



THE NEVADA TRAVERSE

Journal of the Professional Land Surveyors of Nevada

Institutional Affiliate National Society of Professional Surveyors • Member Western Federation of Professional Surveyors

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The Nevada Traverse

This publication is issued quarterly by the **Nevada Association of Land Surveyors (NALS)** and is published as a service to the Land Surveying profession of the state of Nevada. *The Nevada Traverse* is an open forum for all Surveyors, with an editorial policy predicated on the objective of NALS and Bylaws, Article II, which reads:

"The purpose of the association shall be to promote the common good and welfare of its members in their activities in the profession of Land Surveying; to promote the common good and welfare of the public in terms of professional land surveying activities; to promote and maintain the highest possible standards of professional ethics and practice; to promote public awareness and trust in Professional Land Surveyors and their work.

This organization, in its activities and in its membership, shall be non-partisan, non-sectarian, and non-discriminatory."

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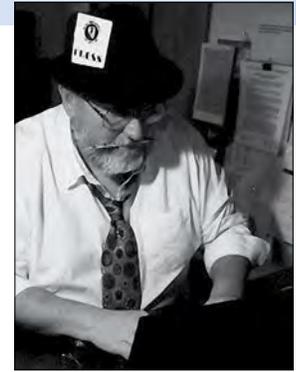
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The Editor's Corner



by Carl C. de Baca, PLS

Well we're winding down another year here at the Traverse. The first three editions of the magazine were chock full of information, opinions and ideas. This one will be no different. We are featuring the last half of Paul Pace's excellent "Brothers" piece. Bill Ray, with help from Todd Enke, gives us a great 'Following in the Footsteps' article. And we offer a look back at the 1989 NALS conference, with illustrations generously provided by Conor C. de Baca. Justin Moore discusses a different kind of youth outreach program and we take a look at the Southern Chapter golf tournament. This issue wraps up with a thoughtful essay by Gene Sawyer.

As we are putting this edition together, a proclamation by the governor of New Mexico has just been circulated. Let me excerpt a couple things from that proclamation: "... there is no discernable difference in health and public safety

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outcomes between states with more rigid licensing regulation and states with more flexible licensing regulation..." New Mexico licensing boards shall promulgate rules or policies that "...accept the occupational licenses of licensees in good-standing in any other state or jurisdiction as equal to a New Mexico license for equivalent or similar occupations..." Licensing boards shall "Reduce required education and experience to the lowest level allowed by statute..." and my favorite: "Establish a 'consumer choice' process that is an alternative to occupational licensing..." That one's a doozy. Non-licensed service providers are okay as long as the client is made aware that the provider is not credentialed.

That's just brilliant. Apparently Jo Jo from Monkey Island can now get a surveying license in New Mexico or better yet, opt to be a 'consumer choice' and not even bother with the license. Frankly, I think New Mexico would be better off if Jo Jo ran for governor. Meaning no disrespect to our surveying brothers and sisters in the Land of Enchantment; they have just seen the value of their licenses diminished by governmental fiat. "Consumer choice", if it is embraced beyond the borders of New Mexico, is the end-around that unlicensed drone mappers are seeking. For the last two years I have predicted that state licensing may start to fall like dominos. Well, seeing any dominos yet? NCEES can keep their member boards of registration on the same page but there is no such board overseeing rambunctious governors not in possession of what the rest of us call 'facts'. We'd better get behind our state board and start thinking about becoming part of a coalition of professionals focused on preventing this from happening in Nevada. Not only for our own benefit, but for the benefit of our clients, the public.

Across the nation surveyors just finished up the GPS on Benchmarks effort at the request of the NGS. This collected data will help improve the next geoid model and that will allow for better vertical results when using GPS. In Nevada overall participation wasn't spectacular, but compares favorably with many states. We captured roughly 20 benchmarks (out of 45±) and a few diligent benchmark hunters went after multiple points. Some of these folks contributed to a fun wrap-up of the effort here in these pages and that should serve as encouragement for the rest of us when the NGS request comes around next time.

My favorite topic, as always, is 'content' in the Traverse. I have spent the last four years pleading for material from you dear readers and this year it came to pass. We have had contributions from up and down the state in every issue and I am very pleased! Every one of you is a better writer than you think you are and we are proving it with every edition of the Traverse. If you have a story to tell, or an issue you want to flesh out, send it in! We'll take care of the run-on sentences and such trivial things as semi-colons and verb tense. The goal of the Traverse is to be a magazine of surveying related news for Nevada surveyors and by Nevada surveyors. And we are accomplishing that. Thanks and great job!

I can't believe it, an edition of the Traverse without an obituary. Thank goodness. I hope everyone stays healthy and upright for as long as they can. Take care and have a Merry Christmas and a Happy Holiday Season!

"Some circumstantial evidence is very strong, as when you find a trout in the milk." -- Henry David Thoreau



About the Cover...



On June 23, 2018, Todd Enke snapped this beautiful example of Nevada Blue, out in the desert east of Fallon on Highway 121, Dixie Valley Road about 31 miles North of U.S. 50 as part of his contribution to the GPS on Benchmarks effort.



In 1867 Lt. Col. Robert S. Williamson submitted this 17"x28" topographic atlas map of California, Nevada, Oregon and Idaho to the Government Printing Office for publication. It was based on his and other Army surveys in the region, as well as other sources. Map scale is 1:2,000,000. Most cartography in the 1860's still used hachures to depict relief, as this map does. In the title block is the word "Essayons", the motto of the U.S. Army's Topographical Corps, and later the Army Corps of Engineers. It is a French word meaning "Let us try". Words such as reconnaissance, corps, terrain, gabion, fascines, pontoon, etc., reflect the French influence on this country's military engineers, dating back to the Revolutionary War.



The President-Elect's Message

by Jason Higgins, PLS



Fast approaching is 2019, where I will have the privilege and responsibility to serve as NALS President. I will do my best to carry on the mission of the association, keep its time honored traditions in place and look to the future for those that will follow. This is my third opportunity to serve the association. First as a director for the Southern Chapter in the late 90's, then as President-Elect and President for the Southern Chapter in 2007, now serving on the state board. I am fortunate to have many distinguished leaders to follow behind and carry on the good work set before me. It is with counsel from several of these Past Presidents and leaders of our association that I have developed goals for 2019.

The first quarter of 2019 is going to be busy. The Annual Meeting of the State Board will be in Reno, on January 10th. Board members from the south will arrive on the 9th, to attend the Lahontan Chapter meeting. In early February, NALS will hold a Strategic Planning Summit in Reno. These events are traditionally held every 5-10 years to set forth the long term goals of the association and address important issues facing the association and profession. February also marks the start of the 2019 Nevada Legislative Session. Reno will host the joint NALS/CLSA Conference at the Silver Legacy, March 23-27.

An agenda is currently being developed for the Strategic Planning Summit. An Ad-Hoc Committee was formed to set the agenda, coordinate with the NALS Central Office for logistics and to implement a plan following the summit.

Current topics for consideration:

- Set goals for the future of organization.
- Are we setup for future success with the body of volunteers we currently have?
- Are we setup for future success with the body of volunteers that are upcoming?
- Licensed professionals - recruitment and involvement with the association.
- Non-licensed professionals - recruitment and involvement with the association.
- Briefing on legislative issues in Nevada and trends in the western US.

- Review overall structure of organization.
- Current officer guidelines and terms (possible term limits for multiple years).
- Current committee guidelines review.
- Future of licensure in Nevada (statistical update from NVBOES data).
- Greater local opportunities for continuing education.
 - Partnering with other professional organizations, joint workshops.
 - Bringing back the Breakfast Roundtables.
 - Field Trips for PDH's.
 - Technical Tracks.

The 2019 joint NALS/CLSA Conference is shaping up to be a diverse and valuable event that will benefit all that attend. Nationally recognized speakers, with new topics, a Land Survey review track for those seeking California licensure, a water right track, a legal track, state board panels and CFedS training comprise the educational opportunities. The time-honored events such as the scholarship auction, awards luncheon and evening reception will take place along with the new tradition of the bowling tournament. I look forward to a successful conference with our California neighbors.

In order for 2019 or any other year to be successful, our association must have volunteers. Volunteers that hold office at the state and chapter levels, chair and sit on committees, make financial contributions and attend events. Committees at the state and chapter level is where most of the work is accomplished. Having only quarterly board meetings limits the effectiveness of the state board otherwise. Traditionally, Committee Chairs have been appointed by the President at the first board meeting of the year. Chairs were selected at the last state board meeting to get a head start on the year and will be ratified by the Board of Directors at the January meeting. As the economy has picked up and most if not all of us have a larger workload than in recent years, time becomes our most important commodity. Giving time is one of the greatest things one can offer. One person or a small group cannot keep this association moving in a positive direction. Please consider serving on a committee, providing ideas to elected officers or writing an article for the Nevada Traverse. However small of a contribution you can make, it adds up making this association worthy to us all.

I am motivated to able to serve the association next year. I will be surrounded by an experienced and respected executive board and directors. The Chapters of the association are growing in numbers and I look forward to returning and new volunteers.

Brothers

Part II

Daniel and John Major In the Trans-Mississippi West

By: Paul S. Pace, PLS

In Part I Daniel Major began his career as an astronomer for the Naval Observatory in Washington, D.C. From there he took on projects as a U.S. Astronomer and Deputy Surveyor for the Interior Department. Soon his younger brother John followed him into the surveying profession. In Part II the brothers resume their efforts in the Far West.

The Department of the Pacific

Robert Stockton Williamson graduated fifth in his class from the U.S. Military Academy only months after the end of the U.S.-Mexican War. He was commissioned as a Second Lieutenant in the Corps of Topographical Engineers and assigned to the Army's Department of the Pacific, based at the Presidio in San Francisco. Fulfilling the demand for so-called internal improvements, Williamson participated in major reconnaissance missions in California and Oregon. He performed surveying and mapping for the proposed Pacific Railroad, for railroad routes all along the Pacific coast, as well as harbor and navigation improvements and an extensive network of new military roads.

In 1849 Williamson was second in command under Captain William H. Warner, as Warner led a survey party into northeastern California. They were in search of a railroad route through a chain of mountains they thought to be part of the Sierra Nevada, as well as a site for an Army post. Warner, a combat veteran wounded in the Mexican War, split his command. He sent Williamson north to Goose Lake, while he proceeded northeast accompanied by a party of nine men. Hostile Indians ambushed the party and Warner was killed in action, struck with numerous arrows. Francois Bercier, Warner's guide, was also killed and two other members of the party were wounded. Upon learning of the attack, Williamson and several troopers returned to the site to recover Warner's body. They were unable to locate Warner's remains, but did find his fieldbooks.

In the autumn of 1860 Lieutenant Williamson was lead surveyor for the Pacific Department. In that capacity, Williamson addressed a letter to the U.S.-California Boundary Commission in Sacramento, California. The Commission was to oversee the boundary survey between the soon to be created U.S. Territory of Nevada and the State of California. In his letter, Williamson offered advice on surveying the line, in particular for determining longitude. He also noted that since the Army was supplying all the instruments and most of the technical knowhow on behalf of the U.S. Territory of Nevada, the State merely had to send along a small number of assistants. The project, he wrote, would require three years or more to complete.

Williamson wrote that the first and most accurate method for longitude, "...is by the telegraph, and can only be adopted when one point on the telegraphic line has already been established... The telegraphic method is superior to all others..."

The second method was by transporting chronometers to the required point. Comparing the time of a celestial body's transit at the local meridian with that of, say, Greenwich Observatory, produced the longitudinal difference between them, as a function of time. Williamson cautioned that chronometers could not be "carried over a long land journey without changing their rates." This was a well-understood problem with no easy solution. Williamson suggested that the chronometers for the work at the southern terminus of Nevada's boundary be brought up the Colorado River by boat, sparing them the jarring passage inland from the coast.

Williamson concluded that the third method "...is the one generally adopted, because the conditions required for the others can seldom be fulfilled. It is by astronomical observations. For Latitude, the most accurate instrument is the Zenith Telescope... For Longitude the instrument used is the Transit instrument and the method of observing is by 'Lunar Culminations'. The observations are usually carried through two or three lunations (lunar months) and are compared with similar ones taken at Greenwich." Williamson added an extra note of caution: errors of a mile or more in longitude would be incurred if inadequate observations or timings were made. In this regard, Williamson knew what he was talking about. So did Daniel and John Major.



Captain Robert Stockton Williamson,
U.S. Army Topographical Engineers, August 1861

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Williamson had more than a passing interest in the boundary survey. Lieutenant Joseph C. Ives, a fellow West Pointer and colleague from the Army's Topographic Corps, was performing the surveying and astronomy for the project and he would be using the Army's instruments from the Presidio. Sylvester Mowry, a former Army officer, was in overall charge of the fieldwork.

The Commission, mired down in red tape and politics, was no help to the surveyors. Regardless, Ives, Mowry and their party pressed forward with the work. Ives began the astronomy on the southern end of the line, where the Colorado River intersects the 35th Parallel, the terminus of California's long oblique line. Mowry, however, was soon relieved, accused of misconduct. Ives continued on with the survey, despite the outbreak of the Civil War in April of 1861.

During the early summer of 1861 Ives moved the survey from the Colorado River to the south shore of Lake Tahoe. There he observed for longitude using telegraph signals sent by Lieutenant Williamson, who was co-observing from an observatory on Telegraph Hill in San Francisco. Ives and Williamson completed the astronomy in August. Ives was about to proceed to the "Washoe Region" to continue the survey when he received orders to terminate the boundary work and return to Washington, D.C. The Union Army needed more officers for the war effort. Ives had determined the southern terminus of the oblique line, and the latitude and longitude of his observatory near the 120th Meridian at the south shore of Lake Tahoe, but the boundary remained undefined.

In 1863 representatives from the State of California and the Territory of Nevada agreed to resume the survey of their common boundary, left unfinished by the Army in 1861. In 1863 Boundary Commissioners James Houghton of California and Butler Ives of the Nevada Territory appointed John Kidder, deputy U.S. surveyor and chief clerk of the Nevada Surveyor General's office in Carson City, to conduct the actual the survey. The Houghton-Ives Survey with Kidder in charge began at Lt. Ives' astronomical station at the south shore of Lake Tahoe. The longitude of the station was carried across the lake at night using signal fires. The party then chained the offset to 120 degrees west longitude.

Once on the Meridian they proceeded north on the boundary, occasionally marking the line at random locations until they reached the 42nd Parallel and the northwest corner of Nevada, where they erected a stone mound to mark the location. The party then returned to Lake Tahoe and ran southeasterly on the oblique line to the White Mountains, where they were forced to end the work.

The California-Oregon Survey

In 1864, while the Civil War brutalized the combatants, the U.S. Congress passed enabling legislation to create the State of Nevada from the former U.S. Territory. However, the boundary description that Congress wrote for the new state was contradictory. It read, in part, "...thence (from the south end of the oblique line) in a northwesterly direction along the said eastern boundary line of the state of California to the forty-third degree of longitude west from Washington; thence north along said forty-third degree of west longitude and said eastern boundary line of the state of California to the forty second degree of north latitude; thence due east along the said forty-second

degree of north latitude to a point formed by its inter section with the aforesaid thirty-eighth degree of longitude west from Washington."

Thus by an act of Congress Nevada was bounded on the east by the 38th Meridian west from Washington and on the west by the 43rd. However, the eastern line of California north of the 39th Parallel was set in 1850 at the 120th Meridian west from Greenwich. The 120th is not coincident with the 43rd Meridian west from Washington. Nevertheless, many regarded it so and had for some time, thinking the 1850 Washington Meridian to be exactly 77° west from Greenwich. Rather, the Washington Meridian then in use was 77° 03' 02".3 west from the Greenwich. Surveying to the 43rd would have caused Nevada to overlap California by 2.7 miles. The oversight apparently escaped the notice of Congress.

