

The Tarheel SURVEYOR

SPRING 2018 | No. 18.1

ELEMENTS OF
SUCCESSFUL PROJECT
MANAGEMENT FOR
SURVEYORS
P. 16

2018 CONFERENCE
HIGHLIGHTS
P. 20



2017-2018 NCSS SUSTAINING MEMBERS



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The Tarheel SURVEYOR Spring 2018

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ABOUT NCSS:

- Founded January 31, 1939
- Second oldest professional surveying organization in the United States
- Only professional surveying organization in NC
- Affiliated with the National Society of Professional Surveyors and, therefore, all Professional Members are also accounted as members of NSPS as of July 1, 2013

OUR MISSION:

"A society of professional surveyors and their associates dedicated to enhancing professionalism, improving legislative awareness and promoting the profession of surveying."

Cover Image: By Peter Brennan



WHO WE ARE

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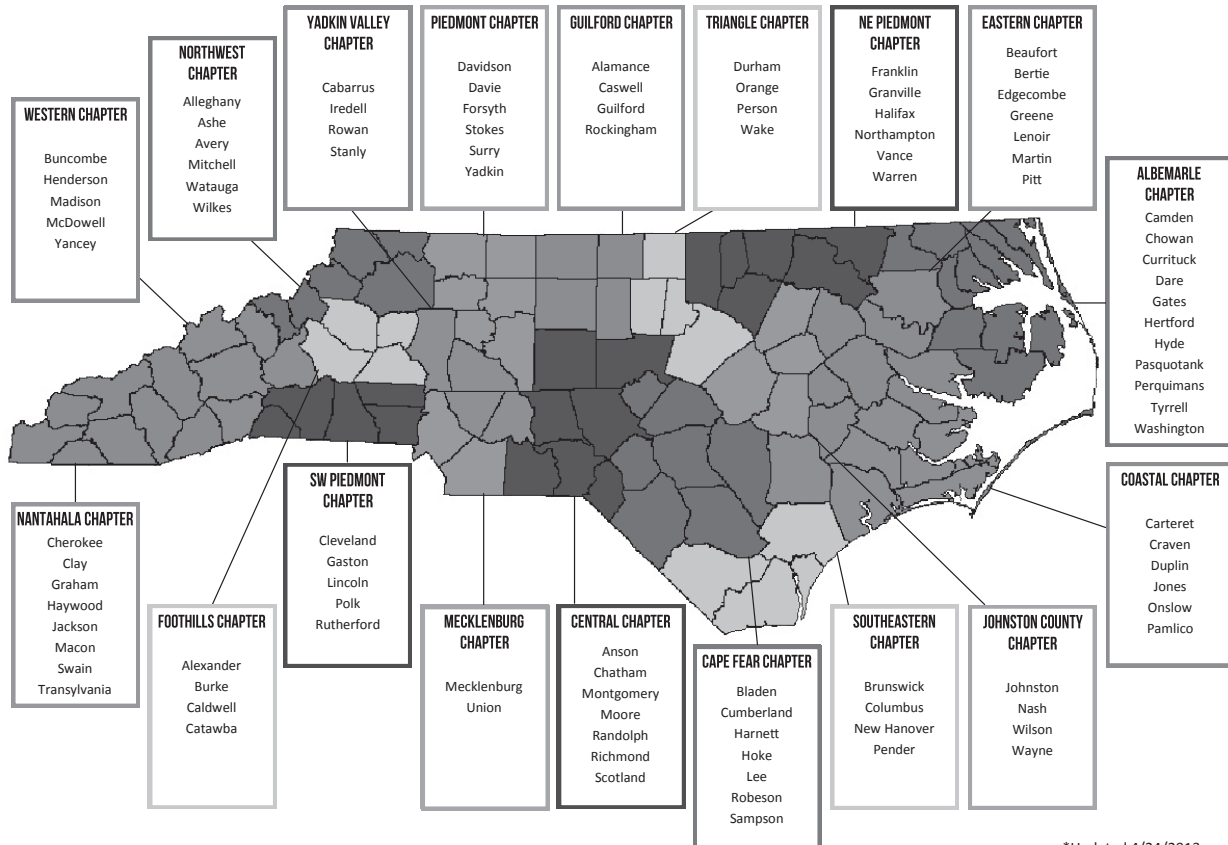
MARKETING & MEMBERSHIP DEVELOPMENT

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CHAPTER MEETINGS

CHAPTER	DATE & TIME	LOCATION
Albemarle	3rd Tuesday 6:30 pm	Cypress Creek Grill, Elizabeth City
Cape Fear	Last Tuesday 6:30 pm	Various Locations, Fayetteville
Central	Last Tuesday 7:00 pm	Pumpkin Creek Cafe, Seven Lakes
Coastal	Last Monday 6:30 pm	Texas Steakhouse, Morehead City
Eastern	2nd Monday 6:30 pm	Parker's BBQ, Greenville
Foothills	2nd Tuesday, 7:00 pm	Timberwoods, Morganton
Guilford	3rd Wednesday 6:00 pm	Various Locations in Greensboro
Johnston County	2nd Tuesday 6:00 pm *no meeting Jun-Aug	Holt Lake BBQ, Smithfield
Mecklenburg	1st Monday 6:00 pm *no meeting Jul-Aug	Dilworth Grille, Charlotte
Nantahala	3rd Tuesday 6:30 pm *no meeting Jun-Aug	Ryan's Steakhouse, Sylva
NE Piedmont	Last Tuesday 7:00 pm	Various Locations, Louisburg
Northwest	3rd Tuesday 6:00 pm	Various Locations, Boone & Wilkesboro
Piedmont	4th Tuesday 6:00 pm	Various Locations, Winston-Salem
Southeastern	Last Wednesday 7:00 pm	Carolina BBQ, Wilmington
SW Piedmont	2nd Thursday 6:30 pm	Dragon Palace, Spindale
Triangle	3rd Tuesday 6:30 pm	Peddler Steakhouse, Raleigh
Western	2nd Tuesday 6:30 pm	Cornerstone Restaurant, Asheville
Yadkin Valley	2nd Wednesday 6:30 pm	Various Locations, Salisbury

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DIRECTOR'S NOTES



I find that I begin each year with a particular focus on a new project. In the past, I have chosen projects such as our scanning efforts, realtor education and chapter visits. This year, I have decided to focus my energy on recruiting the next generation of surveyors. I am

hoping to reach current students who haven't yet decided on a career path.

This effort began November 8-10, 2017 when Dr. Jerry Nave, professor at NC A&T University, and I hosted a booth at the North Carolina School Counselors Association (NCSCA). The North Carolina Society of Surveyors Education Foundation supported our efforts by paying the booth rental fee. Jerry and I both found the event very beneficial. The Conference was held at the Sheraton at Four Seasons in Greensboro. There were over 1200 school counselors in attendance. Our booth location was excellent (right beside the food table), and we had superb traffic between break-out sessions. The repeated theme we heard was that counselors were always looking for non-traditional career paths for students adept at math and science. Most counselors were not aware of surveying as a profession. You've heard the comments before, "Is that a camera?" The surprise on their faces was priceless when we informed them that according to recent salary studies, a graduate with a BS in Geomatics enters the work force with higher pay than someone with a BS in Engineering! When we told them that scholarships were plentiful and applicants few, the counselors really lit up! Scholarship money is a counselor's love language and the Education Foundation speaks it fluently.

As a direct result of the NCSCA Conference, we were invited, on November 30th, to attend a career day at Hillside High School in Durham. Professional surveyors Dale McGowan and Donnie Stallings joined me to discuss the profession and show off their equipment. It was a great opportunity to interact with intelligent, respectful students who seemed to have a real interest in learning about the profession. The results of career days will be hard to track, but we are sure that the overall exposure will pay off in the future. As an aside, that school seems to be incredibly well-run. It was a delight to spend time with them.

Another school in Hillsborough has contacted us to meet

with 3rd through 5th graders in April 2018 to discuss the profession. Jerry Nave is going to attend that career day on behalf of NCSS. Following our Conference and Trade Show in Asheville, I had several other surveyors volunteer to attend career day events in their area. If you are interested in helping us recruit others into the profession by volunteering your time, please contact me and we'll add you to the list for your region. If we could each take a turn donating one morning or afternoon, we may make a difference for the future.

Finally, as part of the outreach focus, I have been designated as proctor for the Certified Surveyor Technician (CST) exams. The CST program is offered through the National Society of Professional Surveyors (NSPS) and is a great way to have well-trained employees, while increasing the chances for them to pass the FS and PS exams one day. I have given the exam twice already, with the next date set for April 5, 2018. If you know someone interested in taking the CST exam, please have them contact me and I'll get another date on the calendar for the summer. In the words of our new President, Jamie Watkins, let's all be "driven to inspire" the next generation of surveyors.

