The UCLS Newsletter

January 2022

Where is it?

The principles and applications of land surveying have remained relatively constant throughout history; however, the fundamentals and methods have evolved with advancement in technology. Using Dynamic Remotely Operated Navigation Equipment (DRONE) allow us to perform faster, produce quicker, and gather more details than ever before.

Meridian Engineering graciously provided an aerial image gather from their DRONE. The first UCLS member that correctly identifies the location of this image will be eligible for a free lunch at their next chapter meeting.

Answers may be emailed to Susan at srmerrill@ucls.org. The earliest date and time of response will determine the winner.

In this issue: The National Geodetic Survey gives us more guidance on the GEOID 18 transition into production and Salt Lake County Archives provides information on Land Title Certificates.

Brad Yarbrough guides us through the business side of ethics and how to deal with peer pressure as you move into a leadership position. Additionally, Knud Hermansen shares his thoughts on professional practice and education.

Jeffrey Turner shares his personal, and often humorous experiences of land surveying and what it takes to BEE a good surveyor.

Do you know someone who is looking for a job? Do you know of surveying companies that are not actively looking for quality employees? Eric Gladhill gives insight into finding good help and/or becoming that quality employee.

The 2022 UCLS Conference will be part of the Western Regional Survey Conference in Las Vegas, Nevada. More information may be found inside.

Committee, Chapter, and the NSPS Report are shared, along with the history of surveyor's tacks and another dastardly deed.

We invite you to share charismatic photos of yourself and/or a coworker, panoramic images of Utah's scenic wonders, or pictures of survey related tools and equipment. Additionally, we need interesting and unique descriptions or survey related stories to share with our membership. Remember, if you do not participate you have no right to complain. Please let us know your thoughts, recommendations, suggestions, or complaints.

The UCLS Newsletter is published monthly by the

Utah Council of Land Surveyors
PO Box 1032
Salt Lake City, UT 84110

Phone/Fax:
801-964-6192

Website:
www.ucls.org

INDEX TO PAGES:

"Approach the new year with resolve to find the opportunities hidden in each new day."
- Michael Josephson

UCLS EXECUTIVE BOARD 2021

State Chair
Todd Jacobsen
City of St. George
175 N. 200 W.
St. George, UT 84770
Business: (435) 627-4124
todd.jacobsen@sgcity.org

State Chair Elect
Sean Fernandez
State of Utah AGRC
1 State Office Building 5th Floor
Salt Lake City, UT 84114
Business: (801) 209-9359
sfernandez@utah.gov

Past State Chair
Doug Kinsman
Ensign Engineering
169 No. Main Street, Unit 1
Tooele, UT 84074
Business: (435) 843-3590
dkinsman@ensignutah.com

NSPS Director
Dale Robinson
Sunrise Engineering, Inc
6875 S. 900 E.
Salt Lake City, UT 84047
Business: (801) 838-8322
drobinson@sunrise-eng.com

WFPS Director
Michael W. Nadeau
5226 W. Ashland Rose Dr.
Herriman, UT 84065
Business: (801) 569-1315
mikenadeau.ucls@gmail.com

Book Cliffs Chapter President
Scott Vernon
Civco Engineering
1256 W 400 S. Ste 1
Vernal, UT 84078
Business: (435) 789-5448
srvern121@yahoo.com

Book Cliffs Chapter Representative
Paul Hawkes
Uintah Engineering & Land Surveying
2120 N 2500 W
Vernal, UT 84078
Business: (435) 790-3937
paulhawkes1975@gmail.com

Color Country President
Arthur LeBaron
Hurricane City
147 N 870 W
Hurricane, UT 84737
Business: (435) 635-2811 ext. 113
arthur@cityofhurricane.com

Color Country Chapter Representative
Mike Draper
Hyperion Land Surveying LLC
318 N 100 E
Washington, UT 84780
Business: (435) 619-2646
snow-md@hotmail.com

Golden Spike President
Andy Hubbard
5746 S 1475 E
Ogden, UT 84403
Business: (801) 394-4515
andyh@greatbasineng.com

Golden Spike Chapter Representative
Steve Porter
Ogden City
2549 Washington Blvc. Suite 615
Ogden, UT 84401
Business: (801) 629-8979
steveporter@ogdencity.com

Salt Lake Chapter President
Chris Donoghue
Salt Lake City Corp.
5808 S. Fontaine Bleu Cir.
Murray, UT 84121
Business: (801) 535-7973
christopher.donoghue@slcgov.com

Salt Lake Chapter Representative
Steven Dale
West Valley City
3600 S. Constitution Blvd., Ste 250
West Valley City, UT 84119
Business: (801) 963-3218
steve.dale@wvc-ut.gov

Timpanogos President
Chad Hill
1377 S. 350 E.
Provo, UT 84606
Business: (801) 852-6746
cjhill@provo.org

Timpanogos Chapter Representative
Travis Warren
Spanish Fork City
40 S. Main St.
Spanish Fork, UT 84660
Business: (801) 804-4557
twarren@spanishfork.org

Administrative Secretary
Susan Merrill
PO Box 1032
Salt Lake City, UT 84110
(801) 964-6192
srmerrill@ucls.org

Treasurer
Brad Mortensen
3268 S. 930 W.
Syracuse, UT 84075
Business: (385) 272-8106
bmortensen@meiamerica.com

Chapter Vice Presidents:
Book Cliffs - Martin Pierce
fishguts99@hotmail.com
Color Country - Brad Petersen
brad2765@gmail.com
Golden Spike - Ken Hawkes
kenh@awagreatbasin.com
Salt Lake - Matt Peterson
matt.peterson@esieng.com
Timpanogos - Riley Lindsay
rlindsay@utah.gov

Chapter Secretary/Treasurer
Book Cliffs - Mitch Batty
msb@timberlinels.com
Color Country - Daryl Brown
daryl@wecinc.com
Golden Spike - Matthew Murdock
matt@wasatchcivil.com
Salt Lake - Matt Stones
matthew.stones@slcgov.com
Timpanogos - Travis Anderson
travisan@utahcounty.gov

Committees & Committee Chairs
Legislation - David Hawkes
dave@boundarycosultants.biz
Education - Chris Donoghue
christopher.donoghue@slcgov.com
Publication - Steve Keisel
svkeisel@gmail.com
Standards & Ethics - Evan Wood
ewood@focusutah.com
Membership - Vacant
Conference - James Couts
james.couts@ecislc.com
Historical - Charles Heaton
charles.heaton@esieng.com

GEOID18 Is Here!

by Steve Martin

In case you missed it, NGS transitioned GEOID18 to production, and it is no longer in Beta testing. The final release notice was issued without much fanfare through the "NGS NEWS" back on September 17, 2019. Today, you can find out more as the final report for GEOID18, NOAA Technical Report NOS NGS 72, was released in June of 2020 and is available on the NGS website at: https://geodesy.noaa.gov/library/pdfs/NOAA_TR_NOS_NGS_0072.pdf

To visually interact with, and investigate GEOID18 further, check out the cool "Exploratory Web Map" at https://www.ngs.noaa.gov/GEOID/GEOID18/map-gallery.shtml

GEOID18 is the last hybrid geoid model that NGS will release before the replacement of the current vertical datum by the North American-Pacific Geopotential Datum of 2022 (NAPGD2022).