In the autumn of 1867, the G.L.O. awarded Daniel Major a contract to survey the meridional boundary line between the State of Oregon and the U.S. Territory of Idaho. He signed the contract in Boise City, Idaho Territory on October 1st, 1867. Major began his survey at the intersection of the Owyhee and the Snake Rivers and ran his line south to the 42nd Parallel, where he set the line's terminal monument. He completed the work in June of 1868 and returned to his temporary office in San Francisco, California, to work up his map and field notes.

That same October of 1867, the G.L.O. also awarded Daniel Major the contract for the Oregon-California boundary, at the rate of \$60 per linear mile. The higher than normal rate suggests the greater experience and technique required for this project. Surveyors General from both states had requested the work so that Public Land surveys could proceed and close on the boundary. Major was instructed to start at the northeast corner of California and proceed west to the Pacific Ocean. The contract also would penalize Major twice the contract amount for failing to fulfill the contract's terms, a sum of nearly \$46,000.

Major's initial point was to be on the rough, basalt-strewn Modoc Plateau, at the intersection of the 42nd Parallel and the 120th Meridian. Or was it, if you please, 43 degrees west from Washington? Major mentioned both in his written record. In either case, the initial point was about a dozen airline miles from the nearest settlement, the Army's isolated outpost at Camp Bidwell, California. Lt. Williamson had selected the fort's site two years before, and rough log barracks for two companies of cavalry troops had been constructed to house the men.

Major wrote in his field notes that his instruments were "very carefully examined before leaving San Francisco" and, were in good operating order. Then they were packed and taken to Camp Bidwell in a light spring wagon "built specially for the purpose...". Major added that all his instruments were "...all in excellent order at the end of my long journey. The Astronomical Transit, with an object glass of 30 inches focal length and 2½ inches aperture, with three eyepieces, and 12-inch vertical circle, with three microscopes, was made by Young of Philadelphia. The diaphragm contained 7 vertical wires and 2 horizontal wires and a micrometer correction with a collimating eyepiece for measuring the collimation from a reflected surface of mercury."

Among the other instruments Major brought with him, which we could assume were part of his typical kit for such a project and which he described in detail in his notes, were a zenith telescope, a sextant, a box chronometer,

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a pocket chronometer, two watches, a cistern barometer and several thermometers. The cistern barometer was, if one can imagine, carried the entire distance on foot.

Daniel's brother John assisted him on this survey, together with 17 other men. The additional personnel consisted of chainmen, axemen, flagmen, moundmen and packers. They commenced observations from their astronomic station at Camp Bidwell on July 13, 1868. Daniel's notes read, "Over three thousand observations were made...(extending through three lunations)... at this observatory. From these observations...the intersection point of the Boundary was found to be 4 miles 78 chains East and 9 miles and 55 chains North of the Flag Staff at Camp Bidwell." These observations included lunar culminating stars and the moon for longitude.

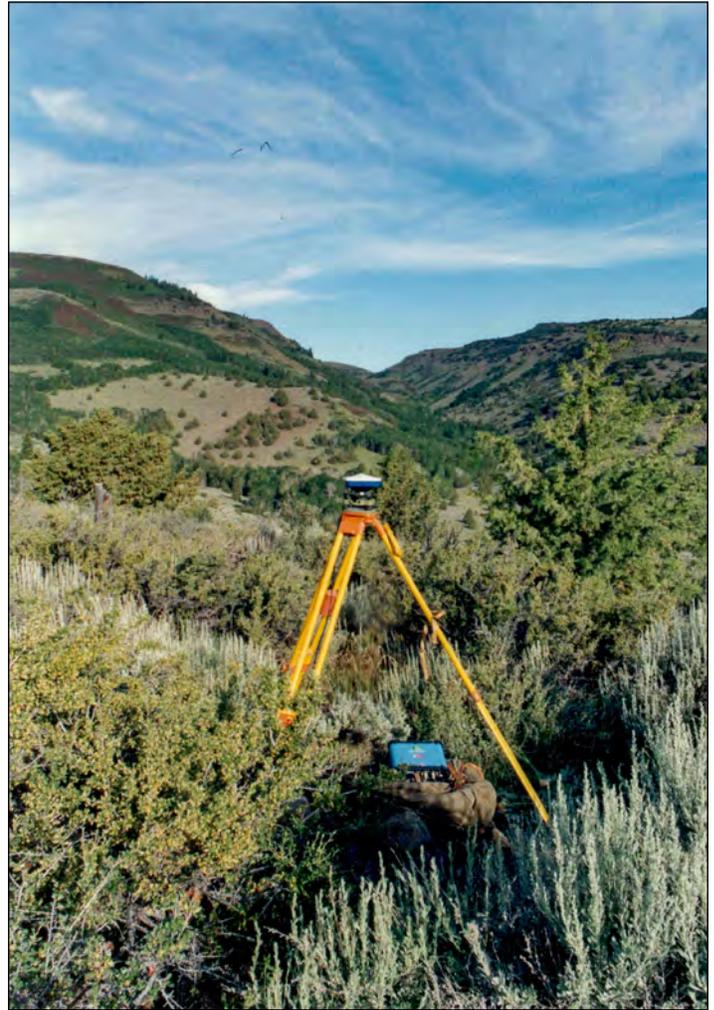
They were aware that they probably couldn't trust the chronometers, spring wagon or not. And there was always some doubt about the accuracy of the almanacs and ephemerides then in use. Daniel's notes reported that things grew more complicated due to several earthquakes. In particular, "...that of August 27th at 8:45 a.m., being so violent as to stop the box chronometer and disturb the instrumental adjustments." Still, precise time is not strictly required for lunar culminations. Rather, the very exact differences of transit times of the stars and moon's limb were needed, and the accurate calculation of the motions of the moon and stars used from an almanac. The brothers soldiered on.

When they completed the observations they perpetuated the astronomical station at the fort with stone monument. It was inscribed with the observed latitude, longitude, magnetic variation and the elevation above sea level. They also cut hour lines on the stone for a sundial.

The Majors next ran a stair-step traverse of about 15 miles length and, according to Daniel's notes "...reached the intersection of the 120° meridian of west longitude with 42nd parallel of north latitude the corner of the boundary of California and Nevada...". When they arrived at the point, they buried, "three large glass bottles (black), also charred cottonwood stake...", then set a 6 foot long juniper post over the memorials and built a stone monument around it and marked bearing trees. Atop the monument they placed a rectangular sandstone marked "Oregon" on the north face, with "Nevada" on the east and "California" on the west. On the top was incised "D.G. Major U.S. ASTR 1868".

The brothers must have been aware of the 1863 Houghton-Ives boundary survey. Their initial point for the survey of the Oregon-California line should have been the same point as the 1863 work was intended to be, or reasonably close to it. But instead, Major's initial point fell almost 2.5 miles west of it. Daniel's notes made no mention of the 1863 terminal monument, any attempt to find it or tie to it. Instead the party worked their way west on tangents to the 42nd Parallel, toward the Pacific.

The G.L.O.'s report explained the effort required to lay in the parallel, "...five astronomical stations were determined, and a series of over four thousand observations made for the correct demarcation on the earth's surface of this portion of the forty-second parallel." The surveyors set mileposts for 212 miles, each with a memorial of some kind buried beneath it, usually a bottle. Major submitted the survey of the Oregon-California line to the G.L.O. in the summer of 1870 and the work was approved.



Major's Milepost 3 on the California-Oregon boundary, west of his initial point. Photo by author, 1991

It wasn't long however, until irregularities in the boundary were noticed by deputy surveyors marking townships around Camp Bidwell. Sherman Day, the California Surveyor General, wasn't pleased to learn that. He wrote to the G.L.O. stating that he received Major's, "...elegant topographical map, elaborate calculations and field notes" of the northern boundary of California, but, "I do not find that Mr. Major has established any connection with the monument of the (1863) Houghton-Ives survey at or near the northeast corner of this State...".

Major tied the large flagstaff on the parade grounds at Camp Bidwell, as did Deputy Surveyor Dyer who was surveying the Public Lands in the area soon afterward. Dyer also tied the Houghton-Ives line. General Day wrote that this comparison showed, "...a considerable discrepancy in longitude between the two monuments fixed by two different surveyors for the northeast corner of the state." He wanted a resolution. The Commissioner of the G.L.O. likely didn't approve of California and the Nevada Territory taking it upon themselves to survey their mutual boundary in the first instance. The Commissioner thought a G.L.O. sanctioned survey of the California-Nevada line was in order and sought to make it so.

Out West

In the early 1870's the Major brothers were still in the west. The 1871 City Directory for San

Summary of Nevada's 2018 'GPS On Benchmarks' Campaign

Compiled by Carl C. de Baca

Recently the Nevada Traverse reached out to some of the surveyors who participated in the GPS on Benchmarks effort, as requested by the National Geodetic Survey. As you know, or should, the NGS wants to make serious improvement to the geoid we all use. Why this is so is patently obvious and no more so than in Nevada where it really doesn't matter which of the last three geoid models you use because there have been no changes in the model in our neck of the woods since the last millennium. It is in all of our best interests to contribute to this effort since all of us who rely on GPS for elevations stand to benefit from a better geoid model.

That is why it is somewhat puzzling that only a few Nevada surveyors heeded the call to action.

(editor's note: If you have a puzzled look on your face right now, you weren't one of them.) In any case, the Traverse reached out to four good (no – **excellent**) Samaritans and got their thoughts on the project. After all, this is not the last time that we will have an opportunity to contribute to the national welfare in such a way and I'd like to think that after a slow start, we will really slay next time.

We asked Jon Wooten of the Las Vegas Valley Water District, the state coordinator for the effort, Doug Larson of NV Energy, Todd Enke with R.O. Anderson *(editor's note: at the time he made his measurements Todd was a Lumos and Associates employee and used Lumos gear)*, and Nick Montoya of Lumos and Associates, to write up something that would help persuade you, dear reader, that next time, you too can participate. And not only that, but enjoy the experience!

No outline of what to write or how was suggested to the writers and each of the four went in a different direction, like party-goers on a scavenger hunt. All of them brought a wealth of insight back to the Traverse and to you. Enjoy! -Ed.



Jon Wooten

Fellow Surveyors,

In early 2018, NGS released a list of priority benchmarks where GPS data collection was needed to improve the future Geoid18. This will be the last planned Geoid model prior to the release of the North American-Pacific Datum of 2022 (NAPGD2022).

A request was sent to surveyors across the country to collect a minimum of 2 observations with a minimum of 4 hours occupation on each of the priority benchmarks identified and submit the data to NGS through OPUS Share.

Nevada was given a list of about 80 priority benchmarks that were identified, and with the help of the local agencies, private companies and individuals (weekend warriors), some 50 sets of observations on 15 benchmarks were collected and submitted, making a considerable contribution to improve the Geoid model for our state and local areas.

Across the Nation, over 3,040 observations were submitted. This is a significant contribution by the surveying community, noting that each observation requires a minimum of 4 hours occupation, not including travel time and the office time necessary to upload the data to OPUS Share.

On behalf of the NGS, I want to say a very big thank you to all who participated and contributed to this effort. Working together, we can make the way for a better tomorrow.

Jonathan Wooten PLS
Las Vegas Valley Water District
Nevada Geodetic Coordinator, NGS

Todd Enke

My dad is a surveyor and now I am one. From an early age, say seven or eight I spent many Saturday's, some Sunday's and most of my summer teenage years getting up before dark to head to the latest project site. As I grew into my teenage years, I learned how to survey, not what is considered today as surveying, but how to actually survey. How to set-up Wild T1 or T2 (for those of you who are new to surveying, a Wild is now called a Leica) and turn angle after angle to far away points on other ridges to establish photo control. After turning those angles, I had to take the Wild down and set-up the Geodimeter EDM (today's Trimble, but before that Spectra Precision) and shoot distances to all the points that I just got done turning multiple angles to. I'm sure the younger you are the lamer that sounds, but if so, you missed the fun of watching a red beam of light bounce off a triple (back-site prism) two, three, four miles away and as it does this in the early morning dew of Northern California it lights up the heavy air with colorful beams of the rainbow.

Ah but now it is 2018. I find myself fifty miles east of Fallon on State Route 121 in Beautiful Dixie Valley locating F 103, C 387, P 386, and on State Route 361 south of Middlegate Junction, locating K 381. Four benchmarks listed as wanted for the 2018 NGS GPS on Benchmarks Campaign. Four benchmarks separated from north to south by forty miles as the eagle soars and close to sixty as the GMC drove. This was fantastic. I took NGS Data Sheets dropped them **CONTINUED ON NEXT PAGE ►**



GPS On Benchmarks... *continued from previous page*

into Trimble Business Center, loaded them into a TSC3 and went on a treasure hunt. Day one May 12, 2018 up at 5:00 A.M. driving to place in Nevada I had only driven by when going to Austin and Eureka, driving to find four points set in the 1950's so I could survey them. I never thought I would actually be able to find four points out in the middle of nowhere and then survey them all in a day. Then to get to send this data to the NATIONAL GEODETIC SURVEY. People, this is cool stuff. I grew up as a kid taking a data sheet and doing a search and destroy mission looking for monuments set maybe only twenty years previous and not finding them. Now I can head out with a latitude and longitude, a data sheet and get within fifty to a hundred feet to start looking, and look I did. K 181 and P 386 were a slam dunk as NDOT had put markers up on them. C 387 and F 103 were a different story. If it had not been for GPS I would have had little chance of finding them as roads, descriptions and sage brush challenged me. But I did it, I found the four benchmarks in question and surveyed all four with five-hour occupations on one day May 12, 2018 and then surveyed them all again on June 23, 2018. As I picked up my last set-up F 103, I couldn't help but to smile over the joy of being able to have a job that on the good days makes me feel like I am seven years old working with my dad in Napa locating photo control on ridges two, three, four miles away. I do miss the heavy air and laser rainbows though, I guess those are the things seven-year old boys like.

-Todd Enke PLS



Todd Enke sees a cloudy Nevada day

Nick Montoya

When I heard that the NGS was looking for volunteers to go hunt down a prioritized list of benchmarks across the state I saw an opportunity, and excuse to get out there and do

some surveying that I don't typically get to do. In looking into where I wanted to go chase down a few benchmarks I decided to try to locate a few around Spring Creek, NV, my home town. I didn't end up having any luck finding any of the benchmarks I set out after on this initial trip. However, on a following trip I ended up finding and recording a series of benchmarks, five on the prioritized list and one additional mark, way out north of Wells and South of Jackpot in the extreme northeast corner of the state.

While out around Spring Creek in early June I loaded up my niece (age 14) and nephew (age 9) and drug them out to Jiggs, NV to go hunt down a BM that was supposed to be in the SW corner in the buttress of a cattle guard at the entrance of a ranch. When we showed up at the location it was pretty clear that the cattle guard had been replaced fairly recently so it was not looking great from the gate, but I figured I drug the kids out there so I might as well make them work a little bit. After digging and cleaning out the entire SW corner of the cattle guard with no luck, while the nephew beat on the cattle guard with a four pound sledge, we took a break to allow the niece to try to brainstorm the next place we should search. She concluded from the BM description that the surveyors of old were turned almost 180 degrees around, so I humored her and let her clean out the other side of the cattle guard for the ranchers as a show of good faith. No luck. Once it became plain that we weren't going to find anything there we moved on and made our way up to Tuscarora, NV, and easy hundred miles north. We drove right past a BM at Lone Mountain Station that Mr. Doug Larson recorded a little later on. We ended up digging another sizable hole in the ground measured from the still intact the visual call-outs from the benchmark description, but the BM was nowhere to be found.

