and silent auction are for the scholarship fund. For the Corner Record competition, it would be wonderful to see several people enter, and I would like to remind you that it is a great way to show off some of the places we have been to over the last year or two.

History is a vital part of our profession and recording that history is just as important now as it has always been. As we advance into electronic field books, through datum changes, equipment updates, and many other modern methods of measurement let's all remember, we are here to uphold and protect the rights and interests of the people. So, monument your adventures, document your footsteps and leave the tracks for generations to come, just as we research and retrace, everything we do helps show our intent and guide those in the future. I hope to see you all in the fall.

So we can wisely advance in the future we must know the past and where we have been!

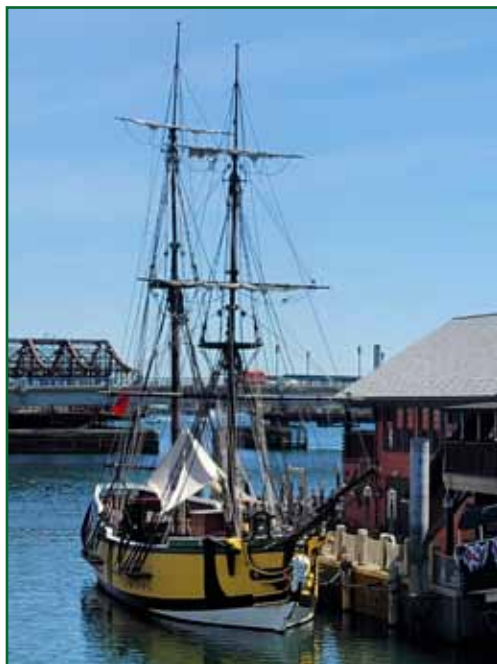
Sincerely,

Brad Neumiller, PLS

President - Prefessional Land Surveyors of Wyoming



# PRESIDENT'S MESSAGE





## HINTS TO AUTHORS

Dear Readers:

The editors of Lines & Points wish to convey our gratitude to the numerous authors who have contributed photographs, technical and professional articles, and other information to be incorporated into the quarterly journal. In recent years, the assembly and redaction of the submitted materials has taken on considerable technical application of the various English language compilers, office suites, and "publishing suites". This means that the communication and transfer of information and materials arrive at the editors' desktops in a multitude of formats and styles, which sometimes are not compatible with the PLSW personal computers.

We, the editors, are setting forth some simple rules for submitting materials which, hopefully will simplify your efforts and make the transition to the published version simpler and less time consuming.

1. If you have any questions or comments, please contact S. Dennis Dawson, Publications Comm. Chm., (dennieandbarb@gmail.com) or Michael A. Flaim, Editor-in-Chief (mike.flaim@bresnan.net).

2. If an article contains any illustrations, photographs, graphs, or other graphics, please transmit them as separate individual files. You may also include the illustrations within your manuscript, but the image integrity/quality is degraded seriously when attempting to extract them from the manuscript to create a published digital image. The Editor-in-Chief states that a much better digital resolution is obtained from the separate, individual illustrations submitted.


3. All submissions (electronic and snail mail) should be sent to S. Dennis Dawson (4005 Snyder Avenue; Cheyenne 82001). It is recommended a second copy be sent to Mike Flaim (1212 Southwest Drive; Cheyenne 82007).

4. It is strongly recommended that all submissions be transmitted six weeks prior to the publication deadline. The publication deadlines are: 1 January; 1 April; 1 July; and 1 October, annually.

5. Lines & Points is the official publication for the Professional Land Surveyors of Wyoming. Therefore, hence forth there will be incorporated in the publication all formal announcements pertaining to official business of the organization and other announcements. This includes announcements for the Annual Meeting; state-wide membership meetings; seminars; and the Fall Technical Session. These announcements are to be submitted to the PLSW Secretary/Treasurer John J. Studley (PLSW; Attn.: Mr. Jack Studley; P.O. Box No. 8; Cheyenne 82003) (jklz0318@gmail.com), at least four weeks prior to the publication deadline in which the announcement will appear. The PLSW Secretary/Treasurer will circulate the announcements to the Publication Comm. Chm.; the Editor-in-Chief; and the PLSW Board of Directors.

6. Advertisers and prospective advertisers should communicate directly with PLSW Secretary/Treasurer Studley about any advertisements and modifications.