A hybrid geoid model is a modified gravimetric geoid model designed to work with a specific realization of NAD83. In the case of GEOID18, it is designed to work with NAD83 (2011) epoch 2010.00. To create the hybrid GEOID18 model, the gravimetric geoid model, (xGEOID19B,Li,etal.,2019), created from a number of terrestrial, airborne, and space-based gravimetric datasets, is compared with the adjusted to best fit a network of passive benchmarks (GPSBM18, Ahlgren,etal.,2020), where both the ellipsoid height from GPS and the orthometric height from geodetic leveling have been obsereved. The "GPS on Benchmarks" campaign is a big source of these ellipsoid height measurements on existing leveled benchmarks.

Like GEOID18's perdecessor, GEOID12B, was also optimized for use with NAD83(2011) epoch 2010.00, GEOID18 shows significant improvement, demonstrating an 18% smaller overall standard deviation (1.39 cm versus 1.7 cm) for the CONUS region. This improvememnt is the result of 29% more GPS on Benchmarks (32,000+ vs. 24,900+), more airborne and space-based gravity data, along with significant software improvements in modeling.

Users should avoid mixing orthometric heights derived from different geoid models, such as GEOID18 and GEOID12B, as several centimeter differences have been observed.

Unlike prior NGS hybrid geoids, GEOID18 does not cover Alaska or the Pacific Islands, its coverage is limited to the Coterminious United States (CONUS), Puerto Rico and the Virgin Islands.

NGS continues to produce experiemental GEOID models incorporating the latest in satellite and airborne gravity data. Available on the NGS website is xGEOID19, a gravimetric geoid that incorporates 15 new GRAV-D blocks for a total of 53 GRAV-D blocks. Experimental GEOID models are intended to give stakeholders a perpetually improving and converging view of what the final geoid model will look like when NAVD88 is replaced in 2022-2025.

Salt Lake County Archives
Digital Documents

Online Records: Update

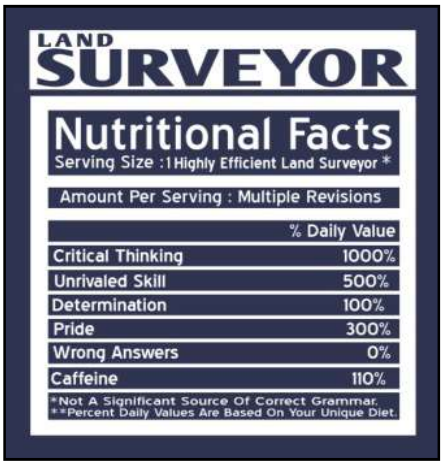
Archives staff continuously work on preparing, scanning, describing, and uploading more and more Salt Lake County records to our website. A quick update about some of the most recent records series made available on-line include:

Land Title Certificates: Records are now searchable and viewable up to last names starting with "MI."

Tax Appraisal Cards, 1970s-1991: Records are being uploaded each week. These cards document assessed values on residential and commercial property located in Salt Lake County, from the 1970s to 1991.

Salt Lake County Maps: Additional maps recently uploaded.

https://slco.org/archives/#



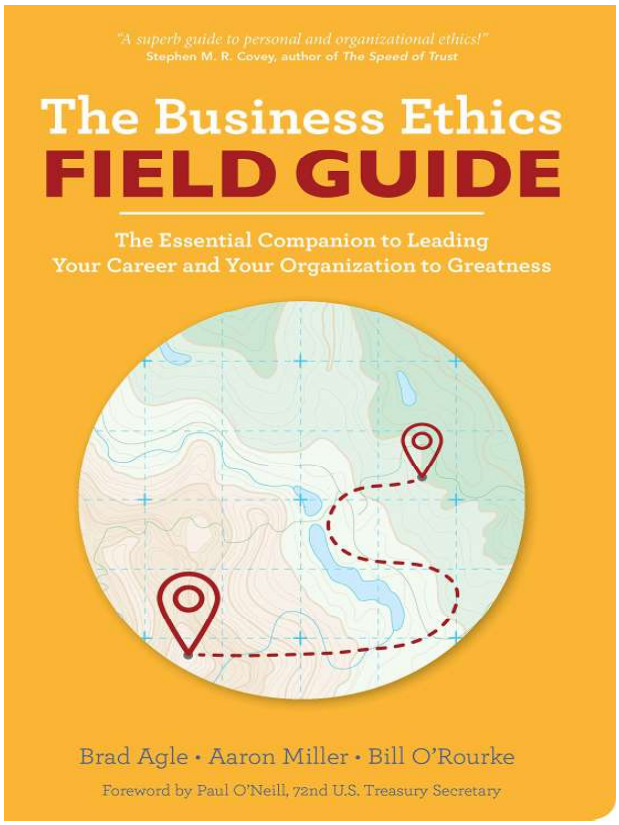
New Backsight Standard
Photo submitted by Bruce Williams
of the Salt Lake County Surveyor's Office.
The distance between the two survey monuments is 2.36 feet.

The Business Ethics Field Guide - Part 2

By: Brad Yarbrough

EDITOR'S PREFACE: This is the prologue to a series of thirteen articles centered on ethics in business. These articles were originally produced for and published serially by the International Right of Way Association beginning in the November/ December . 2018 issue *Right of Way.* The similarities in ethical challenges faced by professional land surveyors and professional landmen or right of way agents makes this series well suited for the Utah Surveyor.

A common ethical dilemma occurs when an authroity figure asks you to do something that is clearly understood as unethical. Would your actions be okay because the boss is asking you to do it or should you stand up to power?



Personal Experience

I was once asked by the CEO to report to a newly-hired Chief Information Officer (CIO). The CEO thought I could introduce her to the company and let her know I'd be available to explain the company culture, its processes and procedures. I met my new boss in New York City and while walking down Madison Avenue, she asked me to buy an expensive purse she saw in a store window. Moreover, she asked that I use the company credit card and list it on my expense account for her subsequent approval.

Having significant clout in the company, I could have emphatically told her that what she was asking was wrong and that we don't put personal expenses on the corporate expense account. Cleverly, I replied, "This must be a test and I'm not falling for it. Nice try, but I know that's wrong." The less threatening comeback succeeded in her flatly dropping the unethical request.

"...these dilemmas can create considerable discomfort, but it's best to face them head-on. These are opportunities to let others know what you stand for."

However, what about a similar situation happening to an employee who feels insecure in the organization and who really needs the job to meet family and financial obligations? It would be more difficult to stand up to their boss an drisk being put in the "dog house" for a long time. Even so, an employee cannot participate in unethical conduct. In this case, the "I know this is a test and I'm not falling for it" technique is a good tactic.

A second option is to repeat the request back in a slow, exaggerated way. This might cause the boss to take accountability for the action and rescind the request. Remember that the excuse "I was just following orders" is never acceptable.

Another time I was ordered to drag payables to 60 days despite contractual terms that required a 45-day payment. In this dilemma, I met with suppliers and renegotiated the contract. Some agreed to the 15-day drag. Some raised their price to cover the cost of the delay. Others needed a swing loan and I assisted by providing their bank with confirmation of a long-term contract to support the loan. Dragging the payables from 45 to 60 days without interatction with the suppliers would be unethical, but I was able to find an appropriate way to satisfy the request and honor commitements.

Business Ethics continued

Peer Pressure

What if an inappropriate request comes from a peer, not a boss? There can still be perceived pressure to help them. A student told me about such an experience. On her way to a class that required studens to sign in, she recieved a friend's text asking that she sign her in at that class. She decided to pretend not to receive the text until after class was over.

