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ISSUE #186



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Editorial Material

All articles, reports, letters, and other contributions are accepted and will be considered for publication regardless of the author's affiliation with the **California Land Surveyors Association, Inc.** Contributions should be e-mailed to Landon Blake at landonblake@redefinedhorizons.com.

Material Deadline Dates

Spring: March 1

Fall: September 1

Articles, reports, letters, etc., received after the above mentioned date will be considered for the next edition.

Opinions expressed by the editor or individual writers are not necessarily endorsed by the **California Land Surveyors Association** Officers or its Board of Directors. Original articles may be reprinted with due credit given to the source and written notification to the **California Land Surveyors Association**, unless otherwise noted.



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SURVEYOR

CALIFORNIA

ISSUE #186



COLUMNS

President's Message – <i>Ian Wilson</i>	2
Editor's Message – <i>Landon Blake</i>	3
Legislative Report – <i>Michael Belote</i>	4
Central Office Report – <i>Kim Oreno</i>	6



FEATURES

Monument Destruction – <i>Why Does It Continue? Why Do We Allow It?</i>	10
Is Your Drone Program Good Enough?.....	17
Tracking California's Movement for the Growing Geospatial Community: CSRS EPOCH 2017.50 (NAD83).....	19
Know Your Constitutional Rights When Dealing with the California Board for Professional Engineers, Land Surveyors and Geologists.....	21
A Review of <i>Hooper v. Hero Lands Company</i>	25
A Review of IBLA 37-132.....	31
FIG Working Week 2017.....	33



CLSA 52ND ANNUAL CONFERENCE:
**A Commitment to
Professionalism:
Going for Gold**
March 23-27, 2018
Hyatt Regency, Sacramento

The *California Surveyor* is a bi-annual publication of the California Land Surveyors Association, Inc. and is published as a service to the land surveying profession of California. It is mailed to all members of the California Land Surveyors Association, Inc. The *California Surveyor* is an open forum for all Surveyors, with an editorial policy predicated on the preamble to the Articles of Incorporation of the California Land Surveyors Association, Inc. and its stated aims and objectives, which read:

Recognizing that the true merit of a profession is determined by the value of its services to society, the California Land Surveyors Association does hereby dedicate itself to the promotion and protection of the profession of land surveying as a social and economic influence vital to the welfare of society, community, and state.

The purpose of this organization is to promote the common good and welfare of its members in their activities in the profession of land surveying, to promote and maintain the highest possible standards of professional ethics and practices, to promote professional uniformity, to promote public faith and dependence in Land Surveyors and their work.



PRESIDENT'S MESSAGE

Ian Wilson CLSA 2017 President

This will be my last “message” as President of the California Land Surveyors Association. As my term draws to a close, there is much to reflect on.

I started my career in land surveying 30 years ago, this year. I was involved in CLSA from the beginning of my career and CLSA has served as a backbone of tenure in the profession. It has been a great source of knowledge in terms of classes and seminars and conferences. It has also been the source of friendships with surveyors from all over the state, the country, and in some cases, the world. Those friends have given me the benefit of their learning and experience, their comradery and their time.

To all those who have supported me, counseled me, taught me, mentored me, challenged me, admonished me, and worked with me over the years, Thank You, from the bottom of my heart. You have made me a better person and, I trust, a better surveyor.

And that is one of the best benefits of membership in CLSA that I know.

CLSA provides exposure to other surveyors and other ideas outside your normal

bubble of contacts. By serving at the Chapter level, you have the opportunity to learn more about the profession and the people in your area. You have the chance to broaden who you are. You have the chance to meet others living and working in your area. You also have the opportunity to “go state-wide.”

By serving your Chapter as a Director, you meet others from all over the state who are likeminded in their devotion to the profession. You have a

chance to come together with others to make a difference and to shape the direction of our profession.

A number of years ago, Dave Goodman paid me a huge compliment that I have never forgot. After a few of my mentors helped me grow up and grow into the responsibility of helping to shape the Association, Dave came to me and said that he was glad to see that the profession and the Association were in such good hands.

As my term comes to an end and I follow Roger Hanlin, Dave Goodman and others off to the wings to make way for the next generation of leaders, I am very happy to see that there are so many younger people who are stepping up.

To be sure, we are not “out of the woods.” There is much we need to work on for the benefit of our profession: education of new practitioners, the assault on our livelihood by others, the destruction of survey monuments, and erosion of our perceived value, among others. But I see hope in the identification of the needs and the discussions about how to proceed.

Step up. Join the Association and give it your time and talents. Make a better profession for those who follow you. From the people I see who are coming up to fill in the ranks as we leave, I truly believe that, while the challenges are great, those people are equal to the challenges.

Thank you all, for your support and your friendship.

Ian Wilson, PLS
CLSA President 2017





EDITOR'S MESSAGE

Landon Blake California Surveyor Editor

Welcome to Issue #186 of the *California Surveyor Magazine!* (I know its January of 2018. We are running behind on the Fall issue from last year, but we've already started to collect articles for our Spring 2018 Issue.)

This issue of our organization's magazine has another article from Aerotas on using UAVs in your land surveying organization. The article from Daniel Katz at Aerotas is entitled "Is Your Drone Program Good Enough?" It is followed by an article from the team at the California Spatial Reference Center on a new CSRS Epoch Date and Adjustment. Dave Woolley follows with another contribution to our magazine with an article that helps you understand your rights during an investigation by our state's licensing board. Our magazine concludes with an article on FIS Working Week 2017.

I've contributed two articles in this issue reviewing recent court decisions. The first reviews an adverse possession case involving deed staking and simultaneously created parcels that comes to use from Louisiana. This article is entitled *A Review of Hooper v. Hero Lands Company*. The second review of a court decision discusses

a decision of the IBLA about the survey of Section 8 in a New Mexico Township. In this decision, the IBLA determines the BLM incorrectly restored a corner by single proportion because it ignored important topographic calls and failed to "protect the plat."

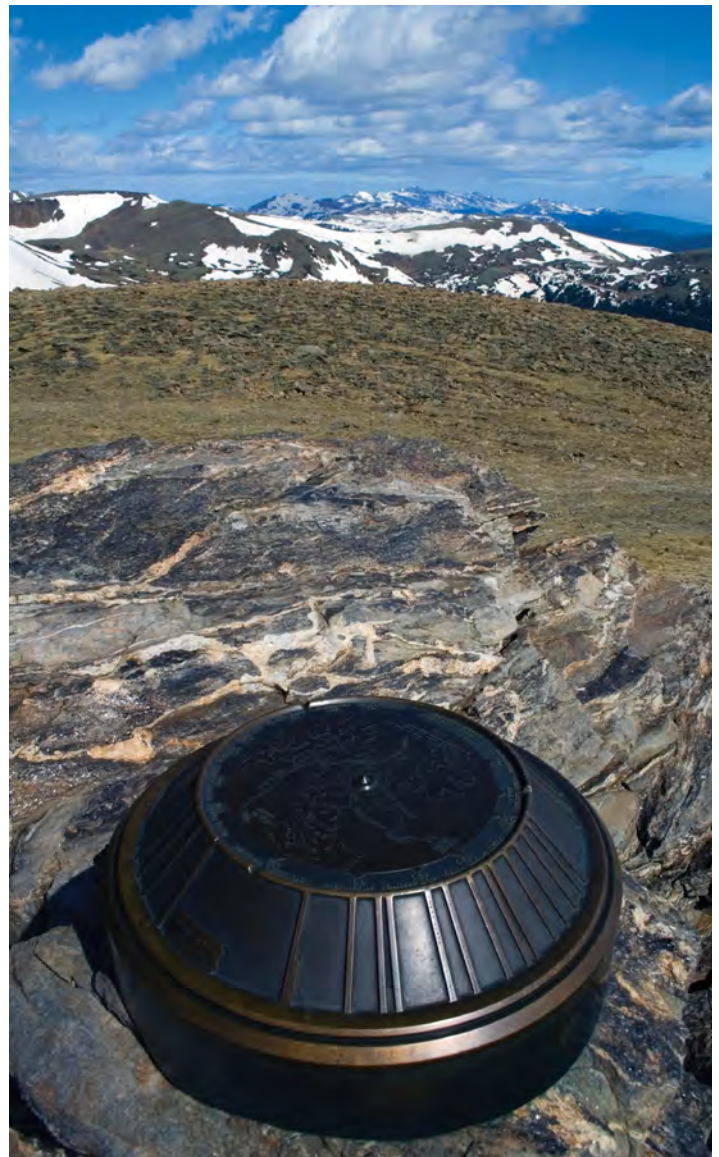
Our cover article in this issue is about the problem of monument preservation. I don't think there is another single issue as important to boundary surveyors in our state than this one. The cover article examines the reasons (some economic) why rampant monument destruction continues in California after so many decades of efforts to stop it.

I'd like to thank the individuals that helped put this issue of our magazine together. Many of them regularly offer to help with the magazine. These people include John Berkowitz, who handles our graphic design and layout. It also includes Dave Woolley and Danial Katz, who regularly submit articles for publication.

In our Spring 2018 Issue of the magazine (Issue #187) you can look forward to articles by Warren Smith, Mike Pallamary and Ken Wilson.

I'd love to get more help editing our magazine. If you are interested, or know a young surveyor that would benefit from being more involved

in CLSA, please shoot me an e-mail. You can reach me at lblake@guidasurveying.com or landonblake@redefinedhorizons.com. ☺





LEGISLATIVE REPORT

Michael Belote
CLSA Legislative Advocate

2018 Legislative Year Begins: Changes Afoot

The California Legislature returned to Sacramento to begin the 2018 legislative year on January 3. This is the second year of the current 2017-2018 two-year session. Some 2000-2500 new bills will be introduced by the February 16, 2018 deadline, and some bills will be carried over from 2017 as well.

No one is quite sure how to handicap the new legislative year, for a variety of reasons. First, the make-up of the Assembly and Senate have changed, based upon the sexual harassment allegations against legislators. In both the Assembly and Senate, Democrats have lost their two-thirds supermajority in each house, at least temporarily. In the Assembly, Democrats Raul Bocanegra and Matt Dababneh have resigned in the wake of allegations, and Sebastian Ridley-Thomas has resigned for health reasons. This leaves the balance of Democrats to Republicans at 52-25 with three vacancies. Special elections to replace these three members will begin in the spring.

In the Senate, Democrat Tony Mendoza is on a leave of absence relating to harassment allegations, and his return is uncertain. This reduces Democrats to 26 members, one below the 2/3 supermajority. Thus, Democrats no longer have the supermajority

which permits tax increases, ballot measures, and veto overrides without Republican assistance. Why is this important? See the discussion below relating to recording fee surcharges for a good example!

In addition to the sexual harassment allegations roiling the Capitol, the Senate will soon transition to a new President pro Tem to replace Kevin De Leon, who is termed out of office and running for U.S. Senate. His replacement will be Senator Toni Atkins from San Diego, who previously served as Speaker of the Assembly.

Further, the system is gearing up for elections in June, where our state will elect a new governor and constitutional officers. The point is, there are lots of political dynamics which will distract our Capitol from the usual focus on policy issues.

In terms of policy, expect 2018 to continue California's attempt to be the "anti-Trump." Whether the issue is climate change, immigration, taxation or health care, policymakers in California are very explicitly forging paths completely at odds with Washington, D.C. Even as this is written, for example, there are plans in Sacramento to pass legislation allowing California taxpayers to make charitable

contributions to the state in lieu of income taxes, in order to make the payments deductible on federal tax returns. Whether this approach will succeed is being hotly debated by tax law experts.