After some time, and procrastination, I finally found the perfect weekend to go out camping in the middle of nowhere just East of China Mountain in northern Elko County, unfortunately just west of the Goose Creek fire, right after the fire had started. I left Reno around 3 p.m. and arrived at my first BM with just enough light to set up over my point and set up camp along the long-abandoned Oregon Short Line Railway about 2.5 miles NE of Wells. From there I went across highway 93 along the California trail to gather data on two benchmarks along the SE toe of the range containing China Mountain and Knoll Mountain. For the observations I had planned for the evening I ended up at the NE extents of the same range and located the first of two BM's rather easily, then proceeded to overshoot the second one by more than I'd like to openly admit but was able to locate a secondary mark to observe. In doing so I had to change my plans and camp at a different location than I had planned. This worked out great as Rock Spring, just off the Wine Cup Ranch property turned out to be a fantastic camping spot with great views of the good ol' Nevada desert and a heard of elk. I ended up doing the final Benchmark observation on Sunday morning before I made my way back to Reno just off of a ranchers property on the west side of Highway 93 about 11 miles south of Jackpot. In obtaining permission to access the ranch and get a decent point to walk into the point, I ended up meeting an older gentleman who used to know my grandfather from his days as Sheriff around those parts and spent a bit of time shooting the breeze with him for a few hours while I was observing the point. My return trip two weeks later, was much more streamlined as I was no longer searching for points and was able to do two observations simultaneously instead of one at a time.

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Meet Your 2019 Officers!

The Nevada Association of Land Surveyors is proud to introduce the newly elected state officers for 2019. Jason Higgins is your 2019 President. Greg Phillips is your President-elect. Justin Moore is your Secretary and Robert Carrington is your Treasurer. Additionally, Gene Sawyer is the Southern Chapter President and Todd Enke is the Lahontan Chapter President. These folks have stepped forward to serve the organization, face the various challenges presented to them and to carry on the great traditions of the organization. When you see them at a chapter meeting or the upcoming conference make sure to congratulate them and thank them for stepping up and sacrificing a great deal of their personal time on behalf of all us!

2019 President Jason Paul Higgins, PLS, WRS



Jason began his land surveying career in his native state of Maryland in 1983. Upon moving to Southern Nevada in 1996, he has served in various positions within the NALS organization and served as President of the Southern Chapter in 2007. From 2013-2018, he served as the Energy and Mineral Development Representative for the Mojave-Southern Great Basin Resource Advisory Council for the

Bureau of Land Management and as Chairman from 2013-2017. In 2016 Jason was appointed to the Nye-White Pine County Resource Advisory Council by the United States Department of Agriculture, representing Energy and Mineral Development. He has presented seminars and lectures on land surveying topics for various professional associations, federal agencies and private corporations since 1999. Jason is the Executive Vice President of Wallace Morris Kline Surveying, LLC in Las Vegas, directing the Public Works, Utilities and Water Rights Group. In his free time he enjoys coaching his daughter's volleyball team, woodworking, blacksmithing, hunting and fly fishing.

2019 President-Elect Greg Phillips, PLS, WRS



Greg began his surveying career while in high school working as a chainman for his uncle's engineering and surveying business in rural Missouri. He worked his way through college moving up to a crew chief position while attending the University of Missouri to obtain his degree in Fisheries and Wildlife Management. In the spring of 2000, he and his soon to be wife relocated

to the Carson Valley where they are raising their family. In his

free time he enjoys being outside hiking, skiing, and trying to keep up with his kids. He has served on the Lahontan Chapter Board in multiple roles and as President in 2016. Greg is the Director of Surveying at Lumos and Associates, Inc.

2019 Secretary Justin Moore, PLS



Justin was first introduced into surveying while he served in the U.S. Air Force. As a member of the 152nd Civil Engineering squadron, Justin was deployed and surveyed around the world to include Saudi Arabia, Iraq, Honduras, and various states within the U.S. After his discharge from the Air Force, Justin returned to his hometown of Sparks and started surveying in the private sector. He obtained his license in

2013 and since has been active within the Lahontan Chapter Board and served as President in 2017. Outside of work Justin enjoys spending time with his wife and children at the lake fishing or wakeboarding, hunting, and volunteering within his church community. Justin is employed at Odyssey Engineering in Sparks, NV as a Project Manager in the mapping and boundary department.

2019 Treasurer Robert Carrington, PLS, WRS



Robert L. Carrington, PLS WRS, spent 26 years at the City of Henderson, retiring in 2009. The last 3 years as their City Surveyor. While working for the City Robert managed the daily activities of the Survey/Right-of-way Division. Reviewed and approved subdivision of land for compliance with the Nevada Revised Statutes and the Henderson Municipal Code. Maintains the City's horizontal and

vertical control networks. Maintains a Real-Time Kinematic Global Position Base Station. Prepares and approves legal descriptions, maps and plats for the acquisition of real property, annexation and for public rights-of ways. Participated in the planning and preparation of Departments and divisions annual budgets. Participated and was final authority in the selection, evaluation and disciplinary action of department employees. Responded to inquiries and provided technical assistance to public, other City personnel, agencies and organizations regarding survey and right-of-way issues. After retiring from the City, Robert joined Diamondback Land Surveying where he is still as of today. Robert role with Diamondback includes, Project Management, Mapping and Field Surveying.

Professional Land Surveyor, (PLS), Nevada: No. 9103
 State Water-Rights Surveyor, (WRS) Nevada: No. 1165
 2008 President, Nevada Association of Land Surveyors,
 (NALS) Southern Chapter

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2007 President Elect, Nevada Association of Land Surveyors, (NALS) Southern Chapter
Member, National Society of Professional Surveyors, (NSPS)

2019 Southern Nevada Chapter President Gene Sawyer, PLS, WRS



Gene was born in southern Minnesota and raised in an environment which fostered a great appreciation of the outdoors, for its beauty and severity alike. Being an avid fisherman and lover of water, the irony of his migration to Las Vegas is not lost on him, however; he has called Nevada home for a little more than thirty-four years and finds it no less miserable than Minnesota for six months out of the year!

Mr. Sawyer is a Graduate of Western High School where he met and married his wife of twenty-eight years and together they have raised four daughters and one Golden-doodle. He began his land surveying career with the Nevada Department of Transportation in 1993 and in 1997 he began his career with the Clark County Surveyor's Office within the Department of Public Works. In 2004 he successfully passed the Fundamentals of Land Surveying exam and obtained his L.S.I. certification. Having been blessed with excellent mentorship and educational opportunities, he became a Nevada Licensed Professional Land Surveyor in 2006. Through the continuous support of his mentors and peers, he was promoted to Deputy Clark County Surveyor in 2008 and continues to faithfully serve the public, the Department of Public Works, and his profession. Gene has been an active member of the State and Southern Chapter of the Nevada Association of Land Surveyors for nearly two decades and has served eight of those years on the Executive Board of the Southern Chapter in the capacity of Director, Secretary and President Elect. "I try to take a moment each day to think of the people who helped me along the way and to always be grateful for their part in shaping my life. There are many."

2019 Lahontan Chapter President Todd Enke, PLS



For those who don't know me my name is Todd A. Enke, P.L.S. 19734 and I work for R.O. Anderson Engineering in Minden. Like many who now reside in our state I am the product of California, but in my defense my dad was born in Elko, so I guess that makes me a little more of a Nevadan than other transplants. I was born at Kaiser Hospital in Walnut Creek in the Bay

Area of Northern California and spent most of my youth in San Ramon before moving to Tracy in my senior year of high school. I graduated in 1994 from California State University Stanislaus with a Bachelor of Arts degree in History after short stints at San Diego State University and California State Hayward and thought that teaching might be the direction I was headed. But that wasn't to be as I was headed into the profession of surveying. Being the son of a surveyor, a surveyor who owned his own business I was set on a path to be a surveyor myself. I am married to my wife Jennifer and have three kids one girl and two boys. Our daughter is currently traveling the world and at this point is employed as a teacher at a small private school in Cambodia, while my boys are in fifth and eighth grades here in Minden. This is currently my third year of serving on the Lahontan board having filled the positions of Director, Secretary and this year President-Elect. Since moving to Minden in 2007 I have worked at R.O. (2007-2016) and Lumos (2016-2018) and now back to R.O. with the time at Lumos preparing me for a different role when I returned to R.O. I look forward to having the opportunity as serving as the Lahontan Chapter President and hope to be part of a successful joint NALS/CLSA Conference. In moving into 2019 I hope to continue our chapters community outreach by support of the Boy and Cub Scouts, the Food Bank of Northern Nevada and our Military Veteran's and am hoping that we can get more of us involved in our 2019 events. Please don't hesitate to contact me at nvpls19734@yahoo.com if you have any questions or suggestions about what we are doing in 2019. -Todd A. Enke, P.L.S.



NALS Historic Committee Search

The Historic Committee is searching for pictures and narratives on past presidents and prominent contributive members. The presidents are known, but a list of contributive members needs to be developed. This year we hope to collect an overview of recollections, contributions and photos for both categories for future use. Respondents need not worry that two or more reply; information and photos received will be compiled by the committee.

Please respond to:
NalsHistory@GMail.com

Thank you!



Winnemucca Conference - 1989

By Carl C. de Baca with
illustrations by Conor C. de Baca

Once upon a time, the Nevada Association of Land Surveyors used to represent and celebrate all of Nevada, not just the two principal metropolitan areas – North and South, as we do today. That may come as a shock to anyone who has joined NALS in the last fifteen years. It is true, we once held annual conferences in far-flung places like Elko and Winnemucca. And these were terrific events! City folk from both ends of the state, mostly those that didn't actually attend, still complain about the inconvenience of the last one in 2002 in Elko, as if a couple days in a cow town was the worst thing that could ever happen to them. Really?

In today's climate, it is pretty obvious that we will never again venture out past the city limits at either end of the state to join our brethren for a get-together, and that's a shame. Those of you who wonder why we don't see the same kind of commitment and participation from our members and Chapter in Sagebrush Country that we do from our two urban chapters should keep this in mind.

Through my years in the profession I have attended some twenty-five NALS conferences. Many were highly memorable affairs and some were even highly educational. Some were joint events with the ACSM and saw a thousand surveyors moving around for three days. Many were joint affairs with CLSA where 500-plus surveyors milled about and sat before some truly great speakers like Dennis Moulard and Walt Robillard. But in the days before mandatory continuing education, the purpose of the conference was as much social as educational. It was a way to foster closer ties to surveyors who spent the year hundreds of miles apart; to encourage fellowship and

friendship to create an environment where local issues and statewide issues could be discussed and debated. I don't see that too much anymore. When the conference is in the north, few of the southern surveyors attend. When it is in the south, few of the northern surveyors attend. When it is in San Diego, no one attends...ooh, did I say that out loud? Every one of these events is of value, and I try to go every year. But now I sound all preachy. Not my intent – I just want to discuss one conference in particular. Of all the shindigs I have ever ponied-up for, the 1989 soiree in Winnemucca ranks as my favorite.

1989 - that was so long ago that dinosaurs still roamed the earth. I'm speaking of course of the Killer B's, Ken Brown, Jerry Barnson and Babe Brenner, their northern counterparts, Tom Foote, Barry Hickerson, Ron Monson, Phil Mott, Rich Stinchfield and the easterners like Rob Caldwell. (Apologies to any 'dinosaurs' that still roaming - Babe, Ron and Rob!) As a young surveyor in training, I worked with (for actually) all of the northern characters at one time or another, and had occasion to spend time at the bar with a couple of the Killer B's, and I can tell you that none of these guys ever complained about how far out in the sticks they may have had to go for a conference. These guys took the spirit with them wherever they went. They were all made up of a masterful blend of experience and wisdom, with more than a touch of mischief and always with a twinkle in their eyes. NALS and Surveying loses something irreplaceable every time another of them falls. But I digress. Let me give you the briefest of overviews regarding the goings-on in Winnemucca that spring week all those years ago.

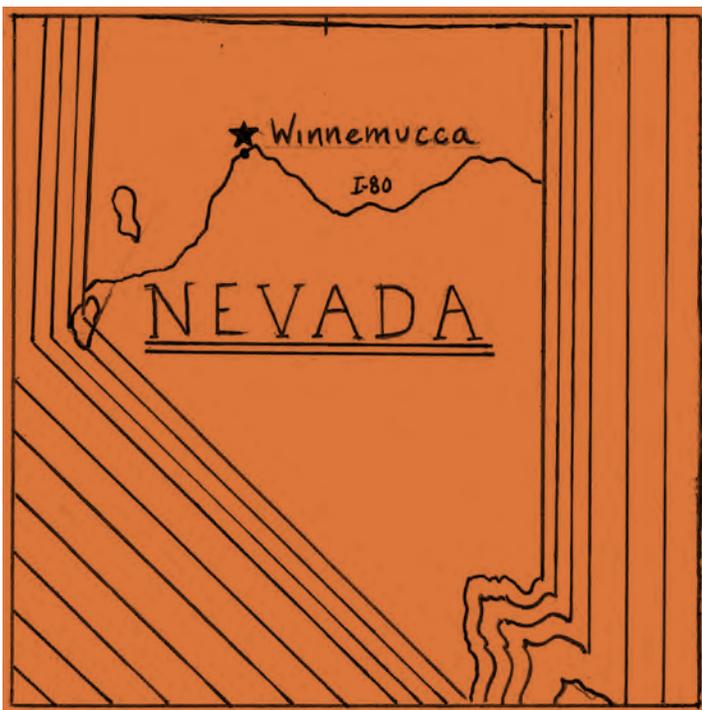
Thankfully there are no pictures. This was years before cell phones and digital cameras. I am confident that no one would have dared to snap off any photos with a conventional camera. Some things were still off limits then. Besides, there was no 'social media' to post gossip and pictures to, the event itself was the social media. In any event, the absence of photographic evidence lends a patina of fiction to the story, and that is a good thing. No way could any of this stuff have actually happened. No one could have survived...

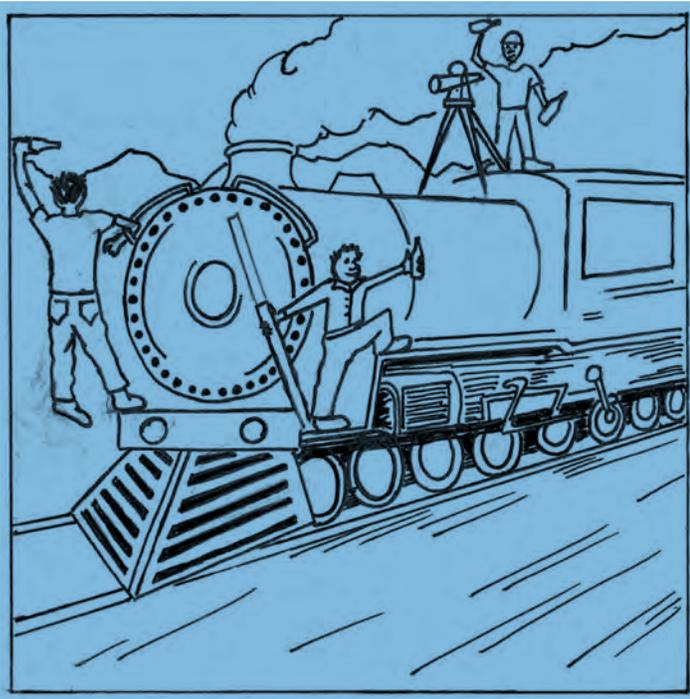
Preliminary Round

It is the day before the conference and the Killer B's and other NALS members of a southern persuasion have flown into Reno. The Lahontan Chapter organized a pre-trip hospitality suite at Harrah's. The festivities began in the early afternoon. Toasts were made, jokes were told and the ice bucket needed refilling many times. At an appointed time in the chilly spring evening, the assembled group emerged from the casino, walked unsteadily across the street in a never-ending line, entered the train depot and boarded the Amtrak train headed east. By the time the train passed through Lovelock, the bar car was full of surveyors but devoid of liquor. The last two mini-bottles of Jack Daniels were in the pocket of my sports coat, and I don't even like whiskey.

We chugged into Winnemucca (pardon the pun) after midnight on a cold March night, and everybody stepped out onto the platform. There was no train station or Amtrak enclosure in 'the Muc' back then and so the shivering began. At the time, Winnemucca had two taxis and they were both hauling groggy surveyors, four at a time, from the side of the tracks to the various hotels where we were all staying. I remember standing there freezing in the last group of four to be picked up and realizing that the hotel I was checking into was only four blocks away. Yeeesh.