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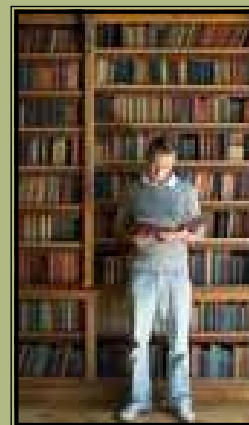
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<b>Qualifications</b>	<p>Must have a high school diploma. Associates Surveying degree or equivalent from an accredited post-secondary institution preferred. LSI certification preferred. Other education and certifications applicable to the Opportunity will be considered.</p> <p>Value added skills or certifications could include:</p> <ul style="list-style-type: none"> <li>• Experience with AutoCAD Civil 3D</li> <li>• Experience with Trimble Business Center, Trimble RealWorks, Pix4d and Trimble field equipment including 3d scanners</li> <li>• Drafting or GIS experience</li> <li>• sUAS Part 107 Certification</li> </ul> <p>2 years' experience in control, boundary, topographic, and construction staking preferred.</p> <p>High level of personal responsibility and accountability. Interpersonal skills to meet and communicate effectively with employees, managers, and clients. Positive attitude and professional bearing. Must be service oriented and be excited to work in a team environment.</p> <p>Must be willing to work out of town on occasion. Must have a valid driver license and insurable driving record.</p>



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## EXAM GRADER - PROFESSIONAL LAND SURVEYING TAKE HOME QUOTE REQUEST

The Wyoming Board of Professional Engineers and Professional Land Surveyors is seeking quotes for an Exam Grader of the Wyoming Land Surveying Take Home Exam.

### *What is the Exam?*

The Wyoming Land Surveying Take Home Exam is a hands-on open book exam which assesses an applicant's knowledge of and ability to apply Wyoming law and regulations as a professional land surveyor. Passage of the exam is necessary prior to the issuance of a Wyoming Professional Land Surveying (LS) license.

### *What does an exam grader do?*

The Exam Grader (Grader) works directly with the Board's Exam Coordinator (Coordinator). As exams are submitted to the Board office, the Coordinator assign a code to the exam to maintain anonymity of the examinee. The exam is then sent to the Grader. The Grader uses a grading guideline to assess the exam and apply scores. The grading guideline provides parameters to help determine if the examinee achieves a minimum threshold for each problem. The Grader is provided a scoring sheet where scores and comments are documented. The scoring sheet and exam are then returned to the Coordinator. Coordinator then communicates back to the examinee. If examinee is required to rework specific problems, then information from the scoring sheet is shared with the examinee.

All communication occurs through the Board's Exam Coordinator to maintain anonymity for both the Grader and the examinee. Coordinator and Grader may share information in a completely digital/secure environment. It is possible the Grader may need to access a shared Google environment to obtain exams and provide feedback.

Graders may be asked to critically assess the exam and the exam guideline and propose updates to Exam Coordinator and, if needed, the Board.

Graders are expected to return a graded exam within 15 days from the date the exam is received for grading. Exams are submitted for grading on an irregular basis. The exam contents and grading tool are confidential. Graders must maintain that

confidentiality.

The Exam Grader spends an average of 5-6 hours per month grading exams however that time can vary from 0-15 hours per month. The selected candidate will enter into a 2- or 3-year Contract with an option to extend. It is expected the selected candidate would begin work November, 2021 or after a Contract is executed.

### *What is the Board looking for?*

The successful candidate will hold an active Wyoming LS license and exhibit a strong understanding of Wyoming law. Candidates must be technologically proficient or have the capacity utilize new technology as part of the grading process. Candidates may be asked, if needed, to provide additional information such completing a sample exam.

### *Interested? Your Next Steps:*

Interested individuals shall **respond by August 31, 2021** by providing the following:

- ☐ Name, LS License #
- ☐ Why you would like to be an Exam Grader (1-5 sentences):
- ☐ Outline of your professional surveying career
- ☐ Summarize the typical areas of Wyoming law you utilize as part of your professional practice.
- ☐ Briefly explain your technological proficiency and/or capacity to utilize new technology
- ☐ Proposed Hourly Rate: \$ \_\_\_\_\_

Quotes may be submitted by hardcopy or email to:

Shannon Stanfill, Wyoming Board of Professional Engineers and Land Surveyors  
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Email: [Shannon.stanfill@wyo.gov](mailto:Shannon.stanfill@wyo.gov)

Questions may be submitted to: [Shannon.stanfill@wyo.gov](mailto:Shannon.stanfill@wyo.gov) or by calling (307) 777-6207

## 2021 PLSW Fall Tech Session

"The PLSW Fall Technical Session will be held, in person, in Casper on November 4th and 5th, 2021. This year it will be held at the newly remodeled Clarion Inn (formerly Parkway Plaza). Our speaker will be J. Anthony Cavell.