SB 2: The Roll-Out Begins: CLSA members are well-aware of the enactment of SB 2 (Atkins) during 2018, which imposes a \$75 surcharge on the recording of real estate documents, in order to create a permanent source of funding for affordable housing. The maximum surcharge per "transaction" is \$225. Along with a host of other associations and county recorders, CLSA was opposed to the measure, which was considered a tax increase subject to a two-thirds vote requirement.

SB 2 became effective on January 1, 2018, and many questions remain. For example, the bill contains a non-exclusive list of real estate documents covered by the surcharge, but does not speak to the hundreds of documents which might or might not be covered. Is a mining claim covered? More relevant to CLSA, is a record of survey? The bill provides no answer, and 58 different county recorders are likely to come to different conclusions, and their conclusions may change over time!

CLSA is working with recorders and other groups interested in promoting consistency in the application of SB 2, and we will have more to report soon. It is also very likely that clean-up legislation will be introduced on the subject, but the basic law is here to stay, and it will be necessary to adjust as implementation issues arise.

Politically, however, SB 2 is an excellent illustration of the power of supermajorities. As a tax increase, the bill required a two-thirds vote in each house, and that is exactly what it received, 54 votes in the Assembly (including one Republican vote) and 27 votes in the Senate (with no Republican votes). If the same votes were conducted today, with Democrats below the supermajority threshold, it is extremely unlikely that the necessary votes could have been obtained. These things matter!

Bill Introduction Deadlines Approach: As noted above, the deadline for introduction of new bills for 2018 is February 16. We are working to refine the ideas for CLSA bill sponsorship, which will be reported to the membership. With the continued focus on housing and infrastructure, however, it is a certainty that many of the new bills for 2018 will be of interest to CLSA members. Watch for updates after February 16! 🌐



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CENTRAL OFFICE REPORT



Kim Oreno CLSA Executive Director

Happy New Year! CLSA Headquarters has hit the ground running for 2018.

We are pleased to announce that the 2018 editions of the *Subdivision Map Act and Index* and the *PE Act and PLS Act with Board Rules* are now available for purchase in the CLSA store. Orders typically ship within one week of purchase. Order yours today!

We have also been focused on 2018 membership renewals. You should have received your paper renewal notice in the mail by now. If you have not received it, please contact us so we can send you one. You can use that paper form to renew or you can renew online through the CLSA website, www.californiasurveyors.org. Please renew your membership so you don't miss out on important CLSA member benefits such as free webinars, discounted registration for the Annual Conference and discounts on purchases made in the CLSA store.

The CLSA 52nd Annual Conference will take place from March 23-27 at the Hyatt Regency in Downtown Sacramento. The Hyatt Regency is across the street from the California State Capitol and very close to some

of Sacramento's most popular restaurants and attractions. The new Golden 1 Center is less than a half mile from the hotel and Sacramento Kings games will be taking place during the conference. You should also plan to visit Old Sacramento, the unique 28-acre National Historic Landmark District and State Historic Park while you're in town. The CLSA Conference Committee has put together a great program of education and fun events. Please visit the CLSA website's conference page, www.californiasurveyors.org/conference.html, to review all education sessions & speakers and networking events. We hope you are able to join us for all or part of the conference.

The CLSA Education Foundation has been hard at work, and recently reviewed over 40 scholarship applications from students all over the state attending universities and community colleges. The CLSA Education Foundation Board of Directors met in early January and awarded \$65,000 in scholarships! Students will be receiving those scholarships during upcoming chapter meetings and during the CLSA Annual Conference in March. The CLSA Education Foundation will be hosting your favorite fundraising events during the Annual Conference.

Please sign up for the golf and bowling tournaments and participate in the silent and live auctions.

Thank you all, for your continued support of the California Land Surveyors Association. Your membership and participation

is so important. If you're interested in becoming more involved but don't know where to start, please reach out to me by phone (916-239-4083) or email (kim@californiasurveyors.org) so we can discuss the many opportunities available to you. 🌟

— Welcome New Members! —

- | | | |
|------------------------|-----------------------|------------------------|
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| Subi Aimaitijiang | Jeremy Gross | Samantha Reeser |
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CLSA 52ND ANNUAL CONFERENCE:

A Commitment to Professionalism: Going for Gold

**March 23-27, 2018
Hyatt Regency, Sacramento**

Friday, March 23, 2018

1:00 pm – 6:00 pm. CLSA Education Foundation Golf Tournament
6:00 pm – 8:00 pm. Golf Tournament Awards Reception & Dinner

Saturday, March 24, 2018 (Pre-Conference Workshops)

8:00 am – 5:00 pm. Workshops
7:00 pm – 10:00 pm CLSA Education Foundation Bowling Tournament

Sunday, March 25, 2018

8:30 am – 10:00 am. Opening Ceremonies / General Session / Keynote
10:30 am – 5:00 pm. Breakout Education Sessions
12:00 pm – 1:30 pm Luncheon
5:00 pm – 6:30 pm Exhibit Hall Open
5:00 pm – 6:30 pm Icebreaker Reception in the Exhibit Hall

Monday, March 26, 2018

8:30 am – 5:00 pm. Breakout Education Sessions
7:30 am – 5:00 pm. Exhibit Hall Open
12:00 pm – 1:30 pm Luncheon
6:30 pm Cocktail Reception, Dinner, & Scholarship Auction

Tuesday, March 27, 2018

8:30 am – 12:00 pm. Breakout Education Sessions
7:30 am – 12:00 pm. Exhibit Hall Open
12:00 pm Closing Ceremonies & Conference Adjournment

Please visit californiasurveyors.org/conference.html for information on all events, education sessions and registration information.



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PreConference Workshops PreConference Workshops: Saturday (all day).	\$165	\$215	\$ _____
Conference Only Conference Only Registration: Sunday through Tuesday. Includes Sunday, Monday and Tuesday Luncheons, Sunday IceBreaker Reception and Monday Scholarship Auction. Does not include Pre-Conference Workshops on Saturday (all day).	\$395	\$445	\$ _____
Conference & Workshops Full Conference Registration: Saturday through Tuesday. Includes all preconference workshops and conference registration.	\$455	\$505	\$ _____
Conference One Day Select Day: <input type="checkbox"/> Sunday <input type="checkbox"/> Monday <input type="checkbox"/> Tuesday	\$185	\$235	\$ _____

NON-MEMBER REGISTRATION

	BY FEB 28	AFTER FEB 28	AMOUNT
PreConference Workshops PreConference Workshops: Saturday (all day).	\$215	\$265	\$ _____
Conference Only Conference Only Registration: Sunday through Tuesday. Includes Sunday, Monday, and Tuesday Luncheons, Sunday IceBreaker Reception and Monday Scholarship Auction. Does not include Pre-Conference Workshops on Saturday (all day).	\$445	\$495	\$ _____
Conference & Workshops Full Conference Registration: Saturday through Tuesday. Includes all preconference workshops and conference registration.	\$505	\$555	\$ _____
Conference One Day Please Select Day: <input type="checkbox"/> Sunday <input type="checkbox"/> Monday <input type="checkbox"/> Tuesday	\$235	\$285	\$ _____

OTHER REGISTRATION

Spouse/Guest Registration Includes entrance to Exhibit Hall, Sunday Icebreaker Reception, Sunday, Monday, and Tuesday Lunch and Monday Scholarship Auction.	\$205	\$ _____
Full-time Student Registration Must attach current student ID. Includes Conference Registration (Sunday through Tuesday), Sunday, Monday, and Tuesday Luncheons, Sunday IceBreaker Reception and Monday Scholarship Auction. Does not include PreConference Workshops on Saturday (all day).	\$195	\$ _____

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Extra Monday Auction/Dinner Ticket	_____ @ \$70	\$ _____
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CANCELLATIONS: To receive a refund on registration fees (less a \$50 cancellation fee), all cancellations must be received in writing no later than March 9, 2018. No refund after March 9, 2018. Substitutions welcome – additional fees may apply, contact the conference office at: (916) 239-4083 for more information.

Register Online at: www.CaliforniaSurveyors.org/conference.html



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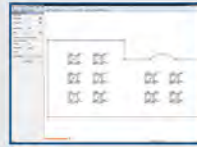
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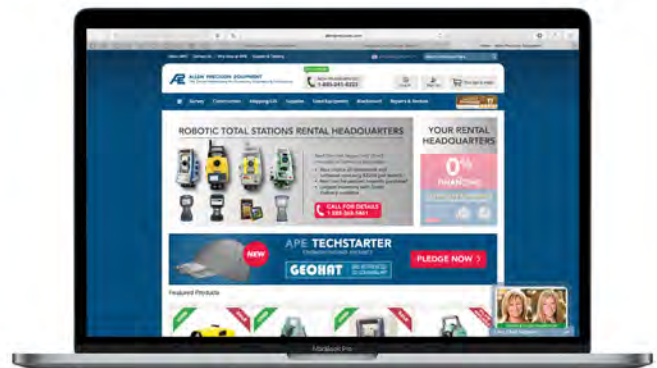
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Monument Destruction – Why Does It Continue? Why Do We Allow It?

By Landon Blake

Introduction

I'd like to start this article with a couple of short stories. The stories illustrate that monument destruction has become pervasive in California.

Just a few months ago I was doing an initial monument search for a small residential parcel in Modesto. The parcel was in a 1960's era subdivision not far north of my office. It was one of several hundred parcels in this part of town. A handful of subdivision parcels defined all those parcels. The subdivision maps marked the parcel boundaries with centerline monuments. The surveyor placed the centerline monuments at regular intervals, at angle points, and at curve ends. The handful of subdivision maps set a couple hundred centerline monuments.

My initial corner search started with the subdivision that contained my subject parcel. It quickly revealed no centerline monuments left in place. I expanded my search in phases, moving outward from my subject parcel. As I searched for corners on adjacent subdivision maps, I came to a disturbing realization. The centerline monuments on those adjacent maps were also gone.

At the end of my search, I was only able to locate 4 centerline monuments. These were in close together, far from my subject parcel. I found only four monuments out of a couple hundred originally set. What happened in this neighborhood?

I later determined that a municipal sewer project was constructed after the subdivisions. The sewer project installed sewer trunks down the center of each street. The sewer project had completely eliminated the centerline monuments. They were never reset or witnessed with other monuments. The sewer project had left several hundred parcels, and millions of residential real estate with no marks on the ground. To survey my parcel, I would tie in the 4 monuments I found, and I would split curb and sidewalks to determine right-of-way centerlines. This was less than ideal.

continued on page 12



About the same time I was working on a boundary survey as part of a land development project in Sacramento. This parcel was in an industrial area. Several of the properties south of my subject parcel had been developed as warehouse space and light industrial facilities in the last ten years. My subject parcel was shown on an older parcel map. The surveyor who created the parcel map set monuments on all the parcel corners in the subdivision, and also tied out centerline monuments on the two adjacent public streets. (The north and east side of my subject parcel bordered railroad right-of-way.)

Based on my research, there were around 20 monuments I could search for and tie as part of my boundary survey. This included monuments set on the controlling parcel map and centerline monuments in the public streets.

After two days of diligent searching, I was only able to recover three monuments. Two of the monuments I found were on my undeveloped subject parcel, and had been set on the controlling parcel map. The third monument I found was a railroad spike in a small hole in the pavement on the adjacent public street. I determined as part of my field work that all the other monuments had been destroyed. The majority of the monuments in the controlling parcel map had been removed during the recent site development, likely obliterated with the construction of the block walls that separated each industrial site from the next. The monuments along the railroad right-of-way on my subject parcel's west side had been removed during the clean-out of the drainage ditch that ran parallel to the tracks. All the other centerline monuments in the public streets had been wiped out as part of paving projects. I had several million dollars worth of industrial parcels with only two controlling monuments. The destruction of the remaining eighteen monuments had been entirely preventable, and their protection had been required by state law.