After hearing about the dilemma, I suggested that she should not run and hide from ethical issues. Sure, these dilemmas can create considerable discomfort, but it's best to face them head-on. These are opportunties to let others know what you stand for. She could have responded immediately to tell her friend saying, "No, that's wrong. Don't ask me to do that. I would never ask you to do something wrong." My guess is that her so-called friend would never ask her to do that again.

When You're the Boss

There's another aspect to the standing up to power dilemma. It's when you are the power. First, don't make unethical requests of your employees. Period. As the boss, your employees might give more deference than you deserve. Obviously, pleasing the boss is important and in that zeal, they can misinterpret questions as orders.

Once, while touring a manufacturing plant which I supervised, I asked why a wrapping machine wasn't located closer to the shipping department since wrapping immediately preceded product shipping. I merely asked out of ignorance, but when I returned six months later, the wrapping machine was in the shipping department. I asked why and was told, "You said to move it." I learned an important rule of communication: ask the recipient to tell you what they heard. That double comunication can avoid a lot of misunderstandings.

In summary

Most organizations have ethics resources to whom you can turn to when you are asked to do something wrong. Use them. Use the Compliance Line if you cannot find the needed help elsewhere. Progressive organizations have integrity champions scattered throughout the organization. Learn who they are and meet with them.

A final word of advice is to plan ahead for the day when you are faced wit this dilemma. Build friendships throughout the organization. Strong relationships are always helpful and the social capital is very helpful when standing up to power. Be ethical in little things. Habitual ethical conduct will eventually manifest itself in the big issues as well. Build a reputation for character and integrity. Attend the ethics training. Offer to teach it. Become an integrity resource for others. Your company and the entire industry will be better because of your effort.

13 ETHICAL DILEMMAS

Upcoming articles in this series will take a closer look at each dilemma.

1. **STANDING UP TO POWER**
   Someone in power is asking you to do something unethical.
2. **MADE A PROMISE**
   Conflicting commitments force you to choose.
3. **INTERVENTION**
   You see something wrong. How do you proceed?
4. **CONFLICTS OF INTEREST**
   Multiple roles put you at cross purposes.
5. **SUSPICIONS WITHOUT ENOUGH EVIDENCE**
   You believe something is going on, but you're not sure.
6. **PLAYING DIRTY**
   Achieving justice but by doing something unethical.
7. **SKIRTING THE RULES**
   Bending the rule for a better outcome.
8. **DISSEMBLANCE**
   Misrepresenting the truth for better outcome.
9. **LOYALTY**
   Giving up ethical stance to protect valued relationship.
10. **SACRIFICING PERSONAL VALUES**
    Living ethically might put burden on others.
11. **UNFAIR ADVANTAGE**
    When opportunity exists to wield an unfair upper hand.
12. **REPAIR**
    When you are responsible for a mistake.
13. **SHOWING MERCY**
    You could grant forgiveness, but you don't know if you should.

What it Takes to Bee a Good Land Surveyor

By: Jeffrey Turner

This year has found me several times in the company of bees, lots of bees, hundreds of bees and thousands of bees. For land surveyors, interactions eventually bring us face to face with nature in unexpected ways. This is an aspect of the profession that brings joy to my life and occasionally fear, and sometimes it might make me run.

In spring, I was performing field work to prepare an as-built survey plan in order to prove to the township that the owner had kept to the design plan. My eyes are always looking for the many items I will want to show on my plan. At this particular property, I was standing on their new rear flagstone patio and heard a machine of some sort and I could not connect the sound with any of my memories. The first choice was pool equipment doing something odd, but this lot had no pool. Then I imagined a huge fan running on the next level down and it must be out of sight. Walking around to where I thought the noise was produced, it was obvious there was nothing there. Then I stood and listened and looked up.

Above me, starting about ten feet off the ground, was the bottom of a giant swarm of honeybees filling the leaves. It was magical. Since I'd experienced a swarm moving through our back yard 30 years ago, I felt I probably had nothing to fear, they were busy bees looking for a new home. Perhaps 15 feet away a hollow tulip poplar tree had bees coming out a huge hole and ascending up into the air. I watched for five minutes and went back to work thinking to warn the client in case they were allergic to bee stings but no one was home. In a half hour there was not a bee left on the tree in the yard. They had all moved to better pastures. I was glad to be there at that time and witness the event.

The brother-in-law of a fellow who had worked where we both were employed at the time, told a story of being dropped off with a crew and equipment on a mountain top in Alaska. The helicopter was rising and then suddenly dropped back down and the pilot frantically waving them back into the chopper. As the aircraft had first ascended, his eyes fell onto a bear running straight up the hillside to where the survey crew had just got out. Apparently, the party chief was armed with a pistol, but had the pilot not been so responsible to observe the surrounding land, the bear might have found the crew chief before he found his gun. That was back in the 70's and they were running long control lines. You can see so far from a mountaintop.

My Missouri coworkers recalled with laughter, how one of the rodmen was told to go and give a backsight but he failed in his mission. They looked to see where he went and saw his head and he was just over a hill. As they walked toward him they observed he was standing on a wooden fencepost poking at something with one of those old red and white, screw-together range poles. Getting closer, it was a skunk trying to climb the post to get to him and it was broad daylight. Fence posts make for short trees in which to escape and all he could do was keep pushing it back down. The poor little stinker was sick with rabies, and it was not long before someone with a gun was brought to the scene to rescue the rodman.

We surveyors are so blessed to have such opportunities. Sometimes it does not seem so, but generally we are. I do not play golf, but I love to prepare boundary and topographic surveys for golf courses. Following many motorcycle crashes I would never participate in after school sports, but I have staked out many athletic

What it Takes to Bee a Good Land Surveyor continued...

fields and buildings. I am not trained in animal husbandry, but I sure loved the times I've surveyed within the Philadelphia Zoo and proud of the work and topographic survey plans we made there.

On one project, the architects wanted to know the shape of the bottom of a very large duck pond and two of us, me being one, wore the highest chest waders I could purchase and walked the bottom taking readings with only inches to spare some of the time. They wanted to put a liner in what was probably an acre pond that had too many water foul if you follow my drift. It reminds me of the punchline of a joke I can't tell but the people were all chanting "Don't make waves." When things got too pungent the city would just open an 8" water main and flush the pond out. The city owned the water company and so ignored the expense. They would eventually put in a filtering system.

Surveyors opened the westward expansion. Mapped the rivers, lakes, and created all those square properties starting with Ohio and Westward Ho! The section system of the Midwest I encountered was pretty tame, but the first surveyors must have had quite a rugged life. There's still plenty of adventure to be had. I think this profession has a draw for many once they get a taste for it.

We all must be cautious still of the dangers of the work. They can be from animals, rivers, cliffs, cave-ins, snakes, bears, bugs, and perhaps the worst of all, people, or worse than that, people driving cars. My crew was sent out to survey a part of a very large estate. I drove the van up a long curving drive though an open pasture-like area and pulled off to the side and parked. While we were getting out the equipment a station wagon full of men pulled up and they exited with shot guns and chambering shells with one of them demanding what we thought we were doing there. I answered, "We are here to survey this property."

The leader said "ok," and with-out another word, they all returned to their vehicle and drove back up the driveway. We looked at each other stunned. It would be ten years before I understood the identity of the leader after he was found unstable and had killed a man. Generally, I do enjoy working for the wealthy. They pay their bills and have nice properties.

The various places to be surveyed keep me in love with the profession. I once had a retired engineer come out to shoot the breeze with me. He said he wished he had gone into land surveying. After college he went to work for a large engineering and architectural firm. He was so good at designing pipe racks that he became 'the pipe rack guy' and spent his whole career designing pipe racks and had become burnt out. His experience was not broad because he was just so good at what he did. I've seen this with large civil engineering companies where a person might be 'the stormwater guy.' When I see movies and pipe racks in the scenes, the memory of this conversation will come to mind.

