

MISSOURI SURVEYOR

A Quarterly Publication of the
Missouri Society of Professional Surveyors

Jefferson City, Missouri

December 2015

JOSEPH C. BROWN

JANUARY 29, 1784

FEBRUARY 21, 1849

UNITED STATES DEPUTY SURVEYOR 1815-49
SAINT LOUIS COUNTY SURVEYOR 1821-45
STATE SENATOR-SHERIFF-COUNTY ENGINEER



BROWN'S SURVEYS

1815 - 5th Principal Meridian Baseline	90 Mi.	1837 - Missouri's Northern Line	200 Mi.
1816 - Osage Treaty Line	230 Mi.	1837-38 - Private Surveys in Saint Louis	120 Mi.
1817 - Spanish Land Grants	39 Mi.	1838 - Saint Louis Common Fields	168 Mi.
1818 - Original Towns of Saint Louis	25 Mi.	1838 - Wolf Island Boundary Dispute	40 Mi.
1821 - West & South Lines of Missouri	410 Mi.	1838-39 St. Louis School Land Surveys	40 Mi.
1824 - Choctaw Treaty Line	240 Mi.	1839 - Carmichael & Common Fields	57 Mi.
1825-26 The Santa Fe Trail	345 Mi.	1840 - St. Genevieve & Common Fields	150 Mi.
1833 - T. 20 N. Correction Line	115 Mi.	1844 - Saint Ferdinand & Common	25 Mi.
1834 - Carmichael Common	17 Mi.	1845 - Village of New Madrid	14 Mi.
1834-38 - Howard District Townships	200 Mi.	1846 - Portage des Sioux & Common Fields	85 Mi.

CALENDAR OF EVENTS

2016

February 17, 2016

Board Meeting and Capitol Visitation
Jefferson City, MO

April 28-30, 2016

Board Meeting, Golf Tournament, and
38th Annual Spring Workshop
Lake Ozark, MO

July 16, 2016

Board Meeting
Jefferson City, MO

August 24-26, 2016

Review Course,
Best Western Capital Inn,
Jefferson City, MO

October 13-15, 2016

59th Annual Meeting and Convention
Sheraton Westport Lakeside Chalet,
St. Louis, MO

December 3, 2016

Board Meeting
Jefferson City, MO

Donald R. Martin, Editor



Notes from the Editor's Desk

Donald R. Martin



Welcome readers to the December 2015 Edition of Missouri Surveyor. My ol' pard Tripod the three legged ground hog is making frame soup from the Thanksgiving turkey carcass and digging the tinsel out of the Christmas boxes in the store room. Me? I've been active trying to stay caught-up with all that these MSPS members keep doing! It sure has been busy bouncing from byline to broadcast as our boisterous brethren brag about the bicentennial birthday of the baseline and its brother meridian the 5th PM; boy, boy, boy - Brown and his band of brush beaters would blush at all this boasting.

Stan Emerick and the St. Louis Chapter of MSPS have gone above and beyond this past year to make the 5th PM Bicentennial and the honoring of Joseph C. Brown both successful and memorable. If you weren't fortunate enough to hear it, Stan was a guest on the *NSPS Radio Hour* on September 28th. While his telling of the

exploits of Brown was masterful we would all do well to heed his words about the importance of surveying's history and the need to share it with those beyond our profession. Mr. Emerick stressed non-surveyor outreach as a "critical component" of our events and he recognizes their role in "highlighting the surveyor's significance in our communities." Well said Stan! Give it a listen at: <http://www.stitcher.com/podcast/americas-web-radio/nsps-radio-hour/e/092815-guest-stan-emerick-40710380>

This edition begins with a report from Stan about the *Dedication of the Joseph C. Brown Memorial*. This is followed by the 4th in Knud Hermansen's five part series *Common Research Mistakes Surveyors Make* – for the 4th, he covers *Easements*. Next, Frank Lenik shares his contribution to our profession's struggle to identify future surveyors in *Bridging the Gap; Filling the Ranks of Surveyors in the Next Decade*. Then we have *A Summary of "The U.S. Public Land Survey System for Missouri" Second Edition* by Dick Elgin. Look next for an interesting treatise on riparian matters from Steven Petterson in *Missouri Rivers: Recreational Rights v. Landowner Rights*. As we make our way near the center of the publication we next present photos of our award winners, Missouri's newest PLS's and the new NSPS Certified Survey Technicians from Missouri.

Detailed messages from NSPS President Jon Warren are offered in *Note from NSPS*. Next are the results from the poll taken at the annual meeting reflecting MSPS members' feelings on the matter of educational requirements for new surveyors. This is followed by the press release *NASA Awards Contract for Geospatial Support Services*. The latest happenings with the NGS may be found next in *News from the National Geodetic Survey*. After this is news from the Southwest Chapter as they honored the career of their member Robbie Neece in *Southwest Chapter Recognizes One of Its Own*. An interesting item from Arkansas is next. A public television documentary *It Started Here: Early Arkansas and The Louisiana Purchase* features the 1815 expedition to establish the Initial Point and subsequent surveys culturally impacting the territories of Arkansas and Missouri. A photo montage featuring our suppliers and exhibitors closes out this edition.

Friends, as I close my note for this edition, my family and I are concluding the Thanksgiving holiday. As we offered prayers of thanks and recognized our blessings we also witnessed a world around us torn in strife, cross with racial discontent, and even terror attacked in our world's beautiful City of Light. This year, I turned again to the wise Deputy Surveyor of Sangamon County Illinois when he proclaimed a day of Thanksgiving and Praise 152 years ago fore "They are the gracious gifts of the Most High God, who, while dealing with us in anger for our sins, hath nevertheless remembered mercy." Even with all of our ills (which we cause) He gives us His mercy...and an eternal hope for peace. Take care readers and my fellow surveyors. We will be back together in late winter. Until then, I hope we all may know peace and be its agents. 🇺🇸

Donald

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President's Message

Jim Mathis III



Greetings fellow surveyors and all *Missouri Surveyor* readers. Well, if you missed the annual meeting, you missed a hum-dinger. Our Thursday session on October 8th covered a broad array of contemporary surveying matters. For those of us who enjoy history (and for surveyors I imagine that includes most of us), we had a series of real treats on the Friday and Saturday which followed. Our focus on history coincided with this fall marking the 200th anniversary of the U.S. Public Land Survey System in the State of Missouri. MSPS recognized this occurrence with presentations on everything from the survey of the Fifth Principal Meridian (wherein P.K. Robbins stretched the *fifth into a quart*), to the survey of the Santa Fe Trail. The contributions of our presenters and the Annual Meeting Committee were all appreciated.

The Annual Meeting is also our event for paying honors and recognizing accomplishments. Congratulations to our award winners; *Surveyor of the Year* Stan Emerick, *Robert Myers Service Award* honoree Gary Bockman and *Lifetime Achievement Award* designee Bob Myers. We also welcomed our new Professional Land Surveyors and Certified Survey Technicians.

The following weekend saw the dedication of a 3,500 pound marble monument memorializing the life and accomplishments of Initial Point and Baseline surveyor Joseph C. Brown in Bellefontaine Cemetery in St. Louis. This monument is inscribed with a map showing the central United States and the many lines surveyed by Mr. Brown (see the photo on the cover of this edition). We were also able to tour this historic cemetery and saw the final resting places of Silas Bent, Archibald Gamble, William Clark and other notable Missouri surveyors. My special thanks, and a tip-of-the-hat to the History Committee, the St. Louis Chapter and the Friends of Bellefontaine Cemetery for putting this wonderful event together.

By the time you read this another event honoring this particularly historic season in Missouri surveying will have taken place. Many MSPS members gathered at the first U.S. Public Land Survey corner in Missouri, located (of course) on the Fifth Principal Meridian, just north of the Missouri-Arkansas boundary. Thank you, Dr. Richard Elgin and State Land Surveyor Darrell Pratte for facilitating this little toast to our heritage.

To change the subject, an important item of interest within our Society concerns the levels of education which should be required for those seeking to become land surveyors. By a rank-and-file vote at the annual meeting an overwhelming majority in attendance (76%) supported the requirement of additional semester-hours of education to be eligible to sit for the PLS exam. This is in response to the poor pass-rate of Missouri applicants on the exam. The Legislative Committee lost no time in forming a plan of action, which will hopefully culminate in the realization of this goal.

I wish everyone a Merry Christmas, (or Happy Hanukkah, Happy Holidays, etc.) and a happy and prosperous New Year. Also remember this is the season of membership renewals and committee volunteering. Please remain an active, dues paying member of MSPS and us serve our missions by sharing your talents and time as a committee member! 🇺🇸

Jim

Dedication of the Joseph C. Brown Memorial

by Stan Emerick

The fall weather forecast called for sunny skies and temperatures in the mid-sixties. One could not have asked for a nicer day to celebrate this special occasion. It had been more than a year since the proposition to pursue this memorial was brought to the St. Louis Chapter of the surveyor's society. An impromptu crusade brewed within the survey community to recognize a unique figure in the year of a significant anniversary. Plans were formulated! A committee was formed! Funds for a monument were raised! The coming year represented the two hundredth anniversary of the inauguration of the Fifth Principal Meridian. What better opportunity would there be to celebrate the achievements of one of those first surveyors? Specifically, the one that would go on to shape the future State of Missouri: Joseph Cromwell Brown.