Other land surveyors in California have similar stories. We've been destroying monuments in our state for decades, and the resulting damage is widespread.

Monument destruction is pervasive. This raises important questions:

- 1) How are these monuments destroyed?
- 2) Why does monument destruction continue decade after decade?
- 3) Why do we, as a profession, allow monument destruction to continue?



How Are Monuments Destroyed?

How are monuments typically destroyed? Based on my experience, I've identified three major causes of monument destruction.

#1: Site Development/Redevelopment:

The first major cause of monument destruction is site development activity. This is the conversion of undeveloped land (vacant land, open space, or agricultural land) into residential, commercial or industrial use. The development of the vacant land in Sacramento to light industrial facilities is an example of this cause. Why are monuments destroyed during site development? Most frequently, the monuments are removed when site improvements are constructed. This includes walls, fences, and sidewalks along parcel boundaries. It can also include the installation of new underground utilities serving the parcel.

Site redevelopment occurs when land is redeveloped for more intense use or reconfigured use. An example would be the removal of old single family homes near a downtown to allow for the construction of high-density residential structures. The destruction of monuments during redevelopment is similar to that with new site development, with the added risk that monuments are destroyed during site demolition.

#2: Infrastructure Projects: The second major cause of monument destruction is the construction of infrastructure. This includes roads, bridges, railroads, canals, pipelines, and levees. Why are monuments destroyed during infrastructure projects? The construction of the physical features of these infrastructure projects often obliterate monuments, like a tornado clearing a swath of land. The destruction of the centerline monuments in Modesto for the placement of the sewer trunk lines is an example of this cause.

#3: Maintenance of Right-of-Way and Infrastructure:

The third major cause of monument destruction is maintenance of right-of-way and infrastructure. I find that cities, counties, and utility companies are the guilty parties behind this cause of monument destruction. Why are monuments destroyed during maintenance activities? They are buried, bent or removed by site grubbing and grading. Or they are covered and capped by paving and sealing. (There are places in San Joaquin County, my home county, where centerline monuments can be found 3 or 4 feet beneath the current paved surface of the road, buried by multiple road lifts and paving projects.)

Monuments are also lost to minor construction, maintenance, and agricultural operations by land owners. However, the number of monuments destroyed in this manner pales in comparison to the number of monuments destroyed by the three major causes I've listed above.

continued on page 13



Why Does Monument Destruction Continue Decade After Decade?

Talk to many experienced surveyors in California, and they will tell you the problem of monument destruction has persisted for many decades. Why does it continue? Why is the destruction of monuments so rampant?

I've identified what I believe are five main factors why we have been unable to stop monument destruction. They are factors based both on ethics and economics.

FACTOR #1: Ignorance

Although almost all land surveyors I talk to understand monument preservation, and the related requirements of state law, I still regularly interact with civil engineers who are totally ignorant about the issue. They don't understand what monument preservation is, how it impacts their projects, or what state law says about their responsibility to preserve monuments as part of design and construction.

FACTOR #2:

A Misunderstanding of Monument Value

Many non-surveyors fail to understand the value of property corner monuments. They don't perform boundary surveys, and as a result, have never experienced the extra costs that are incurred when a lack

of monumentation hampers resolution of a parcel or right-of-way boundary. As the number of monuments in an area is reduced because of destruction, the cost of each destroyed monument grows.

FACTOR #3:

Willful Disregard For the Law

In my own practice I have encountered both land surveyors and civil engineers, in both private and public practice, that have a full knowledge of monument preservation requirements, but who willfully disregard the law. They repeatedly fail to contract with reputable surveyors for monument preservation efforts, with the realization that the risk of being caught is low, and the consequences for violating the law are small compared to the cost savings of non-compliance.

FACTOR #4:

Lack of Meaningful Enforcement

We have a huge problem with meaningful enforcement of monument preservation laws in California. This problem has 2 causes at its root. The first is a reluctance of land surveyors to inform the board when there has been a violation of monument preservation. The second is a failure of the board (for a number of reasons) to swiftly and clearly punish flagrant monument destruction, especially when the guilty party is a public agency.

FACTOR #5:

Diffuse and Gradual Distribution of Costs

The last factor in continued monument destruction is primarily economic. The costs that result from monument destruction are easy to ignore because they are:

- 1) Realized long after the initial act of destruction. The period between the act of destruction and the imposition of costs can be years or decades.
- 2) Slowly accumulate. The last monument to be destroyed in a neighborhood has a much greater cost than the first monument destroyed.
- 3) Not clearly communicated in the cost of current surveys. What would happen if all land surveyors started to break out the costs of monument destruction as a separate line item in all of their costs estimates? The cost is there, but it is typically hidden. There are also costs related to legal disputes over uncertain boundary locations that are rarely (if ever) attributed to the destruction of monuments.

Why Do We (as a Profession) Allow Monument Preservation to Continue?

Why do we (as a profession) continue to tolerate a practice that is so detrimental to a fundamental service (boundary surveying) that we provide our clients? I believe there are 4 reasons we allow monument destruction to continue at a pervasive level:

REASON #1:

We Let Civil Engineers Dictate the Terms of Our Work

All too often we bow to the demands of the civil engineers we work with. We let civil engineers dictate our scope-of-services and we allow them to toss out our monument preservation tasks when they believe it is unnecessary or too expensive.

REASON #2:

We Put Profit Ahead of Protecting the Public

We would rather compromise on monument preservation efforts than say no to a client or potential project. We



continued on page 14



Monument Destruction – continued from page 13

perform the boundary survey and stake the site improvements with full knowledge that property corner monuments will be destroyed, but we turn a blind eye and keep quiet because we want the work.

REASON #3: We Are Soft on Enforcement

We know the organizations and companies in our area that repeatedly destroy monuments, but we don't say anything because they are our friends and business partners. Nobody wants to be a snitch or a squealer. As a result, we rationalize and make excuses for the bad behavior of our peers.

REASON #4: We Turn a Blind Eye to Government Violations

Many of us have government agencies as our clients. We perform boundary, topography, and construction surveys on government projects. As a result, we turn a blind eye to government violations of monument preservation requirements. We don't want to "rock the boat" with our local jurisdictions.

Conclusion

I'd like to write more in the future about ideas and suggestions for how to overcome the challenges in this article. I'd also like to hear your ideas. What do we do to fight ignorance and willful disregard for the law? How do we more clearly communicate to the public and our civil engineering partners the real and significant costs of monument

destruction? How do we strengthen the monitoring and enforcement of monument preservation efforts and give it real teeth?

Note: The opinions expressed in this article are my own, and don't necessarily represent those of the California Land Surveyors Association or the majority of its members. 🌱



Monument Preservation, Responsible Charge, and Unlicensed Practice

I recently read the summary of a BPLSEG investigation of a California city that failed to preserve monuments on a construction project. In the investigation it was reported that a EIT and her civil engineer supervisor conducted search of land records to determine if any monuments had been destroyed AFTER CONSTRUCTION WAS COMPLETED and a complaint had been filed by a local land surveyor. Were the EIT and her boss qualified to make this determination? Or were they practicing outside the scope of the supervisor's civil engineering license?

Monument preservation involves several steps. These steps include:

- 1) Land records research.
- 2) Review of land records to identify monuments that may be disturbed during construction.
- 3) Search for monuments in the field.
- 4) Survey of monuments in the field.
- 5) Preparation of pre-construction records.
- 6) Search for destroyed monuments in the field.
- 7) Monument replacement.
- 8) Preparation of post-construction records.

Think back to the last monument preservation effort you were involved with. How many of the above steps were directly performed or supervised by a licensed land surveyor? How many were handled by unlicensed individuals without the supervision of a licensed land surveyor?

I frequently see the first two steps handled by civil engineering technicians that aren't properly qualified or legally authorized. I frequently see the third and sixth step handled by construction inspectors that lack the training or legal authority. How many of the above steps should be performed by a land surveyor?

All of them. That wasn't a typo. I said all of them. All 8 steps need to be handled by a licensed land surveyor or under the direct supervision of a land surveyor. Your civil engineering technician doesn't know how to interpret survey maps and your construction inspector couldn't find a survey monument in the field if I dropped it in his lunch box.

Don't allow your engineering and construction team to practice surveying without a license. Make sure you have a land surveyor on the team, or a consultant land surveyor you've contracted with, handle all aspects of monument preservation on your projects. A failure to do so is a violation of state law and results in the destruction of monuments that would otherwise be preserved. 🌱



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Is Your Drone Program Good Enough?

By Logan Campbell and Daniel Katz

In our work with surveyors around the country, we see that there is a huge diversity in how different surveyors use drones. More importantly is the huge diversity in how much different surveyors benefit from their drone programs. With such new technology, it can be hard for any one surveyor to know whether their drone program is benefiting them as much as it could be. As we discussed in the last issue, making sure that a drone is providing as much benefit as possible is crucial right now, as surveyors nationwide face the critical need to do more work faster to keep up with demand.

With surveyors from coast to coast using our Aerotas Mapping System to complete hundreds of surveys, and having conducted nearly 400 hours of field testing and training, we have validated exactly what a well-implemented drone program should be providing: final line-work with 0.1' or better accuracy in 60-90% less field time and no more office time than before, using existing staff, causing no extra risk, and costing less than \$10,000.

Your drone program should cost you less than \$10,000 total

Including the drone, training, insurance, and all the support equipment you need, an entire drone program should cost no more than \$10,000. An inexpensive and non-specialized drone (e.g., small multi-rotor with a 20 megapixel camera) is good enough for producing industry-best accuracy.

We regularly talk to surveyors who spent 20-30x more than the small multi-rotors we set our clients up with, and produce no better survey results. Unfortunately, more expensive equipment is also usually more complex. Given that the main benefit of a drone is time-savings, the focus when shopping for a drone should be on what is most simple and reliable for field crews, rather than what has the most impressive tech specs.

More advanced drone technologies are not yet good investments. RTK and PPK GPS integrations on drones are often unreliable, complex to use and process, very expensive, with the only benefit of reducing (but not eliminating) the amount of ground control targets needed. Laser-scanners for drones are also extremely expensive and complex, and currently deliver far lower accuracy than drone photogrammetry. Fixed-wing drones are similarly expensive and more complex to use (as well as being more sensitive to weather and prone to damage), and do not provide any real-world benefit due to line-of-sight regulations.

Your drone should get you to final 3D line-work

The right drone, software, and workflow enable surveyors to produce final 3D line-work on every project. A surprising number of surveyors are satisfied if their drone program gets them just an orthophoto, which they use as client-pleasers or to draw 2D planimetrics. Other surveyors produce full 3D models, often as point-clouds, but

don't have an effective way to create their line-work from it. They are happy to show the 3D model to clients or use it a stand-in for field photos to identify objects.

Surveyors in both of these situations are not benefitting from the drone as much as they could be, in time or money. The right drone workflow makes it easy for a surveyor to produce complete final line-work, including a TIN surface with breaklines, contours, and features.

Your drone should reduce your field time by 60-90%

An effective drone program should provide massive time-savings in the field, even on complex projects. After setting ground control targets, the field operation for a drone survey should require only about 5 minutes of set-up. More importantly, there should never be a need to revisit a job to redo a drone flight. If setup takes more than 5 minutes or revisits/re-flies ever happen, this is usually because of insufficient training or an ineffective flight checklist.