Christy C. Davis

Christy C. Davis, Executive Director





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LETTER FROM THE PRESIDENT



First of all, I would like to take this opportunity to say how truly honored I am to serve as President of NCSS. There have been many great surveyors who have served in this same position over the past 79 years. For me to “Follow in the Footsteps” of all the Past Presidents before me is a very humbling experience. What makes it even better is the fact that I can call many of them my friends. We have something very special here and it is up to each one of us as members to make sure that we can continue for another 79 years.

This brings me to what inspired my conference theme this year “Driven to Inspire.” The North Carolina Society of Surveyors is 1100+ members strong. Can you imagine if we were 2000 members strong? What would it take for us to grow as a society to numbers we’ve never seen before? It would only take each one of us inspiring just one person to join. Whether it is a surveying friend who has been surveying for 20+ years or someone who has just chosen land surveying as their new profession, each of them has a voice that needs to be heard. There are a lot of professional land surveyors (PLSs) in NC that have never joined our society. I honestly think that they are just uneducated about what it is that we do for them and what we represent. It is going to take each one of us getting out there and educating these professionals; informing them of the hard work that our great society does each day to make land surveying a better profession for them.

To put our need of members into perspective, there are over 2400+ PLSs in North Carolina and the average age has grown to 61. During the most recent testing cycle for the PS exam, only two test takers passed. We are losing more professionals than we are gaining. Without professional land surveyors in North Carolina, NCSS will not survive. Without professional land surveyors to keep up with the growing surveying demand, outside entities will start to make their way into our profession. Our society is constantly being faced with new challenges; challenges that threaten our profession as we know it. The ladies that make up our great staff at NCSS are always working hard to recognize these threats and bring them to the forefront. It is my duty as your President, to represent you and fight for you. I will be your voice. I may not accomplish every goal that I set out to do as your President, but just know that I will always be working my hardest to represent you.

I would also like to take this opportunity to say thank you to everyone who made it over to the 2018 Conference and Trade Show in Asheville back in February. This truly was a record-breaking year and I hope that it is a sign of things to come. I would also like to say thank you to the vendors who participated. Without you, it would be impossible to hold such a great event every year. You always seem to step up when it counts the most and for that, I am truly grateful.

In closing, I would like to say that I am proud to serve in a society that keeps GOD within it. A society that still prays before each meeting and who prays before each meal. I would like to quote who I would consider to be the greatest speaker of all time, my Lord and my Savior Jesus Christ. From the book of Matthew, Chapter 19, Verse 26, “With man this is impossible; but with GOD all things are possible”.

Thank You and GOD Bless!

A handwritten signature in dark ink, appearing to read 'James Watkins'.

James Watkins, PLS
NCSS President 2018-2019



NSPS Update

by Randy Rambeau, PLS
NSPS NC Director

Having been re-elected in the fall of 2017 to another term as your NSPS Director, I would like to offer a sincere and heartfelt thank you. I look forward to representing NCSS during the next two years.

Ten days after leaving the exciting and very successful NCSS Annual Conference in Asheville, I was boarding a plane for the NSPS Spring Meeting in Las Vegas, Nevada. This meeting was held at the Luxor Hotel and Casino in conjunction with the Western Federation of Professional Surveyors (13 western states including Alaska and Hawaii) Annual Conference. Just so you know; I did not do anything in Vegas that needs to stay in Vegas, so I am happy to provide a complete report of my activities at the spring meeting.

NCSS was fortunate to have Mr. Bill Coleman, well-known and well-respected former NCSS and NSPS President, in Las Vegas attending the spring meeting.

The NSPS meeting began Sunday, February 18th, with the Student Competition, with twelve school teams from across the country and Puerto Rico participating. The competition was a "Surveying Service" project for a developing country. Each team's tasks included Day 1: field work, Day 2: mapping and presentation preparation, and Day 3: presentation of project and map to the panel of judges. The Oregon Institute of Technology won the competition.

The NSPS general membership meeting was called to order Wednesday morning, February 21, and the 2018 officers were installed. They are President Kim Leavitt, President-Elect Lisa Van Horn, Vice-President Mark Sargent, Treasurer Robert Miller, Secretary Tim Burch, and Past President Jan Fokens.

After the adjournment of the general membership meeting, the initial board of directors meeting was called to order and the various committees reported. Several reports that I believe to be of the most interest to NCSS members are as follows:

- Ron Torrence of the CST Board reported that the

number of CST exams given in 2017 was up over previous years, and the vast majority of certificate holders continue to renew their certificates annually. Also, the CST Board plans to complete the review and update of all exam questions by the end of 2018.

- The NSPS Foundation is continuing to receive requests for assistance from Texas, Florida, Puerto Rico, and the US Virgin Islands following last year's storms. Over \$100,000 in grants has been given to more than 40 applicants. Continued contributions to the Foundation will be greatly appreciated to replenish the fund to assist with future disasters.
- In other Foundation news, 46 applications have been received and are competing for 12 educational scholarships totaling \$29,000. The winners will be announced near the end of March.
- The NSPS Government Affairs Committee, along with our outside consultant John L. Byrd of John M. Palatiello and Associates, continues to pursue and guard our surveying profession interests on Capitol Hill. One of those efforts is endorsing the USGS 3DEP program to provide consistent elevation data, primarily through LiDAR collection, for the entire United States. Once collected and processed, this data can be used by FEMA for the National Flood Insurance Program (NFIP), by engineers and surveyors in the design and construction of infrastructure, and by the nation's farmers.
- Another focus is to protect surveying services from being awarded through "reverse auctions" or lowest bid and to keep qualifications-based selection (QBS) as the proper method to select engineering and surveying services. NSPS continues to fight the battle with the US Department of Labor and its ruling that surveyors are "laborers and mechanics" and are subject to federal prevailing wage law under the Davis-Bacon Act. Other issues and Congressional bills that are being followed are the Digital Coast Act of 2017, Federal Prison Industries (FPI) reform, the FLAIR Act, infrastructure legislation, and workforce development.
- NSPS has also been very outspoken against the effort of the rebranded LightSquared folks to be allowed to use GPS frequencies that would be a detriment to surveyors, farmers, and others.
- As we all know, some of the successes realized on the legislative front require a financial component. The PAC is asking surveyors across the country to

support the NSPS committee with a national goal of \$100,000 in 2018. We as NCSS members understand the importance of PAC contributions, as witnessed by the legislative successes of the last couple of years here in North Carolina.

- Our bid to host the 2022 XXVII International Federation of Surveyors (FIG) Congress in Orlando, Florida was submitted in December 2017. The decision to award will be made at the XXVI Congress in Istanbul, Turkey in May 2018. The last US-hosted Congress was in 2002 in Washington, DC. The only competitor submitting a bid is South Africa, and NSPS is very optimistic about being selected. This international meeting should be a prestigious win—both professionally and financially—for NSPS and its members.
- As I alluded to at our Winter Board Meeting, there was a great deal of discussion on the need to increase NSPS annual dues. NSPS currently has 15,800 members, a number that decreased over the past couple of years. California and Arkansas are the only two states that are not 100% membership states and very few members of NSPS are in those states. The consensus is that the slight decline in membership is attributable to the aging of our profession which is also a concern in North Carolina. A good number of directors expressed their thoughts and opinions and those of the states they represent during the extensive discussion. The dues increase is justified and supported for several reasons, including office staffing, upgrades to our website and existing programs, adding new certification and workforce development programs, increased legislative endeavors, supporting the Young Surveyors Network, and public relations to promote our profession to assist with recruitment of future surveyors.

- An initial motion was made to increase the annual dues from \$40 to \$50 to become effective in January 2019. The overwhelming majority of directors supported the increase, but was concerned about implementing it before 2020. Many directors felt they needed additional time to present the proposed increase to their respective states and to complete the process at the state level. After extended and robust discussion, action on the motion was postponed until the NSPS Fall meeting, which will be held October 17-20, 2018 in College Park, Maryland, in conjunction with the Maryland Society of Surveyors Conference.

I was very encouraged by the support offered by the NCSS Board of Directors at our Winter Board Meeting in Asheville when I first reported on the possibility of a NSPS dues increase. As an individual member of NSPS—prior to North Carolina being a 100% membership state—and paying annual NSPS dues of \$225, I firmly believe annual dues of \$50 are a tremendous bargain! For anyone who does not believe membership in NSPS—the only national surveyors organization—is worth much more than \$50 per year, I encourage you to explore the NSPS website. There is a wealth of information available that is of vital importance to you as an individual surveyor and to our profession as a whole. In my opinion, any single item above is worth the less than \$1/week we would pay in dues.

I will be happy to discuss the concerns and ideas any of you may have and that will assist me in better representing each of you. Please don't hesitate to contact me. (See page 2.)



Randy Rambeau has been the Geomatics Office Manager at McKim & Creed, Inc. in Raleigh since 1991. He graduated from NCSU and became a PLS in 1978, when he joined NCSS. Randy now serves as our NSPS NC Director.