I have been spoiled in that I have not often ended up stuck on long term construction projects. There are many great surveyors I've known who spend a year or two on one large stakeout site. I am happy to keep out of the mud and away from the risk of contractors trying to shift blame to anyone to keep themselves out of trouble. However, to survey from the top of a 40 story building roof, well, that can be breathtaking and I have a lot of respect for the layout people that bring those towers up from the ground. That seems like risky business.

My personal high-rise story was of my crew being assigned the project to survey two high rise buildings in Philadelphia on the ground and from the rooftops. Our client rented out the roof of the building for microwave radio-relay towers aimed miles away. The problem was, the neighboring building was going to construct something on their roof and the question was, would it obstruct the view from the relay tower on the roof of our project building up to Valley Forge Mountain? We signed papers holding the building owners harmless if something happened to us. I asked our survey director what that was all about, and he said it's possible one of us might take the 'big step' or simply fall off. The world is very different from the heights of William Penn's hat brim. It was strangely quiet. Looking off the parapet, I watched the window washers swipe suds off windows and it floated down like clouds but evaporated before it hit the pedestrians below. If you want to be asked to perform those surveys, be sure you do not complain when assigned hard projects. My first party chief taught me that.

What it Takes to Bee a Good Land Surveyor continued...

With the now common survey robots, it can leave a person, like me, working alone in what could be dangerous situations. An engineer asked me to survey up a large culvert that flowed under the project we had been working on. There were no maps of what started out as a stream, then a stream with stone walls, then a stream with varying types of roofs such as arches, flat, or eventually big concrete pipes and all long buried. A deep sanitary line was to be crossing the culvert an done question was would it collide with culvert? A second question was, would the hotel to be constructed possibly rest on the culvert?

The contractor set up a very tall ladder and fastened it to railroad ironwork for me to descend to the Schuylkill River below. I put a control point out on a railroad bridge and from that point set a drill hole in the concrete of the apron of the large culvert. I lowered by equipment by rope and then climbed the ladder down to the apron. I am afraid of heights, but you have to do what you have to do, and I knew the contractor and his men had been up and down the ladder and it held. Setting my robot up on the drill hold I began to traverse up the culvert, locating the angles, thread of the stream, top of walls, and top of arches until the pipe was only 36 inches and I could go no further. At one point, I had to disassemble part of the instrument legs to set up and turn the angle up the pipe. I used manhole shafts above and inlets to check my work, and most importantly, I kept tabs on the weather. Should a thunderstorm pop up it might end up raining cats and dogs, and surveyors.

Getting back to the bees, my second run in with honeybees was last week and the hive boxes are shown in the photo. While working on an urban topographic survey, and having little luck in finding the rear lot corners due to the depth of debris, mulch, limbs, etc... I had a neighbor graciously allow me to look for corners in his back yard. Seeing pink flagging laying on the ground I correctly guessed there was a pin at the bottom of a five-foot-high retaining wall. Hindering me from approaching that flagging was the neighbor's beehives, and the hundreds of bees going in and out along their 'bee line' and then the bees that buzz around the front of the hives.

I asked the owner if I were to walk behind the hives, would I be safe. He told me he thought so, but do not get in the way of their bee line or I would be in trouble. I set a nail near the hives but on the side. Then I placed a piece of wood on top of the pin so I could find it easily. With a few stems snapped, I had my shot and something to work with when I start my calculations. Had I not had the owner right there to ask about bee safety, I probably would have tried it anyway. The bees are busy and have no time at all for careful surveyors locating pins. Had I tripped and bumped their box, this story would have had a very different ending.

There still is a lot of adventure in land surveying. It will not happen all in one day or one year, but I feel we land surveyors are blessed in our profession and our skill, wisdom and expertise will always be required and in the meantime, we are all paid to measure the world.

It's Hard to Find Good Help

by: Eric Gladhill

It seems that "Help Wanted" is posted everywhere these days; from billboards to hand-written signs and everywhere on websites seeking to help employers who are hiring. We hear it discussed at surveying society meetings, around the office, and in casual conversations on the street.

Some people try to place blame on the government for handing out unemployment compensation and others just cite an anomaly in the economy. It appears that employers are going to have to "step up their game" by offering more wages and a better compensation package in order to attract the personnel that are needed.

What can a surveyor do to get qualified staff - and just as important - what can they do to keep the quality people who come to work every day with the intent to provide outstanding service?

It would seem to behoove the surveyor; whether in their own personal private practice, or a department leader in a large firm, or one who works in the public sector as a division chief who makes hiring decisions, to seek out and hire the educated surveyor-in-training. There are those who have had success by doing what was the standard practice in the past: hiring the unqualified and uneducated and training them through the apprenticeship program.

Many who started their career through an apprentice program did well. I'm one of those who came through the school of "hard knocks" and it worked well for me, but sometimes those "hard knocks" leave bruises and permanent scars for the surveyor who oversees their work.

One of the firms that I worked for in the past, had the policy of hiring any "warm body" that could hold a rod. At one point, there was a young man who had no experience and was assigned to my crew. This kid had long dirty blonde hair and ripped up jeans (before that was a popular style). When he started working on the crew and had access to black magic markers, he would write the names and logos of popular hair bands of the '90s on his blue jeans. I had never heard of *Dokken* until I saw that written on his jeans. Then he topped it off with some florescent orange paint - just for show. He was just plain stupid. I couldn't even teach him how to perform simple tasks, he just got in the way.

After several warning about this lack of respect for company property and making lewd gestures in public, I had to take him back to the office one morning to be fired. We had already wasted a few weeks of trying to make a "purse from a sow's ear" and it was just a waste of time - this guy was not going to make a good surveyor. That's the only way to deal with some troublesome employees. It's like taking a splinter out of your hand; it may cause some pain to remove it, but it must be removed. If it is allowed to stay and fester, it eventually causes more pain and can even cause infection to spread.

That same firm also had a strange method for disciplining bad behavior. On one particular occasion when there were issues with the party chiefs not maintaining

It's Hard to Find Good Help continued...

their work trucks, they called all of us into a meeting. We had five crews running then, so all five party chiefs were called into a meeting room in the office to discuss some ongoing issues.

Some of the items were general in nature and more of a reminder of what needed to be done, but then the chief of surveys started criticizing how the trucks were dirty inside and out. Then he threatened to take the vehicles away from the party chiefs. (We were allowed to drive them home and from our houses to the job.) I questioned whether they took a look at the van that I had been assigned and whether they found it regularly dirty or if trash was found inside. The answer was, "No." I felt that I was being unduly lectured for an alleged offense and suggested that the offending parties should be dealt with separately.

When the "cream rises to the top" and you notice who the quality staff are, how do you keep them? They should be thanked every chance you have to show your appreciation for their good work. We all like to be complimented and every opportunity should be taken to recognize excellent efforts.
There's a common misunderstanding that each employee should receive the same kind of treatment. In fact, every employee should be treated fairly, but each one should be treated differently. Each should be treated according to their performance. Some people need a lot of praise for their good work and some need a stern reminder daily about what is acceptable. With a lot of effort, good people can be found and retained, but it does take some focused attention to the matter.