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the same old grind as every conference before and since. But like most conferences, after the day's official activities were completed, groups started assembling at various bars and the real business of the conference got underway. Hours went by, drinks were imbibed, a few smart ones went off to dinner somewhere or another and then, at some non-announced mystical hour, groups started migrating on foot to the "Cul-de-Sac of Love", an array of establishments of a kind peculiar to Nevada. One of my more erudite friends, who is not from these parts, calls these places "Houses of Negotiable Affection", a fairly elegant term. In 'the Muc' these very friendly businesses are all grouped around a large gravel turn-around in a spacious vacant area set up against the freeway right-of-way. I suppose the setting was laid out (pun alert) to accommodate big-rigs. One or two of the establishments were genuine stick-built structures while the rest, a flexible number, were mobile homes. One of the actual buildings was called "Penny's" and Penny's lobby-bar-parlor had a comfortable capacity of about 10 to 15 individuals. On this night, there were probably upwards of 40 adventurous souls jammed in there, vying for the opportunity to buy massively overpriced, tiny little beers, and a chance to pretend to be naughty.

There were events that took place that evening that were laugh-out-load funny but in the interest of keeping this PG rated, I will skip them. (Ask me at the bar, sometime.)

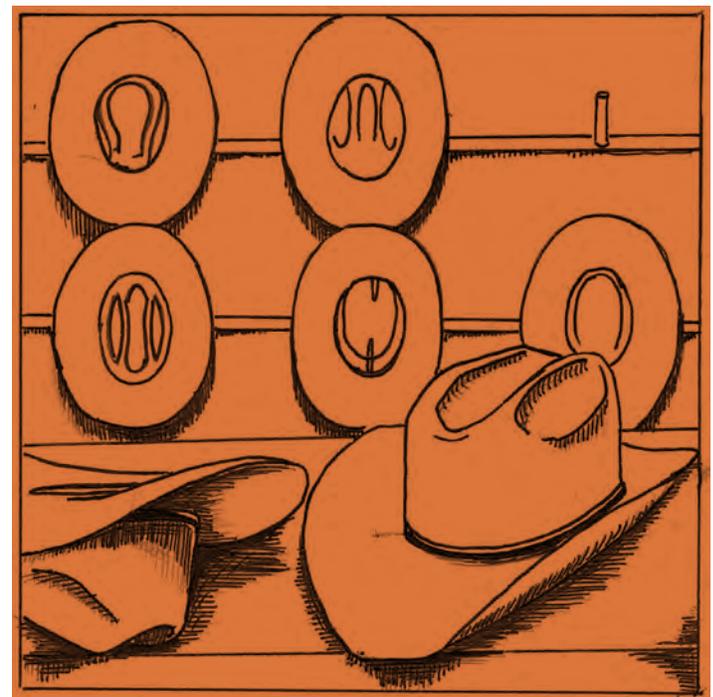
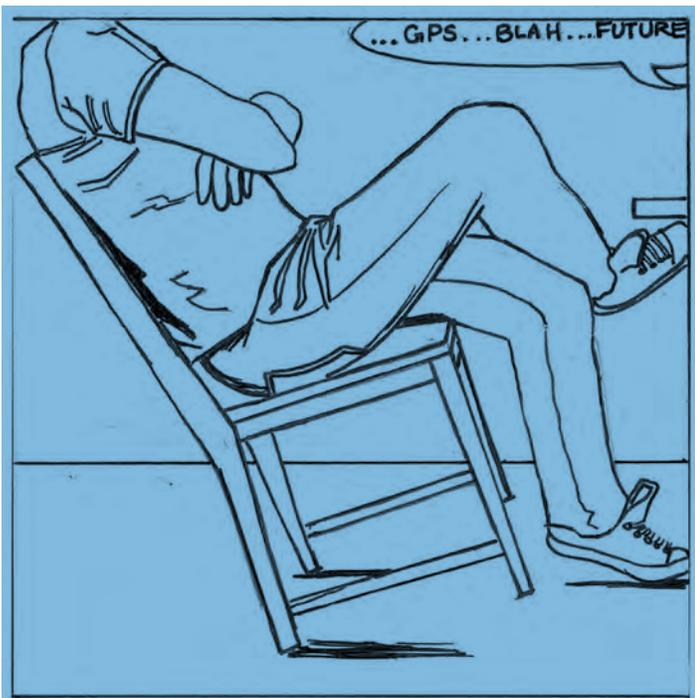
Day One

As I recall, the keynote speaker and one of the lecturers for the conference was a woman named Wendy from Ashtech. I believe she was instrumental in Ashtech's innovation and early success. They were among the first developers of kinematic techniques back when it was single-frequency gear and you had to stay locked to get results. There was no initializing on the fly. Remember, this was 1989. GPS was expensive, exclusive and mysterious in those days. Although everybody's memories vary a little, very few of us had the opportunity to get our hands on the gear at that time. I vaguely recall being bored stiff by Wendy's discussion, because I didn't understand any of it.

Workshops, vendors, meetings, ugh! During the day, it was

Day Two

I tend to be an early riser, even with a MOAH (mother of all hangovers) and I certainly had one on this day. I woke with a powerful need for strong coffee and breakfast. Bleary-eyed, I showered and made my way over to the coffee shop at the Winner's Inn, which was sort of the host hotel. As I negotiated the maze of slot machines and arrived at the entrance of the restaurant, where the 'please wait to be seated' sign was placed, I noticed a table with eight or nine gals and a couple guys right in the middle of the floor. Everyone was laughing and more than a few had Bloody Marys before them. Son of a Biscuit, there was my boss and one of my co-workers [names withheld



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Winnemucca Conference... continued from previous page

for obvious reasons], together with Penny and her whole staff, having breakfast at 5:30 in the morning. Now the only thing I found puzzling was the presence of my co-worker. I had witnessed him almost falling through the door of his hotel room, just four hours ago. My boss, on the other hand, clearly had not been back to his room. And the gals – well they probably didn't get to go out en masse like this very often so they were in high spirits.

The boss looked over while I was 'waiting to be seated', spied me and waved me to join the group but it looked like they were doing just fine without me, and my head was really throbbing so I shook him off and headed for a seat at the counter. After breakfast I was hoping to get a walk in to clear my head, so no shenanigans, thanks.

Let's skip to the day's activities, remarkable for two things, if nothing else. The first was the unsinkable Tom Foote, passing out toe-tags. He figured things might get rough later in the evening and we'd need some form of identification (I still have mine, I'm pretty sure Lee Smithson and maybe Greg Bigby still have theirs). So in the afternoon a sizeable number of surveyors had toe tags hanging off their shirts, belts or briefcases.

The second remarkable thing happened after the lunch break.

Foote's usual partner in crime, Barry Hickerson, went out to lunch with one or the other of the Killer B's and they came back sporting brand new Stetson cowboy hats from a western wear store in downtown Winnemucca. That inspired a full-blown raid on the outfitter over the next few hours and by closing time there wasn't anything left but pink hats and a bowler derby. I inherited one of those Stetsons some five years later when a comrade fell and the sight of it still makes me chuckle.

That night we were all going to have dinner at an old Basque restaurant, the Winnemucca Hotel. Caldwell, local businessman, incoming state president and therefore titular host of the conference, had organized a pacing contest from the convention center down a few side streets and stopping at the front door of the Basque joint. I'm happy to say, (cuz I work with him to this day), that Carl Davis won that contest. Six blocks of zig-zagging and he was within three feet of the measured answer. I was a long way off. Perhaps if I had two or three Picons before the attempt...

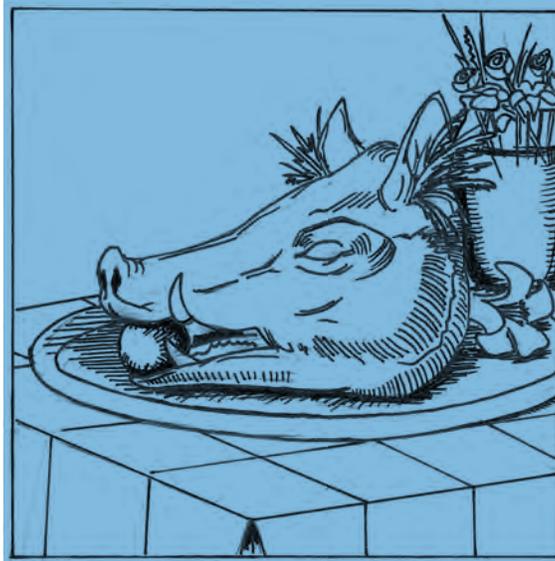
Day Three

More classes, more trying to learn something, anything, while fighting off a throbbing headache, more skipping the afternoon sessions in favor of a cold refreshment, killing time until the evening's big event, the Awards Banquet.

Rob Caldwell had put together something special for the banquet. He and some of his friends and co-workers had recently been to Arizona to bow hunt Peccaries. That, combined with game they had shot previously, were presented as the evening's meal – a wild game feast. We haven't done anything like this since,

I am certain of that. But it was spectacular in both concept and delivery. Most entertaining of all were the centerpieces on the tables. Roasted peccary heads, on silver platters in a nice arrangement of flowers - not for the squeamish, but a most unforgettable decoration.

One surveyor, who will go unnamed, helped himself to numerous decanters of wine at his (and another nearby) table and eventually found a certain affinity with the centerpiece. At one point, near the end of supper, he took his steak knife to the snout on the peccary and cut it off. Stabbing a toothpick into either side of the snout, he then took the ribbon from the flower arrangement and tied it in a loop around the toothpicks and slipped the roasted snout over his own. He then proceeded to engage the aforementioned Wendy in a discussion, for which she was wholly unprepared. Being a good sport, she put up with the shockingly poor behavior, at least for a few moments. Later, Mr Snout, by then at a nearby bar, asked various women to dance. (Strange...no takers!) Ah, to be 28 and single again...



The evening ended with the actual awards. I only recall one. Tom Foote, a past president of NALS and longtime chair of the Legislative Committee, was awarded recognition as the Surveyor of the Year and deservedly so. When not busy raising a ruckus at affairs like this, he was a

giant of NALS with a long list of achievements and a genuine commitment to making things better for land surveyors.

The next day we headed back to Reno, some of us by train, others by convincing a spouse to drive to the Muc and pick us up. I, and a couple others hitched a ride back to Reno with one such surveyor and spouse. I was exhausted, as anyone should be after a successful conference.

Conclusion

So you might be wondering what exactly was the point of this story. Recounting a drunken lost weekend from long ago, has no place in this magazine, you say. Well, the point is just this: events like ones described engendered in me a profound appreciation of the fellowship of surveying; they gave me a love and respect of those who came before me; they gave me the true believer's zeal in the Nevada Association of Land Surveyors as a force for good, and has kept me from ever once uttering the foul phrase, 'What has NALS ever done for me?' The class that came before me were masters in blowing off steam, but their accomplishments as professionals and as NALS leaders at all other times are self-evident. When rolling up my sleeves and working on various projects for NALS, I think about these progenitors and I never feel like it is drudgery.

Lately I've heard some scattered voices talking about a north-south split in the organization and I am here to tell you, it didn't used to be that way and it doesn't have to be that way now. We are all Nevada surveyors and we should be glad to be in each other's company. And yeah, I'll drink to that!

⊗

Western Federation of Professional Surveyors

WFPS

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October 15, 2018

Dear WestFed Survey Community:

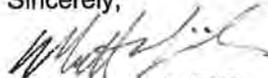
Wildfire ravaged the Western United States in the 2017 and 2018. Devastation impacted many, including some in the land surveying profession. Along with the terrible destruction came those that were willing to help. Lots of individuals reached into their pockets to give to those in need, surveyors were no exception.

The NSPS Foundation established a disaster relief fund which has been a valuable resource to help support those in the survey community. Recent natural disasters across the Country have created a need for more private assistance. On May 18, 2018 the Western Federation of Professional Surveyors joined efforts with the NSPS Foundation and established the Western State Scholarship and Relief Fund. This fund will benefit from the NSPS Foundations assets and help grow the money faster to support those in need.

In addition, to providing disaster relief assistance to surveyors in the western states, this fund will also be used to fund scholarships for students studying land surveying in the western states. WFPS has been providing scholarships for more than three decades. By moving the scholarship funds to the NSPS Foundation we are able to earn a greater return on investment and the tax benefits afforded a 501(c)(3).

Attached are applications for the relief fund and the scholarship. If you would like to contribute to the Western State Scholarship and Relief Fund, please send a check to WFPS Scholarship and Relief fund 526 South E Street, Santa Rosa, CA 95404.

Sincerely,



Matt Gingerich, PLS
WFPS Chair

About WFPS

The Western Federation of Professional Surveyors (WFPS) was formed in 1979. The Board of Directors includes two delegates from each of the 13 western states. WFPS serves as a regional voice for Land Surveyors and meets quarterly to discuss practice issues affecting western state surveyors. For more information about WFPS and the state associations, visit WFPS.org

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Following in the Footsteps

By Clifford "BILL" Ray with a contribution by Todd Enke

It was a typical northern Nevada summer morning; it was cool and sunny as we pulled up to the control point. It was earlier than usual as we climb out of the truck into the cool morning air and set up the GPS base station. We had been planning this day for over a week now and there was a noticeable level of anticipation for what we were about to do. The goal was to locate California/Nevada State Line Monument #32, which is situated on Middle Sister in the Sweetwater Mountain Range about 20 miles north of Bridgeport, CA.



After the GPS base is up and running we drive back to the Highway and turn north, after driving a short distance we turn off on a dirt road. We are pulling a trailer with 2 Quads and the road is rough so it is slow going. We drive down the dirt road for about ½ hour until we find a good spot to pull off. We unload the quads, grab our backpacks and our equipment and we are off again down the dirt road.



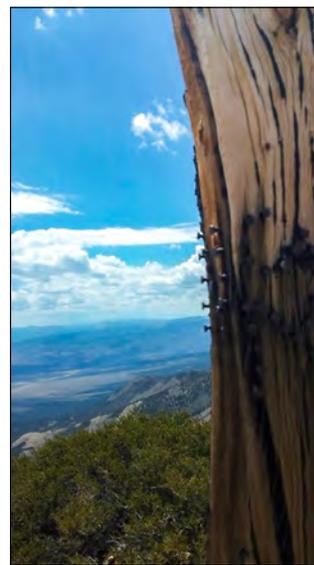
Now that we are on quads we are making better time as we wind our way up into the canyon. We are at around 6,800 feet in elevation now and climbing up the canyon and the road is getting rougher and rougher. The rocks are turning into boulders and the road is becoming a test for the quads abilities as we both wonder silently if we are going to be walking further than we thought. Lucky for us we get through the worst spot and the road returns, we take advantage and quickly climb to the top of the canyon and turn left onto a very faint 2 track road.

We take the road until it completely disappears into the dense brush which prevents us from going any further on quads.

We dismount the quads and gather up our gear, we are now at around 9,000 feet in elevation and about a mile and a half from the monument. It is warming up nicely as we begin our hike, we are traveling along the base of the mountain and we are picking up elevation slowly as we make our way toward Middle Sister. It takes about an hour of hiking to reach the base of Middle Sister, as we take a short water break I look up to the peak in awe. The mountain is formidable and I think to myself "this is not going to be an easy hike".



We are now about a half mile from our target as we turn and head straight up the mountain. Our progress is much slower as it is very steep and rocky. We scramble and climb until exhausted then we take a break and repeat. Every step becomes an effort as we approach 10,000 feet in elevation, but the excitement of reaching our destination is growing so we plod on. The thought of



seeing a monument that very few people have seen is exciting, going where very few people have gone is an achievement that drives us both. We talk about the fact that we may be the first people to visit this monument since the day it was set, who in their right mind would hike up this mountain.

After a little over an hour of scrambling up the mountain we are at 10,500 feet in elevation and the GPS unit tells us we are at our destination. A short search reveals what we have been looking for and it is as glorious as we had hoped. A huge mound of stones with a post in the middle that has nails in it spelling "N" on one side and a "C" on the other, no

mistake, we had found what we were looking for.