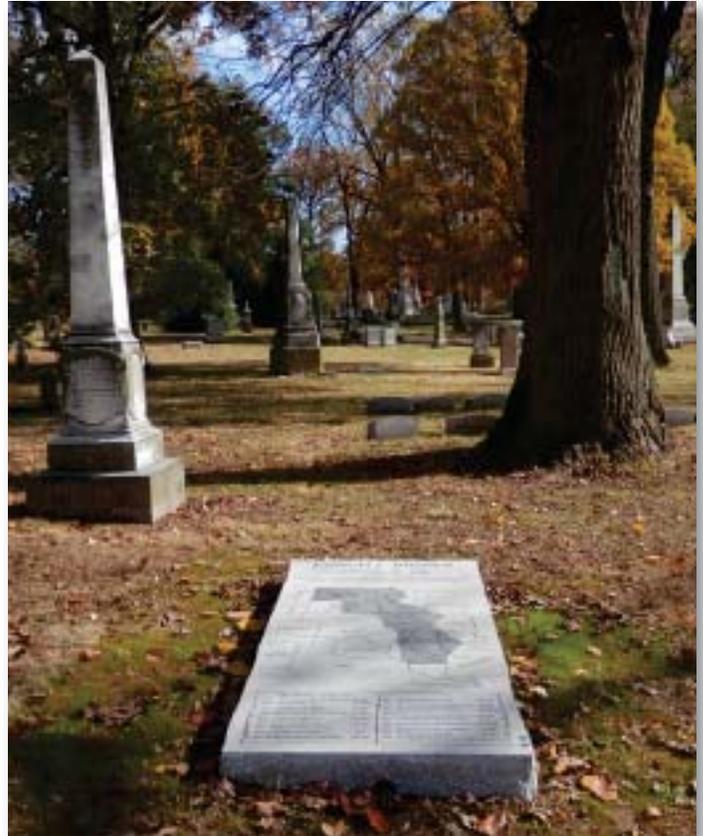
Joseph C. Brown was by all accounts the most accomplished surveyor working in the Missouri Territory. His reputation for competency, accuracy and integrity often led to him being charged with leading the most difficult and demanding government surveys. His three-decade body of work included many of the more important and complicated surveys of the day. An abbreviated list of his surveys is engraved on the face of the monument.

For many years Mr. Brown's final resting place had remained a mystery. It was known that he died before fulfilling his appointment to survey the boundary line between Missouri and Iowa. After originally being laid to rest in a small church cemetery in northern Saint Louis County, his whereabouts slipped into obscurity when that cemetery closed in the 1874.

Early last year that obscurity seemed to have come to an end. During a cursory review of some cemetery listings, Missouri's first State Land Surveyor, Bob Myers, found Brown's name among the residents at Bellefontaine Cemetery. An additional inquiry found the remains located in an extended family plot and those remains had indeed come from the church cemetery noted earlier. It appeared from this review that Mr. Brown's remains were resting in an unmarked grave in one of the most renowned cemeteries in Saint Louis! What a sad irony that this distinguished surveyor who helped build a young nation and a new state while measuring and setting thousands of monuments, resided in a grave without one of his own.

In cooperation with the Friends of Bellefontaine Cemetery and the Missouri Society of Professional Surveyors, the Saint Louis Chapter undertook the task of correcting this oversight. This entire group came together to design a

memorial befitting this unequalled surveyor. The monument would list his many accomplishments. The ceremony would accentuate his historical significance. And when complete, the memorial would become part of the cemetery's tour of historical figures. A list that includes William Clark, Edward Bates and Thomas Hart Benton.



The planning process was temporarily interrupted this past summer when a researcher discovered the cemetery's original transfer records. Those records appeared to indicate that the remains in the family plot may actually belong to Joseph C. Brown, Junior - a nephew of Surveyor Brown some thirty years his junior who happened to have died in the exact same year. A further investigation into those records could not locate any other individuals with the name of our celebrant. This implied that Surveyor Brown may not be a current resident!

While that news seemed disconcerting it did not long impede the plans to honor Surveyor Brown. The committee and its researchers continued to sift through historical records in search of Brown's location. Each new clue seemed to generate another theory on his whereabouts. The popular theory held that Brown's

remains must have been moved at the same time as the other family members, and quite possibly still reside with them at Bellefontaine Cemetery. Another theory speculated that his remains may have gone with his daughter-in-law's family (the Conway's) to a different location. A third theory that his grave remained in place yet was obliterated by development seemed unlikely but has not been completely dismissed.

Notwithstanding this uncertainty, the committee decided to go forward with plans to create the memorial in Bellefontaine Cemetery. The position of the monument altered slightly from the location previously thought to hold his remains to an unoccupied position in the family plot. The monument was transformed from a grave marker to a cenotaph - a place reserved for his final repose should we manage to recover this lost, monumental surveyor. The search continues to this day.

And so we arrived at this day, October 17th. Two hundred years and two days after Brown and Robbins departed Saint Louis on their epic journey to establish the Fifth Principal Meridian. A survey system network that would eventually grow into the largest one in the United States encompassing more than two-hundred and twenty-five million acres of land.

The first of the day's activities was a guided tour of notable surveyors buried at Bellefontaine. The guided tour was conducted by Bob Myers and Dan Fuller, a member of the Cemetery's staff. The list of notable residents included Corps of Discovery leader William Clark, his son Meriwether Lewis Clark (both former Surveyors General of the early state), Silas Bent, Julius Pitzman, John Fenton Long, Claude Hyatt Myers and several others. The grave of Archibald Gamble was also among the sites visited. He was a close friend and confidant of Surveyor Brown, and accompanied him on several of his historic journeys.

After the tour, the participants gathered for lunch in the old chapel. During the luncheon, Robert Ubben presented Bob Myers with the Society's Lifetime Achievement Award. During his presentation Robert poignantly noted that Bob's legacy of developing the Land Survey Program means every surveyor in Missouri truly follows in Mr. Myer's footsteps in one way or another. Ubben rightly noted all surveyor's practicing in this state owe Bob Myers a huge debt of gratitude for his accomplishments.

After lunch the party moved to the site of the memorial. The dedication ceremony began with the arrival of a living-history reenactment crew, purported to having been dispatched from the General Land Office. The survey crew, consisting of Deputy Surveyor Tim Daugherty and chainmen Ben Boyer and Pat Campbell, were accompanied

by Territorial Governor William Clark (personified by Patrick Lee). They recreated the running of a section line to the monument, and the referencing of the monument to nearby bearing trees. Jocular inquiries were expressed as to whether or not their chain had been properly calibrated. That transgression notwithstanding, the crew admirably completed its task and proceeded to run the rest of the line, disappearing northwardly over a hill.

Territorial Governor Clark remained behind to offer a eulogy for our esteemed Surveyor. Governor Clark expounded on Surveyor Brown's accomplishments and what life was like for a gentleman in Saint Louis during the first half of the nineteenth century. Imagined were his joys, the hardships he likely endured and the lessons he may have learned along the way. He noted from Brown's obituary that upon being appointed Surveyor General he was soon found to be too honest and competent a man for President Tyler's administration and was thusly removed! Whether or not Brown would have considered that action a joy or a hardship is left for the reader to ponder.

Governor Clark then introduced the Honorable Robert Ross, Representative from the 142nd District, who read a Missouri House of Representatives Resolution. (Mr. Ross is one of three Surveyor-Statesmen serving in the Missouri Legislature.) In addition to extolling the many accomplishments of Surveyor Brown, the Resolution went on to state that the members of the Missouri House of Representatives of the Ninety-eighth General Assembly, joined unanimously to applaud the dedication of the Joseph C. Brown Memorial and to convey to all those involved that body's heartfelt best wishes for a successful celebration. Based upon the commentary of those in attendance, I believe it would be safe to say that the legislators got their wish.

Also in attendance at the ceremony was Norman Brown, Missouri's resident expert on all things related to the GLO and the USPLSS in our State. Joining Norman was former State Surveyor Mike Flowers and current State Surveyor Darrell Pratte. Adding Bob Myers to the group, as well as professors Dr. Dick Elgin and Dr. Joe Paiva made it a unique assemblage of distinguished Missouri surveyors. It had indeed been a very long time since that quantity of knowledge on the history of land surveying in Missouri had been assembled on the same tract of land.

Representing Saint Louis County at the ceremony were Nicholas Gardner and Andrew Williams. Mr. Gardner is Director of the Department of Transportation and Public Works. Mr. Williams is Chief of Surveys for said Department. Both men are successors-in-office to positions once held by Mr. Brown. These gentlemen are the modern

(continued on next page)

Dedication of the Joseph C. Brown Memorial *(continued)*

embodiment of the professionalism and dedication to public service required to successfully execute the duties and responsibilities associated with those positions. Attributes originally ascribed to Brown and subsequently championed by many of his successors.

Without further ado, and to the delight of all those in attendance, Jim Mathis, current President of the Missouri Society of Professional Surveyors and Philip Grout, current President of the Saint Louis Chapter took the honor of unveiling the monument. (Shown on the cover of this publication.) Richard Lay, Vice President of Bellefontaine Cemetery, followed up with a brief discussion of the Cemetery's efforts to accentuate the history of its more notable residents with guided tours. He added that Surveyor Brown will now join in that group.

At the reception afterwards, Bob Myers had on display a family heirloom, a W. L. Potts compass that has been attributed to Surveyor Brown. Bob relayed the story told to him by his grandfather Claude that the compass was used to survey the Western line of Missouri and the Santa Fe Trail. Although the maker of his principal compass has yet to be found in Brown's notes, the story is credible. Sarah Logan, a research assistant for the cemetery, confirmed the

link into the Myers family. Recited in the probate records from Brown's estate in 1850, is a compass, a Jacob's staff and a surveyor's chain being sold to William Gardner. In the 1857 probate records from Gardner's estate, a compass and Jacob's staff are sold to John Hyatt, the grandfather of Claude Myers. (John's father, Frederick Hyatt, had worked with Brown on several surveys in the Saint Louis area.)