Kenneth Richard "Rich" Richmond

1973-2021

Salt Lake City, UT - Kenneth Richard "Rich" Richmond, of Salt Lake City, passed away surrounded by loved ones in the comfort of his home on October 31st, 2021. At the young age of 48, he faced the news of terminal cancer with courage and a sense of humor. Those who knew him wouldn't be suprised that he passed on Halloween.

He's survived by his wife Galina Pierpoint; son Carter Norton Richmond; brother Rusty Robert Spriggs; stepfather Russell Allen Spriggs; former spouse Belinda Hicks; former spouse and Carter's mother Carrie Norton; and his beloved cat Jaxxon.

Predeceased by his mother Toni W. Richmond Spriggs; and grandparents Kenneth "Buddy" Richmond and Cleah Richmond.

Rich was a devoted County employee, after a quarter of a century his coworkers were like family. While he had a reputation for being rough around the edges, he was a loyal friend and loved his family and his people fiercely.

His sudden passing and his general private nature left many saddened and suprised; instead of grieving the loss of our loved ones, let's celebrate the time we had with them.

A Celebration of Life will be held in Rich's honor at Willies Lounge, November 13, 2021 at 2:00 pm.

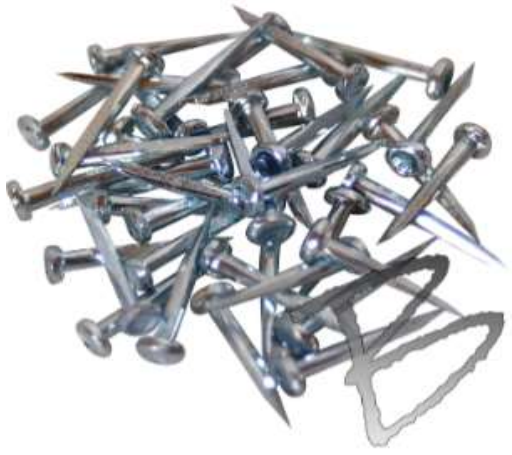
EDITOR'S PEN:
Surveyor's Tacks
By: Mary M. Root

It isn't clear when surveyors first began using tacks to mark exact positions, but they appeared in surveying supply catalogs around 1900. Prior to that, it's possible that shoemakers tacks were borrowed for the purpose, as they were much the same size and shape, with a sharp point. Both specialty tacks form a "J-clinch" when hit against a hard surface, increasing its holding power.

American inventors perfected tack-making machinery. The machine was fed with heated strips of metal having a sufficient breath and thickness, the machine cut the strip in an angular direction from head to point, the strip being turned over after each blank was cut so that the points and heads were taken from opposite sides alternately, and a uniform taper secured. Each blank is briefly clutched at its neck and struck with a heading die, producing the familiar round dimpled tack head.

U.S. manufacturer D.B. Gurney of Whitman, Massachusetts, began making specialty cut tacks and nails in 1825. In an 1890 interview, David B. Gurney Jr. described his company's manufacturing history: " I am over 80 years of age, and have watched the growth of the tack business from its inception, so that I consider myself one of the pioneers in this line of work. If one could go into my factory today and see the machinery in motion, they would hardly think that but a few years ago we were turning little slips of iron by hand heading a tack with a hammer. I used to make tacks by hand before a tack machine was even thought of. We used to cut the tack wide on one side and to a point on the other. These were picked up one at a time and headed with a hammer in a pair of dies. A single person could make about 5,000 per day. I can recall with interest the consternation which existed in tack-making circles when the introduction of a machine was first discussed. The men thought that their livelihood was to be destroyed, that machines were to take the place of hands, and it was a dismal company that watched the first tack machine in operation. In the year 1821 my father first introduced a machine for making tacks, some other manufacturers have made similar claims. This was run by hand power, and I assisted my father in running, as boys are now employed by tack makers in placing plates in the steel clamps. From this one machine which he introduced, thousands are now scattered over the country, and thousands are furnished with employment. The same principle is involved in the machines of today as was introduced in the Blanchard machine, which I ran for a number of years. In 1850 I took my father's business in hand, and have since conducted it."

D.B. Gurney Company, now run by the seventh Gurney generation, is the last U.S. manufacturer of tacks still in business today.




Western Regional Survey Conference
MAPPING THE PATH
FOR THE
NEXT GENERATION
Live From
LAS VEGAS
Luxor Hotel
MARCH 30 -
APRIL 2, 2022
Register Today!
PLSeducation.org

Thoughts on Professional Practice and Education

Article 1: Faculty Licensure

by Knud E. Hermansen

P.L.S, P.E., Ph.D., Esq.

This will be the first of several articles giving thought to the topic of professional practice and education.

I have reached the age where I have a great many opinions and have no fear of sharing them. I have no employers that would take umbrage of my opinion. Perhaps some current or past clients might object but they are free to seek others to perform their services should they wish.

If this is the first of several articles I plan to write, I can introduce myself throughly in this article and be reticent about an introduction in later articles.

I am retired after 30 years of teaching though I still do contract teaching for surveying and engineering programs. I have also retired from the military where I was a surveyor and engineer for over twenty years. I have been licensed in several states as a surveyor, engineer, and attorney. I still have an active license for each profession in at least one state. I have consulted in a wide variety of roles offering surveying, engineering, and legal services. I have surveyed many miles of boundaries. I was a member of a licensing board at one time. On numerous occasions I have served as an expert witness, trial attorney, appeals attorney, arbitrator, mediator, boundary commissioner, and, of course, a professor and instructor. Old age, experience, and my varied and unique practice, I hope gives me a perspective that will generate some thought, no doubt some controversy, and perhaps some changes.

In this missive I will focus on surveying faculty qualifications. I will not and will never claim to be among the best faculty. I am sure there are some former students that will claim I am not even a satisfactory faculty for I had hard standards and high expectations that left some students disgruntled and unhappy that I chose to apply these standards to them. As I said, I am too old to change or even give much care to what a young student, lacking experience, may believe. To put it simply, their opinion is seldom my reality. After the graduate has practiced in the surveying profession for fifty years and still wishes to maintain a low opinion of my instruction, I will welcome their thoughts and give them worthy consideration.

The point I wish to make in this missive is to give my opinion on faculty licensing. I do not believe a quality surveying program must require every faculty to be licensed to practice the profession of surveying. <u>However, I do believe a majority of faculty should be licensed to practice the profession.</u> I will offer three reasons for my opinion.

First and most importantly, I am of the firm opinion that no amount of education and research in surveying or 'geomatics' (as some programs prefer to use), allows a faculty to provide the impactful presentation experience allows. Of course, any person wishing to become faculty and claim they have experience outside of academics should have enough experience to be able to qualify and sit for professional exams in at least one state.

I am mindful that some faculty may have experience in areas of surveying practice that their state of residency will not accept toward licensure. Yet, that person will not be prevented from applying and being licensed in some other state that does accept their experience for licensure. (There is no state, by law, that can demand residency in the state before being licensed.) By way of example, I would refer the reader to some states that require a license for and therefore must accept experience in areas of remote sensing and GIS when applying for professional licensing.

Thoughts on Professional Practice and Education Continued...

Second, I believe it important that faculty set an example that will encourage students to seek professional licensing in the surveying field. This is done most effectively by the faculty themselves being licensed to practice the profession of surveying. I have seen numerous articles in professional magazines that lament the aging of the licensed surveyor population and how few young persons are entering the profession. Many employers lament the difficulty of finding young persons interested in filling employment openings. Young adults are not given a good example by allowing surveying instructors to be unlicensed.