It is important to understand that a drone is just one tool in a surveyor's toolbox. The drone will almost always be part of a mixed workflow, with parts of a project still being collected with ground equipment. In these cases, the drone still provides time savings, even if just on parts of projects. And with the right post-processing workflow, it is

continued on page 18



straightforward to merge together data collected by drone with that collected on the ground.

Your drone should cost you no extra office-time

Getting to final line-work from drone data should take the same amount of time for a CAD tech as if the job had been done using standard GPS or total station equipment. This includes getting from raw photos to a 3D model, then to final client-ready line-work.

If in-office staff are spending significantly more time to produce final line-work, the problem is the workflow. Trying to pull a 3D model directly into CAD software and complete the line-work there is rarely the most efficient solution, due to limitations in CAD software for managing these types of files. Similarly, trying to create line-work directly from a point-cloud is always extremely inefficient. With the right software and workflow, doing projects by drone should require no extra office staff time or resources.

Your drone should get you accuracy of better than 0.1'

An effective drone program reliably produces surveys with less than 0.1' tested vertical error (and substantially better in horizontal). Many surveyors simply do a few easy spot-checks and, if none of them seem to far off, are satisfied. Unfortunately this can result in misleading and inconsistent results, and do not provide confidence in the actual total error. Fortunately, ASPRS Positional Accuracy Standards provide a straightforward methodology for completing a verifiable accuracy test of the total "all-in" error of a drone survey. This approach eliminates any bias or inconsistency in how the error is measured.

When measuring this root-mean-square error, the results should reliably be at worst 0.1' vertical. If a final survey comes out with worse accuracy, the issue is usually a combination of field operation (e.g., ground control target layout), drone setup (e.g., camera settings, autopilot settings, flight planning), and/or the data processing operation (e.g., insufficient

QA/QC procedures). While our system has been independently tested to 0.05' vertical accuracy on some projects, we find that across a broad diversity of projects, 0.1' maximum vertical error is currently industry-best.

Your drone program should require no special staffing

By using drone equipment that is simple and reliable, there is no need to hire a special "drone pilot." Any staff that are qualified and trusted to operate a company truck can be drone operators. With the right equipment, training, support, and flight checklist, even the most non-technical field surveyor can become an effective drone operator. The drone is simply another tool they pull out of the truck to use.

Your drone program should cause no risk

Using a drone in your survey business should not require that you accept more risk. There should be practically-zero chance that field crews are unable to complete a job due to equipment issues, thus costing the business money. There should be no liability risk to the company. Most importantly, no person on-site should be put in any more harm's way due to drone operations. It is essential that every drone survey program emphasize reliable equipment, a failsafe checklist,

high-quality drone-specific insurance, and – most importantly – professional training. Used well, a drone program should in fact reduce risk by taking field surveyors out of dangerous roadways and other unsafe environments.

Make sure your drone program is helping your business

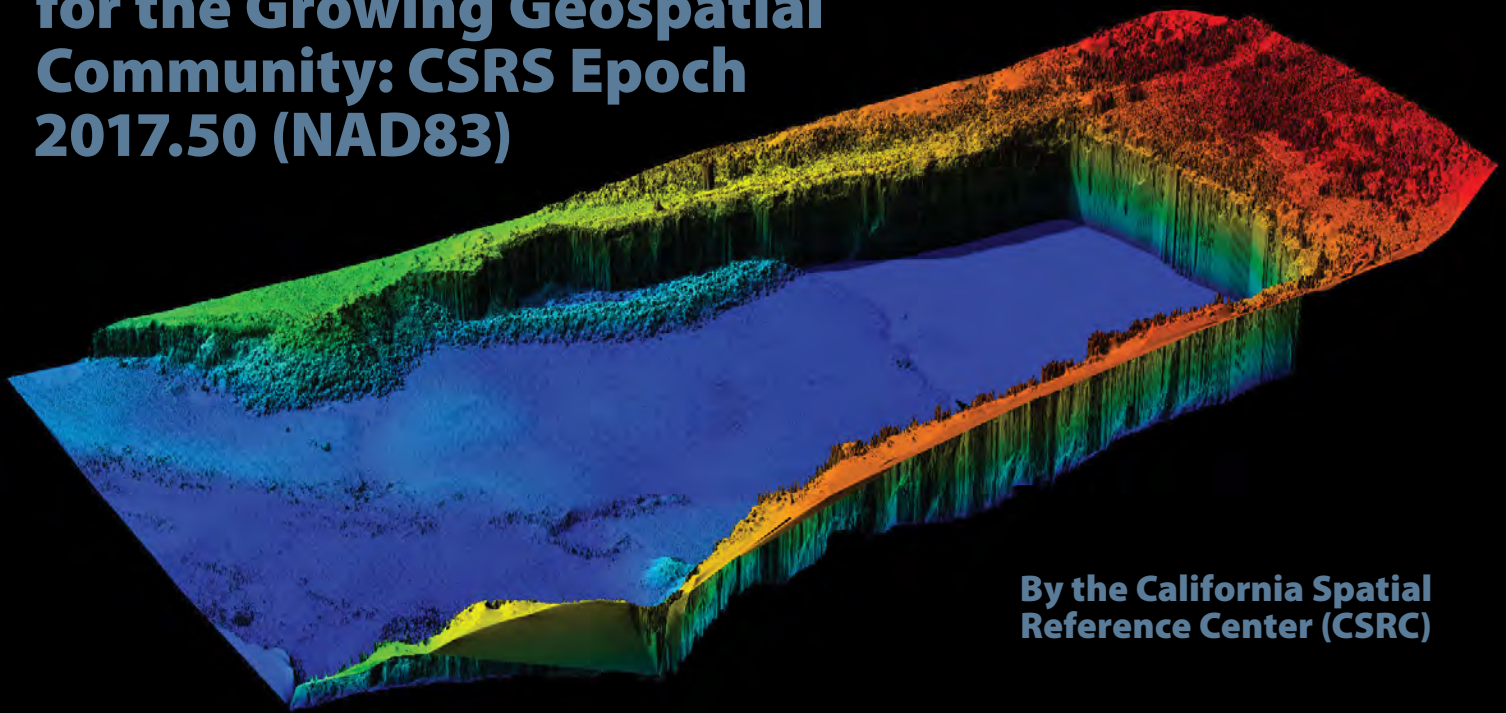
In this critical moment in the survey industry, surveyors need to be shifting how they think about their businesses. With construction and development up in nearly all parts of the country, and the nationwide shortage of hireable surveyors, it is more important than ever that surveyors make sure they are squeezing every bit of value out of the tools they use. For surveyors, a drone can be an incredibly valuable time-saving tool, enabling them to do more projects faster and more profitably, without needing to hire more staff. Now is the time to make sure that your drone program is getting you everything it could be – before the huge 2018 construction season begins. 🍷

Logan Campbell and Daniel Katz are co-founders of Aerotas where they created the Aerotas Mapping System, a turn-key system including a UAV and processing solution, training, insurance, and regulatory compliance support. Learn more at aerotas.com/calsurveyor



Photo by Oliver Schwendener on Unsplash

Tracking California's Movement for the Growing Geospatial Community: CSRS Epoch 2017.50 (NAD83)



By the California Spatial
Reference Center (CSRC)

Proudly serving the surveying and geospatial communities for two decades; the California Spatial Reference Center (CSRC) ensures that a high-accuracy, horizontal and vertical network is maintained in California. The California Spatial Reference Network (CSRN) provides user access to the official California Spatial Reference System (CSRS), in accordance with the California Public Resources Code (CPRC). CSRC also ensures that time-dependent geodetic coordinates, velocities, Global Navigation Satellite Systems (GNSS) observational data and supplemental station information (historical coordinates, metadata, etc.) are available at all times. The CSRC currently has access to 853 Continuous GNSS Stations (CGNSS) in California and adjacent States and 421 California Real Time Network (CRTN) data streams (see Figure 1). CSRC provides one complimentary connection to the CRTN data streams and additional simultaneous connections can be obtained for \$1,000 per year. An individual or organization can become a Consortium member for \$15,000 per year and receive access to twenty connections (http://csrc.ucsd.edu/docs/Consortium_FAQs.pdf).

Besides earthquakes deforming California's crust; the Pacific and the North American

tectonic plates move horizontally in opposite (northwest/southwest) directions at a rate of 5 centimeters (about 2 inches) per year and split the State along multiple geological faults such as the San Andreas fault. Users should understand that these factors cause the CGNSS fixed coordinates to drift over time. Additionally, as the fixed coordinates depart even further from the global reference frame and GNSS precise orbits, surveying precision is degraded. CSRC handles these movements by readjusting the positions of the CGNSS network periodically. The last CSRC adjustment was the CSRS Epoch 2011.00 NAD83 (NSRS2007). Since this last adjustment California has experienced earthquakes and subsidence that have deformed portions of the State and caused the CSRS network to significantly drift from the published values of each station.

CSRC is pleased to announce the new epoch CSRS Epoch 2017.50 (NAD83) that will be available by the end of 2017. This new Epoch will bring stations back into alignment with the GNSS orbits and the latest global reference frame (International Terrestrial Reference Network 2014 – ITRF2014), allowing the coordinate values of the stations to fit together again. In this way, CSRC will continue to provide users in

the State with a high-accuracy reference network. The results of the CSRS Epoch 2017.50 (NAD83) update, along with the final project report documenting the project and its conclusions will be available on the CSRC website <http://csrc.ucsd.edu>. The epoch update will be in the form of a data table showing the coordinate values with velocities and accuracies of each CGNSS station. The values in CSRS Epoch 2017.50 (NAD83) will also be broadcast over the CRTN making the IP-based system the only network capable of delivering coordinates, in real time, in compliance with the CPRC. In addition, the CSRC website is evolving and being updated to provide a modernized map interface for accessing coordinates and data files.

California's precise positioning community has experienced a ten-fold increase in the use of the CRTN, since CSRS Epoch 2011.00. There are currently about 950 registered users. All the while California has experienced crustal motion in the form of rotations, translations, and deformation, exceeding a foot relative to the National Spatial Reference System (NSRS) and NAD83, and inconsistencies with respect to the GNSS orbits and International

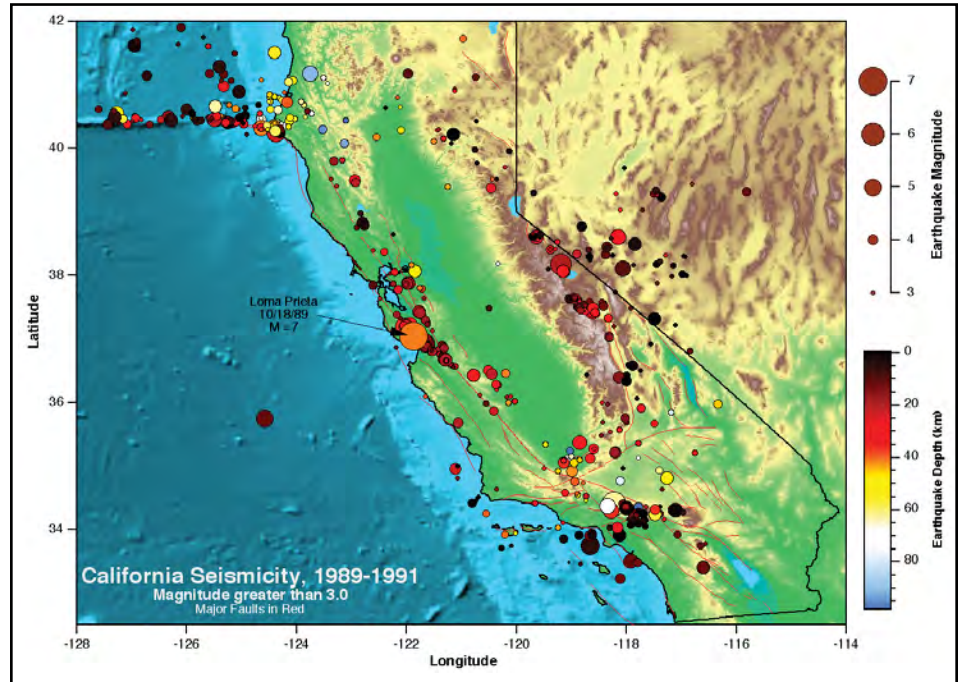
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Terrestrial Reference Frame (ITRF). Also, regional and local subsidence has caused the ellipsoid heights of stations to change by up to a foot from the published National Geodetic Survey's (NGS) 2010.00 values.