This past year of researching Brown's history has proven challenging, but also enlightening. Our astonishment at his many accomplishments continues to grow, as we travel down each new avenue. Our exploration has revealed that this is indeed a man who clearly warrants the historical recognition now bestowed upon him for the significant role he played in the development of the State of Missouri and for his many contributions to the Saint Louis community. A man whose remains may have been lost to the present, but whose legacy certainly does not need to be lost to history. We end here with the most insightful summation of the life of Joseph Cromwell Brown. A statement that appears at the end of his obituary...

"Few men depart this life to whom the whole public will so generally accord the expression that he lived and died: an Honest Man." 🇺🇸

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Common Research Mistakes Surveyors Make [Easements]

by Knud E. Hermansen†, PLS, PE, PhD, Esq

In previous articles I have explained three of the five common mistakes made by surveyors in researching the records. In the first article I discussed mistakes made in determining senior title often required when assessing the boundaries involving an overlap. In the second article I explained the deficiency that may exist when a forward search is omitted. In the third of five common mistakes I explained the necessity for researching the road records. In this article, I will explain the fourth deficiency – researching and identifying easements.

The failure to identify and locate easement records is a major source of liability for surveyors. There are numerous reasons for research difficulties associated with easements. Because some easements are public easements they suffer from the same difficulties associated with locating road records.

Other problems arise by the legal nature of the easement itself. An easement appurtenant to property that was created in, for example, 1823 by recorded grant need not be mentioned in any property records thereafter yet will still effectively burden property and benefit another property (appurtenant property).

The law presumes that an appurtenant easement is a part of the appurtenant property and passes with the conveyance of the appurtenant property even though the easement is not mentioned in subsequent records for the appurtenant property. For example, it is not unreasonable for a surveyor to stop the search of property records long before reaching the ancient property records where the deed for the easement was recorded - especially if all the boundaries to the property being surveyed were created subsequent in time to when the easement was created.

Another problem is that easements often arise from records that are not deeds. The sale of a lot by reference to a subdivision plan may give the lot owner an appurtenant easement in every road or other benefit shown on the plan (such as a park). Also, the call for a private road as a boundary, owned by the grantor at the time of the conveyance, may give an easement to the grantee in the grantor's private road. Unless the surveyor is aware of the law regarding implied easements, the surveyor may fail to research, locate, and mention the implied easement.

Finally, many easements that are evidenced by a deed are so poorly described that it is virtually impossible to locate or fix the width of the easement. These easements are often categorized as “blanket easements.”



I hereby convey to William Surry an easement to install and maintain a water pipe across my property.

Where the surveyor has stopped research prior to a grant from the government, the surveyor would be wise to inform the client of a caveat regarding the presence of easements that may not have been discovered and shown on the surveyor's plat.

† Knud is a professor in the surveying engineering technology program at the University of Maine. He offers consulting services in the area of boundary litigation, title, easements, land development, and alternate dispute resolution. 🇺🇸



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Bridging the Gap; Filling the Ranks of Surveyors in the Next Decade

by Frank Lenik, PLS

Lately, each time I get together with a group of surveyors, the discussion moves towards the shortage of available candidates for employment, the dearth of applicants for the land surveyor exam, and the aging of the population of existing surveyors. With a long face someone inevitably predicts the eventual death of our profession. We recognize the symptoms, but can't identify a cure. As Walt Kelly's Pogo would say, "we have met the enemy, and he is us".

The progression from a field crew composed of three people to two to one person over the last twenty years has reduced and in most cases eliminated our usual method of training employees. We can no longer depend on the old model of the master apprentice program. We lament about the quality of candidates but have little time to properly train our field crews. A qualified candidate often becomes one who is familiar with the type of instruments we own, or one who is adept enough to learn quickly and begin production.

Over the last ten years the list of surveyor candidates who were looking for work or who were under employed has evaporated. The larger firms have realized this and have gone after university co-op students and graduates in a big way. Those firms understand the need to fill their ranks with the best candidates they can find. It is good for the long term health of their company programs and they are not afraid to pay for these individuals. The result is that many of our university programs had their seniors placed before the final term last year.

This may be the beginning of a new age of land surveying education. The law of supply and demand should put pressure on universities, colleges and technical schools to satisfy our needs. The schools will need to create new surveying, survey engineering or geomatics engineering programs or support the existing ones, which will in time result in more qualified candidates for our profession and a better experience for the public overall.

The obvious dilemma will be how long it will take for this cycle to generate enough candidates to satisfy our attrition rate; and what should we do in the mean time? Land surveyors who want to be a part of the solution need to be working today with our institutions of higher learning and providing them with feedback on market conditions and man power needs. With a determined effort, we could effect change in the survey education system and increase the number of students coming out of existing programs in a few years and hopefully start some new programs along the way.

Understanding that this will take time to come to fruition, we will need to institute some stop gap measures like the one proposed by a colleague of mine. He suggested if you "give me a person with a college degree, I can teach them to survey". Yes, it would be preferable to hire survey graduates today, but what do we do if they aren't available? Why not hire a graduate and shorten the learning curve for new employees.

Environmental studies and forestry majors have already committed themselves to working outdoors. One university in the Philadelphia region is currently teaching "Introduction to Environmental Surveying" where their students are taught the use of GNSS hardware and software, digital levels, total stations and robotic instruments. They are learning about hydrography and UAV's and are applying these tools to ground water studies, flora and fauna studies, as well as lake, river and ocean hydrology and sedimentation studies.

If we are looking for potential employee candidates today we should explore all possible solutions. We need to identify them wherever they are and teach them about the rewarding futures in land surveying. 🇺🇸

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OnLine Course

by Joe Paiva and State Technical College of Missouri

Course Description:

This course teaches elements that provide the student with the fundamental knowledge to perform property boundary surveys. The student will examine evidence of ownership, historical information, property descriptions and legal requirements for recording documents. Applications of the Missouri Minimum Standards, American Land Title Association (ALTA)/American Congress on Surveying & Mapping (ACSM) Surveys and FEMA Certifications are also studied. 3 credits.

Course Objectives:

Upon completion of this course, students will be able to:

- Analyze deviations between recorded information and found evidence.
- Correlate technical, legal and administrative facts.
- Evaluate the reliability of all evidence discovered.
- Apply prescribed standards and historical values.
- Provide a reasonable conclusion of title boundary locations of real property.

Required Books, Tools, and Other Materials:

- Interpreting Land Records (2nd Edition) by Donald A. Wilson (2014)
- Supplemental materials including the Missouri Minimum Standards for Land Surveying and handouts related to ALTA/ACSM and FEMA will be provided by the instructor.
- A valid student e-mail account and either home access to the internet or time to access the internet from on-campus sources is required.
- Scientific calculator (including trigonometric functions).

FOR MORE INFORMATION CONTACT:

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Missouri Rivers: Recreational Rights v. Landowner Rights

by Steven Patterson

Syllabus

This paper is intended to focus primarily on water law in Missouri as it pertains to rights to navigate the various watercourses throughout the state. In particular, issues related to recreational rights on the smaller streams in Missouri, which course through predominately private property.

This paper was undertaken to shed some light on a confusing and hotly contested area of Missouri law. Proponents for riparian landowner rights, which have traditionally been stringently protected, argue that the public has no right to traverse across their lands. Proponents for recreational rights, a less traditional method of travel that's increase in popularity is coincident with the near disappearance of commercial travel on Missouri rivers, argue for expanding their rights to use the waters and surrounding land for recreational purposes. The shooting death of a floater by a landowner on the Meramec River near Steelville, Missouri in the summer of 2013 has brought this issue to the forefront of the public's attention and many are searching vigorously for guidance, but finding little.¹ This paper will begin by explaining riparian rights, then public rights, followed by a discussion about the distinction between navigable and nonnavigable rivers, and then an analysis of *Elder v. Delcour*, the leading Missouri recreational water law case. Finally, the paper will finish with a summary of the current water law in Missouri.

Much of the information in the next two sections was taken from University of Missouri School of Law's Professor Peter N. Davis's works "Recreational Use of Watercourses" and "6-Mo Waters and Water Rights I," both cited in the footnotes. To keep this paper to a manageable length I thought it best not to reinvent the wheel, as Professor Davis has already laid the groundwork. I will recite his work, build upon what he has contributed and focus most of this paper on the issue left unaddressed by the Missouri courts and legislature; namely, the lateral extent of public waters in Missouri, or more specifically, where private rights stop and public rights begin on the waterways of Missouri. The terms river, stream, and creek are used interchangeably and have no bearing on the issue, they all simply mean a "watercourse."

The Court in the 1920 Missouri case *Hobart-Lee Tie Co. v. Grabner* describing what makes Ozark's streams so special:

"We take judicial notice of the fact that the point on the Gasconade river, where this cause of action arose, is near its source; that on the topography of the country is stamped the grandeur of the magnificent Ozark uplift; that the stream throughout the county of Pulaski is at many places narrow and its waters swift and beautiful; that in the beds of the Ozark streams there are shoals and bars which furnish a happy camping ground for the erstwhile fisherman; an occasional rapid joins in the chorus of nature; and that while actually capable of floating logs, ties, and commerce of this character, they are not navigable streams with the bed of the river in the public."²

Riparian Rights

A riparian proprietor is a landowner "whose property borders on a stream or river."³ The riparian-rights doctrine is the "rule that owners of land bordering on a waterway have equal rights to use the water passing through or by their property."⁴

Missouri follows the "comparative reasonable use interpretation of riparian rights for uses of water in surface watercourses."⁵ This allows the riparian to use the water, so long as his use is reasonable. This does not allow the riparian to interfere with the public right of navigation and floatage.⁶ And, "where the abutting watercourse is subject to a public right of navigation and floatage, as discussed below, the riparian can go wherever a member of the public can go."⁷ Riparian rights are subject to a public easement to float and navigate the waters of Missouri.⁸ Thus, although a riparian owns to the water's edge on navigable waters and to the centerline of the river on nonnavigable waters, either way he may not interfere with the public's right of navigation. Likewise, the public may not interfere with the riparian's right of property ownership beyond the water's edge, most importantly his right to exclude others.