Third, I believe faculty are much more inclined to have been or become active in their state and national professional societies when licensed. I am of the very firm belief that a successful college surveying program must enjoy the support of state surveying societies. To enjoy that support, there must be continuous interaction and familiarity between the academic program and the professional society. The interaction and familiarity are often absent or tenuous at best when faculty are not licensed. Lacking a license, the faculty can't be a full member of the professional society.

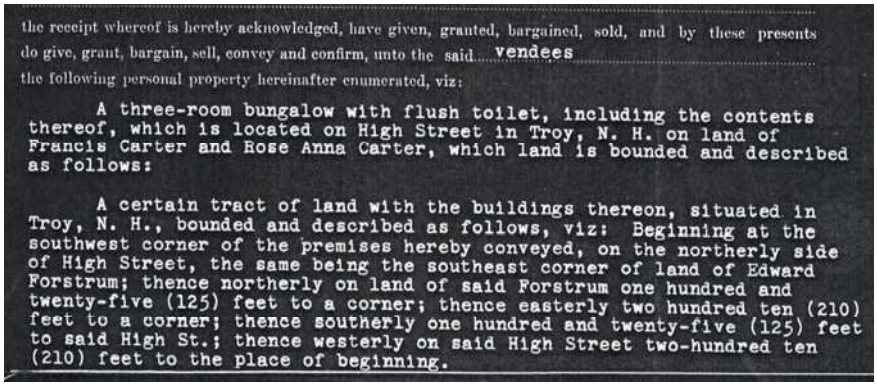
I have such a firm opinion on the importance of requiring licensed faculty, that I would demand licensing as a prerequisite for a faculty member even at the sake of academic qualifications. If the only choice to fill a faculty position was between a licensed individual and one with a Ph.D. of similar temperament, I would opt to always take the licensed individual.

Many universities that host surveying programs require a Ph.D. These same surveying programs do not require professional licensing of faculty. For some reason which I cannot comprehend, even after 30 years in college teaching, university administrators think it much more important to hire a Ph.D., without practical experience, often without experience as a resident, to teach surveying topics. The administrator will not accept someone without the Ph.D. that would have many years of relevant experience, relevant license, and familiarity with the residency where a graduate is likely to seek employment.

Having given my opinion, I now offer advice by suggesting ABET and professional societies make strenuous and consistent requests of administrators of surveying programs to demand current faculty become licensed and new faulty to be licensed prior to employment. The line is very clear. If a person wishes to teach in a surveying or geomatics program, they should have a professional license.

*Other books and articles by Knud can be found at https://umaine.edu/svt/faculty/hermansen-articles/

DASTARDLY DEED



the receipt whereof is hereby acknowledged, have given, granted, bargained, sold, and by these presents do give, grant, bargain, sell, convey and confirm, unto the said vendees the following personal property hereinafter enumerated, viz:

A three-room bungalow with flush toilet, including the contents thereof, which is located on High Street in Troy, N. H. on land of Francis Carter and Rose Anna Carter, which land is bounded and described as follows:

A certain tract of land with the buildings thereon, situated in Troy, N. H., bounded and described as follows, viz: Beginning at the southwest corner of the premises hereby conveyed, on the northerly side of High Street, the same being the southeast corner of land of Edward Forstrum; thence northerly on land of said Forstrum one hundred and twenty-five (125) feet to a corner; thence easterly two hundred ten (210) feet to a corner; thence southerly one hundred and twenty-five (125) feet to said High St.; thence westerly on said High Street two-hundred ten (210) feet to the place of beginning.

UCLS Surveying Excellence Award Recognizes a Professional Land Surveyor and/or Surveying Company for outstanding achievements on a Land Surveying Project completed or started during the five-year period.

GUIDELINES FOR THE UCLS SURVEYING EXCELLENCE AWARD

- The Project needs to have been completed or started within the past five calendar years.
- One winner and two finalists will be awarded annually
- Candidates for the award can be nominated by a member of the UCLS or a person involved with the project together with a UCLS Member.
- Each nomination must include a narrative stating the reasons why the sponsors feel the nominee is deserve ing of this honor, specific accomplishments the project has made toward the profession, and biographical data that can be used in the award presentation.
- Finalists from the previous year may be re-nominated one additional time, by a letter from the original sponsors stating they would like the person re-nominated for the present year's award.
- Any additional information or plaudits may be included with the nomination form.
- The panel of judges will be comprised of the five Chapter Presidents of the UCLS, if one of the presidents has a conflict of interest the Chair Elect of the UCLS shall appoint a stand in from the UCLS Board of Directors.
- Nominations are Due no later than **December 30th**, to be eligible for the present year's award.
- The winner of the project of the year will be nominated for the Utah Engineers Councils project of the year award the following year.
- The following factors will be considered by the panel of judges in determining the recipient of the award:
  - Service to the profession
  - Service outside the profession
  - Types of survey activities
  - Improvements in, or refinement of, surveying equipment and techniques
  - Recognition as a professional leader
  - Membership and activities in surveying and related professional organizations
  - Other factors demonstrating breadth of professionalism, activities, project ingenuity, public awareness and/or education.
- The foregoing is not listed in ranking order. Judges shall consider the overall nomination using these factors as guidelines.
- The judges will review the nomination form and rate the nominees on a scale of 1 to 5, with 1 being the highest.
- The Chair Elect will tally the scores. The nominee having the lowest score shall be the recipient of the award.
- If the judges feel there is no sufficiently worthy candidate, they will note so on their ballot.

I hereby nominate the following individual or organization for the **UCLS Surveying Excellence Award**.

Name of Project:_____

Organization(s):_____

Complete Address:_____

Phone and Fax:_____

Provide a detailed description of work (use additional pages as necessary):_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Individual Submitting Nomination:_____

Address:_____

Phone:_____

Signature:_____

Date:_____

Complete form and email to:

Susan Merrill

SRMERRILL@UCLS.ORG

GOLDEN SPIKE CHAPTER REPORT
NOVEMBER 2021

With everything that I had going on this year during the Summer, I let time get away from me. We did not have any meetings until October of this year. The October meeting went well, and we discussed the current Lot Line Adjustment Language in the State code and the Legislative committees' efforts to correct the deficiencies in the code. Thanks to Dave Hawks for taking a few minutes to present this to us. We also looked at a few boundary scenarios that I was made aware of. Here are two of the more interesting ones.

The first being a boundary where there has been a Hard Fence line for 80+ years but that a 30 year old survey and current descriptions call 50'+/- beyond the fence line, but markers for the 30 year old survey were placed along the fence line, but noted as a 50' offset on the survey from the property corner. Parole evidence from adjoining parties is in conflict but the fence hasn't moved since the first survey was performed.

Second, a boundary issue where in the open field on the east side calls to and along the section line as does the adjoining subdivision to the West, (the Section line follows along a fence line, in retracing the Subdivision, the Centerline Monuments were found as well as multiple rebar and caps, the monuments and rebar were found to be between 0.6' & 0.7' East of the calculated position and were falling east of the old fence line. The subdivision lot owners have fenced their properties West of the old fence line. The Subdivision is almost 20 years old and there does not appear to be any current intent from the Subdivision lot owners to claim the property East of their fences.

The group had a good discussion and lots of questions were asked, ideas were put out on how to resolve and/or retrace the boundaries, while protecting the public's interest in their respective properties.

We are looking at having another meeting in December and again in January, and are looking for topics for these and the coming year.

Hoping you are all well and have an enjoyable holiday season.