Whilst the mission of the NOAA/NOS National Geodetic Survey is to provide a reference frame for positioning the nation, the CSRC's focus is with the local and regional scale dynamics. With this "local" perspective the CSRC, under contract with Caltrans, undertook a multi-year reanalysis and reprocessing of the statewide reference network, to provide the precise positioning community with updated station coordinates and velocities for 843 operational and 101 legacy stations. The Scripps Orbit and Permanent Array Center (SOPAC) GNSS observation archive spanning more than two decades supports the most rigorous geophysical studies; processing and adjustment capabilities at SOPAC that has performed the new Epoch data analysis are world class. When published by the end of 2017, this updated realization of the CSRN will provide the professional surveying and geospatial communities with dependable reference control for California Geodetic Coordinates and State Plane Coordinates. Further, the improved relative precision and realignment to GNSS orbits and ITRF is the necessary basis to maintain functional integrity of real-time networks, in order to support positioning with surveying accuracy. This unified spatial reference system provides the ability to relate maps and spatial data under a common definition.

California presents unique challenges for precise geodetic control surveying, and as the dynamic user community continues to grow and become more demanding with even greater and more sophisticated positioning applications, CSRC will be the organization that can keep California as a world leader in these endeavors. Some of the more recent high-rate users of CRTN include GNSS manufacturers, agricultural users, and autonomous vehicle companies. As the precise positioning industry evolves, CSRC will continue to ensure the availability of accurate, consistent, and timely spatial referencing data for California. 🌐





Know Your Constitutional Rights When Dealing With the California Board for Professional Engineers, Land Surveyors and Geologists

By David E. Woolley

As you may know, in 2016, Assembly Bill No. 177, §§ 1, 3 and 4 (“AB 177”) passed the California Legislature and California Business & Professions Code § 8780.2 and was enacted into law. The Orange County Chapter of the California Land Surveyors Association (“CLSA”) adamantly opposed this statute on constitutional grounds and brought its concerns to the CLSA Legislative Committee. I also sent a report disavowing the language of AB 177 (along with detailed argument) due to constitutional rights violations to the Bill’s sponsors California Assemblywoman Susan Bonilla (“Bonilla”) and California Senator Jerry Hill (“Hill”). Subsequently, a “Legislative Counsel Opinion” (“LCO”) as to whether Section 8780.2 is constitutional was issued. **Exhibit A** is an entire copy of the LCO for your review. You can view or download it at: <https://goo.gl/7k9qbQ>

Below is the following:

1. A summary of my arguments against Section 8780.2
2. A summary of the LCO’s opinion
3. An example of past request from the Board for Professional Engineers, Land Surveyors and Geologists (“BPELSG”) (See **Exhibit B**) and suggested responses that will comply with Section 8780.2 pursuant to the LCO

1. Summary of Objections to California Business & Professions Code § 8780.2:

Section 8780.2 states:

“The failure of, or refusal by, a licensee or a certificate holder to respond to a written request from a representative of the board to cooperate in the investigation of a complaint against that licensee or certificate holder constitutes a cause for disciplinary action under Section 8780 or 8780.1.”

My concerns about this language stem from the requirement to “respond to” and “cooperate in the investigation.” There must be a mechanism for judicial review of a licensing board’s document requests or subpoenas before a licensee can be cited or disciplined for failure to produce documents so that a licensee rights are protected. This does not mean that a licensing board can never obtain the requested records. It just means, absent a licensee’s voluntary production, the licensing board must ask the court (a third party neutral) for permission to demand these records.

California Government Code §§ 11180-11191 provide authority for all state agencies to investigate pre-hearing (no hearing pending) matters under their jurisdiction. Most agencies that engage in investigatory activity are authorized to issue subpoenas and subpoenas duces tecum. California Government Code § 11180, et seq. gives governmental agencies broad investigative authority, including the inspection and copying of books, records and other items that could be subpoenaed. When a licensee does not comply with a prehearing

inspection demand (even with a subpoena), the requesting agency must ask the court for assistance. These channels are in place for a reason – to protect licensees’ constitutional due process rights (14th Amendment), rights against unreasonable searches and seizures (4th Amendment) and rights against self incrimination (5th Amendment).

In the case of a land surveyor licensee, his/her failure to provide these records to the California Board of Professional Engineers, Land Surveyors and Geologists (“BPELSG”), pursuant to a written request, requires the BPELSG to obtain court intervention in order to obtain these documents. During this process, the court determines if the record request is valid, not over broad and not in violation of the licensee’s constitutional rights. These mechanisms allow the BPELSG to obtain requested records when warranted, while providing judicial oversight and protection of licensees’ constitutional rights.

2. Summary of the LCO’s Opinion:

The LCO asks and then responds to questions including:

Does Section 8780.2 require a licensee to provide documents to the board in response to a request to cooperate in an investigation?

The LCO’s short answer is no. The LCO interprets the language that “failure of or

continued on page 22



refusal by a licensee to respond to a written request from a board representative to cooperate in the investigation of a complaint against that licensee constitutes a cause for disciplinary action under section 8780 or 8780.1.”

The LCO states that 8780.2 does not define “respond”; however, the LCO defines “respond” as “to say something in return; make an answer.” The LCO goes on to state that “respond” does not mean producing documents – it only means provide either a written or verbal response.

The LCO also states that Section 8780.2 only gives the Board’s authority to “request cooperation from the licensee” and that Section 8780.2 only requires a licensee to respond to that request for “cooperation” **but does not require the licensee to produce the documents themselves.** The LCO states:

“Additionally, although section 8780.2 requires a licensee to respond to a written request from a representative of the board, it does not mandate that the response be an agreement to cooperate or an agreement to cooperate by turning over documents ... Thus, under the plain language of the statute, a response to the request for cooperation that is an affirmative refusal to cooperate or to cooperate by producing documents and that is conveyed to the board would not constitute a cause for disciplinary action under section 8780.2” [emphasis added]

The LCO goes on to state that either a verbal or written response will suffice to avoid disciplinary action. The LCO states that:

“a [unnamed] board representative has informed us that the board interprets the statute as merely requiring a licensee to provide a response as to whether the licensee intends to cooperate in an investigation, not as requiring a licensee to produce document.”

The remainder of the LCO goes on to discuss constitutional protections associated with requiring a subpoena to compel production of documents.

3. Example of a Past Request from the BPELSG and Suggested Responses Complying with Section 8780.2 pursuant to the LCO.

Most laypersons/licensees, unfamiliar with the LCO, may still interpret the plain language of “respond” and “cooperate” to mean that they must produce anything demanded by the BPELSG or be subject to discipline. A simple Google search for definitions of the word “cooperate” revealed the following:

- a. *“To be helpful by doing what someone asks or tells you to do.”* Merriam Webster Dictionary; Cambridge Dictionary.
- b. *“Assist someone or comply with their requests.”* Oxford Dictionary.

In these definitions, “cooperate” implies producing documents and responding in the affirmative – not responding by stating that the licensee will not cooperate. This is why it is important for all California licensees to understand their rights when it comes to Section 8780.2. Any of the following from a licensee will suffice according to the LCO:

1. A verbal response that the licensee will not cooperate;
2. A written response that the license will not cooperate;
3. A verbal response that the licensee will partially cooperate;
4. A written response that the licensee will partially cooperate;
5. A verbal response that the licensee will fully cooperate; or
6. A written response that the licensee will fully cooperate.

I have attached a letter sent to by BPELSG to a licensee alleged to have failed to resubmit a record of survey within the prescribed 60 days as **Exhibit B**. Reading **Exhibit B**, the BPELSG is requesting:

“all of the information that you have regarding this matter, such as copies of contracts, correspondence, field notes, applicable maps, etc. Please provide two copies of any large documents such as maps or plans” [emphasis added]

continued on page 23

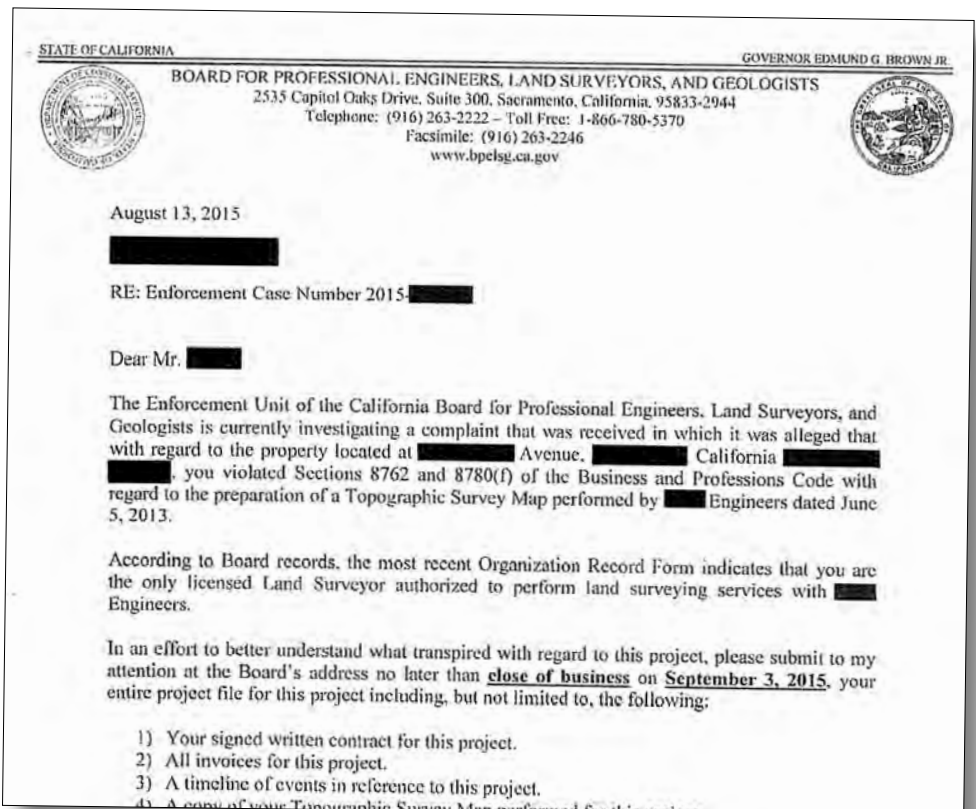


Exhibit B (partial) View or download the full exhibit at: <https://goo.gl/7k9qbQ>



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The copying cost of a file (particularly a litigation file), as was the case in the referenced exhibit, would be several thousand dollars. This letter is an example of the hardship put on a surveyor required to copy an entire voluminous file without reimbursement. Misinterpreting Section 8780.2 might mean that the licensee incurs thousands of dollars in unnecessary production costs because the licensee is afraid of disciplinary action for failure to “cooperate.”