Public Rights

Federal law requires Missouri to "recognize free navigability by the public of the Mississippi and Missouri Rivers, their tributaries, and portages between them."⁹ These waters include all which were "historically navigated in waterborne interstate commerce, or could be made so with reasonable improvements."¹⁰ Rivers must be regarded as "public navigable rivers in law

which are navigable in fact. And they are navigable in fact when they are used, or are susceptible of being used, in their ordinary condition, as highways for commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water.”¹¹ Members of the public may go wherever the public waters extend.¹² In Missouri, the public has a right to navigate all watercourses that have sufficient flow to float a recreational boat.¹³ However, they have no right to “traverse or sit on islands in or banks along those watercourses, because those islands and banks belong to the abutting riparian.”¹⁴ The public does not have the right to cross private property to access the water, this is trespassing.¹⁵ A watercourse is not subject to the public right of navigation if it may be reached from the public water only through a “tortuous course with extreme dexterity.”¹⁶ In summary, the public has a federally mandated right to use navigable rivers which have been traditional means of commerce, and the Missouri Supreme Court has held that the public has a right to float on nonnavigable rivers, even though they flow over private property, and the public has no right to navigate over nonnavigable rivers not floatable by reasonable means.

Navigable v. Nonnavigable River

Whether or not a river is navigable is essential for determining the extent of riparian ownership and property boundary location. On navigable streams in Missouri, the state owns the bed of the stream and the riparian landowner owns the adjoining upland land down to the low-water mark.¹⁷ On nonnavigable streams in Missouri, the Missouri and Mississippi Rivers, the riparian owner owns the bed of the stream, and if the opposing banks are under different ownership, absent evidence to the contrary, each owner holds to the center or thread of the stream.¹⁸ The low-water mark is the “point to which the river recedes at its lowest stage.”¹⁹ This must mean that the riparian owns to the water’s edge because that is the only way to “insure the right of the riparian owner to access to the river.”²⁰ This line will move with the fluctuation of the water level, always giving the riparian owner access to the water. This is opposed to high-water states, like Arkansas, in which riparian ownership on navigable streams is to the high-water mark.²¹ The high-water mark is the “line which the river impresses on the soil by covering it for sufficient periods to deprive it of vegetation and to destroy its value for agriculture.”²² On nonnavigable rivers the “riparian owner prima facie owns *ad filum medium aquae*, subject to an easement for the public to pass along and over it with boats, rafts and river craft.”²³

Each state must choose whether to follow the low-water or high-water mark distinction and Missouri has chosen the low-water mark.²⁴ The low-water state is presumably more riparian owner friendly than the high-water state

because, quite simply, on navigable streams in a low-water state, the riparian owner owns to the water’s edge, in a high-water state, the riparian owner owns only to the top of the bank. Over the years there have been many differing interpretations, but in my mind this is the most logical explanation for the historic distinction between high and low-water marks. Again, if the stream is nonnavigable, the riparian owner owns the bed of the stream to the center of the stream, or if he owns both sides of the stream, he owns the entire stream bed. This is the case in either low-water or high-water states on nonnavigable streams. Because most float rivers in Missouri are nonnavigable, understanding this concept is critical in determining the extent of public and private rights.²⁵

Much is made of the distinction between a navigable and nonnavigable river regarding rights of the riparian landowner, and subsequently the extent of public rights. However, I believe that in reality there is little distinction in Missouri between navigable and nonnavigable rivers regarding the rights of riparian landowners and recreational users of Missouri’s waterways because, either way, the riparian landowner owns at least to the water’s edge, so travel by the public beyond this line would be a trespass on private property.

Elder v. Delcour

Elder v. Delcour is a 1954 Missouri Supreme Court case which has become the cornerstone of recreational rights on Missouri’s waterways. The case arose from a dispute over a landowner (Delcour) fencing across the Meramec River in Dent County, several miles upstream from Cook Station. When a fisherman (Elder) wished to float down the river with his wife on a fishing trip, he was obstructed by the fence and informed by Mr. Delcour that this was private property and he was not allowed to pass. Mr. Elder continued on down the river, crossing onto Mr. Delcour’s land to traverse around obstacles in the river and made stops for lunch and canoe repairs on the gravel bars as he made his way downstream. The Court pronounced that Elder had a right to float the river, fish from his canoe and wade in the water, and make incidental use of the gravel bars as necessary to navigate the river.²⁶

The Court stated that “it is admitted that the river in its present state, where it crosses [Delcour’s] property, is navigable in fact by canoes, rowboats, and other small floating craft of similar size and nature, but that it is not navigable in fact by larger boats and vessels.”²⁷ However, the Court continued, “it is nevertheless our view, that the Meramec River at the point in question is a ‘non-navigable river’ as that term is used in this state for the purpose of determining title and whether or not...[Delcour] is the owner...of the bed of the river from the meander line on

(continued on next page)

Recreational Rights v. Landowner Rights (continued)

one shore to the meander line on the opposite shore.”²⁸ The Court quoted *Longfellow*, which recognized the established law that “ownership by a riparian owner to the central line or thread of a so-called non-navigable river is subject to an easement for the public to pass along and over it with boats, rafts and river craft.”²⁹ Quoting *Hobart-Tie*, which held that the defendant was trespassing when taking ties out of the Gasconade River across the plaintiff’s gravel bar, the court stated,

“the river, at the point in question was ‘navigable or floatable’ and was a public highway, but that that the use of the north bank of the river was a constant trespass of the plaintiff’s acquired rights.”³⁰ Concluding, “at the point where this controversy arises, is navigable and floatable in the sense that it may be used as a highway, but not in the sense that the bed of the stream was retained in the public and that any islands formed in the stream would become the property of the public.”²⁵

In limiting the right of the public use of the waterway the Court cited *Farnham on Waters and Water Rights*; “the right of navigation does not authorize interference with the bed of the stream or with the banks, or the destruction of property on the banks. The right to float is but a right of passage, and includes only such rights as are incident to the use of the stream for that purpose and necessary to render such use reasonably available.”³¹ The Court continued, citing *Grove v. Energy Coal*, which characterized the Black River as “no more than a public highway upon which the public have certain rights but recognizing the riparian owner’s right to the gravel in the bed of the river.”³² The trial court in *Elder* mentioned that

“[Elder] had the legal right to carry his boat around obstacles in the river where obstructions preclude the passage of his boat, subject to liability for damage he might inflict on [Delcour’s] property and the legal right to tie up his boat or to camp on said stream as long as he uses the stream bed, gravel bars and clearly recognizable area over which the stream flows during its normal stages.”³³

The Supreme Court, however, pointed out that although *Elder* sought to establish a right to stand on the privately owned banks of the river for the purpose of fishing, he failed to include this in his petition, and therefore it was not decided because it was not before the Court. The Court did mention that “Members of the public have been denied such rights in other jurisdictions.”³⁴ The Court held; “we must and do hold that the waters of the Meramec River are public waters and the submerged area of its channel over

and across [Delcour’s] farm is a public highway for travel and passage by floating and by wading, for business or for pleasure, and that in traveling the course of the stream by canoe or wading, [Elder] was not a trespasser on the property of [Delcour].”³⁵

The Court in *Elder* explicitly declared that the Meramec River, at the point in question, was nonnavigable, which means that the riparian owner owns the bed of the stream to the centerline of the stream, but the river was still subject to a public right of navigation by means of the water, over the privately held stream bed. The remaining issue for recreational users of Missouri’s rivers is whether or not they may use the gravel bars while floating the rivers. The public has never been given an easement over the gravel bars and beyond, only incidental use of the gravel bar to aid in navigation of the river.

Current State of Water Law in Missouri

This is what appears to be the current water law in Missouri:

- ◆ Navigable river (Navigable)
 - Public has a constitutional right to travel.
 - Historically, commercial travel with large vessels.
 - Missouri River, Mississippi River, & maybe parts of the Osage and Grand Rivers.
- ◆ Nonnavigable river that is navigable in fact (Recreational Navigable)
 - Public has a right to use the water because the water is a public highway, but no right to use the surrounding land.
 - Historically, commercial travel with small vessels, floating timber, and recreational travel with canoes and river boats.
 - Meramec River, Gasconade, Current, Black, probably most Ozark float streams.
- ◆ Nonnavigable river that is not navigable in fact (Not Navigable)
 - Public has no right to use the water.
 - Historically, no commercial travel and very difficult for small recreational craft.
 - Small streams floatable only though a “tortuous course with extreme dexterity.”

It appears that the public has the right to float *in the water* of any stream in Missouri in which it is reasonable to float a canoe or small watercraft. But does this give the public the right to use the gravel bars along the river? The short answer appears to be no. Although *Elder* stated that the public has a right to use the gravel bar incident to navigation, any more significant use than that seems at odds with where Missouri draws the boundary line on navigable rivers.

