

Ontario Professional Surveyor



on the cover ...

Deerhurst Resort
Site of the 123rd AOLS AGM
Huntsville, Ontario

also in this issue ...

Geospatial or What?
What were they thinking?
Lost Highways Revisited
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Articling: The New Process
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ONTARIO PROFESSIONAL SURVEYOR



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ON THE COVER ...

The 123rd AOLS Annual General Meeting will be held at Deerhurst Resort in Huntsville from February 25 to February 27. This year's theme is *Building Our Geospatial Future*. More information about the meeting can be found on the AOLS Website (www.aols.org).

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President's Page

By Dasha Page, Hon. B.Sc., O.L.S.



My term is nearly over. While trying to make a difference, I have learned that time is very unforgiving. I tried to the best of my abilities to be a good leader, a good listener and representative. At the same time, I have learned so much about our profession, the world around us, our colleagues and myself, all the while maintaining high integrity, fairness and ethics. My travels throughout Canada and the adjoining U.S. states opened my mind and enabled me to make better decisions as President, which I hope will benefit the Council during my tenure as Past President. Of course, I also experienced difficult times during my presidency, namely, trying to make tough decisions or dealing with negative people. That's when simple gestures of appreciation from so many of you allowed me to persevere. I thank you for that and thank you for your patience in reading through my presidential journey articles.

The Council, with tremendous help from the AOLS staff, has maintained its focus on the objectives and challenges that were set at our Strategic Planning session in March. Our accomplishments include the completion of the salary survey; the start-up of the University and College Student Liaison Committee (UCSLC); ongoing cooperation with York University and the University of Waterloo; dramatic improvement in communication between the AOLS and our members through our bi-weekly In Sight newsletter and the Survey Monkey questionnaires; completion of the Interpretive Guide and Supplement to the Performance Standards for the Practice of Surveying, and the Manual of Procedures for the Complaints Committee; a face-lift of the Survey Review Department (SRD); and the initiation of the Provincial Survey Records Index (PSRI) project. All of these enable the AOLS office administration and Council to operate more efficiently while ensuring proper governance, transparency and openness for our membership.

Our 2015 Annual General Meeting (AGM) will be held at the Deerhurst Resort from February 25 to February 27. The theme for the meeting was named *Building Our Geospatial Future* in response to the latest international developments in our industry and the emergent need for collaboration between Geographic Information Systems (GIS) and land surveying. After visiting many conferences, seminars and an international congress in Quebec, I am convinced that we must embrace and maintain our key position in the geospatial world. We can no longer ignore this new dimension of our profession. Our professional expertise is essential for making geospatial information an authoritative data source. Especially since open source solutions are growing significantly as a viable alterna-

tive to commercial suppliers. We must respond by applying our skills to new technologies and collaborate with the rest of the geospatial community to stay relevant in the geospatial world. During our AGM, we will have presentations and seminars that will provide information and views of the future of land management and geomatics.

I enjoyed the hospitality of the Vermont and Manitoba surveyors in September, and the Quebec and Nova Scotia surveyors in October. During each provincial conference, all attending presidents gather for a forum to share the challenges and successes of their respective associations. I found this to be the most invaluable part of each conference because we all struggle with the same issues, such as attracting young people to our profession, the aging profession, our lack of identity and the slow response to the dynamic market. By learning from each other, we can fast track our individual solutions.

The *Vermont Society of Land Surveyors* celebrated their 50th Annual Fall Meeting in Burlington, VT and it was held in conjunction with the *North East Surveying Societies IV Conference*. The conference was well attended and many surveyors enlightened me with their surveying experiences. Harris G. Abbott even arranged a tour of the local Land Registry Office, and Malcolm Shaw (NY land surveyor, Trustee and Past President of NYSAPLS) was kind enough to fill me in on a lot of local history that included our own Wayne Brubacher and Lorraine Petzold. For many years, Malcolm has been a guest at every one of our annual meetings.

The *Association of Manitoba Land Surveyors* organized a very informative conference in Winnipeg and welcomed out-of-town delegates with their tremendously warm hospitality that included a private visit to their new Museum of Human Rights. Their membership is made up of 52 practicing members and 6 new land surveyors who were proudly sworn in during the meeting. Their Land Surveyors and Related Amendments Act was just passed and is expected to be proclaimed in December of 2014. The Province of Manitoba signed a 30 year agreement with Teranet to modernize the Manitoba Property Registry.

The Quebec land surveyors (*Ordre des arpenteurs- géomètres du Québec*) held GeoConference 2014 Revisiting Our World in Quebec City in conjunction with the *Canadian Institute of Geomatics, the International Federation of Surveyors and Laval University*. International delegates presented their views about the future of land management, geomatics, the importance of land registration systems and the geospatial sector. This impressive global forum, which featured speakers from around the world, emphasized the importance of the geospatial industry. Most large nations recognize that geospatial data is

cont'd on page 7

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Complete Directly Georeferenced Aerial Mapping Systems for Unmanned Aerial Platforms

By Joe Hutton

As detailed in the Ontario Professional Surveyor's last issue's article "Aerial Photogrammetry from Unmanned Platforms: Challenges and Opportunities for Surveyors", Direct Georeferencing (DG) offers a compelling value proposition to Unmanned Aerial Vehicle (UAV) photogrammetry systems, and as a result a new generation of smaller, lighter and lower-cost solutions is emerging, driven by ever improving micro-electro-mechanical systems (MEMS) inertial technology. Applanix Corporation is one of the first companies to produce a complete directly georeferenced aerial mapping system for unmanned platforms. Here, we discuss this system and how directly georeferenced mapping imagery is being produced and utilized today.



The Applanix APX-15 UAV board for small UAVs

Accurate geospatial information is relied on for many important applications: everything from emergency response to crop management and environmental monitoring requires access to accurate, up-to-date georeferenced imagery. Today's method of choice for acquiring high-resolution, geometrically accurate orthorectified imagery information from the air is Airborne Remote Sensing, which utilizes DG technology. As the aircraft is flying, real-time, high-accuracy maps are created, ready to use.

The use of differential GNSS and Inertial position and orientation technology for Direct Georeferencing (DG) has long been established and proven in the aerial mapping

industry. It is highly efficient and accurate. For even the smallest and lightest manned aircraft, the relative size, weight and cost of GNSS-aided inertial navigation systems required for direct georeferencing – and the attendant computing equipment required to process the data – are small factors of the cost of flying and inconsequential to the aircraft's ability to perform. In unmanned aircraft, however, the calculations are very different: the size and weight of the DG payload must be significantly smaller for the aircraft to be able to fly, the cost must be significantly reduced to make the system economically practical, and excellent accuracy is still required. For small UAVs (generally considered to be those with an all-up weight below 25 kg) the size and weight considerations are even more critical.

A small yet highly accurate DG payload for UAVs not only meets the needs of an aerial survey on a UAV, it also provides high-accuracy position and orientation information for UAV flying tasks such as precision RTK landing and Guidance and Control.

A DIRECTLY GEOREFERENCED MAPPING SOLUTION FOR UAVS

Applanix, known for its highly-accurate POS (positioning



An RGB camera based Direct Mapping Solution (DMS) payload for medium-sized fixed-wing UAVs

cont'd on page 6



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and orientation) technology, has brought together its long-established and proven POS expertise for aerial mapping with small-form-factor hardware to produce solutions for improving the accuracy and efficiency for aerial mapping for UAVs. They are called the Direct Mapping Solutions for UAVs or “DMS for UAVs”.

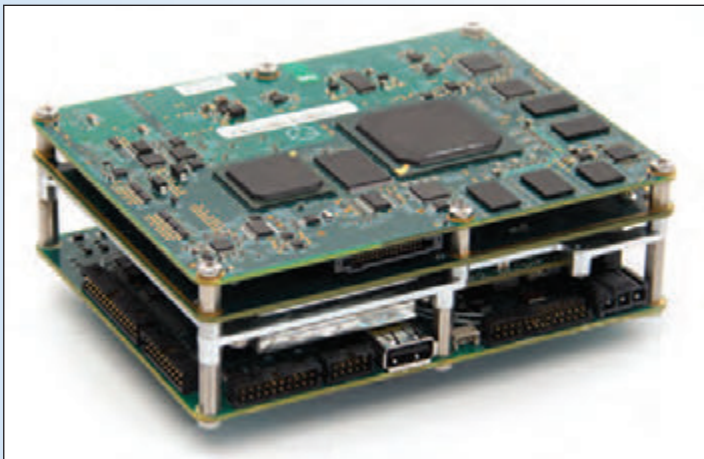
“Small, light and accurate” is the requirement for UAVs

Working with UAV platform manufacturers and payload providers, Applanix develops custom DMS solutions, composed of hardware, software and workflows, that meet the specific size, weight, and power requirements of the platform, and the accuracy requirements for Directly Georeferencing the payload sensors. A DMS can be developed for virtually any size or type of UAV (Vertical Take-Off and Landing, Fixed wing), and for any type of mapping sensor (Camera, FLIR, LIDAR).

APPLANIX DMS IN ACTION

For Medium/High Altitude Long Endurance (MALE/HALE) platforms, a DMS has been developed that has the following configuration:

- 1) **The Trimble AP-20:** Incorporating a compact, custom-built inertial measurement unit (IMU) based on commercial MEMS sensors, the AP20 enables system integrators to achieve high-rate position and orientation measurements with excellent accuracy. The AP20 is designed for continuous mobile positioning in poor GNSS signal environments and for high-accuracy direct



Trimble AP board

georeferencing of imaging sensors. It delivers high-rate position and orientation measurements at 200 hertz, supporting its use in challenging mobile environments while sustaining performance levels. The unit is fully compatible with the **POSPac MMS™ (Mobile Mapping Suite)** for enhanced accuracy using network differential GNSS.

- 2) A calibrated **Nikon D800 camera**
- 3) Metric camera and lens mount
- 4) POSPac MMS office software and associated photogrammetry workflow: POSPac MMS is software for directly georeferencing mobile mapping sensors

using GNSS and inertial technology. It processes data from either POS AV or Trimble AP board sets to accurately georeference data collected with airborne sensors.

The AP 20 was integrated into this payload in order to meet the size, weight and power requirements of MALE/HALE UAV’s, and meet the high-accuracy georeferencing requirements for beyond Line-of-sight (LOS) mapping without Ground Control Points. For smaller UAVs, configurations based on Applanix’ APX-15 UAV hardware and smaller, lighter imaging sensors exist.