Otis A. Jones

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MARK YOUR CALENDAR

Education Foundation

by James E. Davis, PLS
Education Foundation President



The NCSS Education Foundation begins a new year with some new faces on the board. New members are Mike Adams and David Lee. Returning members are Jim Davis, Gale Brown, Chris Witherspoon, Billy Digiacomio, Lora Younts, John Furmage and Doug Suttles. The 2018 officers are: Jim Davis, President; Doug Suttles, Vice President; John Furmage, Treasurer; and Mike Adams, Secretary.

As we move into a new year, I want to thank all the members for great support over the last year. We had another successful year with the annual cash raffle selling all of the tickets and raising \$7,000 for scholarships. Also, we continue to have great success with the license plate program which has generated approximately \$9,000 over the last year. It was great to see so many surveyor license plates in the parking lot at the Conference in Asheville. We will continue this year with another push to sell tags. There are still plenty of surveyors and survey companies out there that need a surveyor license plate. It's easy to do. Just select a NC Education Foundation license tag the next time you renew. It only costs an additional \$25 and \$15 of the proceeds benefit the Foundation's work.

We have had great success over the last several years in our fundraising activities. As the value of the endowment has increased to over \$250,000, the board has discussed ways to make a bigger impact on the development of education in the state. We have decided to establish a goal this year to grant a total of \$10,000 in

scholarships with the goal of giving one scholarship of \$5,000. Also, in order to provide a connection for the scholarship recipients to the North Carolina Society of Surveyors (NCSS), we have decided on an annual basis to name the \$5,000 scholarship after a current or former NCSS member who has contributed to the development of surveying in the state. This year we have chosen to honor Don Clements for all that he contributed to NCSS over the years and for his generous donation of the use of his beach condo for a raffle that generated thousands of dollars for the Foundation.

We continue to support the 4-year and 2-year surveying programs through scholarships and educational promotion programs. The Foundation attended the annual NC Math Teachers Conference in October 2017 and provided information on surveying careers and the Trig-Star program to math teachers. For those who are interested, the Foundation continues to support the Trig-Star program to introduce practical surveying problems to high school students.

As we hear all the time, the average age of the surveyor in the state continues to go up. While some may view this as a problem, I see this as an opportunity. We all know that surveying is a great profession. There are great education and career opportunities and a variety of career paths. All we need to do is get the message out to the next generation.

The NCSS Education Foundation continues to support and carry out the purposes of NCSS. As your Education Foundation, we focus on the areas where we believe we can have the most impact which are: 1) Growing the endowment, 2) Providing a funding mechanism to support a 4-year program and 3) Providing a funding mechanism for scholarships.

If you have any ideas for the Foundation to consider or would like to attend a meeting, please let me know (jedbuckeye@gmail.com) or contact one of the other board members.



Schedule at a GLANCE

APRIL 13, 2018
Elevation Certificates & High Watermark Training
with Nantahala Chapter
8:00am-4:30pm
7.5 PDHs
Jackson County Family Resource Center
Webster, NC

APRIL 20, 2018
CFS Update
12:00pm-4:00pm
4 PDHs
NCSS Office
Wake Forest, NC

APRIL 27, 2018
Case Study Ethics & NCGS Workshop
with Coastal Chapter
8:00am-4:30pm
7.5 PDHs
Jacksonville Department of Public Safety
Jacksonville, NC

MAY 11, 2018
GNSS/OPUS/Elevation Determination
8:00am-4:30pm
7.5 PDHs
GTCC Conference Center
Colfax, NC

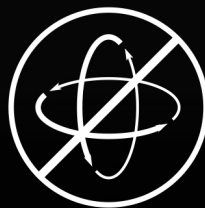
JUNE 1, 2018
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Exploring MAPS

(Museum of Archives & Preservation of Surveying)

by David Alley, PLS

MAPS President

Members

Greetings Membership, my name is David Alley, PLS, current President of NCSS MAPS. I would like to introduce you to the committee members. Current members of the MAPS Committee are: Chris Witherspoon, PLS; Kristian Forslin, GISP, PLS; Michael Barr, PLS (Secretary/Treasurer); NCSS President Jamie Watkins, PLS; Joel Johnson, PLS; and me. Our small group is passionate about preserving our history, and as part of this endeavor, we have several projects that are ongoing.

Mission

NCSS MAPS is a 501 (c)(3) non-profit organization housed within the NCSS office. Our mission statement charges that we "preserve the past of surveying and invest in the future."

Current Financial Status

To see a complete financial report, you can contact the NCSS office and request the latest quarterly report. We have been fortunate to reap benefits from the sale of the book *Following in Their Footsteps*. As our efforts to scan maps have increased, we are aware of the need to continue in our fundraising efforts. All donations are tax deductible.

NCSS MAPS Initiative 2018

We are currently scanning maps donated by surveyors to NCSS MAPS. These maps create a database of information for members of NCSS. The MAPS Database was introduced in 2011 as a way to record and preserve the work of retired and deceased North Carolina surveyors and can be accessed at www.ncsurveyors.com. We currently have over 5,400 maps available for research purposes. The 2018 initiative is a push to acquire more maps to include in the database. We have reached out to county GIS Departments across the state to ask for copies of unrecorded maps they have on file. We currently have several counties that are willing to share maps with us. Help us to spread the word to other county and city employees. We have an intern who is currently scanning maps to include in the database. Having access to this digital archive is one great benefit of NCSS membership. If you know of anyone who would like to donate or share their maps or their time for this endeavor, please contact your local NCSS chapter. (See page 2 for contact information)

Book Sales

We currently have in stock approximately 400 copies of *Following in Their Footsteps*, which traces the history of surveying in North Carolina. This year, we would like to concentrate our efforts to sell these copies to raise funds for NCSS MAPS. We are exploring setting up an Amazon account to sell the books nationwide. If you would like to have a copy of this exceptional history book, please contact the NCSS office (919.556.9848) The price of the book is \$25 for one or two for \$40, plus shipping.

Bodie Island Geodetic Baseline

The Bodie Island Geodetic Baseline was established in 1848 and the current trail to the monuments is in disrepair. Charlie Brown, PLS formerly with NCDOT, visited the baseline recently and brought to our attention that the trail is overgrown and is in need of care. We all agreed that this would be a perfect project for NCSS MAPS. I have contacted Jamie Lanier with the National Park Service, since Bodie Island is part of the Cape Hatteras National Seashore, to coordinate and determine what steps we need to follow in preserving this valuable part of our history. There will be more information coming soon and we hope to have the cooperation of NCSS members to restore the trail and maintain it for the future.

History Museum

We are currently working with the Director of the NC Museum of History to develop a display in downtown Raleigh to be curated during National Surveyor's Week in 2019. Hopefully, there will be more information coming soon.

Fundraisers

To help fund the projects above, we have the annual golf tournament in Morganton in the fall. Also, we are working on the details of a new fundraiser, a bowling tournament, possibly to be implemented beginning this summer. NCSS MAPS is here to serve the members of NCSS and to preserve our history. Any donations you can give in either time or funds are greatly appreciated and help all members of NCSS. If you have questions, comments, thoughts or ideas, please contact me (dalley@allied-engsurv.com).

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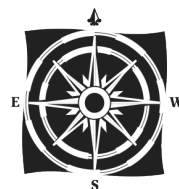
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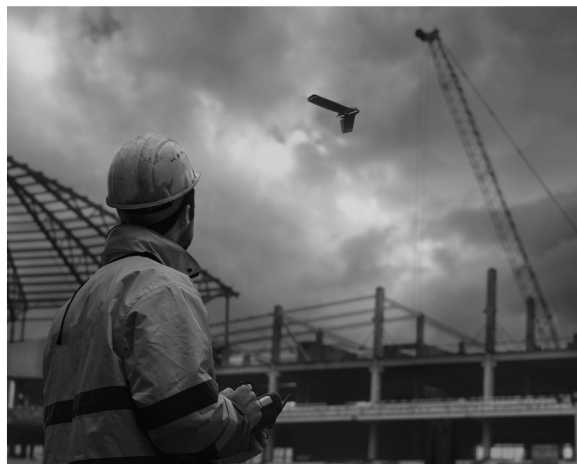
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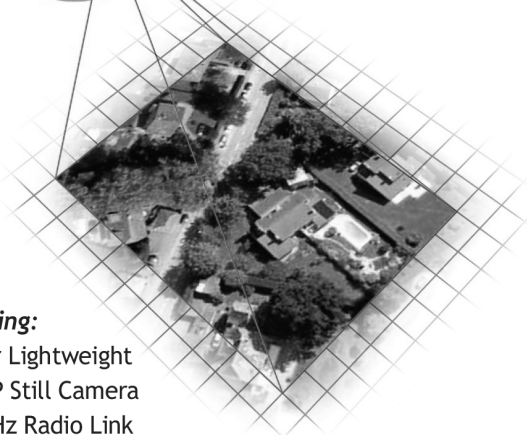


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Gifted Flying

by Peggy Fersner, PE

As noted last month, the initial ABET accreditation was successful. That does not mean the program and the faculty can rest on its laurels since we now are involved in what ABET (our accrediting organization) calls a continuous improvement cycle. This means that we are always assessing our students' and program's performance then analyzing what needs to be improved upon and finally following through with that. Yes, and after that we assess again. Staying relevant is also something that we as faculty and a program must also do.