The *Elder* trial court did state that he had a legal right to carry his boat around obstacles in the river, tie up his boat or camp on said stream “as long as he uses the stream bed, gravel bars and clearly recognizable area over which the stream flows during its normal stages.”³⁶ The last part of this sentence, “as long as he uses the stream bed, gravel bars and clearly recognizable area over which the stream flows during its normal stages,” would make sense if discussing a river in a high-water state, because this is exactly what the state would own on a navigable river. However, in a low-water state like Missouri, a riparian owner’s property line is at least to the water’s edge, no matter how high or low the water is. Allowing public access to such areas ignores any boundary the low-water mark creates. Using gravel bars is also at odds with *Hobart-Lee Tie Co.*, which held the defendant trespassed when crossing “an island or gravel bar” leased by the plaintiff.³⁷ Farnham on Waters, quoted above, stated the right of navigation is only a right of passage and does not authorize interference with the bed of the stream or with the banks.³⁸ Most importantly, this is at odds with Missouri giving riparian landowners title to the water’s edge on navigable streams and even farther, to the center of the stream, on nonnavigable streams.

From the strict interpretation of what the low-water mark means, on navigable streams the public’s right is to the water’s edge, anything beyond is the riparian owner’s property. This gives the public, at most, rights from water’s edge to water’s edge, nothing more. On nonnavigable streams, the riparian owner has title to the bed of the stream. This could mean only the portion under water, or everything between the banks. Either way, riparian landowners own the gravel bars. Had Missouri chosen to be a high-water state like Arkansas, on navigable streams the riparian landowner’s title would stop at the high-water mark, giving public access to everything from bank to bank, including gravel bars. Whether the Missouri courts or legislature could alter the current law in favor of a more recreation-friendly policy is doubtful. There could be many legal consequences for the state should they take such action, including possible condemnation, inverse condemnation, regulatory taking, or possibly judicial taking claims by riparian landowners. 🟩

¹ Associated Press, Suspect in Meramec River shooting case says he was defending himself, http://www.stltoday.com/news/local/crime-and-courts/suspect-in-meramec-river-shooting-case-says-he-was-defending/article_21f2e227-51c4-54de-b568-a30bd510a1c6.html (accessed Mar. 22, 2014).

² *Hobart-Lee Tie Co. v. Grabner*, 219 S.W. 975, 977 (Mo. App. S.D. 1920).

³ RIPARIAN PROPRIETOR, *Black’s Law Dictionary* 1441 (Bryan A. Garner ed., 9th ed., West 2009).

⁴ *Id.* 1442.

⁵ Peter N. Davis, 6-MO Waters and Water Rights I; *Bollinger v. Henry*, 375 S.W.2d 161 (Mo. 1964).

⁶ *Meyers v. City of St. Louis*, 8 Mo. App. 266 (1880).

⁷ Peter N. Davis, *Recreational Use of Watercourses*, 4 Mo. Envtl. L. & Pol’y Rev. 71 (1996).

⁸ *Id.* (citing *Elder v. Delcour*, 269 S.W.2d 17, 25 (Mo. 1954)).

⁹ 6-MO Waters and Water Rights I, citing Missouri Organic Act of 1820, §2, 3 Stat. 545, 5 Mo. Rev. Stat. 5968. (Derived from the Northwest Ordinance of 1787, art. IV, 1 Stat. 52 (1789)).

¹⁰ Peter N. Davis, *Recreational Use of Watercourses*, 4 Mo. Envtl. L. & Pol’y Rev. 71 (1996); *The Montello*, 87 U.S. 430 (1874); *U.S. v. Appalachian Elec. Power Co.*, 311 U.S. 377 (1940); *Economy Light & Power Co. v. U.S.*, 256 U.S. 113 (1921).

¹¹ *The Daniel Ball*, 77 U.S. 557, 563 (1870).

¹² *Id.* (citing *City of Springfield, v. Mecum*, 320 S.W.2d 742 (Mo. Ct. App. 1959); *Elder v. Delcour*).

¹³ 6-MO Waters and Water Rights I (citing *Elder v. Delcour*).

¹⁴ *Id.* (citing *Hobart-Lee Tie Co. v. Grabner*, 219 S.W.2d 975 (1920)).

¹⁵ § 569.150, RSMo.

¹⁶ *Recreational Use of Watercourses* (citing *Sneed v. Webber*, 307 S.W.2d 681 (Mo. Ct. App. 1958)).

¹⁷ 1 Mo. Prac., *Methods of Prac.: Transact. Guide* § 15.4 (4th ed.) (citing *Conran v. Girvin*, 341 S.W.2d 75, 80 (Mo. 1960)).

¹⁸ *Id.* (citing *Bratschi v. Loesch*, 51 S.W.2d 69, 72 (1932)).

¹⁹ *State ex rel. Citizens’ Elec. Lighting & Power Co. v. Longfellow*, 69 S.W. 374, 377 (1902); *Conran v. Girvin*, 341 S.W.2d 75 (1960).

²⁰ *Id.*

²¹ *Barboro v. Boyle*, 178 S.W. 378, 379 (1915).

²² *State ex rel. Citizens’ Elec. Lighting & Power Co. v. Longfellow*, 69 S.W. 374, 378 (1902).

²³ *Id.*

²⁴ 1 Mo. Prac., *Methods of Prac.: Transact. Guide* § 15.4 (4th ed.) (citing *Conran v. Girvin*, 341 S.W.2d 75, 80 (Mo. 1960)).

²⁵ *Current River, T.L. Wright Lumber Co. v. Ripley Co.*, 192 S.W. 996 (1917) and *Weller v. Missouri Lumber & Mining Co.*, 161 S.W. 853 (1917); *Indian Creek, McKinney v. Northcutt*, 89 S.W. 351 (1905); *Black River, Grobe v. Energy Coal and Supply Co.*, 275 S.W. 67 (1925), *Gasconade River, Hobart-Lee Tie Co., Meramec River, Elder v. Delcour*.

²⁶ *Elder v. Delcour*, 269 S.W.2d 17, 23 (Mo. 1954).

²⁷ *Elder v. Delcour*, 269 S.W.2d 17, 23 (Mo. 1954).

²⁸ *Id.*

²⁹ *Elder v. Delcour* at 24 (citing *State ex rel. Citizens Electric Lighting & Power Co. v. Longfellow*, 69 S.W. 374, 378 (1902)).

³⁰ *Id.* (citing *Hobart-Lee Tie Co. v. Grabner*).

³¹ *Id.* (citing *Northcutt v. John O. Long Tie & Timber Co.*, 173 S.W. 15 (1915), quoting Farnham on Waters and Water Rights, Vol. 1 Sec. 25).

³² *Id.* at 25.

³³ *Id.* at 21.

³⁴ *Id.* (citing *Willow River Club v. Wade*, 76 N.W. 273 (1898)).

³⁵ *Id.* at 26.

³⁶ *Elder v. Delcour* at 21.

³⁷ *Hobart-Lee Tie Co. v. Grabner* at 977.

³⁸ Farnham on Waters and Water Rights, Vol. 1 Sec. 25.

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Award Ceremony Notes

The Awards and Nominating Committee was made up of 10 people. (Robert Ubben, Don Martin, Joe Clayton, Rich Howard, Brad Anson, Norm Ellerbrock, Jeremy Powell, Michael Flowers, Gene Basinger, and Shane Terhune)

MSPS traditionally has two awards. Those are the *Surveyor of the Year Award* and the *Robert E. Myers Service Award*. This year there is an additional special recognition for a *Lifetime Achievement Award*.

The *Surveyor of the Year Award* has been given since 1987. This award is given to a MSPS member who has given freely of his/her time and efforts to the organization and toward the betterment of the surveying profession. They must be a member of MSPS and should also enjoy and outstanding reputation for his/her knowledge, integrity, and professional competency. The award committee didn't have to think long to have a standout nomination that has these qualities. The 2015 recipient has been a MSPS member for over 25 years and has been a chairperson and member of a large number of committees during that time, as well as being a past board member. He is a very visible committee person and valuable resource of knowledge to MSPS and members. This person is "there and present" on numerous committees such as history, the Land Survey Advisory Committee, and has worked to help with appointments to the Land Survey Commission. Most recently, this person has unselfishly worked to make special events



*MSPS 2015 Surveyor of the Year,
Stan Emerick*

such as the 250th St. Louis Anniversary in 2014 and the Joseph C. Brown Memorial in October 2015 realities. His efforts have set the bar very high for public relations. What's best, is that he is very passionate what he does and has tremendous respect for our profession. He has passion for the history behind it and a passion for the career it can be for others. This year's *Surveyor of the Year Award* is proudly presented to **Mr. Stan Emerick** of Chesterfield, Missouri.

The *Robert E. Myers Service Award* has been given since 1990. This award is given to an MSPS member who, over an extended period of time (ten years minimum) has given exemplary service and dedication to the surveying profession and in particular to the society. The 2015 recipient has been a member since he was licensed in 1989, that is 26 years. This person has also been on a large number of committees and has served as a past board member. This person has given freely of their time by traveling the state to carry out committee duties and is also a past college survey course instructor that encouraged new comers to become a professional surveyor in Missouri. The recipient certainly doesn't look it, but retirement is on the horizon for them and it was felt MSPS should honor this person for all of the dedication to the surveying profession and society. This year's *Robert E. Myers Service Award* is proudly presented to **Mr. Gary Bockman** of the Springfield, Missouri area.



Gary Bockman received the Robert Myers Service Award for his many years of service to MSPS.

Our last award is a first this year. There is one person that has made a continuous impact and betterments to land surveying in Missouri longer than any other. There is no way to qualify it, but he is surely one of the longest standing members of MSPS. He was Missouri's first State Land Surveyor and set the direction for land surveying as we all know it. Even after so many years in retirement, he continues to

enjoy what he did for a career, educate others, and help in the public relations of surveying in our state. While he is not able to be here today, this award will reach him next weekend in St. Louis, MO at the Joseph C. Brown Memorial Dedication. The first *MSPS Lifetime Achievement Award* goes to no other than **Mr. Robert E. Myers** of St. Louis, Missouri. 🇺🇸



Robert Ubben presents the Lifetime Achievement Award.