Accuracy Assessment: Test flight on Manned Platform

In late 2013, a test flight was performed to assess the performance of the Nikon D800 based DMS. The DMS configuration for the test was with:

- The Trimble AP20 GNSS-Inertial System
- The Nikon D800E (36MP; image size of 7360 columns by 4912 rows and a detector size of 4.9 microns) with a 50 mm AF-S Nikkor f/1.8G lens

Directly Georeferenced accuracies achieved during this test were very high: at the 1.0 pixel level RMS for the ortho products, 1.5 pixels RMS horizontal and 4.0 pixels RMS vertical for stereo products (15 cm GSD). These accuracies scale to lower flying heights and smaller GSD’s until the lower limit of the GNSS position accuracy of 2 cm RMS is hit. For complete details on image accuracy evaluation methodology and results, please review the detailed white paper at <http://bit.ly/1wW7C47>

CASE STUDY: Nikon D800 DMS and the RS-16 Unmanned Aircraft System™ from American Aerospace Advisors, Inc. (AAAI)

Working with AAAI, the Nikon D800 DMS was integrated with the newest American Aerospace aircraft system - the RS-16 Unmanned Aircraft System™ (UAS), becoming one of the world’s very first mapping grade long endurance UAS designed for civilian mapping applications.

Advanced imaging sensors provide a professional grade



The RS-16 UAS with DMS test flight – an industry first!

mapping payload for the RS-16. The combination of the airframe with positioning and orientation technology offers cost and time efficiencies for many mapping tasks. Built for missions where aircraft and crew safety are a factor, remote field deployments are inefficient and expensive, where surveying a network of ground control points is impractical, and/or when long endurance or long range operations are critical, the RS-16 coupled with DMS is a mapping-grade system with 12+ hour endurance.

Capable of legally, safely and effectively mapping large areas and long corridors in civilian airspace, the RS-16 with integrated DMS becomes a complete mission system including:

- an avionics suite designed for operation in civilian airspace,
- integrated DMS,
- mobile ground control stations,
- RF systems,
- everything needed to conduct safe and effective field operations with long endurance aircraft.

The availability of this solution followed a series of successful test flights. Joint teams from the AAI and Applanix planned and flew a sequence of missions to evaluate the capabilities, including the ability to provide highly accurate, directly georeferenced and orthorectified aerial imagery without the need for ground control points or aerial triangulation calculations. The system tested - consisting of the airframe, its avionics, mobile ground control station, telemetry systems and the digital mapping payload - performed according to expectations and successfully produced high-quality georeferenced imagery.

Conclusion

The Applanix DMS framework incorporates a number of complete and ready-to-integrate OEM solutions for directly



Sample georeferenced imagery from a small UAV

georeferencing survey data on unmanned aerial platforms. Designing a direct georeferencing solution specifically for the survey task, the airborne vehicle and the sensor type (Camera, FLIR, LIDAR), significantly enhances the value proposition over a one-size-fits-all approach. Highly accurate mapping results can be achieved from unmanned aerial platforms without the use of dense networks of ground control points.



Joe Hutton is the Director for Airborne Products at Applanix Corporation, where he is responsible for new business development and overall product direction for the airborne business. Joe has been with Applanix since 1991. He obtained his B.A.Sc degree in Engineering Science from the University of Toronto in 1989, followed by a M.A.Sc. degree in Aerospace Engineering from the University of Toronto Institute for Aerospace Studies in 1991. Joe has over 18 years of experience in GPS-INS integrated navigation systems technology and its application to mobile mapping and surveying. He is a member of ION and is a licensed professional engineer in the Province of Ontario.

President's Page continued

the underpinning of the strategic goals of their economies. Discussions included land tenure regulations, flood and other natural disasters analysis and response, budgets based on spatially distributed data, Smart City applications using anonymous data of cell phones to improve a quality of service such as weather and traffic reports, GIS data monitoring to reduce crime, and geospatially connected cities that improve the effectiveness of their government through more widespread use of geospatial information.

My trip to Sydney, Nova Scotia was overshadowed with the imminent danger of hurricane Gonzalo. Fortunately the storm subsided into rainy weather by the time it reached the Nova Scotia coast. Again, the *Association of Nova Scotia Land Surveyors'* hospitality was warm and cheerful. We enjoyed a tour of the Fortress of Louisburg; the reconstruction project of the original settlement founded in 1713 is the largest in North America. We also had a tour of the elegant home of Étienne

Verrier, the King's engineer who was also a surveyor. We were even welcomed to the Order of Good Time, a social club established in 1606 by Samuel de Champlain to keep his men in good cheer. Nova Scotia has 151 active members. One of the by-laws passed during their meeting included a stipend to cover the President's dues and 25% of the Councillors' dues.

At this time, I would like to extend a big thank you to our Executive Director Blain Martin. Without his hard work, my presidential year would have been much more time consuming. Of course, I also have to express my gratitude to the AOLS staff, Council and my partners Andrew Cameron and Al Heywood and the team at Matthews, Cameron, Heywood - Kerry T. Howe Surveying Ltd. for making my job as President possible and enjoyable. I close with yet another quote, this time from Ralph Waldo Emerson: *"Nothing great was ever achieved without enthusiasm."*



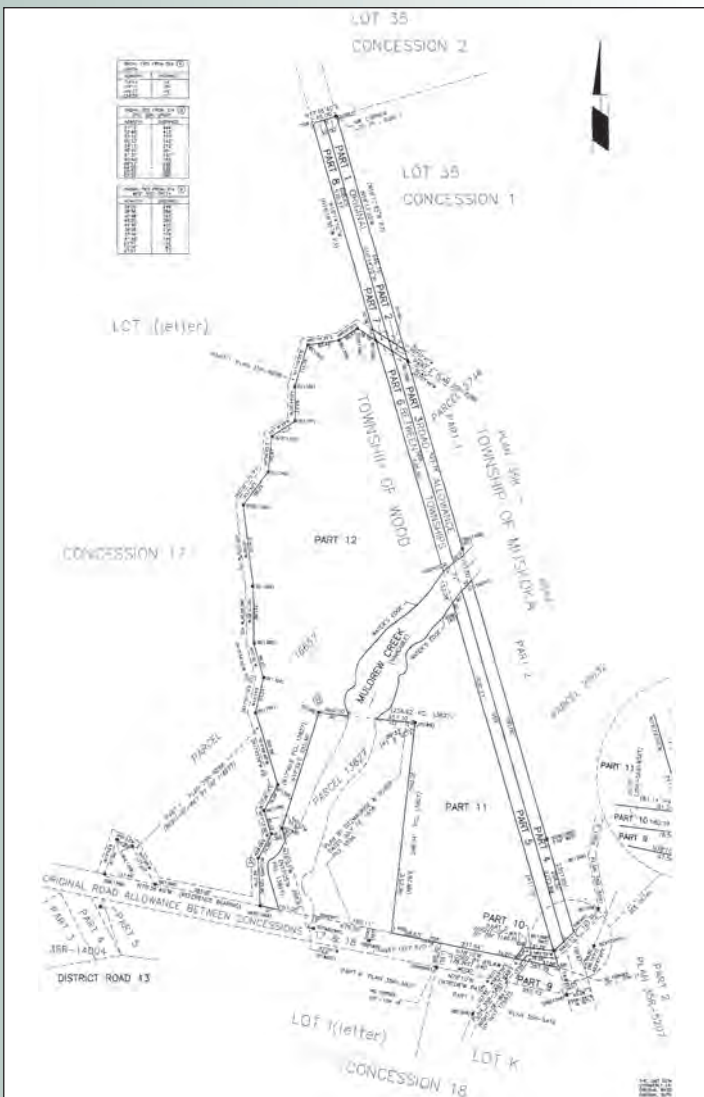
What were they thinking?

By Thomas A. Bunker, O.L.S., C.L.S., P.Eng.

The Surveys Act requires licensed surveyors to prepare, maintain and share records of their field-work. The field notes required under our standards and guidelines are to show a variety of information to assist subsequent generations of surveyors to determine the nature of the work and results obtained.

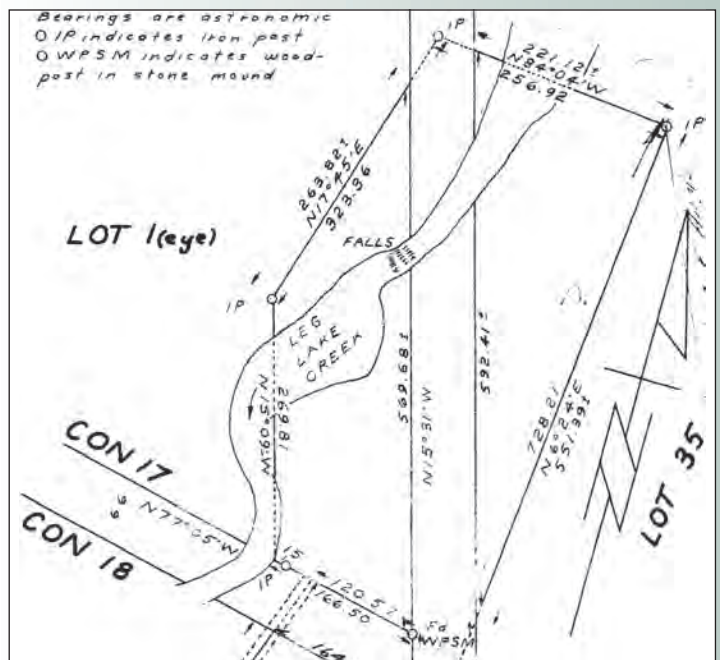
O. Reg 216/10, Sec. 6 under the Surveyors Act provides an obligation to maintain project records with sufficient information “to reconstruct the details of the projects”. It can often be shown that the field observations formed only part of the basis for the ultimate *cadastral opinion* for the final retracement of the boundary. It is occasionally difficult to evaluate the opinions simply from the resulting plans without a complete set of office records, including research records, calculation notes and commentary summaries.

The following project illustrates the problems raised by incomplete files.