The biggest shift in our industry had been in the proliferation of small unmanned aerial vehicles (UAVs) for data collection. NCSS has a UAV committee that is looking at some of the hot topics that this technology is creating. As the four-year academic arm of the profession in North Carolina, it is our obligation to make sure that our graduates have the knowledge and skills that enable them to address these current issues. We are now modifying our curriculum to include two courses that address the UAV technology. GEOM 107 "Introduction to UAVs" will be an introductory course that will promote knowledge of the civil aviation authority regulations, best management safety practices, as well as current and potential uses for UAVs. We are hopeful that this will appeal to a broad group of students across the university as well as our own. GEOM 465 "Applied UAV Processing" will build on our GIS and photogrammetry courses and provide our student with a functional understanding of UAV components and sensors as well as the management of aerial visualizations, post-processing and innovative applications. Nothing is ever easy, of course, and we put the cart before the horse again – we had no UAVs. For those of you that have been around since the inception of the program, you know that we rely on generous benefactors in the profession to provide us with our basic equipment needs. Drum roll, please....

Duncan-Parnell just donated the multi-rotor Trimble ZX5 to the Geomatics program. Daryl Huffman, Executive Director of Duncan-Parnell Geospatial Division, reached out to us in January regarding this potential donation and it became a reality at the NCSS Conference in Asheville. This will allow our seniors to continue to develop their UAV planning, flight and post-processing skills in the GEOM 465 course as well as allow our research arm to flourish. The impact that this donation will make on the program is priceless. Everyone please give the folks at Duncan-Parnell a generous round of applause for their generosity. And just in case anyone is wondering – the beginning students in GEOM 107 definitely will NOT fly this!



Peggy Fersner is the Geomatics Coordinator at NC A&T State University in Greensboro. She has been on staff since 1993, teaching surveying, GIS, and hydrology courses. She has earned both her BS and MS in Civil Engineering.

Welcome New Licensees

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NSPS Memorandum of Understanding

In 2012, NCSS agreed to partner with the National Society of Professional Surveyors (NSPS) to foster membership on both the state and national levels. As a result, your membership with NCSS now includes dual membership with NSPS. Read the MOU on our website at: www.ncsurveyors.com/about_ncss/governing_documents/nsps



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Winter Surveying in North Carolina

It was a long cold winter in North Carolina this year. While the US Postal Service may claim the motto, "Neither snow nor rain nor heat nor gloom of night stays these couriers from the swift completion of their appointed rounds," we think this motto could just as easily be claimed by land surveyors.



French Board River Submitted by Chris Jordan



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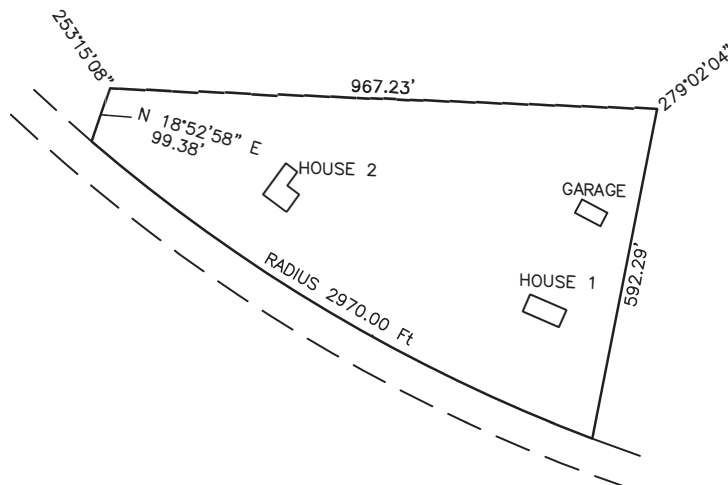
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Elements of Successful Project Management for Surveyors

by Peter Brennan, PLS

The role of the Professional Land Surveyor is becoming increasingly complex. A land surveyor is expected to be an expert in many diverse fields. Everyone expects the surveyor to be an expert in measurement, but few realize the many other skills that are required to produce a finished survey product. Surveyors must have a thorough understanding of boundary law. If measurement is a science, then the application of boundary law can only be described as an art. It takes years of experience and studying law books and court cases to develop this expertise. In addition to this, surveyors are also expected to act as land designers. Knowing the intricacies of the local land development ordinances and all regulatory restrictions of a parcel of land is necessary for successful subdivision projects. As important as these skills are, perhaps more important is project management skills.

A colleague of mine explained it like this: “the only thing we have to sell is our time.” Successfully managed projects make the difference between a profitable company and one that is headed for hard times. How a project is or isn’t managed is the determining factor. The Project Management Institute describes a project as follows: “a project consists of a temporary endeavor undertaken to create a unique product, service or result.” For most of this article, we are going to use a survey for a mortgage as an example. The specific objective of the mortgage project is the delivery of a map for a real estate closing. The unique set of interrelated activities may include deed research, field surveys and mapping. The utilization of resources refers to the time and materials it takes to perform all the required activities. A few examples of resources are CAD Technician time, field crew time, computers, field equipment, stakes and flagging. Typically, survey projects do not require a tremendous amount of materials.

Project success is dependent on a few factors among these are: scope, quality, schedule, budget, resources, risk and customer satisfaction. Let’s review each of these.

Land surveying is a unique mix of advanced mathematics, nuances of law and industry jargon. Surveyors become experts in these matters by study and experience. Many potential clients have never been involved with

surveying projects in depth and have difficulty “speaking the surveyor’s language.” Subsequently, project scopes written by clients, even engineers, can sometimes be unclear, or inadequate. If a client does not understand the complexities of the survey requirements, they will focus on the one thing they do understand, the fee. I have seen survey proposals with low fees that do not meet the accepted standards. These proposals contain clauses such as “the surveyor will locate any boundary corners easily found.” These types of agreements not only demonstrate a lack of professionalism but also open both parties up to contract disputes. A well-defined scope of work should address the client’s specific needs and not be a boilerplate template from previous projects.



Left to right: Matt Hypes (Project Manager) Mike Niklicki (Construction Manager) Ed Ashworth (Lead Surveyor). Prior to beginning construction layout, meetings are held to discuss schedules, workflows and billing processes.

It is very important that the surveyor know his client, and more importantly his client’s needs prior to preparing a scope, or proposal. Understanding both a client’s goals and also their “pain points” can help guide the proposal writing. To effectively write a comprehensive proposal, it is extremely important to make sure a project scope is prepared and communicated well. Does the survey include a flood hazard area determination? Will the property lines be staked in the field? Having a well-defined scope can reduce confusion and delays.

For land surveyors in North Carolina, guidance for project quality is readily available. The North Carolina

Board of Examiners for Engineers and Surveyors has established minimum standards through administrative code. Additional quality standards may be required by the lender, such as American Land Title Association and National Society of Professional Surveyors, Inc. (ALTA/NSPS) requirements. All survey firms should have standard procedures that staff follow to ensure conformance with quality standards. Failure to meet quality standards can result in project delays, unnecessary costs, and potential professional liability.

The project budget is the amount the client is willing to pay for the services. There are many factors that go into determining the budget. Labor costs and materials are the primary factors. Some other factors may include market conditions, difficulty of site conditions or a compressed “turn around” time. Understanding your client and their needs is essential when pricing the job. A client who is pressed for time may be perfectly fine with paying a premium for service on a tight deadline. Sometimes the opposite is true and a client may feel that he is being taken advantage of. A strong relationship and good communication will help to ensure that everyone’s needs are met and the project is profitable for all parties.

There will always be pressure to price a job low. Many prospective clients are only interested in entertaining low fees. Many times, surveyors will take little compensation to “keep people busy.” This is especially true during down times in the economy. The responsibility of the project manager is to price projects to meet the overhead costs and provide a decent standard of living for the company’s employees. The fee should also be developed with the idea that the company will need to make a profit. This profit is essential if the company is going to grow, replace or add new technology or equipment, or to weather the economic downturns.

There will always be someone cheaper in the marketplace. Those companies have lower overhead, less material wants and needs, or no clue how to run a business. Building relationships with clients is essential for receiving adequate fees. If a client’s needs are being met, if the project manager communicates well, and if the client feels that they are valued, a strong business relationship can be built. The strength of this relationship will result in frank negotiations on fees that will protect everyone’s interests. If a client perceives the surveyor as an essential member of the team, and not just a service provider, then better fees can be justified and will likely be agreed to.