More recently and after the passage of Section 8780.2, an August 2017 letter sent by the BPELSG to a licensee investigating a complaint contains strong and threatening language that, in my opinion, is unacceptable and violates licensees’ due process rights. This August 2017 letter states:

“Pursuant to Business and Professions code § 8780.2 (a) the failure of, or refusal by, a licensee or a certificate holder to respond to a written request from a representative of

the board to cooperate in the investigation of a complaint against that licensee or certificate holder constitutes a cause for disciplinary action under Section 8780 or 8780.1.”

A redacted copy of this August 2017 letter is attached hereto as **Exhibit C**. View or download it at: <https://goo.gl/7k9qbQ>

Know Your Rights as a Licensee

You do not have to produce records pursuant to Section 8780.2. If you refuse, I suggest you do so in writing. If the BPELSG really wants the records and their request is justifiable, they can issue a subpoena to obtain them. Remember, even with a subpoena, you can object and force the BPELSG to seek court intervention compelling production, or alternatively, denying the BPELSG’s subpoena. ☺

Endnotes

1 Similar language is proposed for California Business & Professions Code §§ 6775.2 and

7860.2. Therefore, my same objections also applied to these proposed changes.

- 2 Asimow, Strunkwasser, Boliz and Aspinwall, California Practice Guides: Administrative Law (The Rutter Group 2014) § 7:1. California Government Code § 11180 et seq. states that general investigatory authority granted to state agencies is separate and distinct from the subpoena power granted by the Administrative Procedures Act (“APA”) to all parties to a pending administrative adjudication.
- 3 Id. at § 7:2. Additionally, both agencies and parties to an agency adjudication are authorized by California Government Code § 11450.05 to issue subpoenas and subpoenas duces tecum and provide a series of rules relating to the subpoena practice (with hearing pending). Id. at § 7:150.
- 4 Id. at § 7:5.
- 5 See Exhibit A, at: <https://goo.gl/7k9qbQ>.
- 6 Interestingly, knowing my stated opinion of Section 8780.2, when I recently received a letter from the BPELSG demanding documents from my office, this language was curiously omitted. Why? Is it because the BPELSG knows that this language is inappropriate and contrary to the guidance provided by the LCO?



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A Review of *Hooper v. Hero Lands Company*

By Landon Blake

Introduction

In this article I review the court decision in the case *Hooper v. Hero Lands Company*. This case comes from the Fourth Circuit Louisiana Court of Appeals. It involves a boundary line dispute between Hooper and Hero Lands Company. The Hooper Family owns Lot 26. The Hero Lands Company owns Lot 27 to Lot 35, the other 9 lots in the 10-lot block. The boundary dispute arises when Hero Lands Company permits the local parish to start construction of a drainage canal on the west edge of Lot 27, on its boundary with the Hooper Family.

Although the case involves some nuances of law for resolving boundary disputes in Louisiana, the surveyor involved made an obvious mistake and there are lessons in this case for land surveyors in all jurisdictions.

Timeline

Here is a summary of the events in the timeline of this boundary dispute:

????: Burmaster Land and Development Company acquires Lot 26 and divides it into 3 or more parcels north/south along the lot. (Each parcel created in the subdivision extends across the width of the original Lot 26.)

????: Burmaster sells Lot 27 to Lot 35 of the block to Hero Lands Company.

1974: Burmaster leases the east 150 feet of Lot 27 from Hero Lands Company for 25 years.

????: The Hooper Family buys a portion of Lot 26 from Burmaster.

????: Allen Hero authorizes Plaquemines Parish to construction a 35' wide drainage canal on the western edge of Lot 27.

????: Surveyor McCurdy establishes the western boundary of Lot 27 using the record width of the lot.

????: Plaquemines Parish begins site prep for the canal construction based on the McCurdy Survey.

????: Hooper sues the parish, surveyor, and Hero Land Company. Hooper sues for trespass and to acquire title to the land on which the new canal is being constructed.

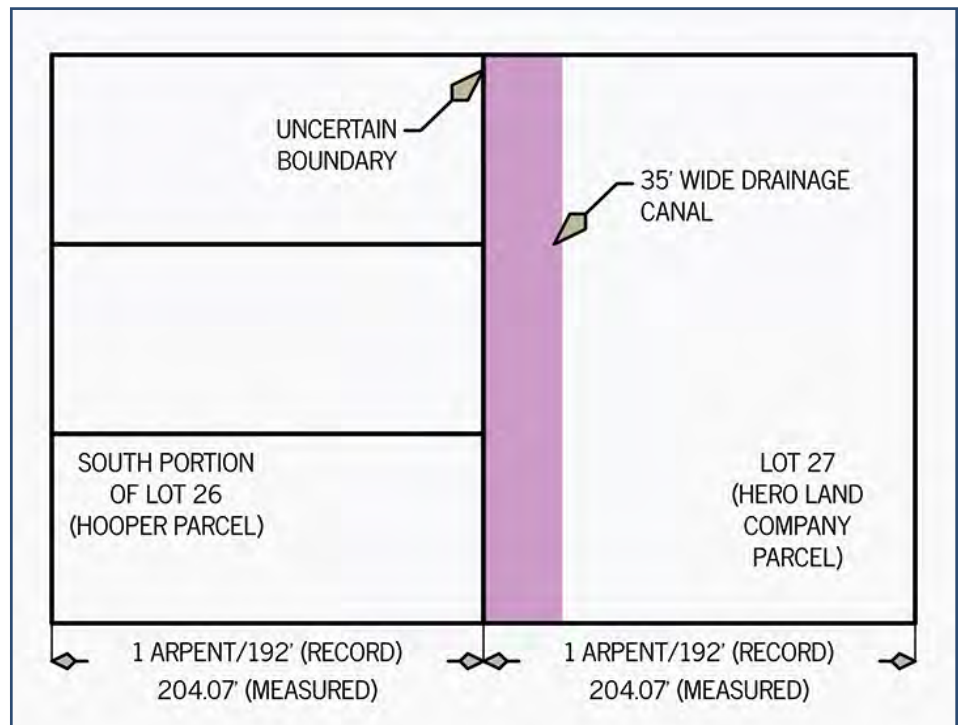
????: The trial judge finds that Hooper did acquire title to the disputed land through adverse possession, after locating the boundary between Lot 26 and Lot 27 by proportioning.

Undisputed Facts

The Sharma Family and Tyannikov Family both agree on the following facts related to their dispute:

1. The Hooper Family owns Lot 26 in the block.
2. The Hero Family owns Lot 27 to Lot 35 in the same block as Hooper.

continued on page 26





Broad Legal Questions

This court decision highlights a couple of broader legal questions:

1. When is it appropriate to use proportioning to distribute excess or shortage in a block?
2. What is the appropriate use of “more or less” in a land description?
3. How is color of title in an adverse possession claim dependent on a good land description in the chain-of-title? ☹️

Unanswered Questions

There are several interesting and unanswered questions raised in a reading of this court decision:

1. Why didn't the Hooper Family request a survey at the time of purchase? If they had done so, would they have required the owner to resolve the conflict with the east boundary of the parcel they were purchasing?
2. Why didn't Surveyor McCurdy properly break down the block as part of his boundary survey? Was that work included in his scope-of-services for the project? Or was McCurdy just the construction staking surveyor that threw a dash of boundary into his bundle of services when asked by the Parish?
3. Did anyone make an initial review of assessor plats, survey maps, and on the ground features to determine if there was a possible conflict with the location of the boundary that would control the location of the new drainage ditch?
4. Why did the design team allow the location of the drainage ditch to be controlled by an uncertain boundary? Why wasn't a buffer included in-between the design improvements and the boundary line? ☹️

3. The record east/west width of the block is 1,920 feet (10 arpents).
4. The actual (measured) width of the block between found stone monuments is 2040.77 feet. There is an excess of 120.77 feet in the block (12.07 feet per lot).
5. The lots in the block are shown on a subdivision of the former plantation Pierre Cazelar performed by surveyor Louis Pilié. The subdivision plat shows the lots of equal size, but doesn't include any lot dimensions.
6. Deeds in the chain of title for both the Hooper Family Parcel and the Hero Parcel describe the width of the lots in arpents and refer to the subdivision plat by Pilié.
7. The deed from Burmaster to Hooper described the parcel as being “192 feet wide more or less.” It makes no mention of measurements in Arpents. The deed warrants the conveyance of Lot 26, but makes no warranty for any land east of the boundary of Lot 26 and Lot 27.
8. The Hooper Family and Burmaster agree not to survey the parcel being sold to the Hooper's at the time of the conveyance.

Claims On Appeal

The Hero Lands Company makes the following claims in its appeal:

The trial court incorrectly ruled that the Hooper Family had establish title to the disputed area by adverse possession.

The Hooper Family makes the following claims in the appeal:

The trial court incorrectly applied the method of proportioning to deal with the excess in the subdivision block. The “more or less” in the deed transferring the property from Burmaster to Hooper means that Hooper is entitled to all of the excess width in the block.

Narrow Legal Questions

Here are the narrow legal questions raised in this case:

1. Did the Hooper Family establish title to the disputed area through adverse possession?
2. Did the trial court properly use proportionate measurement to deal with the excess in the block? If so, was McCurdy incorrect to use the record

continued on page 27





width of 192 feet in his survey of the boundary between Lot 26 and Lot 27?

- 3. Did the “more or less” phrase used to describe Lot 26 in the transfer from Burmaster to Hooper mean the Hooper family was entitled to all the excess width in the block?

The Appeals Court Decision

In this section we will review the decision of the Appeals Court on the narrow legal questions raised in this dispute.

Question #1: Did the Hooper Family establish title to the disputed area through adverse possession?

No.

In this case, the Appeals Court disagreed with the trial court. It found the Hooper Family had not proven title to the disputed area by adverse possession. Why not?

To reach this decision, the Appeals Court examined the possession of the disputed area for both a 10-year prescriptive period and a 30-year prescriptive period.

Under Louisiana state law, to obtain title by adverse possession in a 10 year period, the party claiming adverse possession must have possessed the disputed area in good faith and “just title.” In Louisiana, just title requires that the deed being used to show color of title in the adverse possession definitively describe a parcel that includes the area being claimed. In this case, the Appeals Court finds the deed from Burmaster to Hooper didn’t contain a definitive description of the disputed area. It appears from the language in the description that the court was looking for a clear metes and bounds description, or a survey plat in the deed. It found the reference to “Lot 26” in the deed wasn’t sufficient to allow a 10-year prescriptive claim to the disputed area.

The Appeals Court also finds the Hooper Family failed to meet the requirements for a claim of adverse possession under the longer 30-year period. Because the Hooper’s predecessor in title, Burmaster, leased the disputed area to the Hero Land Company for a 25-year period, the Hoopers didn’t have the required possession for

long enough. They fell short of the 30-year mark.

Question #2: Did the trial court properly use proportionate measurement to deal with the excess in the block? If so, was McCurdy incorrect to use the record width of 192 feet in his survey of the boundary between Lot 26 and Lot 27?

Yes. The Appeals Court found it was appropriate for the trial court to use proportioning to deal with the excess in the block.

The Hooper Family argues that “apportionment is foreign to Louisiana law.” The Appeals Court disagrees. It says:

“Notably, however, at least two Louisiana circuit courts have previously found that equal apportionment of surplus property is appropriate, absent any other controlling questions of title.”

continued on page 28

Answers to Broader Legal Questions

Let’s briefly consider the answer to the broader legal questions raised in this dispute.