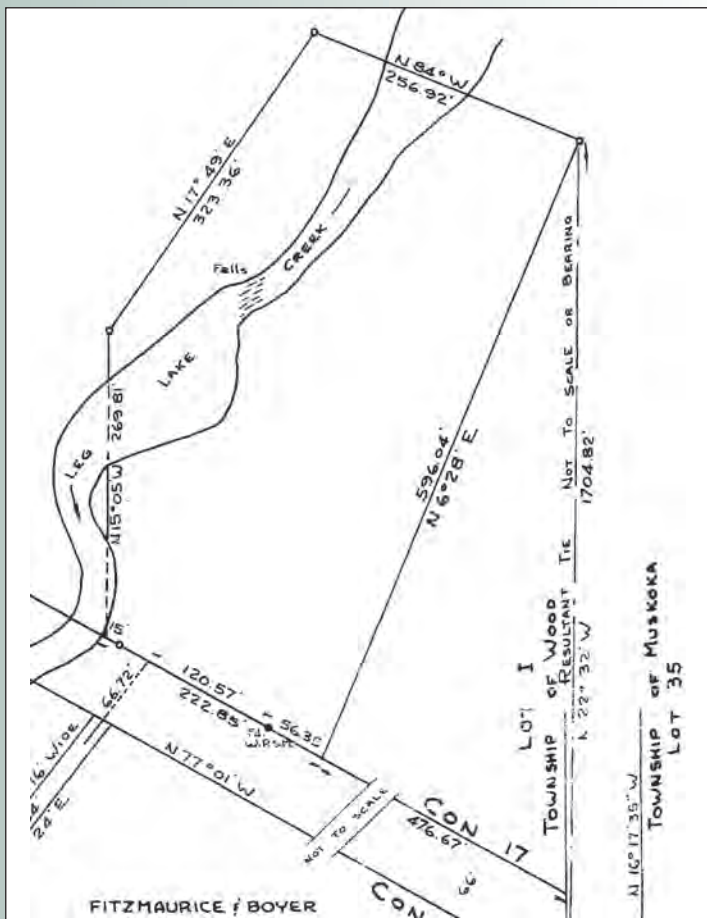


Portions of the Townships of Muskoka and Wood were surveyed in 1870 and 1887 respectively. In 2001, I was engaged to assist a client in closing a portion of the Original Road Allowance between the Townships and to sever portions of lands owned in Lot I, Con 17, Township of Wood and add them to lands owned in the Township of Muskoka. All of the relevant lands were originally patented under the Land Titles system. I had purchased the records of surveyors M. Kupferschmidt, O.L.S. and B. Tompsett, O.L.S. both of whom had carried out work on these properties for our current client. Tompsett’s records were not maintained as individual project dockets and those dockets that did exist for Kupferschmidt’s projects were often just empty envelopes. While I could retrieve copies of field notes and plans for the areas involved, questions arose for which I could find no office notes to help me understand the analysis that led to the previous final opinions. This was not unique to the records I purchased but was evident in other firms’ files that I reviewed for the project.

Our research revealed that D.F. Boyer, O.L.S. had severed a lot in Wood Township that straddled Muldrew (Leg Lake) Creek and according to his 1956 plan was also located in both Townships. The location of the property seemed to be established wholly on a single wood post in stone cairn determined as the southeast corner of Lot I, Concession 17, Township of Wood.



In January 1958, a Township Boundary retracement by the same firm determined that the Road Allowance did not lie within the parcel as surveyed but was actually 476 feet east-



erly. The description of the parcel was revised and the Land Titles Parcel re-entered to reflect the new location.

What was the rationale for the original determination, based as it was on a single monument? Wood posts that in 1900 replaced the original posts were found by the 1958 retracement on both sides of the Township boundary road allowance and were replaced by rock bars. *Why* were these set 0.985 chains apart when the original road allowance was 1.000 chain wide?

In 1977, Tompsett surveyed the associated lands in Lot 35, Concession 1, Township of Muskoka. He located the retraced Township boundary line and held the Muskoka side of the road allowance as determined by one of the above noted rock bars. *Why* did he maintain a road allowance less than 66 feet wide (32.5' from centerline)?

Tompsett also showed "Leg Lake Creek" (now Muldrew Creek) as non-navigable. This creek is at least 12 metres wide and up to 2.2 metres deep and, despite a minor waterfall in the area, forms part of a well documented 1800's travel route from the Severn River through a series of lakes and portages to Lake Muskoka. *Why* would he call it non-navigable? Kupferschmidt adopted the same position in his 1982 division of these same lands by Plan 35R-8544, showing a boundary line as the "middle thread" of the creek. *Why*?

In 1975, Tompsett re-established the Original Road Allowance between Concessions 17 and 18, Township of Wood. He determined that the monuments shown in 1958 by

Boyer as on the northerly limit of the Road Allowance were actually on the centerline. *Why*? I note that he found other old wooden posts, but *what was his analysis*?

Kupferschmidt subsequently surveyed a right-of-way through both of the Wood and Muskoka lands, accepting the Tompsett re-establishment of the Concession 17/18 Road Allowance but remarkably showing the Township Boundary Road Allowance as 65.08' wide at the Concession 17/18 Wood line but 66.00' wide at the northerly extent of the 1977 Tompsett plan. *Why did he create diverging lines*?

Our current project required us to deal with all these previously re-established lines. I had no prior analysis records available to assist in my evaluation and accordingly my opinion was decided on a limited amount of information.

I have occasionally been faced with a prior survey record that shows as found the "remains of a post in cairn" that has been accepted as the centerline of a concession road allowance when the original Township notes show opposing lot corner posts as well. *Why was it accepted as centerline? What analysis was made?* Sometimes I have felt that on extension of the technical measurements a different result should be contemplated, but I am now on the ground 40 years after the "retracement" record and more than 140 years after the original survey and little other physical evidence exists.

What is the solution? We will continue to be faced with a lack of information on previous projects going forward, but we must seize the opportunity to ensure that our successors are not faced with this same dilemma.

We should all maintain a complete record of the analysis that was made to support our opinion. This will take a variety of forms; from a detailed party chief record and report of field observations, to annotated office calculation printouts and sketches to a formal "note to file". I have even seen a detailed account of the method shown on Reference Plans filed in the 1960's. Of course not every project requires such a detailed report, when everything went as planned and it can be clear from the notes and plan what was done and why the results were obtained.

Where there is an interpretation of fact or law that has alternate solutions, we should be clear in our record so those surveyors that follow us understand the information we had available to us, the analysis that we made and the resulting opinions that we reached.

They shouldn't have to ask "What were they thinking?"



Tom Bunker has spent over 40 years in professional practice in Northern, Southern and Central Ontario and has participated on AOLS and ACLS committees including standards and discipline, has presented quality assurance and business practice seminars to members of the AOLS and has acted in a practice advisor position. He has recently retired from active professional participation in T. A. Bunker Surveying Ltd. in Gravenhurst but continues to provide business advice to that firm and to Northway/Photomap/Remote Sensing Ltd. in Barrie.

Insurance Advisory Tips for Members

By Dan Dzaldov, O.L.S., O.L.I.P.

I have been a volunteer member of the Insurance Advisory Committee for many years and I am now the Chair of the Committee. In this role and using my experience as an OLS, I have had an opportunity to give technical advice to the insurance broker to help them defend our members from claims. The committee meetings have also proved to be a valuable source of ideas for me on how to improve my personal actions as an Ontario Land Surveyor and certainly to improve my company's ability to avoid being in situations where we are blamed for a loss. There is no clear cut answer to avoid claims. They can be presented even when we have not erred. Good survey practise with regular checks may avoid that costly mistake. However, and almost as important, we must mitigate the damages or risk of being blamed for errors that are made by others when using our plans.

The following are some suggestions that your Insurance Advisory Committee members have noted during their review of recent claims.

Surveyor's Real Property Report Part 2

Consider the following:

When you haven't investigated the zoning requirements, you should make a note stating as such. If just the zoning setbacks are reviewed, state just that. A recent claim involved minimum building setbacks to Hydro poles which could be found in the Hydro standards. As expected, these were not found in the Municipal zoning documents. The point is, you may want to state only what you are certifying and consider stating exclusions such as Hydro, building code, etc.

Another idea and as a supplement to the note on the survey that states who may rely on the survey you may want to add:

This survey and plan is not valid and should be considered to be falsified in some manner unless embossed by the seal of the signing land surveyor.

This might help when someone produces a faxed copy of a survey that has been tampered with or reduced to an unreadable faxed, coffee stained sheet.

Consider noting that only REGISTERED easements are shown. A recent claim involved an unregistered easement. Rudy Mak, from Rudy Mak Surveying Limited, who is a member of this committee, provided the following suggested note, which also states what has not been shown in regards to possible restrictions.

Parcel is not subject to easements (or is, and those would be listed) as per current title as shown on the current PIN, however, easements and further restrictions on any or all of the parcel may be found in the original Crown patent, zoning by-laws, official plans, Subdivision Agreements, Development agreements etc., and this survey and plan has not searched for these restrictions, nor accepts any liability with respect to any restrictions beyond what is specifically recorded on the land titles PIN.

CAD copies to the client and consultants

Consider a note in your email or Disclaimer to be like a tab in the CAD file. This might mitigate damages if someone has turned on layers and/or misinterpreted the data in the file. You might consider starting with the following ... *files are supplied as a matter of courtesy and are in no way to be taken as appurtenant to, associated with or in placement of copies of the officially sealed documents.* A recent claim involved a CAD file that had layers turned on, redistributed as such and used for design. The CAD file was no longer clear but nonetheless was redistributed, used and the new grading design was flawed. Despite the clear paper copy, the surveyor was still blamed for the error!

Other suggestions of good practise ... to avoid claims.

Not for construction

When provided with "not for construction" drawings, it is suggested that if using those drawings for layout that explicit permission is granted by the client to do so. Responsibility should then be placed on the client to advise the surveyor of any changes afterwards. If changes are made to the architectural drawings and sent to the surveyor after staking that are possibly in conflict with prior drawings, consider asking the client if they want new calculations from scratch or if they will provide an exact list of revisions accompanied by a marked up pdf.

A recent claim involved a site plan that had an underside of footing change of 1m on the final approved "construction" sheets but the Surveyor used the "not for construction" version for the lay-out. The revision to the sheet was made after the surveyor did the staking.

New construction

Strongly consider putting the responsibility to provide all of the applicable zoning setback details on the client and if they do not accept that, make sure they sign off that you are not responsible for setbacks. The client or architect saying that "the site plan was approved by the Municipality" is not likely a valid defense in court! Further, if the client refuses to allow construction tolerances (such as 5cm on house construction) you might want to get it in writing that they have refused to do so.

The above examples are meant as suggestions and clearly, will not apply to all practices, in all jurisdictions. However, the committee continues to see new and unique situations that might be avoided or mitigated by subtle changes in our practices. The Insurance Advisory Committee will continue to share more examples of common mistakes and ways to avoid claims in the first place.

Keep up the good work and John Breese will not talk to me again if I don't end with:

REPORT, REPORT, REPORT!



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Co-op at Lassonde

By Marvin James

The Lassonde School of Engineering now has a brand new Co-operative Education program, with students available all year round during the Winter, Summer and Fall semesters. The program combines a student's learning with ongoing mentorship, evaluation and supervision during the work period, which gives them practical work experience and the chance to learn key skills. Students who have completed their second year of undergraduate study in an engineering program are available for work terms of 4, 8 and 12 months. The next work term will be in May 2015, and interested employers can begin posting positions from December to February.

This is great news for all of our programs, especially the Geomatics program, which, through the excellent effort of faculty members and students, has already developed an extensive network of industry partners, associations and employers. The addition of a Co-op component provides a flexible recruitment system that will allow us to streamline the existing process, and facilitate a more efficient hiring process for both students and employers. Employers can connect with students who are interested in learning more about Geospatial 3D mapping and modelling, remote sensing, surveying, global positioning systems, and to continuously develop new skills.

Our students want to get to know your business and your industry, so please let us know if you are interested in coming on campus to meet our Lassondians, and participate in our Industry Focused Panels, Networking Events, Information Sessions, Co-op Career Fairs, Mock Interviews and Design Competitions.