Andy Hubbard P.L.S
Golden Spike Chapter President

COLOR COUNTRY CHAPTER REPORT

The Color Country held a membership drive activity where we enjoyed lunch and sporting clays at the Washington County Shooting Sports Park on November 5. Fun was had by all! We taught the Surveying Merit Badge in November and 5 Scouts earned the merit badge.

Arthur LeBaron, PE PLS, CFM
Color Country Chapter President

EDUCATION COMMITTEE UPDATE

by: Chris Donehue

Trent did a great job getting the Fall Forum setup. It is virtual again this year and was held on Thursday November 18th from 8am-1pm. Trent got some good speakers to teach as well as Trent Keenan from Mentoring Mondays who put out a weekly podcast for surveyors.

Now that the Fall Forum is planned we are going to concentrate on fundraising for the Conference in Vegas. This is both of our 1st years doing this, does anybody have any words of wisdom or a cheat sheet on how they got donations in years past?

This update goes along with my Chapter update, but we are going to start spit balling ideas to try and recruit new surveyors to our industry.

I misunderstood last meeting about the 'Private Surveyor Contact List' we talked about last board meeting. I have told Trent that we need to explore the best ideas for this and get this up and running to have a good reference for private surveyors that is easily accessible. I will report back when we have formulated a plan. These funds are going to help fund the 4th scholarship we talked about that will be specifically for someone outside or new to the survey community.

SEPTEMBER WHERE IS IT

A correct guess was not received for our September "where is it" contest regarding the location of first weather station in Utah.

In 1870 the first U.S. Government weather station in Utah was erected at approximately 2355 North 4000 West in Corinne Utah by the War Department Signal Service, U.S. Army Division of Telegrams and Reports, for the benefit of commerce. The first observer was William W. McElroy, however the station was subsequently moved to Salt Lake City on March 13, 1874.

FUNDAMENTALS OF SURVEYING (FS) VIDEO STUDY COURSE & MANUAL

Approximately 16 hours of videos and manuals. Manual will be shipped to your address. Video links will be emailed and provided as an annual subscription. **Subscriptions are not prorated.** Link will expire on December 31, 2022.

TOPICS: Topics included are based on the current NCEES Fundamentals of Surveying (FS) exam specifications and recommended knowledge.
https://ncees.org/wp-content/uploads/FS-CBT-specs.pdf

PRESENTERS: Dane Courville, PLS and Knud Hermansen, PLS, PE, Ph.D.

NSPS FALL 2021 MEETING REPORT

This fall NSPS met in Chicago for the Fall Meeting. This was the first face-to-face meeting since the pandemic, and most were in attendance. However, this was a hybrid meeting with some attending virtually.

I was very pleased to introduce Spencer Mccutcheon as our Young Surveyor Rep from Utah.

We participated in the PAC fundraiser and played golf on Wednesday. Thursday and Friday I attended various committee meetings.

- I made a report to the Western States Committee highlighting the following:
  - Young Surveyor Rep
  - Boundary Line Agreement vs. Boundary Adjustment Legislation
  - Update to Model Subdivision Standards
  - How we are recognizing past state chairs
  - A plug for our Regional Conference next year in Las Vegas
- I attended the UAV committee. JB Byrd was also in attendance looking to better understand the issues facing UAV use. We discussed a number of issues and I highlighted the automated authorization web portal that accelerates our ability to deploy UAVs in controlled airspace. That program is only intermittently available and needs to be implemented across all controlled airspaces.
- ALTA/NSPS Committee - listened to comments returned from the recent update.
- I attended the CST committee. Trying to learn about how other states are implementing and promoting the certification program. Suggested that CST members who achieve licensure be granted emeritus status with CST. Employers being proctors is an effective way to promote the program.
- I attended the NSPS Government affairs and PAC committees. Utah is in a unique position with Blake Moore introducing the MAPLand Act and the Forest TECH improvement Act, and Mike Lee introducing the MORE PILT Act.

NSPS will be hosting FIG in 2023. This is an enormous feather in the proverbial NSPS Cap and something that deserves to be promoted with our membership. The conference will be in Orlando.

NSPS PAC has a program called the Jefferson Club. Individuals become members by contributing $500 dollars to the PAC in the year. This money is used by our lobbyist to "grease the skids" for our voice concerning survey related issues on the national stage. Our representation through 'day on the hill' programs and the targeted activity of our lobbyist, JB Byrd, is impressive. I will also make the invitation now for the PAC golf outing in Oklahoma in the fall of next year.

URISA Virtual Survey and GIS Summit free to NSPS and URISA members.

NSPS Final Point. This is a neat monument that is available to members for inclusion on their headstone. Something that could also be written into their will.

NSPS Plat Competition. Winners were recently announced. We should consider forwarding our state winners as entries in this national competition.

NSPS hosts a State Executive Forum which is open to Susan if there is interest. We should check and see if she can attend virtually.

Dale Robinson, PLS
UTAH NSPS Director

THE RIPARIAN BOUNDARY - NOT YOUR USUAL BOUNDARY

By: Dr. Richard Elgin, PS, PE

In the United States, rivers, streams and lakes provide a natural boundary for millions of parcels along thousands of miles of boundary line. As boundaries, rivers are a natural monument, holding the highest priority in the order of conflicting title elements. Visible, their identity certain, they have been used by man as boundaries for millennia. However convenient, and as natural, visible, substantial and inviting as they are for governments, treaties, and owners, they have one huge, troublesome characteristic: They move! There are many other issues related to using water bodies as boundaries, but their ambulatory nature is what makes riparian boundaries different from all others. This boundary movement, influenced by the whims and vicissitudes of Mother Nature and the designs and construction of man, brings uncertainty. With movement, the extent of title and tract acreage changes; even small differences in fluvial processes can result in large differences in ownership. Landowners face uncertainty in something they desire to be firm and absolute: The location of the boundaries of their real property. Generally, owners do not like their boundaries to change, their acreages decreasing or increasing, their lands perhaps vanishing altogether. These boundaries can change by forces of nature that are not within the riparian's control. Or one's riparian boundary may be changed by others without the riparian owner's knowledge or permission, such as by artificially-induced river movements. Riparian boundaries frequently bring conjecture to the landowner, consternation to the surveyor, confusion to attorneys, confoundment to the courts and they have conflated commentators.

Additionally troublesome is that riparian boundaries can be four-dimensional: In a plane, their North/East horizontal position can be affected by vertical movement of the waterbody. And time can affect the riparian/littoral boundary location. (If the river moved slowly or quickly can have an effect.) Four dimensions, very unlike its usual two-dimensional boundary brethren.

And most boundary disputes between adjoiners are personal and are based on emotions. The cost of litigating a boundary almost always far exceeds the value of the land in dispute. Not so in some riparian boundary disputes. At stake can be thousands of acres of land or issues worth tens of millions of dollars. The most epic boundary litigation mater in United States history was riparian boundary dispute: The famous "Red River Litigation" between Oklahoma and Texas. That litigation spent the 1920s in and out of the U.S. Supreme Court and even at this date there remains an ongoing kerfuffle concerning the boundary. Another example is the current "Is it a river or is it a lake" question in Lake Catahoula in Louisiana (with huge ownership and other consequences).

Lex Aquae

With its foundation in English Common Law, courts and legislatures (both state and federal) have proclaimed "lex aquae," the law of the water. Riparian (river) and littoral (lake or seashore) boundaries are part of that law. Riparian boundary law is complex, largely buried in court decisions that set precedents, and, like the shifting sands in a river, it has and will continue to evolve. But it establishes the Professional Surveyor when determine the location of a riparian boundary.