J. Anthony Cavell is licensed as a Professional Land Surveyor in Louisiana since 1990, one of the original group of Certified Federal Surveyors and a Board Approved Continuing Professional Development Provider. He has been speaking on surveying topics since the late 1980s, was awarded the Earle J. Fennell award by the ACSM and was in the first class of Trimble Certified Trainers. He has a particular interest in promoting and elevating the practice and the perception of the ancient practice of surveying. He repays his chosen profession by active participation in his state and national associations including LSPS, NSPS, AAGS, GLIS and ACSM; currently he is serving as Louisiana NSPS Governor and Secretary to the Board of Governors.

Tony has taught classes for Government agencies: the US Army Corps of Engineers, States' DOT, FEMA, Saudi Ministry of Communications; Professional Societies: LSPS, TSPS, MAPS, ASPS, NSPS and others; General Public at Public Libraries and University Continuing Education; Fellow Surveyors as technical trainer and expert consultant. As Vice President and CEO at N.E.I. a colleague noted that Tony "helped to develop and lead a small business to become a national provider and consistently top performing dealership of products and services to the GIS and Surveying industry."

His expert consultation has been sought by attorneys, legislators, other surveyors and individuals, most often for advice understanding maps, datums, historical surveys and the technologies of surveying. Tony's experience is wide ranging and includes construction, boundary, offshore positioning, hydrographical and topographical surveying, technical sales and training, business administration and university research. He is able to bring this breadth of experience to bear on difficult problems or to clarify complex concepts for students. Reviews of his classes consistently indicate a depth of understanding on his part and desire to return to another presentation by him.

Our topics will be "Ethics and the Learned Professions", "Five Little Pigs or The Surveyor and Marketing" and "Determining Boundaries". Tony is an excellent speaker and this should be a great seminar. More details will follow."

#### POB Announcement

After exploring a full range of viable positioning within the market, BNP Media has made the difficult decision to cease operations of Point of Beginning (POB). The last issue will be July 2021. The Point of Beginning website will remain active through the end of the year, December 31st, 2021, with new content being contributed monthly.

This decision did not come lightly. Over the years, Point of Beginning magazine has provided industry professionals with the latest industry and product news to help land surveyors and geomatics professionals succeed through coverage of new technologies and opportunities. We were proud to be able to offer practical solutions to surveying and mapping problems, while keeping readers up to date on business strategies, the law and education.

Most importantly, we want to extend a very sincere thank you to our loyal readers and customers who have supported us over the years. It was our pleasure to deliver the highest quality content and products to you with each issue.

For questions regarding this news, please contact:

Sarah Harding, Publisher  
hardings@bnpmedia.com



# RECRUIT THEM YOUNG

By: Jack Studley

Got a call from a friend needing his property corners located, to determine if some trees on his newly purchased home belonged to him or his neighbor. After he fed me, I went out to start looking for the corners.

It was a beautiful day, and all three children of the neighbor next door were all out playing in the front yard. The buzzing of my Schonstedt looking around for metal, grabbed the attention of the children immediately, and all three came over to inquire about what I was doing. Mom and Dad in tow as well.

I started telling them that I was on a treasure hunt looking for property corners and that the Schonstedt was my magic wand. They asked what a property corner was, and I briefly explained that it was a marker for helping to build fences; and where to build their house. The site was on a tight cul-de-sac, and at first I was not having much luck. But then it dawned on me that because the cul-de-sac was so tight, the standard ten foot off back of curb may not apply. Low and behold, to the delight of the children, I got a high pitch signal. So out comes the shovel.

Well the eldest child was not going to be left out of this action, so he disappeared into his garage to get his shovel, and a couple of tools for his siblings. And the dig began, and we successfully found our treasure.

Their father tells me that I really impacted them with my stories, and they are now continually wanting to bring their tools along wherever they are going, to look for treasures. It is never too early to start.





Issue 25 July 2021

# NSRS Modernization News

For all issues of **NSRS Modernization News**, visit:  
[geodesy.noaa.gov/datums/newdatums/TrackOurProgress.shtml](http://geodesy.noaa.gov/datums/newdatums/TrackOurProgress.shtml)

## Updates to Blueprint Documents

[Blueprint for the Modernized NSRS, Part 1: Geometric Coordinates and Terrestrial Reference Frames](#) was updated and released this last quarter.