Companies who hire a Lassonde Co-op student may also qualify for a Co-op Education Tax Credit. This is a refundable tax credit available to employers who hire students enrolled in a co-operative education program at an Ontario university or college. www.fin.gov.on.ca/en/credit/cetc/index.html

Lassonde is already ahead of the game in so many areas, and the introduction of a new Co-operative Education program presents an opportunity to provide students with valuable work experience, while encouraging them to develop key skills such as entrepreneurial instinct, business leadership acumen and people skills.

Employers interested in hiring a student for the summer 2015 work term can email Marvin James, Co-op Coordinator at marvinjames@lassonde.yorku.ca. Please visit our website at www.lassondecoop.com to learn more about the Lassonde School of Engineering Co-op program.



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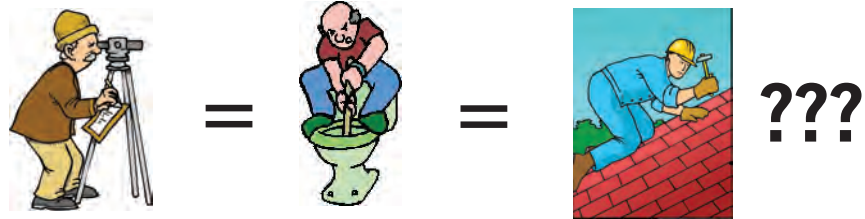
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Second Annual Boundary Law Conference

Linking Parcel Title and Parcel Boundary: Improving Title Certainty

By Megan E. Mills, Lawyer

Four Point Learning produced the Second Annual Boundary Law Conference - a full day of Continuing Professional Development for Lawyers and Surveyors on November 17, 2014. Over 120 participants braved the winter's first snowy blast and road closures on the 401 to attend the event, which was held for the second year at the Guelph Delta Hotel and Conference Centre. The event featured a diverse lineup of speakers from government, academia and the private sector and all explored the theme, "*Linking Parcel Title and Parcel Boundary: Improving Title Certainty.*" Mr. William Snell provided opening remarks which set the tone for the presentations that followed. That tone was one of optimism in the face of challenges that are encountered by both surveyors and lawyers when dealing with issues of parcel title and parcel boundary certainty.

Lawyer John Parr Telfer, counsel in the 2013 Ontario Court of Appeal decision in *Lackner v. Hall*, shared his insight into the recent trend of the courts to look at the intention of the original subdivider and he offered some advice for surveyors going forward. Four Point Learning Program Director and lawyer Izaak de Rijcke, O.L.S., continued the conversation on boundary uncertainty and the court's shift towards an emphasis on "intention."

Surveyor General for Ontario, Susan MacGregor, O.L.S., gave an overview of the role of public sector surveyors in a wide range of service delivery, and highlighted some of the challenges that occur when there is uncertainty in a parcel title and a parcel boundary. She also focused on some of the demographic challenges that will impact on the surveying profession in the future. Lawyer Jeffrey Lem, in his new role as Director of Titles for the Province of Ontario, returned as a presenter and provided this year's audience with a dynamic and engaging exploration of issues to bring attention to the subtle but important distinction between quality and quantity of title through an overview of recent court decisions

In exploring some issues of best practice, Anne Cole, O.L.S., lead the audience through a group exercise that delved into ethical issues that can emerge between property owners, surveyors, lawyers, clients and society as related to parcel boundaries that are in dispute. This succeeded in creating a steady buzz of discussion within the small groups that were formed to answer her research questions. Dr. Spiros Pagiatakis of York University's Lassonde School of Engineering examined, from a statistical perspective, the surveyors' regulatory requirement to integrate evidence with the required confidence level and how that affects boundary certainty and predictability for subsequent retracement work.

The next speaker, lawyer Robert Fenn, offered some insights into the current challenges in litigating boundary disputes and explored the potential of using emerging tools in Online Dispute Resolution and Artificial Intelligence as alternatives. These hold potential in taking disputes out of the courtroom - and even mimic the

decision-making thought process used by surveyors when embarking on retracement work. The last item for the day was a presentation of Virginia Tinti's paper on changing models of service delivery, followed by a short wrap up.

Collectively, this year's presentations explored a wide range of thought provoking issues and questions around the central theme of title certainty. To supplement the presentations, conference attendees received a binder with copies of the papers and other material prepared by the speakers to offer ideas for best practices and future solutions in the ever evolving world of boundary law. The issues and questions raised should compel further reflection and exploration by the attendees and the survey profession as a whole. The event qualified for CPD credits for both Ontario Land Surveyors and Lawyers in Ontario. Conference materials for this and last year's events are available through Four Point Learning at <http://fourpointlearning.ca> Plans are already underway for the third annual event in 2015.



Jeffrey Lem, Director of Titles, Ontario Ministry of Government and Consumer Services.



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TransCanada Energy East: Surveying Across the Prairies and Ontario with Less

By William Akehurst, O.L.S.

At the GeoAlberta 2014 conference held in early November in Calgary, attendees were confronted with a dizzying array of new technologies, from fixed-wing and rotary-wing drones, to surveying-grade iPhones from Google, and ultra-high resolution satellite imagery previously available only to the military.

One theme that came to mind while walking through the exhibits was “doing more with less”. One exhibitor mentioned that he had replaced large portions of his topographic land surveying crew with a drone. A survey crew that took five days to complete a pre-subdivision topographic survey with a point density of 5m could be replaced with a plastic foam airplane. In the course of a few hours with one operator, the drone could produce a 10 point per square metre elevation model.

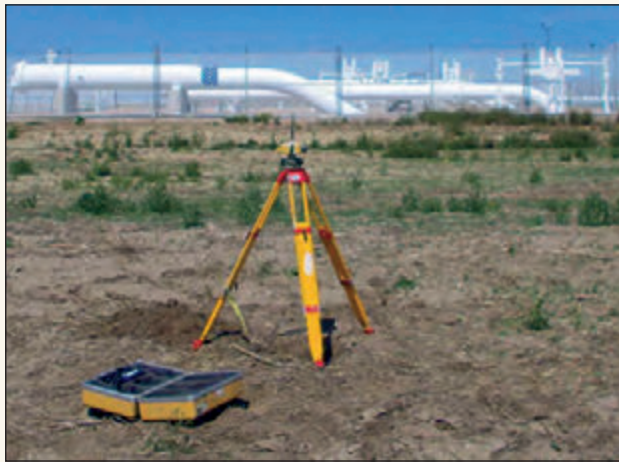
The presentation was impressive, but my first thoughts were, “What about that survey crew? What will they do?” More importantly, how is technology affecting the surveying profession and its labour needs? A recent megaproject that my firm completed for TransCanada Corporation provides an interesting case study about the opportunities and challenges that are facing our industry.

TransCanada Energy East is a 4,600-kilometre pipeline that will carry 1.1-million barrels of crude oil per day from Alberta and Saskatchewan to refineries in Eastern Canada.

Our company, Fugro, specializes in large-scale corridor mapping. After a lengthy contractual process; FLI-MAP, our custom built helicopter-mounted LiDAR & orthophotography system, was selected to survey the entire route. FLI-MAP is capable of capturing points with a resolution of 30 points/square metre at a stated absolute vertical accuracy of 5cm and a horizontal accuracy of 7cm, both at 95% RMSE. The relative accuracy over an area of several hundred metres is within centimetres. During ideal GPS and flying conditions, the accuracies can be much higher and the resulting data is comparable in accuracy to a typical Real Time Kinematic (RTK) survey. More details can be seen at www.flimap.com

When I was articling in Ottawa back in 2005, our cadas-

tral survey firm was tasked with surveying the first iteration of the Ottawa Light Rail Transit expansion. We had up to four survey crews working for several months over the winter picking up the edge of rail, top and bottom of slope, edge of gravel, fences, trees, signals, manhole covers, and elevations along an approximately 30km route. In the morning, the two-man crew would set up a base station, go through the required safety orientation, meet up with the railroad flag person, and throughout the day go through the meticulous process of creating feature-coded points, lines, breaklines, and symbology. It was a physically demanding job. If there was a fence, we needed to climb over it or find a way around it. Party chiefs had to mentally draw out what their point codes would eventually look like. This was skilled work that kept everyone chargeable until the construction season started up again in March.



Base Station near TCPL pump station

Today, the same survey can be flown with FLI-MAP in less than

an hour at 30 points/square metre and a 300m wide corridor. Only two individuals are required in the field. Neither individual needs to set foot on the right-of-way.

For the Energy East project, our labour requirements were slightly more, but not proportionally more given the 3,000km long survey. Several years ago, such a large job would require up to ten individuals in the field. Thanks to the following three key advances, even our staffing requirements for FLI-MAP have been reduced by more than half.

Can-Net

Can-Net is a GPS correctional service that covers the Prairie Provinces and large portions of Southern Ontario. With Can-Net, crews are no longer required to set base stations for RTK or static surveys. More importantly for an aerial survey, any single static GPS measurement can be tied into a high order network without our crews setting up a static network.

The impact was that our crew requirements for the network were drastically reduced. One crew member with no previous surveying experience was sent out with two

GPS receivers and a couple of hours of training. He was good with a shovel and a pin finder. We had rough coordinates programmed into his handheld GPS receiver. Over the course of a few days he proceeded to survey 1300km of TransCanada control. The resultant network performed by one inexperienced crew member matched the original Trans Canada Pipeline (TCPL) control within centimetres over the 200km to 300km legs.

An original MMM Group resurvey that was performed in the summer of 1998 consisted of one GPS technician, one junior party chief, and three instrument men and covered approximately 25km per day.

CGVD(2013)

Another labour saving advance was the adoption of the CGVD(2013) vertical datum by TransCanada. CGVD(2013) is defined by the CGG(2013) geoid and is unlike previous vertical datums, which were defined by monuments. In other words, it is the realization of a new vertical reference frame by geoid modeling rather than geodetic levelling.

How does this impact our field operations? Often our field crews need to establish control in remote areas of Northern Ontario. If there is nearby control, it is often older and conflicts with other control in the area. Our flight processing software requires an accurate network, so simply holding two monuments that may be out by 7cm is not an option. In these situations we rely on Precise Point Positioning (PPP) solutions with 6-8 hour sessions, utilizing up to 5 base stations. The absolute PPP measurements are used to control a fully constrained network adjustment with a resulting internal accuracy in the sub-cm range. To generate the CGVD(2013) orthometric heights, we rely on the GPS-H tool from NRCan.

With CGVD(2013), our field supervisors no longer have to run around trying to get monuments to fit. Lack of monuments will probably get worse since NRCan has announced that with the adoption of CGVD(2013), it will no longer maintain a network of geodetic control points. NRCan goes even further by stating “CGVD2013 heights obtained from GNSS and geoid model CGG2013 prevail over the published elevations because NRCan cannot confirm the accuracy of the heights and stability of the benchmarks derived from the aging levelling network.”

From now on, we'll need to be extra careful around those first order monuments.

Offshoring

From Goldman Sachs Elevator Twitter Feed - 16 Sept 2012:

#1: AAPL says the US doesn't have workers with the skills to make iPhones.