We marvel at the scene, admiring the handiwork of the 1880's surveyor and the incredible view, we joke with each other about the crazy voyage it took to get to this spot. We talk about how much of an honor it was to follow in the footsteps of the original surveyor over one hundred years later. We talk about how cool it is to be one of the few people to ever visit this site. I am sitting on a rock taking a drink of water when I hear Todd say "What is this?", I turn to see Todd pulling a glass jar out of the pile of rocks.

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“Cool, an old jar” I say to Todd, “It must be over a hundred years old”. I’m interested and I move closer to take a look. It looks like a Mason Jar, and it is in really good shape. It must have been left by the original surveyor and preserved by the dry high desert conditions. We are both excited by the discovery as we examine the relic. “There is a piece of paper inside” Todd says as he carefully removes the lid and gently removes the paper. We are both crazy with anticipation as he gently unfolds the paper. As we both read the paper, It takes a few seconds then I realize what I’m looking at. It is a logbook which has been signed by at least two

dozen people. I am stunned...? The magic is gone, the euphoria evaporated with the knowledge that we were not the first to visit this monument, in fact there had been dozens of people at this very location over the past few years, as evidenced by the log. I can’t imagine making the hike up that mountain for a day trip, but apparently some people are pretty zealous. Todd replaced the paper into the jar and gently puts it back where he had removed it. We located the position of the stone mound, packed our gear and headed down the mountain, we had found much more than we anticipated that day. We had followed in the footsteps of a couple dozen hikers.

Revisited (Todd Enke)

The original article was written by Clifford “Bill” Ray about our 2014-2015 Survey for the NRCS. Looking back some years later, and perusing the Coast and Geodetic Survey notes referencing the Von Schmidt Line California/Nevada State Line and the terrain we covered to get to the top of the mountain I realize that even though we were not the first people to get back to CN No. 32 since it had been set. Geocachers may have beaten us to it but we did get there and we might have been the first surveyors to do it. During this survey we were able to recover CN No. 32-34 covering roughly 45,200 feet and while covering over 4,000 feet in elevation, touched Von Schmidt stones marked XXVII & XXI & XXX along the California/Nevada State Line in addition to many other late 1800’s survey markers set by him in this area. It is amazing how with time comes perspective. I grew up in the Bay Area of Northern California and surveyed from Redding to Pismo, San Francisco to Jackson but never once in that time remember being lucky enough to walk in the footsteps of some of the earliest surveys in the Western United States, to enjoy the earliest of surveyor’s journeys, albeit with modern technology. Standing up at CN No. 32 that day it seemed like I could see forever. But today three years later, looking through the pictures we took and the article that Bill wrote, I truly appreciate what we were lucky enough to experience. One additional side note that Bill hadn’t covered about our trip to CN No. 32 is that all the entire adventure would have been for naught if we hadn’t fired up the base station with the Trimble RTK W/Infill style as our base radio failed and the only thing that saved this day from being a photo opportunity was a good old fashion static measurement.

⊗

All in all it was a fantastic experience in which I was able to do some camping around the area I grew up in while gaining some experience in the survey world. I would like to thank Lumos and Associates, Greg Phillips and Carl C.de Baca for helping me to set up and plan this trip, for setting me up with equipment needed and for paying for the gas to fund this little excursion. -Nick Montoya



No Nevada Blue Skies for Nick Montoya! The Goose Creek fire is less than 20 miles away.

Doug Larson

“How far out of town is it again?” Lance asked Doug as we drove North up Mountain City Highway from Elko.

“Keep driving.” muttered Doug...hoping the bench hadn’t been destroyed.

Two months later, it was Jake, who showed McGyver-like ingenuity to recover from an unforeseeable equipment misfire.

We were participating in the GPS on Benchmarks in coordination with the National Geodetic Survey and we were a long way from anywhere.



The observations (two 4 hour long sessions separated by at least two weeks) were routine, except for the scenery. The only hassle was getting them scheduled. It didn’t help that I had selected a bench that was 25 miles north of Elko. That was a bit of a self-inflicted challenge. Typically we don’t return to the same area twice to work, at least not on purpose. But we were able to weave it into the survey schedule and obtained good data and photographs. Thanks for your patience with me on this Matt Gingerich, Lance Smith and Jake Johnson. - Doug Larson P.L.S.

⊗

Francisco lists John Major, Jr. as a civil engineer and sharing a residence on Powell Street with his father John Major, a lithographer. When the senior Major arrived in the U.S., and what happened to him thereafter, is unknown. In 1874, Daniel was listed in the directory as a surveyor. Several years later Daniel appears in the directory as an astronomer and sharing offices and a residence with his brother John. For several years after that, John branched out into home interiors, hanging wallpaper and offering window treatments. In 1878, the brothers were still sharing a residence with Daniel again listed as an astronomer and John Jr. pursuing his interiors business. John Jr. was the last to appear in the San Francisco Directory in 1879. The family then disappeared from the directory.

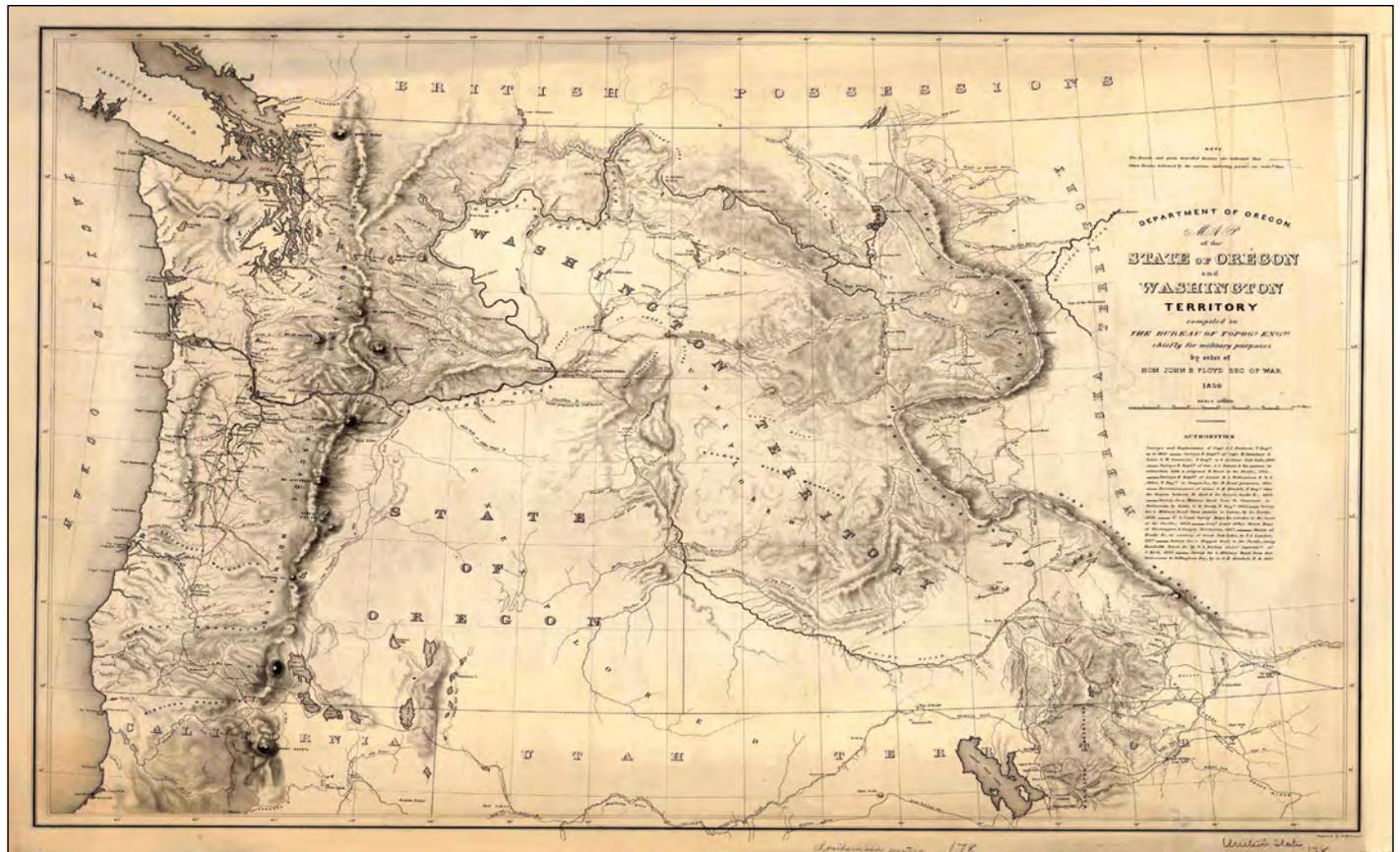
During the 1870's, the G.L.O. vigorously pursued surveys of state and territorial boundaries in the West. As part of this effort, Isaac James, a surveyor of large reputation from Virginia City, Nevada, was awarded the survey of the Nevada-Utah line. Contrary to his special instructions to determine his longitude via the railroad's telegraph near the boundary, James instead triangulated from Coast Survey control in and around Salt Lake City over to Pilot Peak. This mountain is very near the boundary, and to his initial point at the Central Pacific Railroad. From there he ran north along the boundary line, the 37th Meridian west from Washington, D.C. He then ran south to the Colorado River.

In April of 1871, Commissioner Willis Drummond of the G.L.O. accepted James' survey of Nevada's eastern boundary. But he added in the G.L.O.'s Annual Report for that year he accepted it, "...notwithstanding any departure from the instructions that, in

the opinion of said commissioner, does not materially impair the accuracy of the work." Subsequently, deputy surveyors closing on the boundary questioned the location of some of James' mileposts. James was instructed to fix the problem. He returned to the boundary and did some repair work, then headed back to Virginia City to resume his private practice.

Dissatisfied with James' corrective efforts, the G.L.O. issued special instructions to Daniel Major in the summer of 1871 to examine the northern end of James' survey. He quickly left for Nevada. Major soon reported that he found James' terminal monument on the 37th Meridian to be one mile north of the 42nd Parallel. In July, Major submitted his "Diagram illustrating the Examination of the Eastern Boundary of Nevada" to the G.L.O. Major was immediately issued instructions to, "...obliterate monuments executed by the surveyor of the eastern boundary of Nevada, as well as resetting mile-posts" for some 45 miles, from the 42nd to the Central Pacific Railroad. James' survey south of the railroad and on to the Colorado River, some 355 miles, could remain in place. Major re-observed for the 42nd Parallel, set a new terminal monument and corrected James' mileposts south to the Central Pacific Railroad.

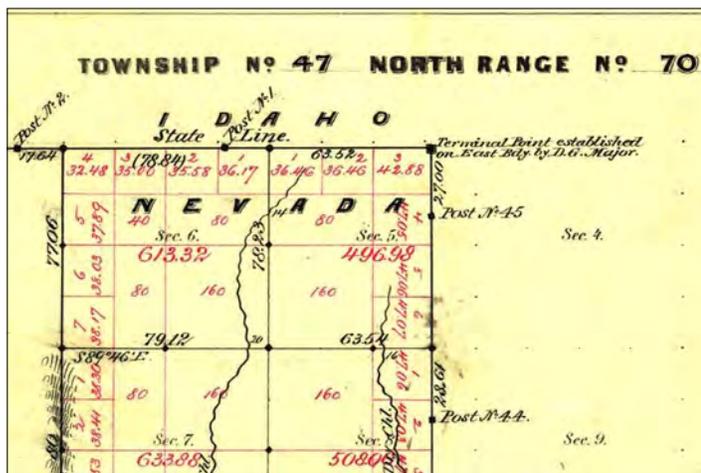
That same year, the brothers entered into a contract to survey the 42nd Parallel on the boundary common to the U. S. Territories of Utah and Idaho. This survey extended from the 34th to the 37th degrees of longitude west from Washington. \$6,480 was appropriated for the work. The Majors determined the eastern terminus by exchanging telegraphic time signals from the observatory at Salt Lake City to their astronomic station at



An 1859 Topographical Corps map illustrating state and territorial boundaries along the great arc of the 42nd Parallel.
David Rumsey Historical Map Collection

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Evanston, a town on the Union Pacific Railroad near the Utah-Wyoming boundary. From there they ran north about fifty miles to the initial point on the 42nd Parallel and the southeast corner of Idaho, then ran west.



A portion of 1882 G.L.O. township plat for T47N, R70E, MDM showing Major's reset of Nevada's northeast corner

The line was 153 miles, 56 chains in length and took the brothers and their party of 10 men through some hilly country. They crossed one mountain range at an elevation of over nine thousand feet. As they ran toward the northern terminus of Nevada's east line, just recently reset by themselves, they found they were south of the parallel. They corrected up, introducing angles in the boundary, then closed on their previous work. The survey was returned and approved by the G.L.O. It was later determined that Major's terminal monument at the northeast corner of Nevada fell over two thousand feet south of the 42nd.

Daniel's brother John headed next east onto the plains on his own. In October of 1872 he contracted to determine telegraphically the western boundary of Kansas. Congress had set the line at the 25th Meridian west from Washington, D.C., over the objections of Kansans, who wanted to extend their boundary westward to the crest of the Rocky Mountains. John Major initiated his survey by observing for the longitude near Fort Wallace, Kansas so he could avail himself of the railroad's telegraph. He exchanged time signals with Fort Leavenworth over 6 nights. Major then chained from his observatory twenty-five miles to the west along north latitude 38° 58'. Major reported that the resulting longitude was 25° 00' 07".35. An earlier attempt in 1869 by O. N. Chaffee had arrived at 24° 59' 49".35. The mean of the two longitudes was taken to be 24° 59' 58".30, or 102° 03' 00" west from Greenwich. In fact, the actual meridian was about 00° 37' eastward.

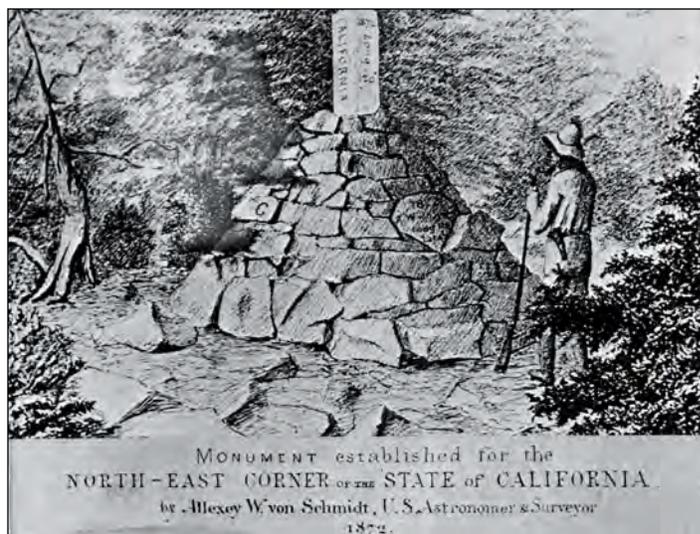
That same year John Major then undertook the Kansas-Colorado boundary. He started at the north end of the line and chained south for 207 miles, 26 chains to the southern terminus, at the 37th Parallel. There he set a monument for the corner of Kansas, Colorado and Indian Territory. Major's notes describe the monument where he, "...deposited can, bottle, bones and stakes and broken flag poles. Planted a white pine, seasoned, sawed pine post 8 feet long, 8 inches square, deeply and legibly marked on the north 25L; on the south 207M. 26 Chs on the east; on the west C. Built mound with four pits to cardinal points."

Back to Nevada

In the autumn of 1872 Daniel was awarded a contract to monument the north boundary of Nevada, at the rate of \$50 per linear mile. Congress appropriated \$15,500 for the work, and now specified for the boundary to be "coincident with the 42nd parallel of north latitude, from the 37th degree of longitude from Washington, D.C. to the 120th degree of longitude west from Greenwich." Daniel, accompanied by his brother John, journeyed back to Nevada to begin the new survey. The brothers began the project at Daniel's recently reset monument at the northeast corner of the state. They worked west on tangents to the 42nd Parallel.

At the same time the G.L.O. was aware that the northeast corner of California remained in doubt. The 1863 Houghton-Ives effort on the 120th, and Major's survey of the California-Oregon line evidently failed to resolve the location to the G.L.O.'s satisfaction. Determined to remedy that situation, in 1872 the G.L.O. awarded a contract to A. W. von Schmidt to resurvey the entire California-Nevada line.