As discussed earlier, the project resources are typically related to labor and a small amount of materials.

Understanding the existing and future demands on resources can have a major effect on project scheduling. Land transactions, whether development or sales, typically involve financing from banks or investors. This puts an urgency on getting to the closing table and a rush on the survey. Because survey technicians can only work on one project at a time, the manager must be careful not to allocate the same personnel to multiple projects at once.

One of the easiest mistakes to make is to insert a new project into the schedule at the expense of projects that are already on the books. It may be that the new project will be a lucrative or high-profile project. Additionally, the client may be a repeat customer or a customer that you have been courting for some time. These may be perfectly good reasons to add the project, but considerations must be made to accommodate the schedule change. Adding staff, hiring subcontractors, or approving overtime are all decisions to consider. Adding the project and “hoping everyone works hard to get it done” is not project management, it’s wishing. It’s also a very common and easy mistake to make.

Another factor that must be considered is exposure to risk. Implementing new equipment, procedures or staff can cause delays due to the learning curve. These types of changes can be positive, but care should be taken during implementation. If a new piece of equipment is added, and the implementation is well supported, the survey technicians will likely take to it well and there will be an increase in productivity and morale. If the technology change is poorly supported, the opposite might be true resulting in slower productivity and decreased morale.

Weather can also have a big impact on a project. If a crew must make multiple trips due to rain or snow, it can affect both the budget and the schedule. Before making



Left to Right: Jake Simpkins (Survey Technician), Howard Asberry (Survey Party Chief) Matt Hypes (Project Manager). Frequent meetings are held on-site to ensure timelines and quality measures are being met.

scheduling commitments, consideration should be made for weather forecasts and leaving some “slack time” in the schedule. Rain or snow days should not be entirely wasted. Equipment checks and adjustments, supply restocking and reordering, and file management are effective uses of that time. Taking care of these tasks during “downtime” will help maximize time on-site during the good weather work days.

Perhaps the most important factor is customer satisfaction. It's obviously very desirable to have projects with high profit margins. However, if those profits are obtained by providing poor quality work, it is very unlikely that the client will be a repeat customer. The adage “bad news travels fast” applies here, and a few poorly executed projects can seriously harm a company's reputation and long-term prospects. Meeting minimum survey standards and complying with a development ordinance should not be a project goal. These are expected. If a firm meets these requirements it is not a guarantee that the customer will be entirely satisfied. There are many ways to determine customer satisfaction.

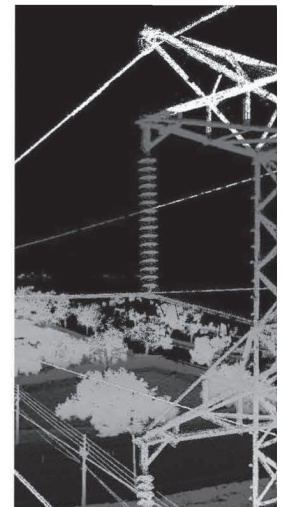
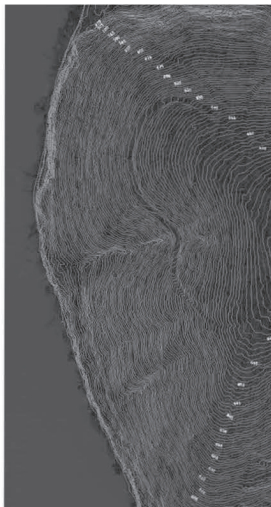
At the completion of a project, the surveyor should review the project for lessons learned. Some examples might

be, did we make all our promised deadlines, if not, why, and how can we avoid those delays in the future? Were our submittals adequate and did they represent the best solutions? Was our original scope and proposal clear and comprehensive? Did we communicate well with the client? Many times, customer dissatisfaction is not a result of the poor work, is a result of poor communication or poor attitudes.

These project elements: scope, quality, schedule, budget, resources, risk and customer satisfaction, have one common thread. High marks in any of these areas is directly tied to the level of communication between the client, project manager and resource people working on the project. Effective communication prior to the start, during the performance of and after the completion of a project can lead to a stronger client base, engaged and effective employees and a profitable endeavor.



Peter Brennan graduated from Wake Technical Community College with an A.A.S. degree in Surveying Technology, while working for NCDOT. He has been the City Surveyor in Wilmington, North Carolina since 2011.



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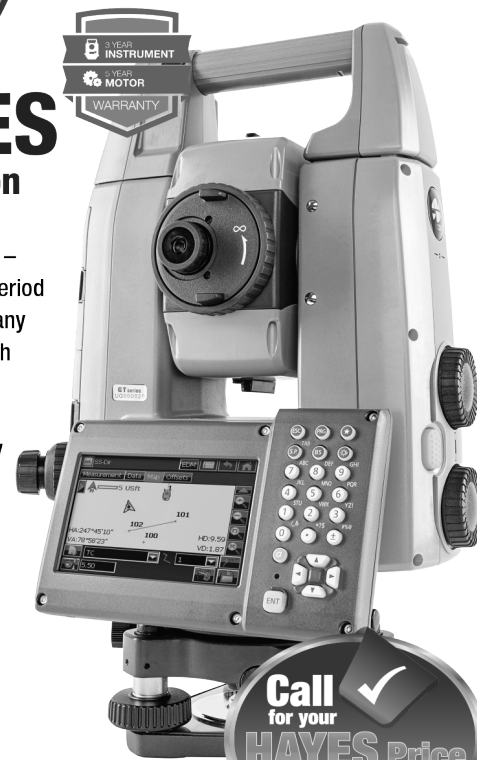
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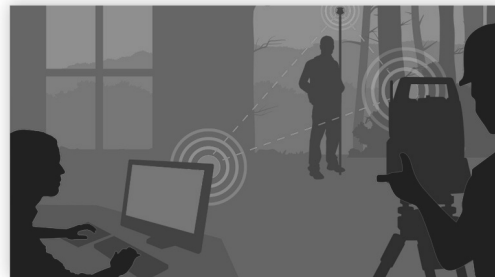
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2018 Conference & Trade Show

by Christy Davis



The Annual Conference and Trade Show took place February 8-10 at the Crowne Plaza Resort in Asheville, NC. Attendance reached a new post-recession record. Over 300 surveyors, associates, vendors and guests attended the event. On Thursday, Leland Strother awarded gift cards to celebrate our diversity in experience. Alex Ward, L-5272 won \$50 to Lowes for being the most recently licensed and Sid Autry, L-1420 won the \$50 Home Depot gift card as our most vintage attendee. The entire event was a mixture of young and old, traditional and innovative, technology and skill. It is very rewarding to watch surveyors from every geographic area, educational background and level of experience come together to share knowledge and a few war stories.

Incoming President, Jamie Watkins chose “Driven to Inspire” as his theme this year. He focused on encouraging business owners to bring one or more of their associates with them to encourage the next generation so that they will understand the value of coming together to learn and socialize. Our membership answered the call beyond what we expected. One example of the success was found in our student participants this year. Josh Gillett and Brian Barwatt, instructors at Southwest Community College, wanted to bring their entire surveying class to the Exhibit Hall on Friday. Joel Johnson of Johnson Land Surveying wanted them to participate in everything available so his company offered to pay for lunch for the entire class of students. What a great way to inspire others. We also had student volunteers from Asheville Buncombe Technical Community College (AB Tech) and NC A&T that were invaluable to the staff during the entire event.

Students weren’t the only ones being educated in Asheville. This year we offered multiple choices for education on Thursday. Seven different topics were offered that ranged from the history of North Carolina surveying to preparing for the NAPGD datum change coming in 2022. That is quite a timeline. This was the second year that we offered



the ability to scan name badges rather than using sign-in sheets. Although there are still a few bugs in the system, it makes the process quicker and the attendees seem to enjoy the simplicity of the process.

Thursday afternoon, 25 different vendors began arriving to set up their booths. Our vendors enjoy time face to face with their clients and the Conference provides that time for them to answer questions and show off their latest wares. One unique vendor this year was Brother Wolf Animal Rescue. As part of our desire to leave our host city a little better than when we arrived, NCSS set up a President's Charity Choice event last year. The incoming president can choose the charity of his or her choice. Attendees can make contributions to support the charity's efforts. On Friday, Brother Wolf raised \$477 towards rescuing animals and NCSS contributed \$100 worth of supplies such as food, treats and leashes.

Thursday evening was the Vendor Appreciation Reception called Asheville Infusion. We had a great time getting a taste of Asheville with a magician busker and beer tastings from both Highland and Hi-Wire Breweries. Thanks to Past President Bobby Burns, we were honored to have some of his friends who make up a wonderful award-winning bluegrass band called Carolina Blue. They were extremely talented! Later in the evening, we held two drawings for the attendees. Paul Badr with GPI Geospatial won the Vendor prize gift card. Tim Bowes followed by announcing the 2019 Conference venue which will be the North Raleigh Hilton. We gave away an amazing prize package with a weekend stay for two at the Hilton, dinner for two at Firebirds in North Hills, and two tickets to see a Broadway play at the Progress Energy Center in Raleigh. Gabe Brown from Spindale, NC won a great weekend

getaway.