#2: It takes a lot of skill to survive on 70 cents an hour.

Along with a reduced field presence, our Canadian office requirements have also been reduced. Classifying the approximately 6 billion LiDAR points into ground, building, roads, trees, and power lines, etc. is a semi-automatic process. Initial classification is performed in our Canadian office automatically using TerraScan. The labour intensive process of manually checking the classification algorithms is shipped off to our sister Fugro office in Qinhuangdao, China. Other tasks such as orthophotography and contour generation are also shipped offshore.

Project managers in North America have no real idea of how many individuals are working on a project, only that a certain amount of hours have been spent and that certain timelines have been met. The Canadian office acts as a gateway to feed labour intensive, low skilled work offshore where it can be done cost effectively. Like Apple, Fugro's survey operations are now part of a global supply chain. We are able to scale up or down depending on the workload with minimal changes to our local staffing requirements.

The Changing Face of Labour

Our staffing requirements have evolved into two very distinct groups, the highly skilled and the unskilled.

Technologies such as PPP, Can-Net, and CGVD(2013) mean that our temporary field surveyors require a minimal skill level. Driving a truck safely, setting up a set of survey legs and filling out a GPS observation form legibly are all that's really required. What separates our junior

crews with those of 20 years ago is the training time it takes to get an individual to be productive on his/her own. It took me as a green articulated surveyor several months to get proficient with a total station and several months more to figure out how GPS and a control network really work.

With Can-Net, CORS and PPP, the field surveyor is always tied into a network, so they need not bother worrying about network geometry, digging up enough control, or worrying about that short backsight. In short, the skill level has been reduced.

What has happened is that more responsibility has been given to fewer highly skilled individuals on our team. Data processors, field project managers and system operators typically all have engineering degrees, are proficient with all aspects of GPS/geodesy, and are capable computer programmers. Each team member is flexible enough to work in the field digging up survey monuments or writing



FLI-MAP takeoff



FLI-MAP landing

cont'd on page 18

scripts in the office to prepare data for the offshore processors. When a job is done, our crews come into the office and process data/solve problems. The pure full time field staff for us is now gone.

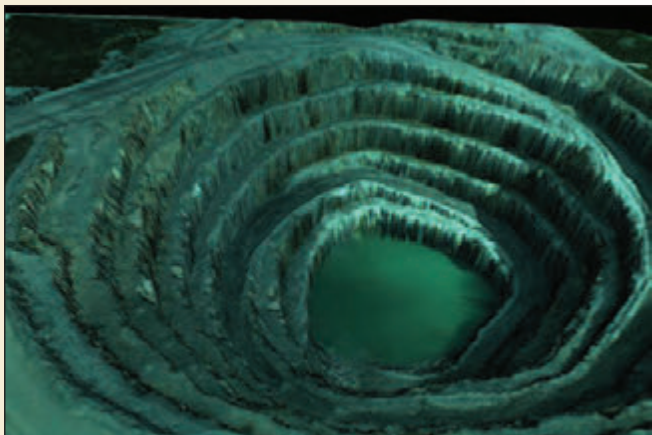


FLI-MAP ground imagery

More with Less, Skilled vs. Unskilled

At GeoAlberta 2014, I chatted with an articulated Alberta Land Surveyor and inquired about what he was doing. “Reposting – basically pounding bars into the ground using RTK, my brain is basically shut off for most of the day,” he responded. “Is there any retracement required? Do you need to pull ties to re-establish the street and lot lines?” I asked. “Nope,” he said dryly, “all the monument locations are defined by coordinates, we just pound the bars in.”

Unfortunately for him, he is being groomed in the unskilled labour category with that particular task. However,



Colorized LiDAR

he’s able to pound in 30 monuments per day. At most, I could only manage 6-7 per day given all the field calculations. Technology has allowed this articulated surveyor to produce more with less skill.

Producing more with less cost is always a challenge that is thrown down by our clients, especially when competing with price-driven bids. Technology has driven down costs and the number of field staff. Given this situation, is there a shortage of Ontario Land Surveyors? During the Association’s latest webinar on Professional Development on November 5th, it was mentioned that the Association was looking at the number of land surveyors required by the

Ontario economy, rather than the declining number of current members.

I believe the “needs” test being applied to OLS numbers will probably ease some of the concerns regarding membership levels. Advances in LiDAR and mapping technology will reduce the manpower required to perform topographic surveys, surveys which are important revenue generators for OLS firms but not subject to restricted practice by legislation.

For Energy East, TransCanada’s ground surveying needs will be greatly reduced by our firm’s high resolution LiDAR. Unfortunately, that’s work that would have been done by local land surveying and engineering firms with boots on the ground.

High Skilled Value

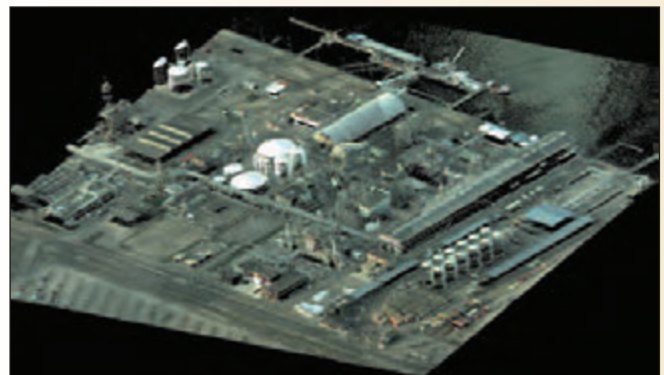
Technology can upset the labour pool, but it can also uncover opportunities with the right skill set. Most of our clients don’t have the capability to manage large LiDAR datasets. Integrating different datasets belonging to different datums is a common request.

For example, TransCanada required us to compute ground elevations at points along the pipeline that were measured with a “rig pig”. The rig pig data needed to be shifted from the GSD95 geoid to CGG2013 in order match the LiDAR. MicroStation TerraScan and FME scripts were then used to generate the heights. The urgent request from TransCanada took about a one-day turnaround for the 3000km line.

Change and Challenge

Even Fugro’s most advanced two million dollar FLI-MAP systems are not immune to obsolescence. The drone system that earlier put subdivision topographic survey crews out of work now took aim at our FLI-MAP systems.

“For only a \$1,500 mobilization, you can have high resolution point clouds that would have required a \$30,000 helicopter mobilization,” boasted the GeoAlberta drone exhibitor. My first thoughts were “uh oh, it’s time to learn a new skill set!”



LiDAR Point Cloud

For all of us in the surveying industry, change is not a choice and we have no choice but to adapt.



William Akehurst, O.L.S. is a Project Manager for Fugro GeoServices (a division of Fugro Canada Corp). He can be reached by email at wakehurst@fugro.ca for further discussion.

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GeoSpatial or What?

By Louis Schoolkate, G.I.S.P.

Wouldn't it be nice to have a crystal ball to predict the future of surveying? There's been such tremendous change over the past decades, I'm sure many of you wonder where this profession will end up. Actually, we don't need magic. I think there's already a solid indication of where this is going. In fact, I believe that my own career illustrates the evolution of the profession, pointing towards a very important and very different role for it in the future.

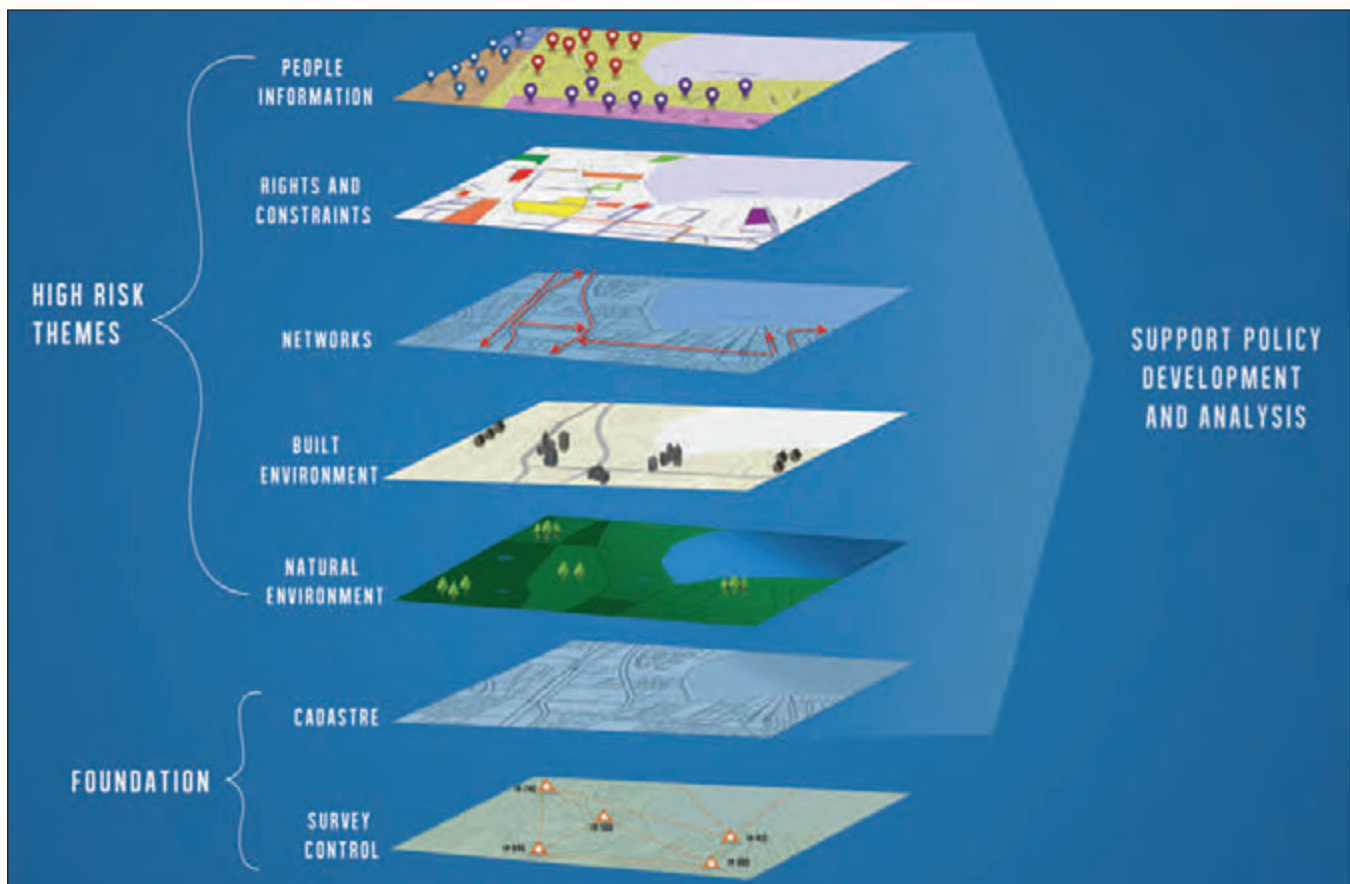
When I started my career back in 1974, I just wanted to follow in the footsteps of my employer and become a land surveyor. Working in the field every day, a steel tape, a plumb bob, and a sharp axe were my tools, things that surveyors had used for decades. But then I encountered my first computer and things really started changing. Soon after, I faced more exotic concepts while using a Doppler satellite receiver on a survey. Then in 1978, during a stint in photogrammetry, I was assigned to a digital property mapping project, a sure sign of what was coming. Later, in the 1980's, those annoying computers really invaded my office and we started shipping 'data' to clients. Over the next twenty years, what I did for a living became GIS, and databases, spatial services, and location-based 'apps' became my vocabulary.