Robert Myers accepts MSPS's Lifetime Achievement Award.



New Surveyors awarded recognition from MSPS at Annual Meeting luncheon. From Left: Daniel Govero, Mike Flowers, J. Scott Faenger, Christopher L. Hasty, Travis J. Niederhofer, James B. Patchett



Surveyors from Fort Leonard Wood included from left: SPC Roel Vasquez, 1LT Daniel Sherman, CPT Andrew Taylor, ISG Dwight Hart, SFC Sean Shannon, SFC Steven Downard, SFC Calvin Cunningham

Congratulations!

Note from NSPS

by Jon Warren, PLS, President, National Society of Professional Surveyors

To all our new members, “welcome to your **National Society of Professional Surveyors (NSPS)**”, and to our previous members, “welcome to your new **NSPS!**” And, borrowing a phrase from a past **NSPS** President and Chairman of the **NSPS** Joint Government Affairs Committee, “*It’s a great day to be a Professional Surveyor!*”

I would also like to take this opportunity to express my sincere appreciation to all the previous **NSPS** Presidents, Officers, Directors, Governors, and staff. They built the strong foundation for us to continue to grow our new **NSPS!** We have finally become what our leaders envisioned back in 1981 when **NSPS** was created.

Who and what is the new **NSPS**? We are 16,000+ members from the United States, Canada, and other countries around the world. The majority of NSPS members are from the 47 Joint Membership Affiliate States. And, we are your National Voice and Advocate with:

Congress: We are strongly represented in the Congress by our lobbyist, Mr. J.B. Byrd, of John M. Palatiello and Associates, opening doors and getting us heard, while our **NSPS Government Affairs Committee** continuously reviews legislation, provides guidance to our lobbyist, and makes recommendations to the Board of Directors for decisions. We are your vigilant national eyes, ears, and voice. You may have noticed that we recently reported that LightSquared is again in the news. We are watching!!!

ABET (the Accreditation Board for Engineering Technology): **NSPS** recruits and supports a team of Program Evaluators (PEV) who are our advocates in support of our responsibilities to ABET for the review and evaluation for accreditation of multiple 4-yr and 2-yr degree surveying programs. This obligation is among the most important roles for NSPS in protecting the integrity of the surveying profession. Surveyors, not others must fill that role.

MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS: Gary Kent and the **NSPS/ALTA** Committee continue to answer questions from members on an ongoing basis, and utilize those interactions to develop an issues database from which to negotiate with representatives from ALTA in developing updated standards every five (5) years. The new 2016 **ALTA/NSPS** standards are scheduled to become effective February 23, 2016, and will be the subject of a workshop during the **NSPS/MAPPS** 2016 Spring Conference in Washington D.C.

COFPAES (Council on Federal Procurement for Architectural and Engineering Services): the organization, currently comprised of **NSPS**, **MAPPS**, and **ASCE**, has traditionally been responsible for the continuous defense of the Brooks Act, which dictates that the Qualifications Based Selection (**QBS**) process be utilized for the procurement of professional services (such as architecture, engineering, surveying, and mapping) for projects on which federal funding is utilized. **COFPAES** also acts at the request of state societies on issues related to the use of the “mini-Brooks” in that state for state-funded projects.

COFPAES acts regularly your behalf, making immediate direct contact with offending agencies, reminding them of their responsibility to utilize the **QBS**.

CFedS (Certified Federal Surveyor) Program: **NSPS** administers a contract with **BLM** for the development and delivery of **CFedS** program/training materials through its relationship with a third party contractor. **NSPS** manages the financial aspect of the program for the facilitation of payment to the contractor. A good example of **NSPS** working together with a federal agency, resulting in a mutual beneficial relationship.

CST (Certified Survey Technician) Program: **NSPS** created this program more than 30 years ago as a mechanism for survey technicians to be able to demonstrate their competence during the multiple components of serving as a surveying intern, and as an evaluation tool for employers and educators to evaluate the progress of their respective employees and students. Also, **NSPS** recently entered into an agreement with the U. S. Air Force to provide **CST** examinations to Airmen, and has begun dialog intended to include members of all branches of the military in **CST**. A Good example of **NSPS** providing a nationwide program, consistent throughout the nation, thereby helping the states by not needing to develop 50 different and inconsistent tests.

NCEES (National Council of Examiners for Engineering and Surveying): **NSPS** is a member of the **NCEES**

(continued on page 24)

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Note from NSPS *(continued)*

Participating Organizations Liaison Council (POLC), and is an active participant in the NCEES Surveyors Forum. Recently, **NSPS Executive Director Curt Sumner** was appointed to serve as an advisor to the NCEES Future of Surveying Task Force. NCEES also works with **NSPS** to promote the surveying profession to potential future surveyors.

NGS, BLM, FEMA, USGS (Survey/Geospatial related federal agencies): Curt Sumner, **NSPS** Executive Director, and members of the NSPS Executive Committee routinely meet with staff at those agencies to provide our support, feedback, council, and exposure for their initiatives.

NSPS Foundation, Inc: Serves as the Steward for over **\$25,000** in **scholarships**, funded by a variety of individuals, companies, and organizations, to encourage and support college education in surveying and the geospatial sciences. The Foundation also maintains a Disaster Relief Fund for surveyors, and their businesses and employees who are impacted by disastrous events.

NSPS Trig-Star: Is a long standing nationwide high school student math competition. The 2015 competition included students from across the country in the local and state competition, with 39 state winners participating in the national competition. The top three (3) national finishers were from Alaska, Wyoming, and Alabama, respectfully. While not specifically developed to recruit students into the surveying profession, CST helps them to understand what surveyors do. In recent years, **NSPS** created the Trig-Star Scholarship, a \$5000 award for which any high school senior who has participated in Trig-Star during their high school career can apply when they can confirm acceptance into a four-year or two-year surveying related curriculum.

What is **NSPS** doing for our membership?

NSPS is working with the Federal Land Asset Inventory Reform (FLAIR) Act:

This bill will call upon the professional surveyor community to assist the Department of the Interior in creating a single, federal multipurpose cadastre in accordance with standards recommended by the National Academy of Sciences, while also encouraging the integration of state and local government real property data and holdings. Such an inventory will assist in improved federal land management, resource conservation, environmental protection and utilization of real property, as well as identify property the federal government no longer needs to own.”

COGO (Coalition of Geospatial Organizations), **NSPS** is a founding member of the group, which is collectively engaged in issues affecting the entire geospatial community which includes more than 170,000 individual producers and users of geospatial data and technology. Recently, COGO published a Report Card on the status of the Federal Geographic Data Committee (FGDC) efforts on the National Spatial Data Infrastructure (NSDI), pointing out areas in which improvements are needed. The group is also working together to find common ground to advocate for the **Geospatial Data Act**. NSDI Framework Data

NSPS is working closely with other organizations on business issues affecting private-practice surveying and mapping firms through the **Business Coalition for Fair Competition** (BCFC).

NSPS Media Outlets:

NSPS Radio Hour – Curt Sumner, our Executive Director hosts this one hour broadcast each Monday at 11am EST, which typically has more than 100,000 downloads per year, in addition to those who listen when the show is being broadcast.

NSPS News & Views – Trish Milburn, our Executive Administrator, works with Curt, our Government Affairs team, and various other media sources to assemble this Weekly e-mail/newsletter. Trish and Curt also collaborate to maintain our **Facebook, Twitter, and Dual Frequency Blogs**.

NSPS supports travel for delegates and pays dues, as your representative to **FIG (Federation Internationale Geographers)** on the international stage. **NSPS** members should take advantage of this membership in FIG, and develop a presence and partnership with other international firms. There is advanced technology available to bring to other countries of the world that are looking to utilize, but need your assistance to apply it to their locale. **FIG** meets annually for the “Working Week” and every four years for a Congress at different cities around the world:

June 2016, Christ Church, New Zealand; June 2017, Helsinki, Finland; Congress 2018, Istanbul, Turkey; June 2019, Hanoi, Vietnam; and we are planning to submit our proposal to host the FIG Congress in April 2022!

NSPS hosts an annual **Student Competition**, providing students with an opportunity to hone their skills in organizing a project and presenting it using various media (Paper, Map, and Oral Presentation) utilized in surveying professional and/or scientific work. The competition also provides the opportunity for students to directly interact with practicing professionals.

The **NSPS Young Surveyors**, connected with the FIG Young Surveyors, is a program through which Surveyors who are 35 years old or younger can develop a greater connection with **NSPS**, and can share their perspectives, influence, and expertise with their peers.

April 13-16, 2015 **NSPS** partnered with **MAPPs** in **Arlington, VA.**, for what is expected to be the first in a series of joint conferences. Some highlights of the conference were: the **NSPS** 14th annual Student competition; a geospatial symposium presented by NGS; a very successful joint “Capitol Hill Day”; (meetings with over 80 senators and over 100 representatives); a very well attended **3DEP (3D Elevation Program)** <http://nationalmap.gov/3DEP/> Stakeholders Meeting; with federal agencies (USGS, NGS, FEMA) and members of COGO (NSPS, MAPPs, ASPRS, NSGIC, NGAC); **NSPS** committee meetings; and the **NSPS** Board of Directors meeting. A 2016 joint conference is being planned for March 14-18 in the same location.

How does the fact that **NSPS** now has over 16,000 members, enhance our influence with Congress and Federal agencies?