## Geospatial Summit

NGS hosted the completely virtual 2021 Geospatial Summit on May 4–5, 2021. All recordings and presentation slides are now [available here](#).

## Progress in Ongoing Projects

There are currently **27 ongoing projects** directly related to NSRS modernization around NGS. Here are highlights from some:

### NOAA Foundation CORS Network, NFCN (Project Manager: Will Freeman)

Collaborating with NGA, NGS has identified locations to install NFCN stations at the VLBA facilities near Fort Davis, Texas, and Pie Town, New Mexico. The plans also include placing radar corner reflectors to calibrate Synthetic Aperture Radar (SAR) satellites, improving the monitoring of the surface movement at and between CORSs.

### New Least-Squares Adjustment Code Library (Project Manager: Dr. Dru Smith)

NGS has contracted with Polaris Geospatial Services to produce a comprehensive statistical analysis and least-squares adjustments (LSA) code library. This new library will replace most, if not all, LSA code at NGS including ADJUST, ASTA and CALIBRATE. This new code (working name “LASER” for Least-squares

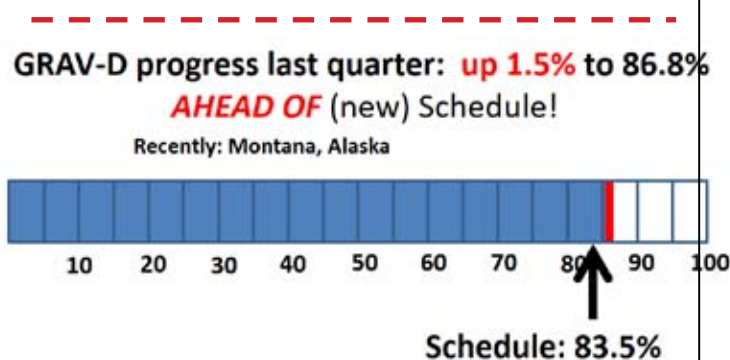
Adjustments: Statistics, Estimates and Residuals) is written in C++ and relies upon the high-efficiency Eigen linear algebra libraries. In recent tests, LASER replicated the national readjustment of 2011 (which created NAD 83(2011) epoch 2010.00 – 1.2M observations, 240k unknowns) on a 6 core laptop, without Helmert Blocking in under 2 hours. Future tests will include large leveling and gravimetric networks. LASER will be the LSA engine behind OPUS 6.0 and all REC and SEC adjustments.

### M-PAGES (Project Manager: Dr. Andria Bilich)

NGS is developing a multi-GNSS replacement for PAGES, called M-PAGES. This software is now capable of GPS and Galileo solutions. Additional capabilities are under active development, and solutions are being compared to the legacy PAGES software currently in production OPUS.

### GRAV-D (Project Manager: Jeffery Johnson)

GRAV-D collected data May 7–June 15 over the Alaskan Aleutian Islands with a NOAA WP-3D Orion aircraft normally used for atmospheric or hurricane research. The block over the Aleutians is 52% complete and we will look for an opportunity to return in the next two years to complete the remaining data collection.





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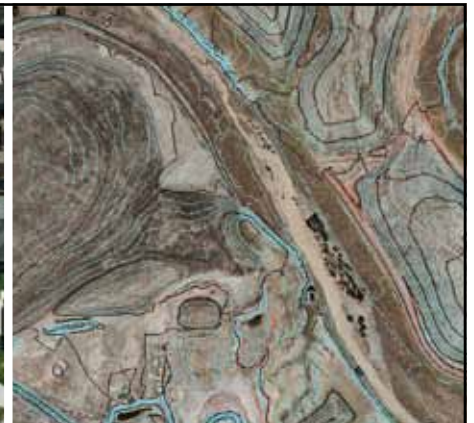
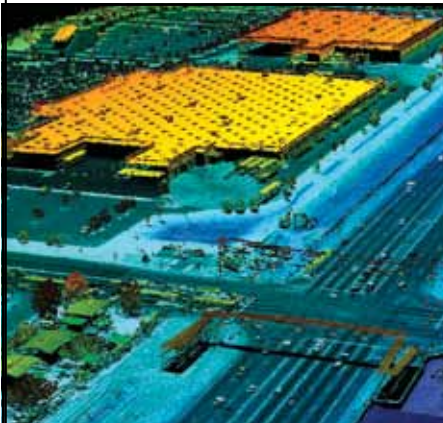
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