Question #1: When is it appropriate to use proportioning to distribute excess or shortage in a block?

This case makes it clear that proportioning is an appropriate method to use when distributing the excess or shortage in a block of simultaneously created parcels. This case reinforces the following boundary surveying principles many surveyors will be familiar with:

- 1. The shortage or excess needs to be distributed between found original monuments.
- 2. The shortage or excess needs to be distributed proportionally between the lots.
- 3. The proportioning needs to consider the subdivision plat references in the land description.

Question #2: What is the appropriate use of “more or less” in a land description?

The phrase “more or less” when used in a distance call of a land description is intended to cover small or “incidental” differences

in the record distance versus the measured distance. It isn’t intended to cover large differences in distance.

The court also understands the subtle nuance that requires an examination of the land descriptions in the chain-of-title to determine when and how the phrase “more or less” was used with the distance call, and if this first use helps explain the intent of the phrase in the controlling land description.

Question #3: How is color of title in an adverse possession claim dependent on a good land description in the chain-of-title?

The court makes a great statement about the need for color of title in an adverse possession claim to be based on a sound land description that clearly includes the disputed area. The simple lot and block description in this case was found by the court to be inadequate to provide for a claim of adverse possession with the shorter 10-year period of possession. Although this aspect of adverse possession law may be unique to Louisiana, it teaches land surveyors an important point about the quality of their land descriptions. ☺



It goes on to explain the logic behind its finding that proportioning was the best method to allocate the excess in the block:

“Moreover, the Hoopers have not proven that the entirety of the surplus property is on Lot 26 or otherwise between Lots 26 and 27. If we are to accept the Hoopers’ argument that apportionment was improper, the alternative options would be that (1) Hero receives the entirety of the surplus property; (2) neither party receives the surplus property and the boundary lines are fixed to exactly one arpent each; or (3) the surplus property is carved out of the existing lots and Hero and the Hoopers own and use the 120.77 feet together. None of these outcomes seem equitable or commonsense in light of the substantial evidence before us. Therefore, we find that, as a matter of law, equal apportionment among the ten lots was the correct method to divide the disputed property.”

What does this mean about the survey performed by McCurdy? McCurdy used the record width of 192 feet in the deed

for Lot 26 to establish the boundary between the Hooper Parcel and the Hero Parcel. This was an obvious mistake. The surveyor didn’t properly deal with the excess in the block.

Question #3: Did the “more or less” phrase used to describe Lot 26 in the transfer from Burmaster to Hooper mean the Hooper family was entitled to all the excess width in the block?

In the appeal, the Hooper Family argues that the “more or less” in the description of the width of Lot 26 in their deed means they are entitled to all of the excess in the block. In its decision the court explains the Hooper’s position on this issue:

“First, as we understand their argument, the Hoopers claim title to the 120.77 feet because some of the deeds in their chain of title describe the width of Lot 26 as ‘one arpent more or less,’ the ‘more’ being sufficient to encompass the surplus property.”

The Appeals Court disagrees. It says:

“The deed from the common owner ... to the Hoopers’ ancestor-in-title ... conveyed a lot one arpent in width and did not contain the language ‘more or less.’ Moreover, the deed from Burmaster to the Hoopers clearly states that the width of Lot 26 is 192 feet, which is the measurement of one arpent. Thus, the Hoopers’ assertion that the description ‘more or less’ was used in all of the deeds in their chain of title is factually incorrect. Importantly, the words ‘more or less’ have consistently been held to mean “about” and refer to, if any, an incidental and non-consequential amount of property ... The inclusion of “more or less” in a deed has never been used to cover ‘serious discrepancies or major inaccuracies.’ Moreover, despite the occurrence of the language in the Hoopers’ chain of title, [w]hen the parties trace their titles to a common author preference shall be given to the more ancient title. Because the Hoopers and Hero trace their titles to a common owner, we thus give preference to the oldest title ... which did not include phrase ‘more or less’ and clearly stated that Lot 26 measures one arpent wide.”

A Review of the Court’s Decision

This was an excellent decision by the Louisiana Appeals Court. I agree with all aspects of its decision. The judges showed a great understanding of key survey principles such as simultaneously created parcels, proportioning between found original monuments, interpretation of phrases in deeds, and the incorporation of the plat in a lot and block land description. It is disappointing the land surveyors involved didn’t show a similar understanding of these same principles.

There is a lot of other interesting discussion in the Appeals Court decision for this case that we didn’t discuss in this article. The court talks about the difference between a claim of possession and a claim of title ownership. It also talks about the role survey plats play when you have an unclear land description. My readers should definitely review the full text of the court decision to learn more. ☺





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A Review of IBLA 37-132

By Landon Blake



Introduction

In this article we review an IBLA decision from 1978. In this case, the Tussio Family disputes a dependent resurvey of the BLM in New Mexico and challenges the BLM's location for the north ¼ corner of Section 8. (The Tussio Family owns the east ½ of Section 8.)

The IBLA decision in this case holds important lessons on evaluation of evidence, dealing with blunders when proportioning, the significance of historical survey methods, and the importance of topographic calls called for in the GLO notes and shown on the GLO township plat.

Timeline

Here is a summary of the events in the timeline of this boundary dispute:

1881: The original GLO survey of Section 8 is performed.

????: The Tussio Family acquires the east ½ of Section 8.

1972: (4/13) The New Mexico Office of the BLM performs a dependent resurvey of Section 8. The dependent resurvey declares the north ¼ section corner of Section 8 lost and restores it using proportionate measurement.

1977: A hearing is held before an administrative law judge to review the evidence in the dispute.

Undisputed Facts

The BLM and the Tussio Family agree on the following facts related to their dispute:

1. The 1881 GLO township plat shows the north ¼ corner of Section 8 lying just inside the east edge of a lava bed and west of a road.
2. The 1972 resurvey locates the north ¼ corner of Section 8 east of the road and outside the lava bed.
3. The location of the north ¼ corner of Section 8 in the BLM resurvey removes several hundred feet of access to the road and results in the Tussio Family parcel being landlocked.
4. The 1972 BLM resurvey successfully recovered original corner monuments at the southwest corner of Section 6 and the northeast corner of Section 8.

Claims of Tussio

The Tussio Family makes the following claim in its appeal to the IBLA:

The BLM dependent resurvey made a gross error when it used a simple proportion to restore the position of the north ¼ corner in a location that disagreed with the topographic calls in the original GLO notes and shown on the original GLO plat.

Narrow Legal Questions

Here are the narrow legal questions raised in this case:

1. Did the BLM properly conclude the north ¼ corner of Section 8 was lost?
2. Did the BLM properly apply the method of single proportioning for corner

restoration given the presence of a large blunder in the original survey?

The IBLA Decision

In this section we will review the decision of the IBLA on the narrow legal questions raised in this dispute.

Question #1: Did the BLM properly conclude the north ¼ corner of Section 8 was lost?

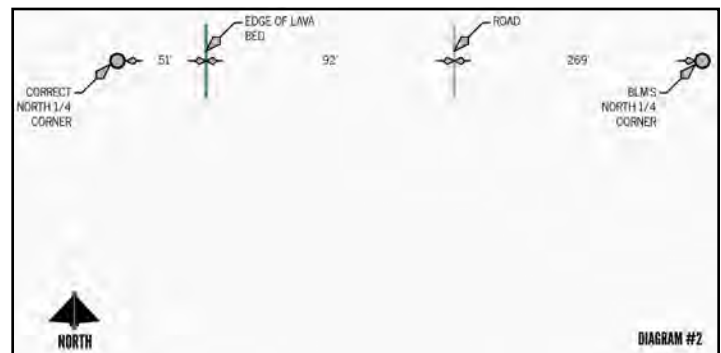
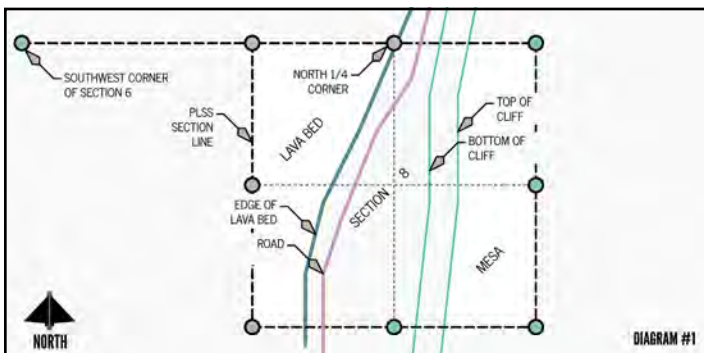
No.

The IBLA found the determination of the north ¼ corner of Section 8 as a lost corner during the resurvey was incorrect. It said: "It is evident that in executing the dependent resurvey, Olsen failed to follow the manual. First, the north quarter corner must be considered as obliterated, not lost."

The IBLA found that the north ¼ corner of Section 8 met the requirements of an obliterated corner. These include "proper relation to known corners" and "agreement with the field notes regarding distances to natural objects."

In this case, the IBLA found the ties of the original field notes to the lava bed and road were sufficient to determine the position of the north ¼ corner.

continued on page 32





Question #2: Did the BLM properly apply the method of single proportioning for corner restoration given the presence of a large blunder in the original survey?

No.

Although it wasn't required in the decision, the IBLA explains that even if the north quarter corner of Section 8 could be considered a lost corner, the BLM had incorrectly applied the method of proportional measurement. It said: "... even if it be assumed that Olsen did not err in using proportional measurement, he erred in failing to place the blunder where it belonged, before applying proportional measurement...."

The court explained the measurement error along the north line of Section 8 found in the original GLO survey of 1881 could be definitely located as between the base of the cliff and top of the cliff

transected by the line. The manner of proportioning used by the BLM in the 1972 dependent resurvey spread this error along the length of the line between the found original corners, instead of placing it in only the segment between the top and bottom of the cliff.

A Review of the Court's Decision

This was an excellent decision by the IBLA. I agree with all aspects of its decision in this case. The judges in this case showed a nuanced understanding of the difference between lost and obliterated corners, and a grasp of the use of proportioning in corner restoration that even many surveyors lack. It also presented clear logic when discussing its evaluation of the topographic calls in the original survey. ☺

Broad Legal Questions

This IBLA decision highlights a couple of broader legal questions:

1. When can topographic calls be used to determine that a corner is obliterated and not lost?
2. How do you properly deal with a blunder in the original survey when using the proportionate measurement method? ☺

Answers to Broad Legal Questions

Let's briefly consider the answer to the broader legal questions raised in this dispute.

Question #1: When can topographic calls be used to determine that a corner is obliterated and not lost?

I've seen IBLA decisions go either way on the issue of restoring corners based on topographic calls. This decision does a good job of explaining why it felt the topographic calls to the lava bed and road in this situation could be used to restore the corner. It explains that both the lava bed and road are:

1. Prominent natural or artificial features easily identified in the field.
2. Not subject to movement or easily confused with other features.
3. Called for in the original GLO notes and shown on the official GLO township plat.
4. Suitable for use as natural and artificial monuments.

Based on these features of the topographic calls the IBLA found they were suitable accessories to the north ¼ corner of Section 8 and could be used to restore

the corner position. As a result, even though no monument was found at the actual corner, it was to be considered as an obliterated corner and not a lost corner.

Question #2: How do you properly deal with a blunder in the original survey when using the proportionate measurement method?