This five-fold increase from only a few years ago, not only provides more clout to open doors in Congress, it also provides a much larger unified group of Professional Surveyors who have personal and/or professional relationships with their respective Senators and Representatives, and who can visit with those legislators in their home states/districts.

In the best-case scenario, where do you see **NSPS** a year from today?

We would be very pleased with having an agreement in place with all 50 states and Puerto Rico, bringing our membership numbers close to 20,000 and rising as the economy improves.

We also want to re-establish our National Surveying and Mapping Conference. We need to lead the way to our Geospatial future!

What are my primary goals for **NSPS** for 2015-2016?

Strengthen our National Voice/Advocate with Congress, Federal Agencies, and FIG

FLAIR Act, National Geospatial Data Act, QBS, ABET, JGAC, NCEES, etc...

Develop Promotional Materials to Market our Profession for all states

Promote, support, and grow the **NSPS Young Surveyors Program**

At each state level and FIG; future NSPS and profession leaders

Promote, support, and grow the **NSPS CST Program**

3500, and growing with Military program addition

Connectivity, Networking, and Strength in Numbers

NSPS Spring and Fall meetings: sharing, listening, and gaining ideas

Survey Summit Forum for all state Society Presidents 

MSPS Member Survey Results

122 surveys were returned at the 2015 annual meeting

In the fall/winter of 2012 the Board of Registration asks MSPS to review the current educational standards for professional licensure as a land surveyor. A committee was formed from that request and research compiled on educational institutions offering in-person or online learning and licensure requirements from surrounding states. After reviewing the data, the MSPS Board made a recommendation to move from 12 semester hours of approved surveying course work to 30 semester hours of which 6 semester hours would be in legal aspects of boundary surveying. The 30 semester hours would consist of 15 semester hours being land surveying specific with the other 15 semester hours covering math, general sciences, communication and business. There would be no change in the required field experience. The one significant change would be the elimination of 12 hour education option now contained in 327.312(3) eight years after bill passage.

An education bill with the above changes supported by MSPS and the Board of Registration was defeated both legislative sessions in 2014. MSPS is currently working with representatives and senators to sponsor a bill that would be supported by the majority. To make this happen, MSPS would like membership to voice their opinion on the following questions:

- 1) Are you in favor of changing the education requirements? (please circle your choice)
 - a. Yes (Please continue with questions → 92/122 = 76%
 - b. No (Thank you for your time) → 30/122 = 25%
- 2) What do you believe is an appropriate number of semester hours to qualify for the LSIT exam?
 - a. 15 hours → 10/91 = 11%
 - b. 18 hours → 5/91 = 6%
 - c. 21 hours → 7/91 = 8%
 - d. 24 hours → 20/91 = 22%
 - e. 30 hours → 49/91 = 54%
- 3) How many semester hours should be land surveying specific?
 - a. 12 hours → 23/91 = 26%
 - b. 15 hours → 37/91 = 41%
 - c. 20 hours → 31/91 = 34%
- 4) Do you support the elimination of 327.312(3) eight years after bill passage?
 - a. Yes → 65/90 = 73%
 - b. No → 25/90 = 28%

NASA Awards Contract for Geospatial Support Services

by *Michael Finneran*, NASA Langley Research Center

NASA has awarded a contract to provide geospatial products and services to the agency's Langley Research Center in Hampton, Virginia.

The contract was awarded to Midland GIS Solutions LLC and Midland Surveying Inc. of Maryville, Missouri, who will be doing business as Midland GSS Joint Venture for work under this contract. The indefinite delivery/indefinite quantity contract is for 24 months, with an option up to 36 months, not to exceed \$20 million. The base contract is for \$8 million with an option of an additional \$12 million.

The contract includes requirements to operate, maintain, and update current Langley geospatial support services and associated data and web tool suite, and also provide recurring and one-time specific geospatial product and service deliverables.

Additional requirements include continuing the operation of existing capabilities and development, support, and analysis for enterprise class geospatial solutions and deliverables.

This expertise will facilitate accurate and effective data for managing property and boundaries, geodetic control, buildings, structures and utilities, environmental, safety and first responders, and facility construction, maintenance, operations, and demolition, and survey and measurement of wind tunnels, models and other scientific equipment to support mission-related programs.

Geospatial data identifies and depicts geographic locations, boundaries and characteristics of features on the surface of the Earth. Geospatial data includes geographic coordinates to identify the location of Earth's features, and data associated to geographic locations. 



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News from the National Geodetic Survey



Tuesday, October 27, 2015

NGS Announces Improvements to GEOCON and GEOCON11 Software Transformation Tools

NGS is pleased to announce a number of improvements to the **GEOCON** and **GEOCON11** transformation tools.

The first improvement is the release of both **GEOCON v1.1** and **GEOCON11 v1.1**. Both versions supersede their original product releases. The changes from v1.0 in both cases are as follows:

- Users may now input and/or output free-formatted files, as well as Federal Geodetic Control Subcommittee (FGCS) FGCS Bluebook-formatted files.
- The number of manuals has been reduced from three to two.
- The number of output files has been consolidated from four down to three. (Quality estimates are now returned in the same file as the transformed coordinates.)
- There have been minor bug fixes in the new versions.

The second improvement is that **GEOCON v2.0** has been released for beta testing to the public. **GEOCON v2.0** represents a major overhaul, and it will eventually replace both **GEOCON v1.1** and **GEOCON11 v1.1**. The extensive changes undertaken in **GEOCON v2.0** include:

- Rigid adherence to, and transformational support for, the actual “High Accuracy Reference Network” (HARN) and/or Federal Base Network (FBN) years defined for each state or territory. (This change

represents a major shift from all earlier **GEOCON** releases. Specifically, in all earlier **GEOCON** releases, the transformation was built from the NSRS007 back to “the coordinates representing the most recent, post-1986, pre-2007 realization of the North American Datum of 1983 (NAD 83) on a point in the state, without regard to whether that coordinate set came from that state’s HARN, that state’s FBN, a mix of both, or neither.” Now, **GEOCON v2.0** rigidly adheres to the actual HARN years and, in 19 states or territories where the HARN is different than the FBN, the FBN years as well).

- Support for all realizations of post-1986 realizations of NAD 83 in the six largest populated areas of the United States (CONUS, Alaska, Hawaii, American Samoa, Guam/CNMI and PR/VI). This means (for example), that in Hawaii, where there was no NSRS2007 realization, a transformation exists between NAD 83(1993:HI) and NAD 83(PA11) epoch 2010.00.
- A transformation in Puerto Rico exists between the original HARN, an error-corrected HARN, and the FBN; thus NAD 83(1993:PR), NAD 83(1997:PR) and NAD 83(2002:PR).
- An entirely new Technical Report and User’s Guide have been issued to support this new product release.
- A series of support maps and figures have been provided.

Thursday, October 22, 2015

Coastal Zone Mapping and Imaging Lidar Sensor Test

In mid-October, NGS’s Joint Airborne Lidar Bathymetry Technical Center of Expertise (JALBTCX) mission representative and representatives from the Office of Coast Survey supported a multi-agency test in Panama City, Florida, to determine the feature detection capabilities of the Coastal Zone Mapping and Imaging lidar (CZMIL) sensor. While the system can provide full seafloor-bottom coverage, its ability to detect features in depths up to 40 meters is unknown. The test evaluated the sensor’s ability to detect features at various depths and environmental conditions. The processed data will be sent to the system manufacturer

(continued on page 30)



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News from the National Geodetic Survey *(continued)*

to create a feature-detection probability model for other geographic locations and environmental conditions. NOAA will use the results of the test to better assess the adequacy of using CZMIL lidar data, provided by JALBTCX, to update bathymetric depths and features on nautical charts.

Thursday, October 15, 2015

Antenna Calibration Service for GPS Manufacturers Worldwide

NGS provides an antenna calibration service for GPS antenna manufacturers worldwide that lets surveyors obtain more accurate heights. Better heights are critical for applications such as floodplain mapping, evacuation route planning, construction surveys, and determining the rate of sea level change. The service makes it possible for manufacturers' equipment to be used with NGS's Online Positioning User Service (OPUS), as well as other software products used by surveyors.

Thursday, October 1, 2015

NGS Publishes First Issue of *NSRS Modernization News*

NGS published the first issue of *NSRS Modernization News*. Planned to be published quarterly, the newsletter will provide brief but important details about NGS's efforts to modernize the National Spatial Reference System. Much of the news will focus on the 2022 replacement of the North American Datum of 1983 and the North American Vertical Datum of 1988. Related projects, such as improving the NGS toolkit will also be addressed.

Thursday, October 1, 2015

2015 Experimental Geoid Models xGEOID15A and xGEOID15B Now Available

In 2022, the National Geodetic Survey (NGS) will replace the current North American Vertical Datum of 1988 (NAVD 88) with a new vertical datum based on the geoid: an equipotential surface that best represents mean sea level.

Since 2014, we have been creating and releasing annual models of the geoid in preparation for the new vertical datum. This year's models - xGEOID15A and xGEOID15B - are now available as experimental products on NGS' beta website. Users can test these models for the improvements gained by the addition of new data from our Gravity for the Redefinition of the American Vertical Datum (GRAV-D) Project. Grav-D has been systematically collecting airborne gravity data across the country since 2008.

The xGEOID models provide our constituents with a regularly updated look at the expected impacts of the 2022 datum update. This 2015 final beta release includes a Web based tool to allow you to identify changes in your specific areas of interest by entering the coordinates for those areas.