Friday's Exhibit Hall was busy and energetic. Daniel Abrams was our MC again this year and he did a great job for us. The Plat Luncheon saw many winners honored for their expertise. Timothy Guisewhite from Charlotte was the winner of Best Overall Plat for 2017.

We had four distinguished guests on Friday evening at the President's Banquet. John Young and his wife, Denise, and Chuck and Dini Pickering joined us for a very interesting presentation discussing the land history and use of the Biltmore Estate. John has surveyed Biltmore for over 30 years. Together with Webb Morgan (1950-2013), they marked over one million points on the property! Chuck and Dini Pickering are co-owners of the Biltmore and are very involved in the operations involving land use and preservation. Dini is the great-granddaughter of George W. Vanderbilt. They were all a delight to have at the dinner. The Pickerings are visionaries and it was so interesting to trace how they have managed the land to create a self-supporting operation through farming, a winery and sustainable logging. If you weren't in attendance, you missed a very special time together.

The President's Banquet on Friday evening is always a special event where the outgoing President, Leland Strother honors those who have helped him during the course of his Presidency. Mike Adams and Cliff Johnson were honored with Shining Star Awards; Dr. Jerry Nave won the Polaris Award; and Jim Davis, President of the Education Foundation and outgoing Chairman of the Education Committee, won the President's Award. All of these surveyors have worked so hard to help promote the profession. The awards culminated with the coveted Surveyor of the Year Award. This award is voted on by the

entire membership. This year's winner was James I. Jeffreys, III from Mooresville. He is chairman of the Standards of Practice Committee and poured many hours into helping to rewrite GS47-30 which passed the legislature in 2017. Mike Benton swore in the new NCSS Board for 2018 which includes three new Chapter Presidents: Eddie Hyman will take over the Albemarle Chapter; Scott Church will serve the Northwest Chapter; and Dave O'Brien takes the reins

of the Piedmont Chapter.

Thanks to everyone who participated in this event. Without your help, it would not be possible. It was a good time together fulfilling our mission by "enhancing professionalism, improving legislative awareness and promoting the profession of surveying."



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Hand-y Signals

by Ken Mills, PLS

When I first began working on a field crew in 1969, the only way to communicate with the other members on the crew was to yell as loudly as possible when we were any distance apart. I know it's hard to believe, but at that time there were no two-way radios you could carry in your pocket or on your belt, and the company could not afford the World War II style radios you carried in a backpack. Also, cell phones had not been invented so we could not call each other when needed.

The field crew consisted of four people: the party chief, the instrument man, the head chainman and the tail chainman. The party chief ran the crew, was in charge of getting the survey done in a timely manner and recorded the data in the field book.

The instrument man ran the instrument and kept the crew working when the party chief was away. He also kept the notes when the party chief was busy elsewhere.

The head chainman held the smart end of the chain.

The chain was really a steel tape measuring 100 or 200 feet long. The term "chain" was a holdover term from when surveyors used the Gunter Chain or link chain. It was marked every foot for the entire length with the distance number stamped beside the foot mark. At the zero end of the chain, there was another foot marked in one-hundredths of a foot. The marks began at the zero point and counted up in the opposite direction from the rest of the chain.

Again, the head chainman was at the head of the chain where he could read the hundredths marks when measuring a distance to locate something or stake out something.

The tail chainman held the chain anywhere from the one-foot mark to the 100-foot mark or anywhere in between.

Distances could be measured as far away from the instrument man as he could see to give line to the head chainman. If the instrument man wanted the head chainman to move a large distance to the right or left he

would move his hand out, at shoulder height, at a slow speed. If the distance was to be a short distance, the hand movement would be very quick. This would occur until the point was on line. Then the instrument man would extend both hands out at the same time to indicate "good."

Once the measurement was completed, the distance had to be carried back to the person taking the notes. This took a lot of time and yelling was not a reliable method because of noise in the area, so a couple of us came up with the idea of using hand signals for the numbers.

The hand signals had to be simple, easy to remember and manageable with either arm. As long as the instrument man could see the one giving the numbers through the scope, it didn't matter how far apart they were from each other. If the party chief was with the chainmen, he could instruct the instrument man to turn to a specific angle by using the hand signals.

This simple signal system reduced the number of errors caused by trying to yell back and forth.

Here's how it works. By the way, it's still useful today because batteries in radios and cell phones still tend to run out of power.

- Number one – The hand is moved quickly down to the side at about a 45-degree angle from level, from the body and quickly back up to the body. (A quick jab.)
- Number two – The same motion as the number one except the motion is done twice.
- Number three – The hand is placed on the belt buckle or just below. (By the way, since the people who came up with the numbering system were of the male persuasion, the original position was well below the belt buckle. Since we were often working in public locations, we decided to move the position to the belt buckle.)
- Number four – The upper arm held straight out from the shoulder and the lower arm and hand hanging straight down.
- Number five – The entire arm held straight out from the shoulder.
- Number six – The upper arm held straight out from the shoulder and the lower arm and hand held straight up.
- Number seven – The upper arm held straight out from

the shoulder with the hand touching the shoulder.

- Number eight – The hand placed on top of the head.
- Number nine – The hand placed on the chest just above the heart.
- Number zero - The upper arm held straight out from the shoulder and rotating the hand from the elbow in one circle.

When a decimal point was needed the hand signal was to push your fisted hand straight toward the one receiving the numbers.

There was a guy on the crew who was left-handed and he had no trouble using the numbering system with his left hand. A lot of times I would be holding something in my right hand and would use my left hand to send numbers to another person on the crew.

The system is very easy to learn and is also useful when batteries die unexpectedly. A number of months ago our field crew ran into a problem when one person left his two-

way radio in the truck. Since the job was in a deep hollow in the mountains there was no cell phone signal, so they fell back on the useful hand signals.



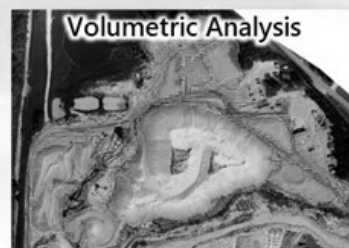
Ken Mills became a PLS in 1975. He has been an active member of NCSS, serving three terms as the Western Chapter President. He served as the NCSS President in 1998. Mills co-authored Following in their Footsteps with Otis A. Jones. He has written for American Surveyor Magazine and is a columnist for Madison County's News-Record & Sentinel newspaper.



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Changing the Definition of Navigable Water in North Carolina

by Dr. Jerry Nave, PLS

Introduction

The use of water as boundary between parcels of land is as ancient as human settlements. A body of water is an object that a person can readily identify and understand as a division between owners. Yet, the precise determination of the location of that boundary can be troubling to many because it can move over time or in an instant of time. Due to this difficulty, we have a large body of case law and common law that defines and locates these boundaries. States determine most laws involving boundaries; however, the exceptions are riparian and littoral boundaries, which can be federal issues. Such is the case of *State of North Carolina v. Alcoa Power Generating, Inc.* (2015/2017), wherein the federal courts redefined how surveyors determine the location of riparian boundaries (135 F. Supp. 3d 385).

Riparian rights and the location of a client's boundary on a body of water have always been a challenge to the professional surveyor. The surveyor must decide if the body of water is navigable or non-navigable in determining the extent of the boundary line. In the past, the determination was based on a state's definition of navigability; however, in 1995 the North Carolina Supreme Court defined the controlling law as follows:

If water is navigable for pleasure boating it must be regarded as navigable water, though no craft has ever been put upon it for the purpose of trade or agriculture. The purpose of navigation is not the subject of inquiry, but the fact of the capacity of the water for use in navigation. In other words, if a body of water in its natural condition can be navigated by watercraft, it is navigable in fact and, therefore, navigable in law, even if it has not been used for such purpose. Lands lying beneath such waters that are navigable in law are the subject of the public trust doctrine. (*Gwathmay, et al v. State of North Carolina*, 464 S.E.2d 674, 1995).

Recently, federal courts changed that definition in the case of the *State of North Carolina v. Alcoa Power Generating, Inc.* 135 F. Supp. 3d 385 (2017). The case centered on the argument of who owned the bed of a 45-mile segment of the Yadkin River in the central part of the state. The segment located in Rowan, Davie, Davidson,

Stanly and Montgomery Counties is the location of four hydroelectric dams built by Alcoa Power Generating and currently owned by Cube Yadkin Generation, LLC.