You can see the pattern. My surveying career was pretty predictable at first. Then amazing technologies intervened and

it will never be the same. Where once I worried about closing traverses and confirming ties to bars, now I worry about the geospatial information that 9-1-1 depends on. Who could imagine that a land surveyor would eventually have that responsibility!

To me though, this has all been the natural evolution of the profession. Surveying was where I started and surveyors continue to build the foundation for all our geospatial data. But, like everything else, the profession has been radically changed by technology, especially by computer technology. Today an incredible amount of valuable, indispensable geospatial information sits on that foundation. In fact, much of that information has become 'mission critical' to this society, trusted for all sorts of important functions.

To further appreciate this evolution, just look at the schools. Today there are hundreds of undergraduate and graduate geospatial degree programs out there, all of them attracting plenty of applicants. Plus, there's a steady stream of graduate students doing innovative geospatial research, adding to the growing body of knowledge every year. And are these geospatial practitioners ever enthusiastic! Both the seasoned professionals and new graduates entering the field are excited by their career with all its possibilities. They see plenty of relevance to the modern world. Even the public is very aware of



their work as technologies like Google maps and location-based 'apps' make the field ubiquitous. It's very exciting to talk about your career when almost everyone is touched by it!

However, despite all the exciting possibilities, the geospatial field we now term 'GIS' also carries with it a risk. Today, geospatial information is being used more and more as the basis for important government decisions. Often when establishing policy, GIS helps identify the best approach, driving decisions that impact thousands of people. Meanwhile, in the private sector, businesses decide where to locate, invest, mine and drill using geospatial information.

With so much now depending on spatial data and analysis, being able to count on that information becomes a critical risk for society. In addition, ethics begin to really matter. It is far too easy to lie with maps! Senior GIS practitioners have already seen a need to respond to this risk by establishing a more professional and ethical framework for senior GIS professionals. More and more GIS practitioners have embraced this idea as shown by the success of the GIS Professional (GISP) credential, currently 7000+ strong.

But, embracing something like the GISP credential will not solve the problem. What we really need is a 'geospatial information' profession to take responsibility for all that geospatial information and look out for society's best interests. That's why I believe that ultimately, surveying, mapping, and GIS under a much bigger geospatial umbrella, represents the future for the

profession. Only when there is a mandatory professional certification that includes all 'responsible' geospatial information professionals will society's interests be truly served.

We use geospatial data and analysis more and more to determine what direction our society takes, whether it is in immediate actions (drill, build, locate, act) or long term policy and planning. Given the risks, I think it is time for jurisdictions to embrace this concept of a geospatial professional licence. I also believe it is time to mandate this designation for those responsible for the geospatial information we now depend on.

But can the broader geospatial field really be turned into a single new profession? Should the AOLS and other professional surveying organizations take on this challenge? Obviously, surveying work will continue for the foreseeable future. Subdivisions still need to be staked. Disputed boundaries require professional opinions. However, in its present form, I believe the surveying profession cannot sustain itself. Although the AOLS along with many other licensing organizations have devoted a tremendous effort towards recruiting, success has been elusive. Membership continues to shrink as a generation retires. Clearly, standing still is not an option.

Besides, eventually society will recognize this risk situation. Already there are US Federal agencies talking about this issue. Since leading practitioners of GIS already agree, a future where large numbers of senior geospatial information professionals

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come under some professional certification is just a matter of time. And, as licensed practitioners cover part of this field already, I think it falls under surveyors' responsibility to society to take the initiative towards making that happen.

That's why I believe the AOLS, along with other surveying licensing organizations, needs to acknowledge that some evolution of what we now call 'GIS', surveying, and mapping represents the future. It should work towards developing a new professional framework and amended legislation to govern that future. Yes, I know the AOLS expanded profession already appears to support something like this. However, what I'm suggesting evolves beyond that. The focus should be on establishing strong professional mandatory oversight for all the geospatial information this society now depends on. I also suggest these new professionals not be called land surveyors, no matter how much reverence we have for the past. This new professional responsibility is much bigger than just surveying, and that has to be recognized and accepted in this process.

At one time, surveyors were the leaders in communities everywhere. Although it's an example from my adopted home, I cannot help but think of George Washington and Thomas Jefferson, proud land surveyors and founders of a great nation. Today's surveyors should aim just as high. I believe the profession should be responsible for outcomes, not just the surveying foundation. What really matters is the ultimate impact of all this geospatial information we generate and manage. And responsibility for what is changing our society should be assigned to professionals that can hold up a high standard for that society.

The AOLS led the industry in the past in recognizing an expanded profession. Perhaps it can now set a new example in recognizing a very different future for this profession. Yes, this will be difficult. Lots of issues need to be resolved and it will not happen overnight. But I believe it is worth it. Spatial information and spatial expertise is sufficiently important to this modern world that it requires professionals to manage and govern it properly. Over the span of my career, I've always appreciated how seriously surveyors everywhere take their professional responsibility to society, oftentimes even to their financial detriment. Hopefully, the AOLS will recognize that this professional responsibility extends to embracing this new reality. Society needs someone to take on this challenge, why not the AOLS?



Louis Schoolkate, GISP, is a former CLS, OLS, and BCLS. He started his career surveying old mining claims in the era of the steel tape, the HP-45, and survey plans on vellum. Since then his work has spanned geodesy, photogrammetry, cadastral surveying, IT and GIS. His surveying work took him to every province from Ontario westward, as far north as Axel Heiberg Island, 5000 feet underground, and well over 7,000 feet up on control projects in the mountains of BC. Over the past 15 years his work has been primarily focused in the areas of enterprise GIS policy, planning, systems design, and implementation for state and local government. More recently he re-structured and now directs the enterprise GIS program for the Orange County government in Orlando, Florida. Mr. Schoolkate holds a Diploma in Surveying from the British Columbia Institute of Technology and a B.Sc. in Computer Science from the University of Toronto.



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What helpful information can Surveyors provide to Arborists?

By Peter Wynnyczuk

On occasion, as a land surveyor, you may be requested to complete a survey that includes living features growing on the property, such as trees, shrubs or other groupings of plants.

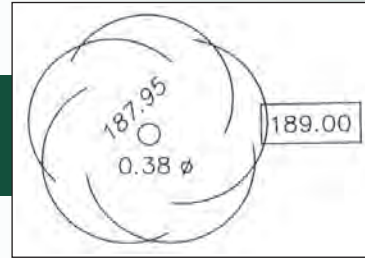
Your help to the Owner or Client by collecting specific information related to the trees, if requested, can help expedite many a review or approval process in this age of greater awareness of trees and our environment.

Of the many surveys that I have viewed in the past, having the grades shown at the base of the tree(s) on the plan can determine if there are proposed grade changes and how significant they are in relation to the tree(s).

Furthermore, if you identify a tree's location, noting the parameters of the location on the plan as a footnote or in the Legend, for example, centre of the tree at a particular height, or the south edge of the tree at a particular height, can help clarify the proximity of the tree to physical objects or property lines. Being consistent in your tree location criteria is critical to the decision makers/reviewers' ability to reasonably review/approve the plans that utilize this important base

information that you have provided.

Using symbols to differentiate conifers or needled trees from deciduous trees can help with follow-up identification for others. At a minimum having the two types of symbols on



Deciduous tree with diameter, existing grade and proposed grade

the plan is helpful and a reference in the Legend supports the interpretation.

Also, as part of your service to the Client, if you are able to provide a layer of data to help determine the approximate canopy width, this can be very helpful for calculating the total property canopy cover, which some municipalities are requesting as part of

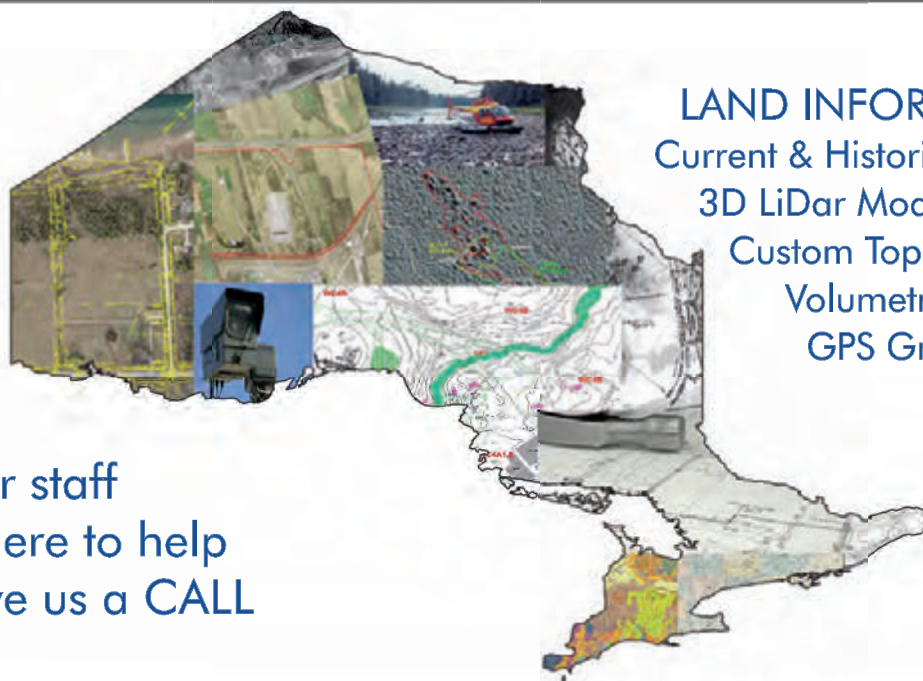
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their submissions now. If trees are to be removed for development purposes or site changes, your data can then be used to determine the scope of the loss of canopy cover as a percentage of the total. Reviewers/approvers may have criteria to prevent more than a certain percentage of canopy loss or use a formula to calculate and seek replacement plantings.

Some surveying firms have staff who have the knowledge to identify trees competently, which can help others, such as Arborists or Landscape Architects to efficiently verify the species. They can use this information for further assessments and recommendations on the retention or removal of trees due to the health of the trees and/or the Owner's planned activities.

If the tree species are not identified, having the other key information, such as coniferous or deciduous tree symbols, and the location together with the existing, and if requested, proposed grading will considerably help the other participants working on the Client's proposed activities in their decision making process.