Thursday, September 17, 2015

Surveying the Precise Position of *Robert J Walker* Commemorative Marker

The week of September 14, NGS surveyors determined the precise geodetic position of a commemorative bench mark that was placed at New Jersey's Absecon Inlet Lighthouse in June 2015. The marker honors 21 crew members who perished when the U.S. Coast Survey steamer *Robert J. Walker* sank off the coast, southeast of the lighthouse, in 1860. The survey data will be submitted to NGS' Online Positioning User Service (OPUS), one of NGS's most popular tools. OPUS contributes to the NGS-managed National Spatial Reference System.

Thursday, August 13, 2015

Partners Gather Stakeholder Input on Upcoming Reference Frames

NGS is working closely with stakeholders and professional organizations to raise awareness about the replacement of the North American Datum of 1983 (NAD 83) and the North American Vertical Datum of 1988 (NAVD 88). The Transportation Research Board and the National Society of Professional Surveyors collected input regarding NGS's activities as it prepares to transition to the new reference frames in 2022. Land surveyors, geodesists, and GIS professionals from 30 states and Puerto Rico provided feedback to NGS on new reference frame requirements and concerns. The information collected from the surveys will help NGS better understand and define user requirements when developing new products and services. 



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Southwest Chapter Recognizes One of Its Own

The Southwest Chapter of Missouri Society of Professional Surveyors recently gathered to pay tribute to member Robbie Neece. Together, the Joplin surveying community honored Robbie and chronicled his life and storied career.

Robbie Wayne Neece was born August 1, 1934 in Newton County. He attended Willow Springs Elementary School near Racine, Missouri before advancing to high school in Neosho. Active in the Future Farmers of America, he there learned of surveying to lay out field terraces for farm lands in the area.

After working a variety of jobs upon high school graduation Robbie was given the opportunity serve with the Bureau of Mines in their searches for ore and water supplies. Working with Neece on the ore and water project was Bob McIntire who in other times was associated with William M. Stewart Engineering in Joplin. After completion of the project, McIntire suggested Mr. Neece approach Mr. Stewart to seek work on his survey crew. A long, successful surveying career was then born – it was 1954.

In 1956 the State of Missouri established a licensing board for Land Surveying. Mr. Stewart thought Wayne Neece would qualify to receive a license. He applied

to the State Board with the recommendation of two prominent business men; Representative Harry Hatcher, PLS #1 of Neosho and Mr. Bruce Williams, who was the owner of Williams Soil Testing and Assay Office. On November 12, 1956 Robbie Wayne Neece became Professional Land Sureyor #369.

Wayne continued to work for Mr. Stewart until Uncle Sam entered into the picture. Wayne enlisted in the U.S. Army and after serving his country he returned to work for Mr. Stewart. In 1964 Mr. Stewart passed away and his widow wanted to continue the operation of Stewart Engineering. At this time it was incorporated and she gave shares of the business to Odell Jones and Wayne. With the retirement of Odell Jones years later he sold his shares to Neece. From then on the business has been owned by Wayne and his wife Mae operating as Stewart & Neece Land Surveying.

His career has gone in many directions including mine surveys in Kansas and Oklahoma and volume surveys for many oil companies throughout the United States. Uniquely qualified for the execution of underground mine surveys, Stewart & Neece is also known subdivision design and property boundary surveys. Most rewarding has been his involvement in the growth of Joplin.



*Joe Clayton, Representative of State Missouri Society of Professional Surveyors,
Robbie Wayne Neece PLS #396*

Wayne is now enjoying partial retirement. He passes his time doing research and occasional field work. His hobbies are his antique cars, collection of antique surveying equipment and a vast collection of maps both mining and land dating back to the 1800's. Also, he is an avid fan of MSSU sports, attending the games and tailgating.

The Southwest Chapter thanks Mae Neece for providing these bits of history on Robbie Wayne Neece, Professional Land Surveyor #396. As the Chapter honors Robbie they also recognize his pride and joy; son Rodney, daughter in law Lori and granddaughters Shelbie and Ragan. 🇺🇸



Jerry Wood, Pres. Southwest Chapter, Missouri Society of Professional Surveyors, Robbie Wayne Neece, PLS #396 and Mae Neece



Rodney Neece, Steve Allgood, Andrew South and Robbie Wayne Neece



L-R: Steve Lewis, John Birner, Ricky Black, Chris Stewart, Jerry Wood, Joe Clayton, Rodney Neece, Darin Carpenter, Robbie Wayne Neece, Andrew South, Monnie Sears



Rich Rewards from NOAA's CORS and GRAV-D Programs

Since 1807, **NOAA's National Geodetic Survey (NGS)** and its predecessor agencies have partnered with surveyors in both the public and private sectors to place hundreds of thousands of survey marks throughout the United States, **determining positional information** for each mark. Each survey mark is published with accurate horizontal and/or vertical information such as latitude, longitude, and/or height. This collection of more than 1,500,000 points, plus more than 1,300 **Continuously Operating Reference Stations (CORS)** which the National Geodetic Survey coordinates and monitors, form the **National Spatial Reference System (NSRS)**. **The NSRS provides more than \$2.4 billion in potential annual benefits to the U.S. economy**, according to a new independent study. The study finds that the NOAA CORS network alone provides an estimated \$758 million per year in benefits.

The study estimates that an additional \$522 million in annual economic benefits could be generated by the implementation of a new vertical reference system, allowing users to **determine more precise elevations using the Global Positioning System (GPS)**, with approximately \$240 million saved from improved floodplain management alone. Development of this new reference system would result from the completion of a new NOAA initiative, **Gravity for the Redefinition of the American Vertical Datum (GRAV-D)**, which will allow surveyors and scientists to employ GPS to **determine more precise and accurate elevations than currently possible, in less time and with less effort**. Because the current



vertical datum is anchored by less accurate, more costly survey monuments, there are elevation errors ranging from 16 inches to 6 feet relative to sea level. When GRAV-D is successfully completed and the new elevation system is accessed using the CORS network, these **elevation errors will be reduced to just under an inch**.

The study, conducted for NGS by Leveson Consulting of Jackson, New Jersey, will be followed by a more refined evaluation of the benefits of the CORS network and the future impact of the new NOAA GRAV-D initiative designed to replace the existing North American Vertical Datum established in 1988 (NAVD88).

For more information, contact NGS:

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A Video History of the Survey for the Initial Point

“It Started Here: Early Arkansas and The Louisiana Purchase”, chronicles Arkansas history in the period between the signing of the Louisiana Purchase and Arkansas statehood in 1836. While telling the story great attention is given to the survey of the 5th Principal Meridian.

The 30 minute documentary, written and produced by Larry Foley, tells of the 1815 land survey that began in a swamp in eastern Arkansas, establishing a starting point for land surveys of Arkansas, Iowa, Minnesota, Missouri and the Dakotas.

It recounts the tale of the two federally deputized land surveyors, Joseph Brown and Prospect K. Robbins, hired to establish the initial point. The film also features the story of Arkansas Post, the oldest frontier trade center west of the Mississippi River. It also highlights the saga of the Quapaw Indians (Arkansae), who were forced from their native homeland in 1835, one year before statehood. This program was produced in cooperation with the Louisiana Purchase Bicentennial Committee of Arkansas. Supported in part by a grant from the Arkansas Humanities Council, the Department of Arkansas Heritage and by the Arkansas Secretary of State’s Office. This documentary may be viewed at:

http://www.aetn.org/programs/it_started_here

From the Transcript

Narrator: It started here. In this headwater swamp in the autumn of 1815, two federal land surveying teams met and marked the initial point for the territory of Louisiana. In a remote delta region of eastern Arkansas, an historic state park commemorates the spot where the surveyors established a starting point-- a datum-- for land surveys of the states of Arkansas, Iowa, Minnesota, Missouri, and the Dakotas.

Lea Baker, Arkansas Heritage: It’s very important to understand that from this little obscure spot in the corner of three counties in Arkansas, the rest of the lands of the Louisiana Purchase all the way to the Canadian border are surveyed and tied to this spot.

Bill Ruck, Surveyor: It’s a big deal and without it, our whole system of land ownership, which is critical to the way that the free United States of America operates in terms of land ownership, that whole system would fall apart.

Narrator: Brown and his team started their survey at the mouth of the St. Francis River and began bushwhacking their way west covering about four miles a day. They crossed the hilly country of Crowley’s Ridge and into the cypress tupelo wetlands. Robbins and his team



began tramping north from the mouth of the Arkansas River. They slogged through sloughs and bayous and crossed the meandering Mississippi River six times. They hacked their way through thickets and briars fending off cottonmouth snakes and mosquitos. At night they slept in tents in the dense wilderness. The crews consisted of the surveyor, an axe man, two chain men, a tree blazer, a cook and a game hunter. For their labor, each team was paid \$2 a surveyed mile and paid only when the job was done.

Bill Ruck: The most fundamental piece of equipment they used was a compass. And the compass gave them direction because without directions you’re lost. The 66-foot chain is a very ingenious system in that it divided the mile into 80 pulls of the chain. 🇺🇸

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by

Kristopher M. Kline, P.L.S., G.S.I.

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- “Beds of all navigable waters belong to the state...” *Do they?*
- “There are only two categories of waterways...” *There might be three ...*

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In his new book, well-recognized surveyor and instructor Kristopher Kline provides valuable insights on the early history and modern application of principles associated with water boundaries. Kline’s new work traces the development of this unique segment of our common law, beginning with early English principles – some of which are still in force today. He then follows developments established by relevant U.S. Supreme Court decisions and by landmark state rulings. Kline contrasts rights associated with fee ownership of a riverbed with the public rights of navigation, and considers the applicability of the “recreational use” test for navigation.

No matter how well versed you may be on riparian boundaries, Kline’s book will provide you with a deeper and more current perspective on this critical topic, making it an essential addition to your professional library.

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