In the United States, the extent of private ownership of land (boundaries) on riparian and littoral bodies of water is determined by whether the body of water is navigable or non-navigable. Navigability can generally be defined as those waters that afford a channel for useful commerce. Recently, states such as North Carolina have used recreational boating as a form of commerce, thus increasing the extent of navigability on waters (*Gwathmay, et al v. State of North Carolina*). The general concept supported by the United States Supreme Court is that individual states hold title to navigable waters by virtue of the Public Trust Doctrine (Cole, 1997). The Public Trust Doctrine is a principle that states that certain natural or cultural resources are held by the government for the use of the public and, therefore must be protected and maintained for the public's use (Black's Law, 199). Riparian navigability in the United States is not controlled by the doctrine of the common law. Many rivers in the United States are navigable for great distances by large watercraft beyond the limits of tidal waters (*The Daniel Ball*, 77 U.S. 557, 1870). As recently as 1995 in the case of *Gwathmay v. North Carolina*, the State Supreme Court stated that "All watercourses are regarded as navigable in law that are navigable in fact. That is, that the public has the right to the unobstructed navigation as a public highway for all purposes of pleasure or profit, of all watercourses, whether tidal or inland, that are in their natural condition capable of such use" (464 S.E. 2d 674, 1995). This definition has now been modified by the recent case of the *State of North Carolina v. Alcoa Power Generating, Inc.*

State of North Carolina v. Alcoa Power, Generating, Inc. Beginning in the 1890s, the North Carolina General Assembly created acts that incorporated companies to develop hydroelectric power within the state. As part of these acts, the State vested ungranted state lands to the companies and gave the companies the ability to privately purchase or condemn land. In the early 1900s, Alcoa began acquiring land on the Yadkin River with the last transaction occurring in 1960. With the final acquisition of land, Alcoa's deeds covered 99% of the land located on the 45-

mile segment of the Yadkin River (*North Carolina v. Alcoa Power*, 2015; An Act to Incorporate the Yadkin River Power Company, 1897, S.L. Chap. 236; An Act to Incorporate the North Carolina Electrical Power Company, 1899, S.L. Chap. 151; An Act to Incorporate the Tallahassee Power Company, 1905, S.L. Chap. 122; An Act to Incorporate the Whitney Reduction Company, 1901, S.L. Chap. 6).

With the closing of the Badin Aluminum Plant in 2010, Alcoa switched the purpose of the Yadkin River dams from providing electricity to the aluminum smelting process to sell the electricity on the open market. In 2013, the State of North Carolina filed a quiet title suit in the Wake County Superior Court against Alcoa, claiming ownership of the riverbed under the public trust doctrine. North Carolina claimed that the 45-mile segment, hereafter referred to as the relevant segment, was navigable at statehood. In addition, the State claimed it allowed Alcoa or its predecessors the right to use the State's land on the Yadkin River to develop industry. The State claimed that they had not granted, conveyed, or relinquished its ownership in the beds of any portion of the Yadkin River. North Carolina further asserted that the segment of the river was navigable in fact and that the State gained title to the river after the declaration of war against Great Britain in 1776 (*North Carolina v. Alcoa*, 2013). Alcoa had the case moved from the State court to the United States District Court for the Eastern District of North Carolina because navigability was a Federal question. In *PPL Montana v. Montana* (2012), the United State Supreme Court stated that “[t]he rule for state riverbed title assumed federal constitutional significance under the equal-footing doctrine” (565 U.S. 576, 2012).

The District Court ruled in favor of Alcoa in August of 2015, determining that the relevant segment of the Yadkin River was not navigable and that the ownership of the riverbed was determined by North Carolina real property law, the Marketable Title Act (MTA), and adverse possession. Additionally, Alcoa's witnesses had demonstrated that the relevant segment of the Yadkin River was not navigable due to numerous falls, rapids, steep terrain and shoals in that part of the river (*North Carolina v. Alcoa*, 2015; *North Carolina v. Alcoa*, 2017). The District Court applied the United State Supreme Court's benchmark for determining navigability used in *PPL Montana v. Montana* (2012).

The MTA states that “any person who, alone or together with his predecessors in title, shall have been vested with any estate in real property of record for 30 years or more, shall have a marketable record title” (NCGS §47B-2(a)). The MTA further states that marketable record title “shall be free and clear of all rights, estates, interests, claims or charges whatsoever, the existence of which depends upon

any act, title transaction, event or omission that occurred prior to such 30-year period and all such competing rights – including those asserted by the State – shall be null and void” (NCGS §47B-2(c)). Alcoa demonstrated it had valid title by supporting deeds that covered 99% of the land in the relevant segment (*North Carolina v. Alcoa*, 2015).

The remaining one percent of the land not covered by the MTA belonged to Alcoa under North Carolina's adverse possession doctrine. The State argued that adverse possession cannot operate against the State, and therefore is subject to public trust rights. North Carolina General Statute § 1-45.1 states that “[t]itle to real property held by the State and subject to public trust rights may not be acquired.” This argument failed as the State could not prove ownership of the riverbed in the relevant segment. Furthermore, the various Acts of 1897, 1899, 1901, and 1905 gave Alcoa's predecessors in title the right to condemn land and the title to ungranted land in the relevant segment (An Act to Incorporate the Yadkin River Power Company, 1897, S.L. Chap. 236; An Act to Incorporate the North Carolina Electrical Power Company, 1899, S.L. Chap. 151; An Act to Incorporate the Tallahassee Power Company, 1905, S.L. Chap. 122; An Act to Incorporate the Whitney Reduction Company, 1901, S.L. Chap. 6). The Federal District Court ruled in favor of Alcoa and North Carolina appealed the decision to the United States Court of Appeals for the Fourth District.

United States Court of Appeals for the Fourth District

In the North Carolina appeal, the State acknowledged the navigable principles found in *PPL Montana*, but argued that those principles did not apply to the original 13 States and that the *PPL Montana* case and its Equal Footing Doctrine only applied to the 37 later admitted to the Union. North Carolina claimed that, unlike the later admitted states, the State gained its sovereignty at independence from Great Britain. A Brief of Amici Curiae by Law Professors in support of the State of North Carolina quoted *Idaho v. Coeur d'Alene Tribe of Idaho* that “[u]pon federation, the shores of navigable waters, and the soils under them, were not granted by the Constitution of the United States, but we reserved to the states respectively” (94-1474, 1997).

The Equal Footing Doctrine is a Constitutional principle providing that all states admitted to the Union are equals of the existing states, in terms of power, sovereignty, and freedom. Black's Law defines it as a doctrine providing “that, like the original states which retained title to the beds of their navigable waters, all new states are entitled to the beds of navigable waters within their boundaries” (p. 536). North Carolina argued that the principle is not

applicable to the original 13 States because *PPL Montana* based its finding of federal jurisdiction on the Equal Footing Doctrine, which applied only to the 37 later-admitted states to make them coequal to the original 13. The State maintained that because it was one of the original 13 States, the law governing navigability for title must be state law. North Carolina contended; "*PPL*, an equal footing case, has no bearing on the riverbed title of an original state. *PPL*'s language that 'questions of navigability for determining state riverbed title are governed by federal law, 132 S. Ct. at 1227, applies solely to the 'new' equal footing States" (*North Carolina v. Alcoa Power*, 135 F. Supp. 3d 385, 2017), i.e., the remaining 37.

In *PPL Montana*, the United States Supreme Court specified that "questions of navigability for determining state riverbed title are governed by federal law." The Fourth Circuit Court further varied this by stating that a "State receives absolute title to the beds of navigable waterways within its boundaries upon admission to the Union [and] that its absolute title to the beds of navigable waters is conferred not by Congress but by the Constitution itself" (*North Carolina v. Alcoa*, 2017).

The Federal District Court considered whether the 45-mile relevant segment was navigable at the time of North Carolina's statehood in 1789, as required by *PPL Montana*. In *PPL Montana*, the Supreme Court explained that navigability for title is determined "on a segment-by-segment basis to assess whether the segment of the river, under which the riverbed in dispute lies, is navigable or not" (565 U.S. 576, 2012). The Federal District Court found that the relevant segment was characterized by "steep slopes, narrow valleys, rapids, falls, ledges, and exposed rock" (*North Carolina v. Alcoa Power*, 2015) and was completely non-navigable. When used for title purposes, navigability is determined at the time of statehood based on the natural and ordinary condition of the body of water (*PPL Montana*; 132 S. Ct. at 1228). In *PPL Montana*, the United States Supreme Court explained that portages are generally sufficient to defeat a finding of navigability because they require transportation over land rather than over water. Additionally, the District Court found that pole boats and flats, the primary means of commercial navigation at statehood, "would have had difficulty navigating shallow, steep, swift-moving, rocky rivers" (*North Carolina v. Alcoa*, 2015). North Carolina's argument on the issue of Equal Footing failed.