After a great deal of effort, von Schmidt determined that Major's 1867 initial point on the California-Oregon boundary was not on the 120th Meridian. Von Schmidt based his conclusion on the Coast Survey's recent telegraphic longitudes at Verdi, Nevada. After much toing and froing, von Schmidt held Major's monument for latitude. He chained east about 3 miles, extending Major's line and set a new monument at what he believed to be the 120th Meridian. Von Schmidt then proceeded south on the meridian, setting mileposts as he went.



A. W. von Schmidt's own sketch of his monument at the northwest corner of Nevada, from his 1872 field notes

Meanwhile, the Majors were running the north boundary of Nevada, working their way west. As Daniel neared his monument at the Nevada-Idaho-Oregon tri-corner Daniel realized he had drifted south of the parallel. He corrected up and ran to the monument. In reality, his monument at the tri-corner fell only slightly to the north of the 42nd. But as they progressed along the line, they again began drifting to the south. At Mile 238 their line was over 3000 feet south of the parallel. West from that monument, their line trended back toward the north, but it always remained to the south of the parallel.

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LSG PROGRAM HIGHLIGHTS



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The Land Surveying and Geomatics program is committed to addressing the diverse and constantly changing needs of students throughout Nevada and in other locales who are preparing for a geomatics career by improving teaching methods, techniques, and content for delivering high quality educational experiences and achieving student success.

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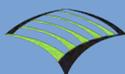
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The National Society of Professional Surveyors Foundation, through its Disaster Relief Fund, has helped dozens of surveyors whose homes were destroyed by disasters such as these. But we do this from a very modest base and we could use your help. By helping us with a donation, you are helping surveyors across the nation as surveyors elsewhere may one day help you! Please give today.



Go to the NSPS website /www.nspss.us.com for a link to the donation page, or

Contact NSPS Director for Nevada and NSPS Foundation Trustee Carl C.de Baca PLS at Alidade.nv@sbcglobal.net for information on how to donate. And Thank you!



About two miles east of the 120th meridian, Major's party crossed 12-Mile Creek, situated in a steep-sided canyon, hundreds of feet deep. They crossed the canyon again as they neared von Schmidt's new monument, located on a rocky tableland very near the south bank of the canyon. Emerging from the canyon he saw that von Schmidt's monument was even farther south than his own line. At his last full milepost, Mile 304, Major was forced to introduce a large angle in the boundary to close on von Schmidt's cairn.

Major was now aware, if he wasn't before, that his initial point on the Oregon-California survey fell miles to the west of the 120th Meridian. While he was still at this place, he returned to his initial monument and extended his Oregon-California boundary east along his line, closing on von Schmidt's monument. Major stated that he set new three new mileposts on the closing line, something von Schmidt had not done. Von Schmidt, having derived the difference between his 120th and Major's monument, had merely chained east from Major's to set his new monument.



A portion of Army Lt. George M. Wheeler's 1878 atlas map sheet 38-B showing Major's California-Oregon boundary monument and von Schmidt's California-Nevada boundary monument, northeast of Fort Bidwell, California. David Rumsey Historical Map Collection

Finally, after enormous physical effort, great personal risk and much expense, there were now three monuments representing the intersection of the 42nd Parallel and the 120th Meridian. Alas, none are at that famous intersection. The terminal monument for the Houghton-Ives survey of 1863 is roughly 4000 feet west of the 120th Meridian, the result of an error in longitude at San Francisco. Von Schmidt's survey falls about 400 feet east because he drifted off the 120th from his initial point at Verdi, despite being 500 feet too far west at that place. Major's monument is just over 3 miles to the west of the 120th Meridian. All three fall south of the 42nd Parallel.

One might suppose, however, that Major intended to set the 43rd Meridian west from Washington, D.C. This is not unreasonable, given the language in the written description. Had he been surveying to the 43rd, he would have fallen substantially closer to that meridian than the 120th. That assumes of course that his determinations for latitude and longitude at Camp Bidwell were free from error. However, an examination of Major's data reveals that while his latitude at Bidwell was spot on, his longitude was off the mark and his traverse northward to the 42nd also contained some error.

Right or wrong, the U.S. Supreme Court settled the matter in 1980. Von Schmidt's post and rock cairn monument was deemed to control the California-Nevada line, from the 42nd Meridian to the angle point in Lake Tahoe. Major's monument controls the California-Oregon line. Nevertheless, all the months of tedious fieldwork expended by otherwise competent surveyors to locate a point on the Earth, and failing, only illustrates the difficulty in determining terrestrial longitude in the 19th Century.

The 37th Parallel

By design the 37th Parallel, like the 42nd, controlled numerous state and territorial boundaries. It runs along those boundaries for one thousand miles, from the southeast corner of Kansas to the southwest corner of Utah. Surveyors had no better luck running this latitude than the 42nd. The first attempt to mark the parallel was in 1857 by Lt. Col. Joseph E. Johnston, with the Army's Topographical Corps. Colonel Johnston began his survey of the line at the intersection of the 37th Parallel and the west line of Missouri, marked on the ground in 1854. Johnston used the previously determined longitude for that line, reported as 94° 38' 03".6 west of Greenwich. Johnston and his astronomer John H. Clark were to lay in the 37th westward to the 103rd Meridian from Greenwich, a distance Johnston calculated as 462.71 miles.

Maintaining their latitude as they worked west, the party chained the calculated distance and set a monument, thereafter called the Johnston Monument. Clark provided a check against their chaining by determining the longitude of the terminal monument by lengthy lunar culmination observations. They then returned to the initial point and re-observed for longitude. Their line, according to Clark, was too long by 11,582 feet. They reported that the intersection of the 37th Parallel and the 103rd Meridian was that distance east of the Johnston Monument.

In 1859 Captain J. N. Macomb, another Topographical Corps officer, was conducting a reconnaissance north from Santa Fe, New Mexico Territory. He was ordered to monument the intersection of the 37th and the 103rd, the Congressional designation for the southwest corner of Kansas Territory. Macomb found Johnston's monument, chained over Clark's called distance and erected a new monument per his instructions. The Civil War shortly followed and further work on state and territorial boundaries soon ended.

From here, matters grew complicated. In July of 1868, a surveyor with the interesting name of Ehad Darling contracted to survey the 37th, on the boundary between the Colorado and New Mexico Territories. He commenced his survey at Macomb's monument and ran west. At 1 mile 68.2 chains, a distance significantly shorter than Clark's called distance, he reported that he found Johnston's monument. Darling pressed on with his boundary survey, bringing it over some extremely difficult terrain, which produced several large irregularities in the line. The work was a long, jagged affair that would once again produce controversy.

The next surveyor to arrive on that ground was John J. Major. In 1874 he and Levi Preston contracted to survey and mark mileposts at every mile along the 37th Parallel from the Kansas-Colorado-Indian Territory monument, which Major set in 1872, westward to the 103rd Meridian. Later that same year Major extended the line west to the 102nd Meridian. From the 103rd Meridian he was to turn south and mark mileposts on the meridian down to 36° 30' North **CONTINUED ON NEXT PAGE ►**

Latitude, the northwest corner



A portion of a 1867 Topographical Corps map showing territorial boundaries along the 37th Parallel. This map cites nineteen other maps, mostly from the War Department, published between 1843 and 1858.

of the Texas Panhandle. Major had a military escort with him to ward off possible trouble.

Running west along the 37th Major found the Macomb monument. After chaining a reported 1.8 miles, he found what he believed to be the Johnston monument. Major stated he also searched for and found some of Darling's monuments, but somewhat south of his line. Major returned to the Johnston monument. Somehow confused, he perpetuated it with a marked stone and then ran south from there, thinking he was on the 103rd Meridian. Major laid off mileposts for 34 miles and 40 chains and set his terminal monument at 36° 30' North Latitude, at what he believed to be the northwest corner of the Panhandle. He reported that he searched for Clark's monument but, not surprisingly, failed to find it. Seeing a trace of an old trail, Major followed it several miles to the former astronomical camp of Colonel Johnston or perhaps John Clark. There he found a marked stone which read "Jane Quin, died 1859". In an odd twist to an already strange tale, the other side of the stone read "103° W.L., 36°30'L".

In 1881, Deputy Surveyors Richard Chaney and William Smith contracted with the G.L.O. to survey the Cimarron Meridian and Base Line to control Public Land surveys in what is now the Oklahoma Panhandle. The Cimarron Meridian lays in on the 103rd Meridian between 37° and 36° 30' North Latitude. The Base Line is the north line of the Texas Panhandle.

Chaney determined the longitude at his starting point by exchanging telegraphic time signals with a colleague in Cincinnati, Ohio. He computed the distance from his astronomical station to the 103rd, chained the nearly eight-mile line three times and set a large marked sandstone monument on the meridian. He turned south and ran seventy-three miles to the 37th Parallel, where he set another large sandstone monument marked "Colorado-103WL-37NL-1881".

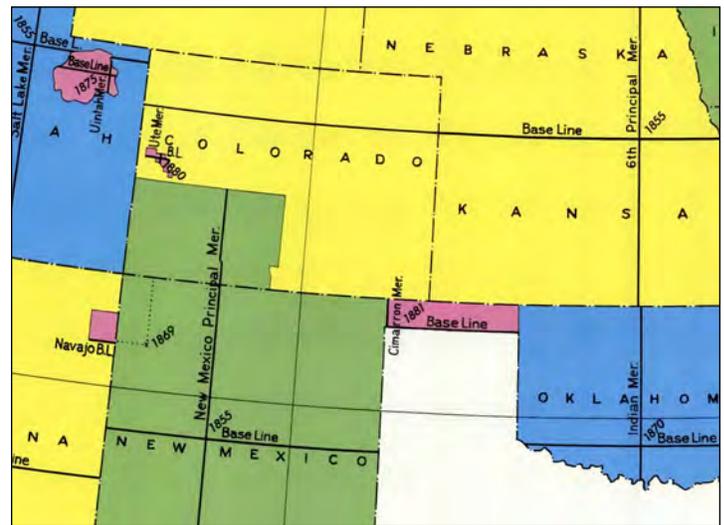
Chaney continued a further 34 miles and stopped to check his latitude astronomically. He was close, needing only another 16 chains, 24 links to reach 36° 30' North. Closing the gap, he set another large sandstone monument, marked "CM-103WL-36°30'NL-NM". There were now three monuments purporting to be at that intersection. Chaney searched for the monuments of Clark and Major but found no evidence of them.

Chaney returned to the north end of the meridian at the 37th. He chained to Macomb's monument and reported that it was 2 miles, 34.28 chains west of the north end of his Cimarron Meridian. Chaney searched for three days, looking in vain

for any evidence of Major's line allegedly running south from Macomb's monument, but found nothing. He ended the survey and returned his work. Still, the seemingly endless surveys connected to the Texas boundary were not yet finished.

In 1900, Deputy Surveyor Levi Preston contracted with the G.L.O. to perform surveys on the Public Lands in New Mexico, near the north and west boundaries of Texas. As part of the work, Preston was to retrace Clark's boundary line along the northern portion of the 103rd Meridian and connect his surveys to it.

Preston started with a Gurley transit at Clark's monument on the south bank of the Canadian River. He ran north seventy-six miles, retracing Clark's line into the northwest corner of Texas. He continued north thirty-four and one half miles to the south boundary of Colorado. He turned west and chained into Macomb's monument and then to Johnston's monument, where he found a stone monument he and Major set in 1874, marked "Major 1874-N.M.-103°L-37°L". He then chained east to south end of Chaney's Cimarron Meridian. There he searched for monuments at the northwest corner of Texas, but found none. Instead he found a fence corner set by the XIT Ranch, which the State of Texas had already accepted as its northwest corner.



B.L.M. map showing the Cimarron Meridian and Base Line, and other principle meridians in the area.

Preston found that the fence corner accepted as the northwest corner of Texas was within one and a half chains of the called distance east of the Johnston monument. He aimed criticism at the previous work: "Professor Darling, Major, Chaney... all failed to recover or reestablish the west boundary and the northwest corner of Texas...Hence I set to work to solve the problem regardless of time and expense."

The matter ultimately came to the U.S. Supreme Court for resolution. New Mexico sued Colorado over their common boundary. Everyone agreed that the 37th Parallel was the correct line. This fight, as it was with *California v. Nevada* and many other state line lawsuits, though not all, was about which incorrectly surveyed line to hold. The court ruled that the Darling line, flawed though it may be, was long acquiesced to as the boundary and newer, corrective surveys were invalid. The Court also instructed that the monuments of Macomb and Preston were to be held.

CONTINUED ON PAGE 36 ►



NALS Board of Directors Meeting

October 4, 2018 • Stanley Consulting • Las Vegas, NV



MINUTES

BOARD OF DIRECTORS MEETING held October 4, 2018 as the offices of Stanley Consulting in Las Vegas, NV.

CALL TO ORDER

President Jerry Juarez called the meeting to order at 10:30 AM

ROLL CALL

Jerry Juarez, President
Jerry Higgins, President-Elect
Greg Phillips, Secretary
Alan Dill, Immediate Past President
Crissy Willson, Executive Director

Doug Larson, Director
Justin Moore, Director
Gene Sawyer, Director

Absent: Jason Fackrell, Treasurer; Jeff Miller, Director; Chris Konakis, Director

Guest: Nancy Almanzan, Past President, Conference Chair, WFPS Delegate

PRESIDENT'S REPORT

Report included in the agenda.

President Jerry Juarez reported that the Washoe County Surveyor position is being retained in-house and technical map checks are being subcontracted. NALS will continue to monitor the issue and will take action to protect the position of County Surveyor if the need arises.

PRESIDENT-ELECT'S REPORT

Report included in agenda.

In preparation for 2019 President-Elect Jason Higgins has held discussions with current Committee Chairs. So that there is a smooth transition between 2018 and 2019 Jason requested the Board of Directors approve the following committee appoints in advance of the January Board of Directors meeting.

Advanced Education – Gene Sawyer
Advanced Technology – To Be Determined
BPELS Liaison – Greg Phillips
Communications/Publications – Carl C.deBaca
Constitution & Bylaws – Nancy Almanzan
Conference/Continuing Education – Nancy Almanzan
Membership – Justin Moore & Alan Dill
Nominating – Jerry Juarez

NSPS Director – Carl C.deBaca
Legislative – Robert Carrington
Professional Practices/Ethics – Justin Moore
Outreach – Jerry Juarez
WFPS – Matt Gingerich & Nancy Almanzan

The Board of Directors approved the committee appointments and recommend Jon Wooten be contacted to Chair the Advanced Technology Committee.

President-Elect Jason Higgins recommended NALS hold a strategic planning session. The Board of Directors agreed that a strategic planning session was needed and authorized the formation of an ad hoc committee.

Action Items: Crissy Willson to research potential locations in Reno and Tonopah and put together a cost analysis. Jason Higgins to Chair the Strategic Planning Ad Hoc Committee.

TREASURER'S REPORT

Report included in agenda.

The NALS financials as included in the agenda were reviewed.

MOVED by Justin Moore and **SECONDED** to accept the treasurer's report as included in the agenda. **MOTION CARRIED.**

The 2019 proposed budget was discussed. A budget was added to cover the expense anticipated to host a strategic planning session. The Board also increased the budget for outreach and discussed potential outreach programs. The proposed budget includes the Board approved \$20 increase in annual dues to offset the raise in NSPS membership dues and provide funds for additional NALS programs.

MOVED by Jason Higgins and **SECONDED** to adopt the 2019 budget as amended. **MOTION CARRIED.**

ADVANCED EDUCATION

Report included in agenda.

The deadline for the NALS Education Foundation scholarship application is October 15th.

EXECUTIVE OFFICE

Report included in agenda.

Executive Director Crissy Willson provided an update on the activities of the Executive Office. We continue to see positive gains in membership and the balance sheet over the last three years has steadily increased.