This IBLA decision makes it clear that any blunder in the measurements along the line of the original survey must be isolated and dealt with before proportionate methods can be used to determine the corner location. In this case the IBLA explained the measurement blunder in the original survey could be isolated to the section of the line between the base and top of the cliffs. Therefore, it wasn't appropriate to proportionately distribute that difference along the other portions of the line of the original survey. To properly deal with the blunder in the original survey, the retracing surveyor needs to:

1. Isolate the source of the blunder.
2. Determine the amount of measurement difference caused by the blunder.

3. Remove that measurement difference before applying proportionate methods of corner restoration.

Lessons for Land Surveyors

This IBLA decision holds a couple of important lessons for land surveyors.

1. Make a careful analysis of the topographic calls in the original field notes. Record the logic of your analysis. Consider if your topographic calls are easily identified, not subject to movement, and a prominent feature with a definite location. If they are, they can serve as accessories to a corner.
2. Be familiar with the historical survey methods in your survey area. In this case, a knowledge of the surveying equipment used by the original GLO surveyor in 1881 helped isolate the blunder in the original survey.
3. Remove and isolate blunders in the original survey before you use proportionate methods to restore a corner. Evaluate the results of your proportionate methods against the plat. Has the proportioning preserved the intent of the plat? If it hasn't, you have a problem with your retracement survey. ☺

FIG Working Week 2017

By Carol Knox



The FIG Working Week 2017 (FWW) was held May 29 through June 2, 2017 in Helsinki, Finland. It was my first FIG event and my first trip to Finland, though not my first trip to Scandinavia. I have been vacationing in Europe for the past 20+ years and did not want to miss an opportunity to get out of California, attend a work-related event, continue my education, and meet surveyors from all over the world.

“FIG” stands for the French: “**Fédération Internationale des Géomètres**” (do not pronounce it as the word “fig,” but speak each letter! I learned this at FWW), and in English is the **International Federation of Surveyors**. It has been in existence since 1878 and became a legal entity in 1999. The stated purpose is “to support international collaboration for the progress of surveying in all fields and applications” and FWW truly illuminated the numerous ways in which FIG does just that. Over 1,500 people from 90 countries attended. Presentations ranged from developing countries speaking about developing their first nationwide control net, to organizations describing worldwide efforts to protect land rights, to research studies comparing various methods of measuring, and just about anything else you could imagine. FIG also conducts their business (General Assembly and other) meetings during these conferences and since I did not attend, I will not be reviewing these meetings. I attended two receptions, and

one technical session in each slot during the conference days. The venue was the Messukeskus Expo and Convention Centre, five minutes north of Helsinki’s city center by frequent train.

Overall theme: **Surveying the World of Tomorrow; from Digitalization to Augmented Reality.**

For me, FWW officially started with a welcome reception at Helsinki City Hall. I had arrived in Helsinki a few days earlier to get over jet lag and acquaint myself with the city. During this time of year, Helsinki gets light outside before 4am and stays light until at least 11pm. Helsinki is a small, modern city, with great public transportation, and an impossible language. A group of about 30 attendees staying at my hotel took a tram to City Hall that evening and it was quite a boisterous tram load of us who joined several hundred others for the reception. There were canapés and drinks and some welcome presentations. It was clear that many attendees had been “regulars” at past FWW’s and were all happy to see each other. Familiar faces included two fellow West Coasters I had met before; other than chatting with them, I mostly observed the festivities. City Hall is located very near the gorgeous Lutheran Cathedral (where I had attended church on Sunday), Senate Square, and near a bustling market, food hall, and harbor.

Early the next morning was a “newcomers session” at Messukeskus which was attended by about 30 people. We sat at tables and exchanged stories and information, then one representative from each table stood up and presented our discussions to the group. The FIG Vice-President was the enthusiastic moderator. After this session was the gala opening ceremony in the huge Messukeskus meeting room. To my delight (I am a classical musician as well as a land surveyor) the ceremony started with a cello and piano duo playing Sibelius (Finland’s most famous composer). Addresses by FIG “royalty” followed, with the keynote speaker being Ed Parsons, Geospatial Technologist at Google. Attendees had been provided with Google Cardboard and had been instructed to have it ready for the presentation, to be used with Google’s app and our phones. He explained why Google is so interested in geography (in a nutshell – more than half of searches are for local goods and services.) He discussed his and Google’s vision for the future in terms of environments, cities, planning, and data. The finale of the ceremony saw the return of the musicians, but with a twist. There was a VR display of the musicians, playing, on the screen behind them and the live musicians “accompanied themselves” – it was brilliant. I recorded a few seconds of it for those reading this magazine digitally.

continued on page 34



The next days would follow the pattern of plenary (attended by all) sessions and then breakout technical sessions in the various meeting rooms, with breaks in between. Each session was 90 minutes, with about ten sessions taking place simultaneously, and each attendee choosing which session to attend. Additionally, various vendors and sponsors were available for us to browse at our leisure. Lunches and breaks were catered with choices for both meat eaters and vegetarians, and lots of opportunity for networking.

Very brief summaries of the sessions, from the 37 pages of notes I took, follow.

There were three speakers at the first plenary session. The FIG Director General discussed how Finland’s surveyors planned and presented the conference, their LIS, and some specifics about their land tenure system. Greg Bentley of Bentley Systems presented the concepts of how moving forward digitally will help different disciplines work together. The last speaker at this session was from UN Habitat and the topic was how land information is crucial for meeting sustainable development goals.

The second plenary session featured a discussion regarding the future of GNSS (8 billion units are projected to be in use by 2020) and all the different ways it will be used. The second topic was the past, present, and future of “geoethics” – what can MY data tell YOU about ME? This is a relatively new issue for our profession. The last presentation was a speaker discussing securing land rights for developing countries and the geospatial community’s responsibility regarding this important issue.

The final plenary session asked the question as to whether we are embracing the forces transforming our world? And why we must. Laser scanning and LiDAR were called “disruptive technologies” to National Mapping and Cadastre Agencies” (in other words, game-changers; innovations which radically change existing markets) and their current and future impact discussed, with examples given.

The technical sessions I attended are too numerous for all but a passing mention in this article, loosely organized as follows:

Scandinavia and Northern Europe:

- How digitalization assists Sweden’s surveying team-based work
- The structure of land surveying education in Sweden and Norway
- How various university departments can use digital data in the Netherlands
- Photos and information about some interesting monuments in Scandinavia
- Finland’s permanent GNSS network
- Discussion of Scandinavian and other international surveying regulations (for example, Norway does not license their surveyors!)



Studies, by nation:

- Colombia – regarding using school students’ hand-held technology to advance their learning
- Indonesia – electrical power generated from wind
- Nigeria – the relative accuracy of spirit leveling vs. GNSS leveling

- Greece – indoor navigation and how it is set up using Wi-Fi and other technology, including a study about construction of large indoor parking facilities using indoor navigation, and various future technologies for indoor navigation
- Sweden – strategic location of total station setup points and the resultant influence on network geometry

Education:

- Benefits of teaching least squares to university surveying and engineering students
- Should educators share materials across campuses and countries?
- An overview of NCEES, testing and licensing, and our aging profession by Pat Tami and Jerry Carter

Software and Hardware:

- Various discussions of open-source software
- How the Czech Republic developed their cadastre from paper to digital
- Interdisciplinary projects using mobile LiDAR at beaches
- Using GNSS to assess ionospheric scintillation errors

Datums, Coordinates:

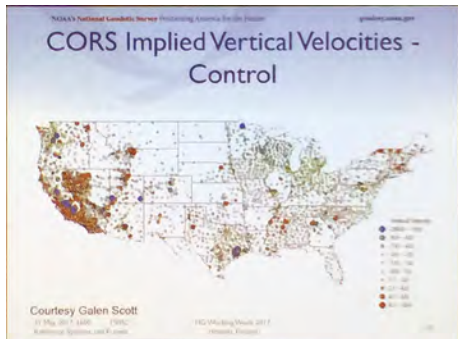
- Upcoming 2022 datum and incorporation of necessary geoid modeling (GEOID2022)
- Benefits of a modernized national datum from a regional perspective in one portion of Australia
- Russia’s state geodetic coordinate system
- How New Zealand rebuilt their geodetic system after an earthquake last year, and their progress towards an integrated vertical datum
- Turkey’s CORS network

continued on page 35



History:

- Hadrian’s Wall (a World Heritage site in England) – how surveyors took part in its construction (and setting the boundary monument for the northern frontier of Roman Britannia)
- Land registration in Quebec in the 19th century (from semi-feudal land tenure and land grabbing by the Crown, to townships, grants, and urbanization)



Other:

- Using technology to deal with conflict of interest issues
- Magnetic declination and measurements in Israel
- UN Resolution on GGRF (Global Geodetic Reference Frame) which was adopted in 2015 and its future implementation
- GGOS (yes, there are a lot of acronyms in our world!) which stands for “Global Geodetic Observing System” was explained and their 2020 goals discussed
- The scientific service IGS
- Fiji – their nationwide control network and the importance of good control to monitor rising sea levels and other climate changes
- And last but not least, the new opportunities for surveyors in geo-data management.

Friday I went on a lunch/boat tour of Helsinki with friends who were visiting Helsinki when I was, and arrived back at Messukeskus for the closing reception, hosted by Turkey, next year’s FIG host. The event was supposed to begin at 3:30pm. I

arrived there at that time and was surprised to see the party already in full swing, with about 15 surveyors in their business suits dancing in a circle to Turkish music with people clapping!

Evenings provided the option of special dinners, there was a Finnish Evening/FIG Foundation Dinner one night and a Gala Dinner another. I stayed in Helsinki until Sunday, attending two chamber music concerts, then traveled on an overnight ferry to Stockholm with my friends for a week’s vacation before returning home. From Helsinki I also took a one-day (2 hours each way) ferry ride to Tallinn, Estonia; the Old Town there is a very well-preserved medieval village, a nice contrast from Helsinki’s modernism. (I was “recognized” in Tallinn by a FIG attendee, and recognized again at a flea market in Helsinki after the conference by another. You never know where you might bump into a land surveyor!)

I was happy to learn that some aspects of our profession are universal. One young woman (I don’t know her nationality) said that whenever she is out walking around and sees a survey monument, she gets excited and photographs it. I think that most of us in California are the same way and it was wonderful that surveyors in other countries also do this!

My guess is that the conference was comprised of about 80% men. Not all of the attendees were my age (mid 50’s) and older; there was a nice mix of some younger people in attendance. I talked to a few of the women about the challenges we face as women in this profession and these challenges seem to be worldwide as well. I was happy to meet some surveyors, like myself, who are married to another surveyor.

In this article I wanted to provide the reader a sense of the surveying work that is being done around the world, the studies, current and emerging technologies, regional and national developments, how aid agencies are helping people in developing countries obtain fair and permanent title to their property and how interrelated and important this all is. And how amazing it

was to be exposed to all of this information at a conference.

If this article has sparked your interest, please visit FIG’s website: www.fig.net

and the website for this year’s Working Week: www.fig.net/fig2017/ which includes downloads of all of the abstracts and presentations given at the conference (still available at the time this was written).

Post-conference report and photos from the FIG newsletter: www.fig.net/news/news_2017/05_ww_report.asp

Future FWW’s and conferences (I was told that even more people attend the conferences than the Working Weeks!):

- 2018 – Istanbul, Turkey
- 2019 – Hanoi, Vietnam
- 2020 – Amsterdam, Netherlands
- 2021 – Accra, Ghana
- 2022 – Orlando, Florida? South Africa? Not decided yet.

My biggest take away from this experience is that our profession is SO much more than the tiny sliver with which I am involved. My eyes were opened to how our profession serves different countries in different ways, and how important the profession is to our world. 🌍





CALIFORNIA LAND SURVEYORS ASSOCIATION

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