It is also helpful to clarify with the Client what the smallest diameter of the trees to be identified is and note it on the plan to aid with any further field-related identification activities. Some municipalities specify the smallest diameter of the trees they are looking to review, so contacting them for further direction is suggested.

Where there are groupings of trees, if able, noting the crown perimeters on the plan will help other professionals in their further assessments and recommendations. Grades may be difficult to provide in this case, and a discussion is suggested

with the Client to see if this part of the site is affected by any activities on the property. If no activities are proposed, a line drawn near this area and a note near the line could indicate, "No work or activity planned in this area," which can then help reviewers of the plan determine if further protection is warranted in this area.

Advising the client on the type and the expected accuracy of the survey is key in helping other professionals who are working for the client make effective and concise recommendations to the Client or Owner. Having clear and accurate survey data then places the onus on them to read and interpret the information, so they can make recommendations related to their field of expertise that are reasonable for the proposed activities on the property.

It is evident that the key role of the surveyor in Ontario is to prepare clear and accurate surveys of the property boundaries which can be crucial in helping to identify and be used to resolve property owners' issues. But in addition, surveyors have an opportunity to help their clients, property owners and arborists during the performance of their surveys by collecting relevant information on any trees or living features that should be protected.



Peter Wynnyczuk is the President of P & A Urban Forestry Consulting Ltd. www.paurbanforestryconsulting.com He can be reached by email at info@paurbanforestryconsulting.com for further information.

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Articling: The New Process - A Transformation

By Nancy Grozelle, Chair Academic and Experience Requirements Committee (AERC)

The AERC in consultation with Council and the membership has been working for over two years on a strategic initiative to change the existing Articling process. The changes are now in place and we have been signing students under the new system since the fall of 2013. Those Surveyors who currently have Articling Students will already be aware of the changes but some of the membership may not be fully aware of the recent transformation.

I thought I would take the opportunity to introduce the changes to the Statutes Exam and provide a brief summary of all of the changes to the articling process that have been initiated so far.

This paper is a follow up to the article by Crystal Cranch titled “Improving the Articling System – An Explanation of the “Essential Areas of Knowledge” published in the Fall 2013 issue of the Ontario Professional Surveyor (OPS) and Bob Halliday’s article titled “Prepare the Way For Change” published in the Summer 2013 issue of the OPS.

Changing Role of the Articling OLS:

It has always been the responsibility of the Articling OLS to ensure that his or her student is receiving quality experience, learning progressively and gaining knowledge. Over the past few years the AERC has witnessed an increasing reliance on the Monitors to teach and mentor the students. Under the new system the responsibility is shifting back onto the Articling OLS where the committee feels it should be. The Articling Agreement has been strengthened to ensure that the Articling Surveyors are aware of their responsibility to provide quality training in all aspects of Cadastral Surveying.

To assist the Articling OLS with tracking the student’s experience, more detailed reporting will be required. The OLS will also be required to submit a summary of the work experience that the student has received and outline how the student will obtain knowledge in areas that they will not be exposed to during the term of Articles.



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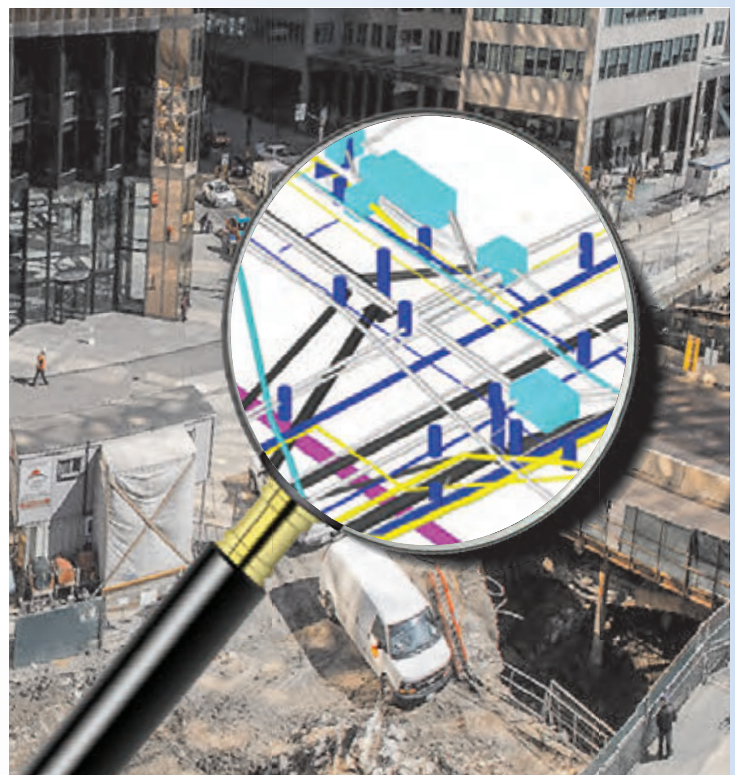
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Under the new system, members of the AERC will act as Monitors to track the students' progress and provide any assistance as required. The traditional role of the Monitor has been eliminated as the students will not be submitting Work Reports.

Essential Areas of Knowledge (EAKs):

The Essential Areas of Knowledge were identified by the AERC in consultation with AOLS members from across the Province. These are the areas of knowledge that the students will require in order to successfully pass the Professional Exams and be prepared to work at a professional level. OLS Subject Matter Experts (SMEs) have volunteered to write and mark assignments for each of the 14 Essential Areas of Knowledge. The assignments have been vetted by members of the AERC and they represent a significant body of work.

The EAK assignments are not mandatory but are to be completed as the student and Articling OLS deem necessary. Some students will complete them all but it is the Articling OLS that will ultimately determine if his or her student is required to complete specific assignments. Nothing can replace experience but the assignments provide practical applications of everyday issues.

The EAKs are:

1. Research
2. General Boundary Retracement
3. Water Boundaries

4. Adverse Possession
5. Roads
6. Original Township Retracement
7. Descriptions
8. Ethics and Professionalism
9. Business Practices
10. Easements
11. Spatial Referencing
12. Condominium Act
13. Planning Act
14. Mining Act.

The Field Note Assignment is no longer required and most of the content has been incorporated into the EAKs.

The Statutes Exam:

During the AERC meetings, much of the discussion with respect to the Statutes Exam was centred on determining the desired learning outcomes. After years of deliberating it was agreed that the students should have a working knowledge of the statutes that we reference daily and be aware of the less frequently referenced statutes. With all of the Statutes and Regulations available and searchable on the Internet, the students need to know what they are looking for and where to look for it.

The new format for the Statutes Exam is a 3-hour closed book, on-line and on-demand exam consisting of 25 short

cont'd on page 28



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answer questions each with a value of 4 marks. The Statutes have been divided into three categories: Primary, Secondary and Tertiary. The exam will be composed of 18 questions (72%) from the Primary Statutes, and 7 questions (28%) from the Secondary Statutes. The Tertiary Acts will not be included on the exam.

The questions will be randomly selected from a pool of questions that have been written by volunteers and vetted by the AERC. A computer program will randomly generate the exam so that each exam is unique. Having the exam available online will allow students to write it when they are ready and not just twice a year. An added advantage of an online exam is that it can be written anywhere in the province provided that the exam is invigilated. The new format is more accessible and has fewer barriers than the previous format.

Professional Exams – Written and Oral:

There have been no changes to the written and oral professional exams. The oral exam is approximately 1 hour in duration and consists of 3 questions. The oral exam is a pass/fail only with no mark given. The written exam is a 4-hour closed book exam with a passing grade of 65% (statutory requirement). Currently the candidates can sit one or both of the exams in June or November. The exams are independent of each other. A student can pass one and fail the other.

Term of Articles:

The term of Articles is a statutory requirement and has not changed. The term is a minimum 18 months to a maximum of 4 years and consists of a minimum of 225 days field experience of which 150 days must be at the party chief level or higher and 113 days of office experience. Students can apply for a reduction based on previous work experience. These are the minimum days of experience required but ultimately it is the Articling OLS who determines when the student is ready to sit the professional exams. The Articling OLS is still required to “sign off” stating that in his/her opinion the student has “reached a level of competence in professional land surveying sufficient for membership in the Association of Ontario Land Surveyors”.

With the passing of amendments to *Ontario Regulation 1026* in 2012 and 2013, the AERC now has greater latitude when evaluating students and granting reductions in the articling period. The Regulation now allows articles and/or exams to be waived based upon a candidate’s education, experience and expertise. Each candidate is individually assessed

and evaluated academically by the committee with the help of professors from both York University and Ryerson University. A candidate’s application for a reduction in the experience component is evaluated through the submission of a work experience portfolio endorsed by the Articling OLS.

The Learning Management System (LMS):

The AOLS LMS is the tool that has been instrumental in the implementation of the new Articling Program. It provides the framework that handles all aspects of the learning/training process. Wikipedia defines an LMS as “a web based software application for the administration, documentation, tracking, reporting and delivering of e-learning educational courses or training programs”. The AOLS LMS is a hybrid of the traditional LMS in that we are using it for e-learning (the EAKs) and as a training program (the Articles).

The LMS is accessible by students, articling OLSs, monitors, SMEs and the AOLS staff. Each user is given access only to the information and tools that he/she requires. It will take all of us a while to learn how to use the LMS effectively but it is a powerful platform.

The AOLS Website:

Today the first place almost everyone looks for information is the Internet. Both Internationally Educated Professionals (IEPs) and Canadian educated candidates will be looking at the AOLS website to determine how to obtain a licence in Ontario. New documents are being posted on the members’ side and the public side that explain the process and roles and responsibilities of all involved.

The Next Step:

After all of the changes to the articling process have been implemented, the next steps will be to monitor the new system closely to ensure that we are still providing the required tools and ethics for our new surveyors to function within the industry. The exam questions will need to be reviewed periodically for relevance and content and the EAK assignments will require a periodic refresh. The AERC and the SMEs will continue to work on the new process to ensure it is meeting our needs.

If you have any questions or concerns with respect to the new process please feel free to contact me - we are always looking for volunteers!



Nancy Grozelle can be reached by email at Nancy.Grozelle@ontario.ca for further information.

Sites to See

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The **C**ontrol **S**urvey **I**nformation **E**xchange (COSINE) online application, which provides access to provincial, federal and municipal control survey information in Ontario, has been improved and has a new website address.

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By Melissa J. Ellis

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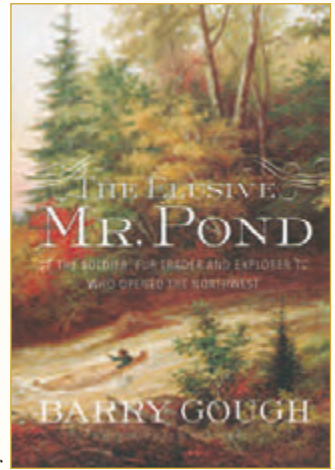
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BOOK REVIEW

Some thoughts on *The Elusive Mr. Pond*
written by Barry Gough



By Robert Allen, B.C.L.S., C.L.S.