Boundary control legal principles are fairly uniform nationwide, hence there are books by Skelton, Clark, Brown, Robillard, Wilson and others that do a good job of stating and explaining them. Some legal principles are broadly applicable nation wide. The general riparian rules for erosion, accretion and avulsion are examples and they are adequately covered by the authors listed above. Under the Equal Footing Doctrine, the federal government left most riparian issues to the states (while reserving federal interests). Because states can (and have) developed their own law and rules relative to water law and riparian boundaries, there are differences. Some riparian boundary issues are very state-specific. One doesn't have to dig too deeply into riparian boundary subjects to find rules that are very different state-to-state: If a state owns the bed of a river that is navigable for title (not all states do), what is the title boundary between the state and the upland owner? If you said Ordinary High Water Line, you'd be correct for less than half the states. So, books by the authors listed above don't delve too deeply into

The Riparian Boundary - Not Your Usual Boundary Continued...

riparian boundaris... as they shouldn't.

Some Examples

To illustrate how state-specific some riparian/littoral boundary issues can be, here are some questions or hypothetical situations. For your jurisdiction, state the applicable legal principle, along with any qualifying statements or explanations necessary. No answers are supplied with this quiz because there is not one answer that will be correct for all 50 states and federal lands. One or two will be close to the same nationwide, but even they will need a qualifying note or two.

If you've not accomplished many surveys or riparian tracts, you may not have thought of or encountered some of these circumstances. All of these issues have been before the courts. It is likely these issues are settled for your state. (Perhaps not to the specificity desired by the Professional Surveyor, but the general principle can be stated.)

1. For a non-navigable stream, what line is the boundary between opposite landowners? Define, exactly, that line and how it is located.
2. Who owns the bed of a waterbody that is navigable for title? Is it the State in trust for the public? Is it the upland landowner but subject to an easement in thepublic for commerce and recreation? Or is it in some other entity?
3. Suppose the bed of a river is navigable for title and is owned by the State. Where is hte boundary between the State and the upland owner? Define, exactly, that ine and how is it located.
4. Who owns an island that forms in a navigable river?
5. On a navigable river that has barge and commerical traffice, for the states on opposite sides of the river, where is the state boundary? Define, exactly, that line, and how is it located.
6. Suppose a non-navigable lake that was meandered by the GLO slowly goes dry. The littoral owners hire you to survey their lakebed ownership. First, do these upland littoral owners have any rights in the now dry lakebed? Describe how you proceed.
7. Suppose that post-avulsion on a navigable river, there's a cutoff lake, formed from the abandoned channel. The cutoff lake partially fills in. Who owns the bed of this cutoff lake?
8. Owner A conveys to B "all lands north of the river," then Owner A conveys to C, "all lands south of the north bank of the river." Based on those facts what is C's northerly title line?
9. For your state, are the legal principles different for a river as compared to a lake? If so, define or distinguish the difference between a river and a lake.
10. The GLO meander line is practically never the upland owner's boundary. As the successor to the patentee, the patent being a lot made fractional by a waterbody, the waterbody is the boundary, not the meander line. Can there be an exception, the meander line being the boundary?
11. Suppose in the deed of a riparian tract, its acreage is given. A current survey shows that the acreage mentioned does not include the accretions to the tract that have been added since the deed was written (but has been used in subsequent conveyances for many years). Are the accretions conveyed by the later deeds?
12. Does your jurisdiction embrace or reject re-emergence? That is, suppose that by erosion an advancing river completely erodes and washes away a parcel. The river then retreats, accretions forming where the parcel formerly was located. Who gets title to the "re-emerged" parcel? Does the original owner's title "re-emerge," or, does title create and insure to the benefit of the owner of the last mainland the river touched (who could have been previously non-riparian)?
13. On a stream that is non-navigable for title (the upland owner(s) holding title to the bed) does the public have the right to float-fish or canoe through the property? Camp on its banks?
14. Suppose artificial improvements to the banks or in the channel of a river create changes downstream be erosion and accretion. Do the usual legal principles of riparian boundaries still apply?
15. When does the apportionment of an accretion stop, the apportionment become fixed? That is, as an accretion grows and changes shape its apportioned lines move as well. When do those lines become fixed?
16. Is there a difference between navigability for title and regulatory navigability? Is there a nexus between the two? Who decides if a river is navigable for title? Who decides regulatory navigability?

The Riparian Boundary - Not Your Usual Boundary Continued...

17. Is, or can there be a difference between federal navigability and state navigability? Can a river be navigable for title under the state test, but non-navigable under the federal test? Can the state test and federal test be different?
18. Is the river adjoining the tract you are surveying navigable or non-navigable for title? How do you know? Will it make a difference in the survey? Yes! For your state, who determines if a river is navigable for title? [By the way, is there a difference between navigability for title and regulatory navigability? The answer is yes. I know of no state where they are identical. But, in riparian boundaries, statements such as this are dangerous. It seems there is always an exception.]

Note that these questions/situations are focused on inland, nontidal rivers and lakes. Just as many questions could be posed for tidal boundaries.

The Challenge

Each state needs its own manual that addresses its riparian and littoral boundary location principles. Coastal states should include its tidal boundaries. To accomplish this, all riparian/littoral decisions related to boundaries need to be discovered, indexed by topic, read, abstracted, then summarized. With these summaries and aided by learned articles on the subjects, publications and statues, the legal principles can be stated. The product will be a book on riparian/littoral boundaries specific to the jurisdiction. This has been done for only one state, Arkansas. See "Riparian Boundaries for Arkansas" by the author of this article. Pages: 288. Tables: 30. Figures:12. Within that book, the answers for each question given above can be found.

To start your state's manual, for the questions/circumstances in the examples given above, do the case law and statute law research necessary to state the legal principle or provide guidance on the matter, specific for your jurisdiction. Cite the applicable decisions and summarize them. Once this is accomplished for each state and the federal lands, someone with high professional knowledge of an experience with riparian/littoral boundaries and who is an excellent writer with lots of energy and unlimited time and resources can edit the resulting tome about inland, non tidal riparian and littoral boundaries and coastal tidal boundaries. It would be a herculean task. That's why no one has done this to date.

This "challenge" is made somewhat in jest, but posing the questions/situations is not. They illustrate how complex riparian boundaries can be, and how state specific they can be.

Dr. Richard Elgin, PS, PE is a surveying practitioner, educator, researcher, collector and author. He co-developed the "ASTRO" software products and coauthored the Lietz/Sokkia ephemeris. He wrote *The U.S. Public Land Survey System for Missouri and Riparian Boundaries for Arkansas* and *Shoulda Played the Flute* (a memoir of his year flying helicopters in Vietnam) and Riparian Boundaries for Missouri (in press). He owns a large collection of early American surveying equipment, rides a Moots bicycle and drives an Alfa Romeo 1600 GT Junior. Dick's articles have appeared in "American Surveyor" for many years. He may be reached at: elgin1682@gmail.com

NEW YEARS RESOLUTIONS FROM KIDS

My new years resolution is to not eat as much sugar. But I probably won't keep it. -Joey 10

I am going to stop picking my nose. It is going to be hard. - Hadssah 7

My new years resolution is to eat 10 bags of clementines each month. - Declan 11

So?!! What is the point of making resolutions if you never really keep them?!!! -Kendra 6

My resolution is to not wig out like I'm seeing the lockness monster when I see a bug! - Brianna 7

I resolve to eat more bananas because I only eat two or three every day. -Jude 6

I will eat ALL the cake!!! - Will 4