Crissy reminded the Board that the deadline to nominate members for NALS awards is January 15th. The forms have been provided. Nominations may be made by a member of the Board of Directors, a Chapter, or any regular member with ten supporting signatures.

It is recommended that NALS purchase a new LCD projector and microphone kit. The current projectors were purchased

CONTINUED ON NEXT PAGE ►

more than ten years ago and many of them are in bad shape and do not accommodate a larger meeting room.

MOVED by Jason Higgins and **SECONDED** to purchase an LCD projector and microphone kit not to exceed \$2100. **MOTION CARRIED.**

EDUCATION FOUNDATION
Reports included in agenda.

The NALS/NSPS fund made positive gains this year. The Equipment Fund has been used to support student attendance at the annual Conference and NSPS Student Competition.

The NALS Foundation is offering multiple scholarships including the Great Basin College Scholarship, Rita Lumos Scholarship, Bill Cuddy Memorial Scholarship, and the Hispanic/Latino Scholarship. In addition, stipends are available to offset the cost of books. The application deadline is October 15th.

Donations can be made directly to the NALS Foundation. Other ways to support the Foundation is through Amazon Smile and Benefit Mobile app.

BOARD OF REGISTRATION LIAISON
Report included in the agenda.

BPELS Liaison Greg Phillips reported on the meetings of the Board of Professional Engineers and Land Surveyors (BPELS). BPELS will be hosting a forum in Las Vegas on October 11th. The forum is to promote an exchange of ideas.

CONFERENCE COMMITTEE
Report distributed.

CLSA-NALS Conference
March 23-27, 2019
Silver Legacy Resort & Casino
Reno, NV

Committee Chair Nancy Almanzan reported on the progress of the CLSA/NALS joint Conference. Nancy also provided an overview of the Board and Chapter roles in the Conference.

A conference call will be set up with the NALS Conference Committee and Chapter Presidents. Nancy requested volunteers for specific tasks.

- Doug Larson – NALS Booth Chair
- Greg Phillips – NALS Sponsors/Exhibitors Chair
- Jerry Juarez – NALS Student Volunteer Chair
- Alan Dill – NALS Auction Donations Chair

MEMBERSHIP
Report included in agenda.

The Membership Committee and Executive Office has worked together to develop a membership survey. The survey will solicit feedback from the NALS membership and will be valuable for strategic planning. The Board reviewed and discussed the survey.

MOVED by Doug Larson and **SECONDED** to send the surveymonkey to the membership. **MOTION CARRIED.**

NOMINATING COMMITTEE
Report included in agenda.

No write-in nominations have been received.

2019 NALS Officers
Jason Higgins, President
Greg Phillips, President-Elect
Justin Moore, Secretary
Robert Carrington, Treasurer
Jerry Juarez, Immediate Past President

WFPS
Report distributed.

WFPS Delegate Nancy Almanzan reported WestFed has adopted a resolution in support of QBS (attached).

MEETING SCHEDULE
January 10, 2019 – Board Meeting
February 7-8, 2019 – Strategic Planning
March 23-26, 2019 – Conference



BLM Accepted Surveys



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Nevada State Office
1340 Financial Boulevard
Reno, Nevada 89502-7147
<http://www.blm.gov/nv>



November 02, 2018

In Reply Refer To:
9600 (NV952)

Nevada Traverse
Attn: Mr. Carl C. de Baca
526 South E Street
Santa Rosa, CA 95404

Dear Mr. de Baca,

Here is the survey that was accepted on August 9, 2018. The records of this survey is available in the Information Access Center at the Bureau of Land Management's Nevada State Office located on 1340 Financial Blvd in Reno, Nevada 89502.

Township and Range	Date Accepted	Type of Survey
T. 33 N., R. 70 E., M.D.M.	10/09/2018	Supplemental Plat of Section 8

Please feel free to circulate this letter among the membership of the Professional Land Surveyors of Nevada. The plat and field notes of the surveys listed above, along with all GLO/BLM survey plats and field notes for Nevada can be found at: www.blm.gov/nv. Click on "Information Center" and select "Land Records Search." For additional information about Cadastral Survey in Nevada, please visit our website, at www.blm.gov/nv and click on "What we do," then click on "more" and select "Cadastral Survey."

If you have any questions, please contact Wayne Strickland, Supervisory Cadastral Surveyor, at (775) 861-6557.

Sincerely,

Michael O. Harnening
Chief, Branch of Geographic Sciences

Southern Nevada Chapter Annual Golf Tournament Wrap-Up

by Curt Sumner



The Southern Nevada Chapter held its annual Golf Tournament in early October this year to take advantage of the cooler temperatures and it did not disappoint. The rain held off and it



turned out to be a beautiful day. The turn-out was better than we hoped for and we would like to thank everyone for being a part of another successful association event! The evening open bar and hors d'oeuvres was held at the Rising Star Sports Ranch in Mesquite where an epic game of Corn Hole was played concluding with the needed “hole shot” for the win. The crowd then migrated to the “other side” (thanks Uber!) for more drinks and mingling. The golfing took place EARLY the next morning on the Canyons Course of the Oasis Golf Club followed by a luncheon and prize banquet. They really treated us right and took good care of us at the Oasis. Not enough can be said about our generous sponsors who continue to support this profession and all our needs. We must to be sure to thank them and support them as well! It was a wonderful day, an amazing event and awesome opportunity to hang with our friends and professional peers! A big heartfelt **THANKS!** To everyone for their participation!



The tournament was held in Mesquite on October 6th at the Oasis Golf Course. Here are the 1st and 2nd place teams:

1st Place: Ross Doyle, Augustin Acosta, Brandon Dorion and Will Sizemore

2nd Place: Jeff Miller, Ken Welden, Bill Desjardins and Mike Smith

A special Thanks to all the Sponsors who made this happen!

Thanks to Gene Sawyer and Jeff Miller for contributing this article.



BEYOND BOUNDARIES



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CLSA-NALS CONFERENCE

MARCH 23-26, 2019

Silver Legacy Resort & Casino Reno, NV

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- SCHOLARSHIP AUCTION
- EXHIBITS

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conference@PLSeducation.org
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George Davidson

Point of Rocks
Verdi Bluff
Verdi West Base
Verdi East Base

VERDI EAST BASE

This granitic column once marked the eastern terminus of a trigonometric base line originally measured in the summer of 1872 by the English-born surveyor George Davidson. Working for the U.S. Coast Survey, Davidson established numerous survey stations in the area north and west of this site to determine the 120th Meridian, the boundary between Nevada and California.

From Verdi East Base the surveyors had a connection with the railroad telegraph which provided accurate time for determination of longitude. The original 1872 instrument pier was later destroyed and this column was set in its place in 1892. Davidson's work provided the basis for the resurvey of the state line which began later in 1872 by A. W. von Schmidt.

Nevada Association of Land Surveyors/California Land Surveyors Association
In Memory of the Honorable James H. Thompson and Francois (Bud) Uzes, PLS
2011
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Lahontan Chapter Report

Prepared by Doug Larson,
PLS, President - Lahontan Chapter

Fall 2018

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dlarson@nvenergy.com

President Elect

Todd Enke, P.L.S.
tenke@roanderson.com

Secretary

Ken Mandryk, P.L.S.
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John Gomez, P.L.S.
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Director

Kevin Almeter, P.L.S.
kalmeter@woodrodgers.com

Director

Dan Church, P.L.S.
sierrasurveying@sbcglobal.net

Director

David Crook, P.L.S.
dcrook@lumosinc.com

Chapter Representative

Justin Moore, P.L.S.
justin@odysseyreno.com

Past Activity

No monthly meetings were held in June, July or August due to our traditional summer break.

September's meeting was very well attended as it was of wide interest to our local surveying community. On Wednesday the 19th at 6 p.m. the Lahontan Chapter paid for Sean Fernandez P.L.S. State Cadastral Surveyor for the State of Utah, to travel to Reno to speak on the Nevada Virtual Reference System that Utah is now administering. He gave a very informative talk that was well worth the expenditure to the chapter.

Larry Grube P.L.S. also spoke and asked for volunteers to participate in a Boy Scouts event known as Camporall which will be October 12 to 14 and will have a Highland games theme.

Future Activity

October's monthly meeting will host Larry Burtness the Washoe County Recorder and Donny LaQue, Washoe County Chief Deputy Recorder.

Our Fall Workshop will be held between 8 a.m. and 5 p.m. on November 2, 2018 at the Associated General Contractors – NAM West Training room.

Our speaker will be Mr. Landon Blake P.L.S. whose topics will include "Tools to Solve Boundary Survey and Land Title Problems" and "Assessing and Communicating Risk and Uncertainty in Boundary Surveys" Cost will be \$125 for members, \$175 for non-members, which includes a continental breakfast and a catered lunch.

November's speaker will be Dwayne Smith Director, Engineering and Capital Projects Washoe County Community Services Department

Christmas Party is tentatively scheduled for December 6, 2018 at the Revision Brewery in Sparks beginning at 3:30 pm.



Southern Nevada Chapter Report

by Jeff Miller, PLS, WRS
2018 President Southern Chapter

The August, September and October meetings were luncheons and were held at Fogo de Chao and very well attended with an average of 40 members. To recap, the September meeting was very informative with the leaders from Clark County, The City of Las Vegas, North Las Vegas and The City of Henderson speaking and answering questions regarding the upcoming projects in each entity.

The 2018 SNALS Golf Tournament was a huge success with over 90 golfers participating. It was held on October 6th at the Oasis Golf Course and on Friday evening, October 5th there was an open bar with appetizers in which over 50 people showed up and a good time was had by all.

Our November Membership Meeting will be held at Sierra Gold as we honor the Past-Presidents. This has always been a favorite of mine, as we should always respect the individuals who came before us and laid the groundwork for this amazing Association.

Our Christmas Party will be held on Friday, December 7th at the Suncoast hotel and we are expecting a great turn out. Tickets are now available through Gene Sawyer, who is the President-Elect this year.





Lahontan Chapter / Bigby & Associates Look at U.S. Marine Corps for Youth Outreach

by Justin Moore, PLS

As we all struggle to find the next generation of Land Surveyors to replace us when we die, or for the lucky few that get to retire, the same question arises, "Where are these youths, and how do we reach them?"

Every level of NALS has a standing committee called "Outreach". In the Lahontan Chapter that committee is chaired by Dan Church and assisted by Jason Caster. We support various youth activities and organizations such as WCDSD career days, Scouts of America (AKA boy scouts and girl scouts), college scholarships, and STEM days. This year Doug Larson (Lahontan President) challenged the board to find new ways of outreach, and we did.

The military has always been an untapped source that we have discussed but haven't pursued until now! It is my honor to announce that this year the Lahontan Chapter of NALS and Greg

Bigby of Bigby & Associates have made monetary contributions to the *Devil Pups Youth Program for America*. This non-profit program is designed for youths ages 14 to 17, any gender, that reside within the states of Arizona, California, Nevada, and Utah. 600 Devil Pup cadets spend 10 demanding days at Camp Pendleton, CA performing self-confidence, self-discipline and self-reliance challenges. One of those challenges that all cadets must complete is orienteering. They are all taught how to read topography maps, read a compass, orient to the cardinal directions, and search out plotted waypoints. Challenges such as these are many kids' first introduction into the world of land surveying.

The program is completely free to participants and is funded by generous donors. The Lahontan Chapter of NALS and Bigby

& Associates both sponsored this worthy program back in June of this year and at our October general membership meeting we were awarded with a Certificate of Appreciation and a Challenge Coin (military symbol of accomplishment and honor) by the Northern Nevada Area Coordinator of Devil Pups. As a veteran

of the USAF and Professional Land Surveyor, I would personally like to say "thank you" to every Lahontan member for your continued support, and a special than to Bigby and Associates for your unsolicited generosity. We all eagerly look forward to seeing a portion of the next generation of land surveyors coming from all branches of the military. OORAH!

[www.devilpups.com /support-devil-pups/](http://www.devilpups.com/support-devil-pups/)



Lahontan Ch. Pres. Doug Larson, Devil Pups coordinator Carl Rodriguez and 2018 Devil Pup graduate Dean Moore



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Reservations and Land Grants

In December of 1880 Daniel Major entered into a contract to survey 40-acre allotment tracts for the Uncompahgre Ute Indians at their reservation on Colorado's Grand River. The Interior Department considered the matter to be of some urgency. The agency instructed Major to establish a special base and meridian to control those surveys, rather than connect to an existing Public Land survey, which was at considerable distance from the reservation. The methods used for running township and section lines were to be in accordance with the G.L.O.'s Manual of Instructions, but Major was to further subdivide the sections into forty acre tracts by setting all 1/16 corners along the perimeter of each section. The interior lines were then to be run and marked only from east to west from opposing 1/16 and 1/4 corners. This later became known as the 3-Mile Method, as it required Major to run an additional three miles per section.

Major established his survey camp on the north bank of the Grand River about 2 miles upstream of the confluence of the Grand and Gunnison Rivers. There he made observations for latitude over 5 nights. From that location he ran his meridian north 3 miles and 47 chains and established the Initial Point for what he called the Ute Meridian and Base Line. From his new Initial Point he extended exterior township lines along the meridian and the base line, setting cottonwood posts and building mounds. He then subdivided 12 1/2 townships.

At that point, Major was directed to discontinue the survey. No patents for allotments were ever issued and the reserve was soon returned, by an act of Congress, to Public Land. He was then directed to proceed to Utah and conduct another survey for the Ute Indian lands there. He was paid forty thousand dollars for both contracts.

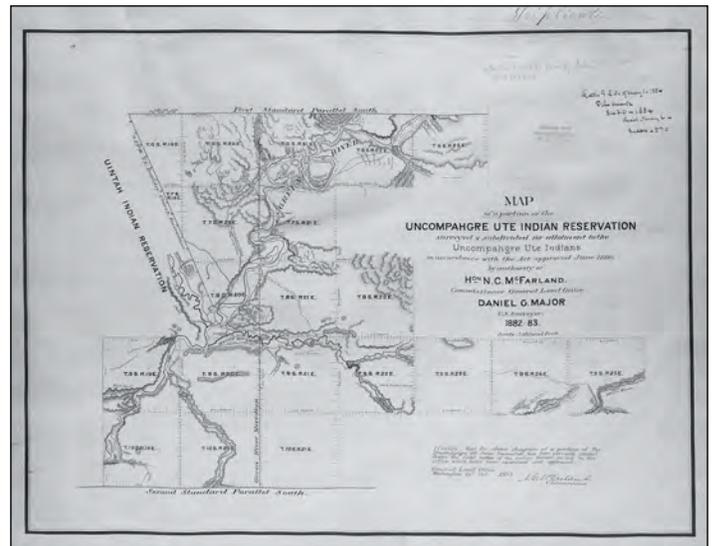
Major then surveyed and subdivided lands for the Red Cloud and Spotted Tail Reserves in the Dakota Territory. He also surveyed land for allotments to the White River Ute Indians and ran a portion of the Uintah Reservation line. Major laid down that portion of the Ute Reservation line running along the 107th Meridian in Colorado. His brother John also took contracts for Reservation surveys, surveying the north and east boundaries of the Cheyenne and Arapahoe Reservations in the Indian Territory in 1885. John was named a U.S. Examiner in the 1880's, in addition to U.S. Surveyor.

In 1883, John Major retraced a portion of the Beaubien and Miranda Land Grant in Colorado and New Mexico. This later became the Maxwell Land Grant, comprising over 1.7 million acres, at one time one of the largest contiguous private holdings in the United States.

The Montana and Dakota Territorial Boundary

In June of 1885, Daniel Major was awarded a G.L.O. contract to survey the boundary between the Montana and Dakota Territories. This north-south boundary was coincident with the 27th Meridian west from Washington, between the 45th and 49th Parallels. He went to the field in August with his brother John. What happened to the brothers and their party in many ways typified field conditions for 19th Century surveyors.

They positioned their astronomic observatory near the Mingsville, Montana station on the Northern Pacific Railroad, now called Wibaux. There they could utilize the railroad's telegraph line.