North Carolina argued that the MTA could not be used with respect to land to which North Carolina obtained title when acquiring sovereignty. The Fourth Circuit Court stated that:

"[w]hile the legal validity of this argument is dubious, because North Carolina could have conveyed any such land and thereafter become subject to the MTA, as 'the force' of navigability for title would be 'spent' and the State would be free to convey title, it can have no force here." (*North Carolina v. Alcoa*, 2015)

The District Court concluded that North Carolina did not obtain title to the riverbeds of the relevant segment by virtue of sovereignty because the relevant segment was not navigable at statehood. North Carolina also argued that the MTA does not apply to land subject to public trust rights. However, North Carolina failed to identify any basis for such an exception. The Fourth Circuit stated, "[w]hile the text of the MTA does contain a fulsome list of exceptions, none makes mention of public trust rights" (*North Carolina v. Alcoa Power*, 135 F. Supp. 3d 385, 2017). The MTA provides that it is subject "only to such limitations" as listed in the statute and should be "liberally construed" to ease property owners' burden in showing good title (NCGS §47B). Accordingly, this argument failed.

Again, North Carolina argued that the MTA could not be used against North Carolina because it is a sovereign state. The Fourth Circuit stated that this argument was not supported in the text of the MTA, nor would such an exception be consistent with the purposes of the Act. The Fourth Circuit concluded that, if the MTA did not apply against North Carolina, the State could simply make a claim to any real property in the State and rely on NCGS § 146-79 to place the burden of showing ownership on the landowner. The Fourth Circuit found that the Federal District court's conclusion that Alcoa proved its title to 99% of the relevant segment's riverbed under the MTA was correct.

The Fourth Circuit decision was a 2-1 split vote for Alcoa. North Carolina appealed to the full Fourth Circuit and was denied a hearing by the full court's 8-7 split. North Carolina then appealed to the U.S. Supreme Court and on 20 February 2018 the U.S. Supreme Court denied the State's petition.

Conclusion

With the denial of the *Writ of Certiorari*, North Carolina is now bound by the original decisions of the Federal District Court and the Fourth Circuit Court. The question remains how does this affect the way in which surveyors locate boundaries along riparian and littoral bodies of water? The determination of whether a body of water is navigable will require a person to apply the legal standard for determination of navigability as used in *PPL Montana*. Navigability on rivers must be determined on a segment by basis based on a body of water being navigable at the time

of statehood in 1789. In *PPL Montana*, the court explained how to select segments. The U.S. Supreme Court stated that a segment should be “both discrete, as defined by physical features characteristic of navigability or nonnavigability [sic], and substantial, as a matter of administrability for title purposes” (*North Carolina v. Alcoa*, 2017). This will require research of records and other historical documents, such as old surveys, maps, plats and locally achieved data on stream condition at the time of statehood. Secondly, navigability for the individual segment must be determined by vessels used in commerce and transportation at the time of statehood. The Federal District Court records indicate that the expert witnesses used craft such as pole boats and native canoes as examples of craft used in the relevant era. Whether the public trust doctrine extends an easement over bodies of water that can be navigated by modern recreational vessels remains to be seen.

**The author is not an attorney and the views expressed in this paper are only the views of the author.

An Act to Incorporate the Yadkin River Power Company, (1897) S.L. Chapter 236.

An Act to Incorporate the North Carolina Electrical Power Company (1899) S.L. Chapter 151.

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Dr. Jerry Nave is an assistant professor of Geomatics at NC A&T State University. He earned his BS and MS in Surveying and Mapping and his doctorate in Educational Leadership and Policy Analysis at East Tennessee State University. He is licensed in TN & NC. He has over 20 years of experience in the private and public sectors.



You Don’t Need to be a Millionaire to Leave a Legacy

Estate Planning is not something reserved only for the rich. The word ‘estate’ may bring to mind an image of riches with a mansion and landscaped grounds. In legal terms it simply means “property or possessions”. I think it’s safe to assume that everyone seeing these words has property or possessions and for you to depart this life without a formal declaration of what happens to your possessions creates a huge potential for your loved ones to become embroiled in a destructive conflict. Without a will, your property or possessions will be distributed according to state guidelines which may not match your final wishes. A will should be created with the proper documents, and accordingly, we strongly encourage you to engage a professional for assistance or there are several books available to guide you through the process. In short, almost everyone needs a will.

The NCSS Education Foundation, Inc. is a non-profit, all-volunteer group which raises funding for the education of future surveyors. We urge all of the NCSS members, fellow surveyors and others to create a will to represent their own personal wishes. The Foundation can offer you an opportunity to leave a legacy (a gift of property or personal possessions) to assist the future of surveying through the education of newcomers to the profession. The following sentence included in your will is one way to ensure that you can leave that legacy to reflect your passion for the surveying profession: I give (specific or identified property, possessions, percentage or residue) to the NCSS Education Foundation, Inc. (a tax-exempt organization located in Wake Forest, NC) for the purpose of supporting its education-stewardship programs.

MEMBER PROFILE

Shane Strickland



Wife
BettyMae

Children & Grandchildren

None unless you count the fur baby, which is a Jack Russel Terrier named Maverick.

Place of Employment & Title

CE Group, Inc., Principle/Survey Manager

Childhood Ambition

I wanted to be an astronaut and go to Mars. I grew up in the era of the Space Shuttle and still vividly remember the Challenger accident in 1986.

Most Recent Purchase

Company: Focus 35 with Ranger3 & TDS from our sponsor Transit& Level.

Personal: Finalized the construction of our forever home which resulted in the purchase of a Ztrac 900 series John Deere Zero turn. I'm a Green Freak or Deere Head.

Favorite Surveying Equipment

The Brush Axe.... of course (I prefer the 4-hole ditch blank blade type).

It is the multitool of surveyors, a hammer, prybar, picket boot scraper, spider web getter, dog repellent, etc.

Oh yeah, you cut line with it, too!

Shane grew up working summers on his grandparent's small farm doing all the things that a young kid does on a farm because his granddad thinks it will make him tougher. There, he learned the "joys" of swinging an axe long before it became part of his profession. He started surveying at McKim & Creed as a crew member in the mid-nineties. Shane recollects that, at first, it felt like playing in the woods or being on the farm. He couldn't believe they were going to PAY him for this type of work. During his employment there, he was exposed to the foundations of the practice of surveying that he still uses today. He also got to know many good surveyors. They were professionals who created an environment that let him learn, directing him towards surveying as a career. Afterward, he worked for a local firm that exposed him to residential and commercial development and gave him his first job as a Crew Chief (Thanks, Jimmy B.). He moved around to some other local firms until ambition got the best of him and he decided that he needed the education and fundamentals necessary to become a more complete surveyor.



Shane enrolled full-time at Wake Technical Community College in the fall of 2003 to complete his survey degree. During the next two years, he worked mostly evenings and nights at an agrochemical warehouse preparing

shipping orders. After graduating from "The Tech" with a 3.9 GPA, True Line Surveying employed him where he learned the foundations of his CAD skills (Thanks, AP & MG).

Shane finally found his way back to McKim & Creed where he had the opportunity to work on unique projects as a Crew Chief, CAD Technician, and Project Surveyor. Most importantly, he had the



opportunity to work alongside Mr. Randy Rambeau and learned by example what being a surveyor should look like. Shane reflects, "I can't express how important working with Randy has been in my recent career." Currently, Shane finds himself the Survey Department Manager of The CE Group, a smaller boutique firm of like-minded individuals who strive to provide the best possible service to their clients. Shane notes that he truly believes ambition and God have gotten him to this point in life. What a wonderful life it is!

When asked what has been his favorite project to work on, Shane had trouble defining just one. "I can't say that there is a single project. I feel like I learn new things that reshape my perspective on a regular basis. My collective career has allowed me to be involved in some unique projects. A couple of memorable ones include: As crew member marking the Overhill's Boundary (10,000 Acres); mobile



scanning in western Texas; static scanning a rock face in 5-degree weather in downtown Pittsburgh; and surveying a private boundary at the 'NC Corner' where NC, TN, & VA are monumented to intersect."

Shane is fairly new in the North Carolina Society of Surveyors (NCSS) leadership circles. He began his tenure with NCSS two years ago as the Johnston County Chapter President and is very grateful for the

exposure this service has given him. He is finding it very rewarding. In 2018, he begins new responsibilities as our Political Action Committee (PAC) Chairman taking over for Jamie Watkins who is now serving as President of NCSS. When asked if he thinks it is important to serve, Shane replied, "Being at the forefront of our profession's ideas, puts a new perspective on how we, as a Society, are shaping the profession and truly cements the value of being involved, as well as the consequences of not."

Finally, Shane was asked what one piece of advice he would give someone just entering the profession. His reply shows a love of learning and a sense of adventure. "Learn about all the surveying technology that you can both software and hardware. Make it your goal to know more than any technical support personnel. Then

share it with anyone who asks about it. Don't hoard your knowledge because by making those around you more knowledgeable, you will become more knowledgeable yourself. Finally, when you exit the career of surveying either through retirement or a different path, try to leave it better than you found it."



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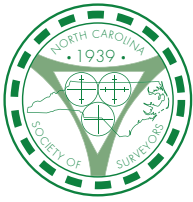


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