Map of a portion of the Uncompahgre Ute Indian Reservation in Colorado, surveyed and subdivided for allotments to the Uncompahgre Ute Indians. by Daniel G. Major, 1882-83. J. Willard Marriott Library, University of Utah

They obtained the cooperation of the Washburn University Observatory, over seven hundred miles away in Madison, Wisconsin and began coordinated time signals for longitude. During eighteen days of observations through the end of August and into September, Major reported that cloudy weather, soft ground and vibrations from passing trains constantly hampered the work.

Satisfied they had sufficiently determined the latitude and longitude of their observatory at Mingsville, they ran east 6 miles, 28.51 chains to the 27th Meridian. From that point, they ran south on a random line one hundred and thirty-seven miles until they reached a point near the northeast corner of Wyoming Territory on the 45th Parallel.

In the distance, the Majors found a monument set in 1877 by Rollin Reeves, another U.S. Astronomer and Surveyor. It was nearly seventy-one chains west of their random line. They nevertheless constructed a large monument a bit east of their random line, at what they believed was the southwest corner of Montana.

The party then worked their way north on their boundary, setting 6" by 6" posts and digging pits every mile. When they lacked wood, they build stone cairns. As they worked their way north, three of Major's party quit. He was forced to look among the sparse homesteads for men and wagons to replace them. They were plagued by bad weather and had to divert the wagons tens of miles off the line to find fords or ferries over many creeks and the Yellowstone and Missouri Rivers.

In an oral history of the boundary survey, William Crenshaw, one of Major's party, recalled some of the troubles they faced along the boundary. "The third day out from Little Beaver Creek we had to go through the Cannonball Badlands, and the wagons had to go around them about forty miles. Mr. D. G. Major, Dursham, Williams and myself went through the badlands eight miles. We expected to meet the rest of the outfit on the prairies on the North side. But it was getting dark when we got out and we could not see anything of them. We got wood and built a fire and stayed there all night. Mr. D. G. Major was nearly 70 years

CONTINUED ON NEXT PAGE ►



old and it was pretty hard on him to be up all night.” Around the campfire the brothers related their adventures along the boundaries in the West and on the International Boundary with Canada.

Things did not improve. “When we got to the N.P.R.R. our boots were in pretty bad shape and we camped there two days to go down to the store in Mingusville to stock up on grub and shoes.” After crossing the Missouri River they camped at Fort Buford, just inside the Dakota Territory. The soldiers there advised them, “...that we would not find any wood as soon as we left the brakes on the Missouri and we had better take canned meats and hard tack, which we did-and we found as they told us, no wood or water...We melted snow to make coffee and used buffalo chips for fuel.”

Crenshaw described the end of the survey, “The day before we expected to get to the Canadian line Mr. (John) Major told us the story of when the Indians cut him off from the Boundary Survey Party, and that we would find stone pyramids, of loose stones, for marks. They did not mark miles on the International Boundary but made pyramids on high points.” By then it was December and the weather closed in on the surveyors. Sixty mile per hour winds took down their tents and dropped four inches of snow on them. “The next morning was clear and cold but no wind. We got out as soon as Mr. Major could see through his transit...Mr. Major told us to go east until we found a pyramid, and report to him. We built a fire for him and went out. Clayton saw a pyramid about a mile west of us. Mr. Major then took his transit and lined back and made the connection.” At the intersection they placed two large stone slabs set in an “A” shape, and built a mound around it. They placed a piece of parchment with all the names of the party, and the date, inside a small coal oil lamp and sealed the lamp with wax. Crenshaw recalled, “We got through about noon and started back for Buford. We had been six days without wood, or water (except snow water) and we wanted to get out of that bleak country.” They had run the boundary a total of 276 miles, 27.80 chains.

When the party reached Fort Buford, Major took the crew to a restaurant for their meals, while they camped in their tents and waited three days for the river to freeze over hard enough to cross. They followed the Yellowstone River from Buford to Glendive, Montana, on the Northern Pacific Railroad. There Major paid the men and the party disbanded. It was Daniel’s last known survey.

The USGS later found the monument set by Major at the southeast corner of Montana to be at latitude 44° 59’53”.19 north, and longitude 104° 02’ 20”.83 West from Greenwich, or about 27° 03’ from Washington.

Closing the Circle

As the Civil War wore on, Robert S. Williamson was promoted to Captain and made Chief Topographical Engineer for the Army of the Potomac in North Carolina. He saw combat at the Battle of Fort Macon and the Battle of New Bern. Promoted to Major, he returned to California in 1863 and resumed the surveying and mapping of rivers, harbors, coastal fortifications and lighthouses all along the Pacific Coast. He also devoted time to perpetuating monuments on the Houghton-Ives boundary survey. In 1866, Williamson was promoted to Lieutenant Colonel, and was named Commander of the Army’s San Francisco District. In 1868, Williamson accepted the proposal of A. W. von Schmidt

for the removal of Blossom Rock, a serious navigational hazard in San Francisco Bay. Von Schmidt’s complicated plan to blow the rock to pieces proved to be successful. Williamson continued his career until 1882, when he retired from the Army due to failing health. He died from tuberculosis in San Francisco a few months later at the age of 58, and is buried in that city. He never married. Mount Williamson, a 14,383-foot peak in the Southern Sierra, is named for him. Also named in his honor are Oregon’s Williamson River and a western woodpecker, the Williamson Sapsucker.

The brothers Daniel and John, together with their uncle James, attended the commencement ceremonies at Georgetown College in June of 1880. That may have been the last time the three men were together. A few years later, James concluded teaching and was made pastor of St. Joseph’s Church, in Providence, Rhode Island. He died on New Year’s Day, 1898, and was buried in the Holy Cross College cemetery in Worcester, Massachusetts. Daniel Major’s sister Susan married John Buckley who subsequently opened a dry goods store in Utica, New York. In the early 1880’s John’s firm, Buckley & Co. experienced financial difficulties and Daniel loaned his brother-in-law money to keep his business afloat. Over the next six years Major loaned Buckley \$12,000, which Buckley promised to repay, with interest. Buckley borrowed large sums of money from others, as well.

However, the loans were never repaid. Buckley manipulated his books to cover his losses and later alleged that Major had given him the money as a gift. In March of 1886 Major sued his brother-in-law for the money, plus damages amounting to a total of \$13,502, or roughly \$320,000 in today’s dollars. Buckley appealed and in 1890 the appellate court reduced the amount Buckley owed to Major to \$12, 656.

Daniel stated in court that he had left his surveying business, and the suit against Buckley, in the hands of his brother John while he was working in the West. Upon his return, Daniel found his brother was ill and unable to manage his affairs. All the while, the suit dragged on.

In the end, the matter was not resolved in time to benefit Daniel Major, though the legal struggle may have taken a toll on him. He died at St. Vincent’s Hospital in New York City on February 24, 1889. His brother John, as he had in so many ways, followed his brother, even in death. John died in St. Vincent’s Hospital thirty-six days later. Neither man had ever married. The brothers are buried, together with their aunts Margaret and Mable Major, in the Holy Rood Cemetery in Washington, D.C. The graves of both brothers were unmarked and are now lost.

Daniel and John Major logged a remarkable record of boundary surveying in the Trans-Mississippi West. Between them they marked many thousands of miles of state and territorial boundaries, base lines and meridians, township boundaries and subdivisions, reservation boundaries and land grants. Still, their names all but lost to posterity.

In this marvelous age we live in, it is easy to forget that surveyors like the Major brothers spent months in the field obtaining a single latitude and longitude, when a mere glance at our cellular telephone can place us on the Earth with far more precision than they could ever hope to attain. The lines that the brothers ran are, for the greatest part, still recognized today. The monuments they built are their legacy, for they left little else.

CONTINUED ON NEXT PAGE4 ►

ENDNOTES

¹Warner remained in California after the Mexican War and conducted the first survey of Alcatraz Island. He surveyed the military reservation at the Presidio in San Francisco and later the Sacramento townsite, assisted by Lt. William T. Sherman. Warner Valley, the Warner Mountains, Warner Lake, Warner Rim, Warner Canyon, Warner Peak and the Warner Wilderness are named for him.

²Letter dated November 1, 1860 Notes explanatory of the proper manner of conducting the Survey of the Eastern Boundary of California, Lt. R.S. Williamson, Sacramento, California

³Lt. J. C. Ives packed up and left Lake Tahoe in early September of 1861. He delivered his maps and notes to the California Surveyor General's office in San Francisco and returned the Army's instruments to Williamson. But he did not report for duty with the Union Army as instructed. Instead the New York native headed south and in a few months reappeared in Richmond, Virginia, a staff officer for Confederate President Jefferson Davis.

⁴Act of Congress (1864) Enabling the People of Nevada to Form a Constitution and State Government, Chapter XXXVI, Section 2, Boundaries of State

³There were a total of four Washington Meridians used at various times: the Capitol Meridian (through the U.S. Capitol dome); the White House Meridian (through the house of the President); the 1850 Meridian, based on the Old Naval Observatory (though the observatory dome); the New Naval Observatory (the through new observatory's clock room).

⁶A Major Monument: Oregon-California Boundary, Francis "Van" Landrum, PLS, PE, Oregon Historical Quarterly, March 1971, Vol. LXXII, No. 1

⁷The astronomical transit is a much larger instrument than an engineer's transit and is only used to observe a celestial body's crossing of a local meridian or of a culmination. A collimating eyepiece is used to align the lenses of a telescope to ensure that the light collected by the telescope is in proper focus at the proper spot at the back of the telescope. The mercury would be both reflective and level for his purposes.

⁸George Goddard ordered his chronometers hand-carried from Placerville to Lake Tahoe in 1855, when Goddard was attempting to determine the line between California and the Territory of Utah. Major's crew had a substantially longer pack, from San Francisco to Camp Bidwell.

⁹Major's Oregon-California line was retraced in the 1990's in connection with the Fremont Forest boundary. The imprudent surveyor in responsible charge removed the memorials at every milepost that he tied.

¹⁰Later surveys revealed large discrepancies all along the California-Oregon boundary. Major's line deviated from the 42nd as much as a half mile on either side of the parallel. Problems ensued which persisted into the 1980's. In 1985, the California attorney general recommended that the state take the matter to the Supreme Court, as it had with the Nevada boundary. Ultimately, the boundary was left as it was.

¹¹A Major Monument: Oregon-California Boundary, Francis "Van" Landrum, PLS, PE, Oregon Historical Quarterly, March 1971, Vol. LXXII, No. 1

¹²op. cit

¹³op. cit.

¹⁴U.S. Supreme Court, California v. Nevada, 447 U.S. 125 (1980)

¹⁵Johnston graduated from West Point in 1829, in the same class with

Robert E. Lee. Johnston was assigned to the Topographical Corps in 1838. He was a topographer during the Mexican War and was wounded during the assault on Mexico City. He was serving as Quartermaster General of the Army when the Civil War began. He resigned his commission and joined the Confederate Army. Wounded at the battle of Seven Pines, he was replaced by Robert E. Lee. He was later given command of the Confederacy's Department of the West. He died in 1891.

¹⁶U.S. Supreme Court, State of New Mexico v. State of Colorado, (1925) No. 12

¹⁷Mr. William Crenshaw of Anaconda, Montana gave his oral interview on December 18, 1911. It is recorded in the Contributions to the Historical Society of Montana, Volume Eight, 1917

¹⁸Crenshaw was mistaken about Daniel's age. Both brothers would have been in their mid 50's at the time of the survey.

¹⁹Court of Appeals of the State of New York, on Appeal from Supreme Court, New York, 1890, and Report of Cases Heard and Determined in the Supreme Court of the State of New York Vol. LXI, 1890

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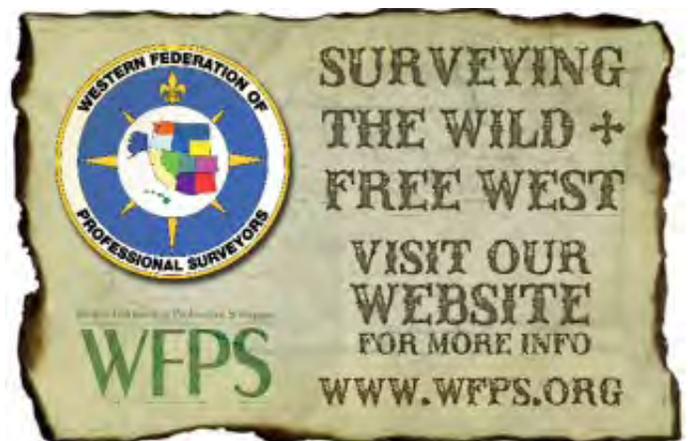




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The Last Page

by Gene Sawyer

Unwritten... for now.

[Qualifier: I've raised four daughters. They've helped me to broaden my horizons regarding music appreciation. This essay reminded me of a song they used to listen to, Unwritten. If you know it you'll see the shared message, if not, check it out.]

Very few of us know or understand the deep passion our four-digit professional brethren have for this profession. Their profound sense of belonging to something. Their inherent and undeniable responsibility to model and mold it; to see it flourish and grow into something that is more than the sum of its parts. An alliance of like-minded individuals vowing to uphold its integrity and to invest their time into nurturing and sustaining the ideals of professionalism chartering a professional organization and its offshoots, the Chapter Associations.

The governance of our profession, the statutes, codes and ordinances, are their legacy. There is great history here and history is of great importance to every surveyor.

Although I've been in the business half my life; I won't pretend to comprehend the level of commitment our forefathers had to the profession and to each other. I'm fortunate to have heard the stories of those formative years, of the good 'ol days, told by the "Old-timer's" themselves. Tales that wound their way through smoke filled rooms, across sticky bar tables where differences of opinion were common place and welcome; where the naïve newcomer listened intently and quietly to the older self-proclaimed experts (possessing vastly more significant and beneficial experience) spin their yarns of heroism in the face of great dangers. Their escapades conjuring images of crazed miners in dirty hats with large caliber rifles, packs of snarling feral dogs, flying snakes and red-eyed burros filled with mindless rage! I've heard the tales of Chapter Association meetings wherein hours-long discussions took place! When people actually engaged in meaningful dialogue and collaborated to affect mutually beneficial changes! Tales of people setting aside their differences and helping one another in times of need. Of times when ideas were shared and plans were made, all the while knowing fully there would eventually be more whiskey than coke in the glass and the evening would inevitably devolve into boisterous declarations of superior knowledge and ability. I've been to the table and had a taste and can tell you this; it was fun but if you ever have the urge to belly up to that bar, remember two things; always wear your tall boots and never show a sign of weakness!

In truth and in all seriousness, I've seen what it takes to facilitate change of the smallest magnitude and I've known the satisfaction of small victories. I've grown to appreciate the work of my predecessors and am humbled by their efforts. I'm hopeful I will see the new generation of college educated professionals take over and work in unison to uplift the profession. Many aspiring professionals are apparently inclined to withdraw from their pursuit of licensure rather than adopt the "I can do it" attitude and take the first steps toward achieving their goals. The "old way" of learning this profession is slipping away, if it's not gone already. There are too few surveyors out there with the time and ability to provide the level of mentorship necessary to prepare people for licensure and still get their jobs done while remaining competitive and keeping their businesses afloat. There is without doubt a long, tough row to hoe for the future surveyor. That is the new reality, however; change can be affected. It will require sustained effort and commitment from those who desire it. I encourage all who desire to become professionally licensed to please, keep your eyes on the prize. Please remember the hard work and accomplishments of those who came before you. Please believe in yourself. Your time is now. You can lead the way for others to follow, in your footsteps. Your chapter in history is yet to be written.

It is unfortunate not all will entirely appreciate the history of our profession or the subtleties of its influence upon us. The poor soul who surrenders to pressure will be resentful of his circumstance, of his stifled professional future and the difficulty in successfully reaching his goals and years later, will look back with a sad heart, regretful for not having been more committed to the dream.



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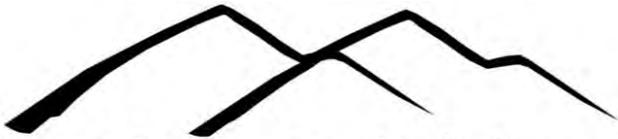
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