This started out as a book review but quickly turned into a book review AND a short biographical sketch of Peter Pond, “the soldier, fur trader, and explorer who opened the Northwest”.

Please note that all of the quotes below are taken from the book itself.

Every once in a while someone suggests a good book to read or suggests a good author who has put out another book. In one of the hiking groups that I belong to, I met a fellow who hikes with the group on occasion and we found we had a mutual interest in matters of historical interest. He is more interested in maritime history and I am more interested in overland history but our interests did in fact overlap. His name is Kim Davies and we soon got into a discussion on David Thompson and that in turn switched to Sir Alexander Mackenzie. I mentioned to Kim that not too long

ago, I read in *British Columbia History*, the magazine put out by the British Columbia Historical Society, about a book called *Mackenzie of Canada* written in 1926 by a Dr. M.S. Wade from Kamloops, B.C., which is about Sir Alexander Mackenzie. Luckily I found a copy of the book in excellent condition for a reasonable price on Amazon.com. I also mentioned to Kim that a number of years ago, I purchased another book on Mackenzie called *First Across the Continent* that was also written by Barry Gough. It turns out that Barry is a personal friend of Kim’s and that he had just written another book, this one about Peter Pond and Barry had just given Kim a copy of his new book, *The Elusive Mr. Pond*.

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In school we learned a lot about various early explorers who ‘discovered’ and explored Canada: Cabot, Cartier, Champlain, La Verendrye, Henday, and Hearne, etc. Peter Pond was the fur trader and explorer who opened up the Athabasca/Mckenzie River systems and the access to western Canada as far as the Rocky Mountains. Mackenzie followed in his footsteps as did Thompson a few years later and anyone who has read about Mackenzie or Thompson would have read or heard about Pond. In school, we learned a bit about Mackenzie and Thompson but nothing about Pond. I wonder if it is because he wasn’t British or Canadian or as Gough says, because he left Canada: “... partly engulfed by the rivalry, jealousy, and suspicion of others, and ultimately dismissed by government authorities as a native-born American of dubious loyalty”. In any event, our school system let us down!

Pond was born in Milford, Connecticut, on January 18, 1740, a fifth generation American, and the third of eleven children. He married Susanna Newell in 1762 and had at least two children. He passed away in Milford on March 6, 1807. His whole life is fascinating and one worth reading about.

Pond’s early career included time in the army, on trading voyages to the West Indies, and in 1765, following in his father’s footsteps as he commenced trading westward as far

as Detroit. In 1769, he was trading in what is now Canada. He visited Montreal on a few occasions and in 1773, he was sent as an emissary of the Crown to act as a peacemaker among the warring Sioux tribal nations.

In 1775 Pond was trading on the lower Saskatchewan River and wintering at Fort Dauphin (Manitoba) and by the Spring of 1778 he was extending his travels further north and west as he paddled up the Churchill River to Lac Ile-a-la-Crosse. He continued northwest through a lake now called Peter Pond Lake, up the Methye (La Loche) River to Methye Lake (Lac La Loche). From there it was a relatively short twelve mile portage over “level Country but thinly Timbered” to the now national heritage Clearwater River that flows into the Athabasca River near present day Fort McMurray. This opened up a fur trade route for the North West Company over which to take all their bounty from the fur-rich Athabasca area. Gough goes on to say: “... [Pond] was being drawn into the most vital conduit in history of the fur trade, and he was soon to become its master — the most prominent trader. North and west lay the course of the empire. He was the fist in the wilderness.” Pond couldn’t have done all this without the help of his faithful Canadian voyageurs, the Metis, and the indigenous people who spent the winters with him. As Gough so rightly notes: “They deserve nothing less than an immortal

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place in Canada's story". Along with Pond's success came jealousy and rivalry, even from within his own organization, even though he had increased the trading share values for all his partners. "He was the Nor'Wester par excellence, respected but unloved."

1778 was the same year that Captain James Cook explored the Pacific Northwest coast and these two explorations shaped what would later become the Dominion of Canada. While Pond produced numerous maps over his time in the western fur trade, he was handicapped by not having any proper training in the field of surveying and was thus unable to accurately depict what he had seen or where he had travelled. His maps nonetheless gave a general idea of the geography of the area even if he was out at times by numerous degrees in latitude and longitude. His later maps did show more realistically his achievements and they did give "him a place in the history of discoveries".

In February 1785, Pond was one of fifteen charter members of the famous Beaver Club. One of the qualifications of joining was to have spent a winter in the northwest and by that Pond would have qualified numerous times over. "Pond stands firm as a geographical pioneer, for this resilient, violent, and ambitious man made a significant contribution to opening the trade of Athabasca to the nascent North West Company based in Montreal."

In March 1790, having just turned 50, Pond returned to Milford and shortly thereafter contacted Dr. Ezra Stiles, president of Yale College in the nearby town of New Haven. Pond wanted Stiles to promote his map before its locations might be proven incorrect by the likes of Sir Alexander Mackenzie. Again, while his maps may not have been accurate, they were the best representation of the area, in fact, the only representation of the area. Regardless of their accuracies, we can thank Stiles for his forward thinking in helping to promote and preserve Pond's maps and travels. Pond lived out his final days in Milford and wrote his memoirs. Pond was not a surveyor like David Thompson or Sir Alexander Mackenzie, in later life, as he had had no schooling in that regard. However he did remarkably well considering he had very little schooling at all.

There are a number of Canadian place names named after Peter Pond. One of them is Peter Pond National Historic Site about five kilometres west of Prince Albert, SK; Peter Pond Lake, SK, as previously mentioned; and a few bars and a shopping centre in Fort McMurray, AB. "But of all the historical sites connected with him, that of Methye Portage is the most important. As Judge Frederic Howay, a member of the Historic Sites and Monuments Board of Canada, said at the unveiling of the plaque in a schoolyard

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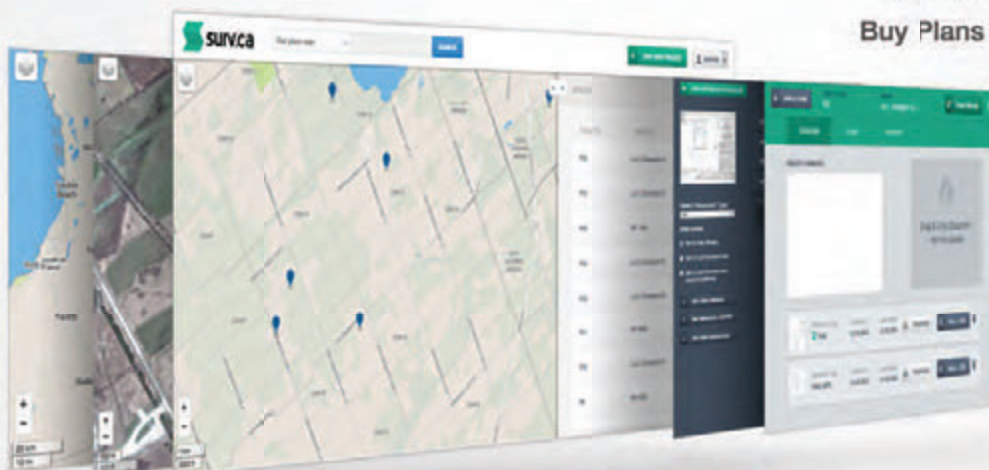
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in Fort McMurray in September 1938, it was ‘a spot far more important in the story of Canada than those whose names are emblazoned in large letters’.”

While David Thompson never actually met Pond, his description of Pond, probably told to him by his father-in-law, Patrick Small, is the one to have stuck. He describes him as: “a person of industrious habits, a good common education, but of a violent temper and unprincipled character”. With regard to the last two characteristics, there were a couple of unproven instances in which Pond may have been involved. It is not the intent of this work to go into those details but they are covered by Gough in his book.

There is no known portrait or even a sketch of Pond nor did anyone write any details about his appearance but we do know he was one not to be crossed. In fact, it was best to give him a wide berth or treat him with utmost care. “He could handle himself in a fight, and he was handy with a gun: he had been blessed with good eyesight and quick responses, essentials for being a good shot”.

Despite Pond’s shortcomings, he should be listed as one of the great explorers of Canada. He unravelled the beginnings of the Mackenzie River and showed them to the outside world, and in particular, to Sir Alexander Mackenzie, who followed the river named after him to the Arctic Ocean in 1789. Also armed with Pond’s knowledge, Mackenzie was also able to find his way up the Peace River and therefore eventually out to the Pacific Ocean in 1793.

Peter Pond, “the soldier, fur trader, and explorer who opened the northwest” was a master of logistics. If he were still alive, he could probably teach us all “how to get supplies in bulk, how to win Native support and cooperation, and how to work efficiently in a harsh northern environment”. “He was the last of the tough, old-style explorers, a man who ventured into the wilderness and helped shape the modern world.”

There are a number of maps and photographs strategically placed throughout the book and for anyone interested in filling in the gap in Canadian history in the late 18th century, this book is a must-read. The same can be said for anyone interested in the history of the fur trade or the early-known geography of Manitoba, Saskatchewan, and Alberta.

There is a long list of people in the ‘Acknowledgements’, even one with a very similar name to mine, one Robert S. Allen – but who is no relation to me. There are numerous

end notes for each chapter which provide more excellent reading and as one can expect from a book like this, a lengthy bibliography.

Thanks to my new friend, Kim Davies for lending me the book and a special thank you to Barry Gough for writing it.

The book was published by Douglas and McIntyre (2013) Ltd. Details on the book can be found in the Book Reviews on page 39.

Robert Allen is a Past President of the Association of British Columbia Land Surveyors and a Past President of the Association of Canada Lands Surveyors. He is currently the Chairman of the Historical and Biographical Committee of the Association of British Columbia Land Surveyors.

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Sites to See

www.tc.gc.ca/eng/civilaviation/standards/general-recavi-uav-2265.htm

Transport Canada regulates unmanned aircraft to keep the public and our airspace safe. Unmanned aircraft (no pilot on board) go by many names—unmanned air vehicle (UAV), remotely piloted aircraft system, model aircraft, remote control aircraft, and drone.

At the end of November, Transport Canada introduced new requirements for UAVs that are used for work. Check to see if the new requirements apply to you. If they do, you must follow the specific safety guidelines.

Flying an Unmanned Aircraft – Safety Guidelines

Lost Highways Revisited

By Jeffrey P. Talbot, B. Tech., O.L.S.

This paper, reprinted with permission from *Geomatica*, Vol. 68, No.2, 2014, will re-examine key elements within my previously published paper *Lost Highways: A discussion of untravelled quarter session and municipal by-law roads created over private property prior to 1873*ⁱ in light of the Ontario Court of Appeal decision in *Meaford (Municipality) v. Grist*.ⁱⁱ

INTRODUCTION

My 2005 paper “Lost Highways” put forth an untested legal proposition that differed from an oft-quotedⁱⁱⁱ judicial dictum delivered by MacLennan, J.A. in *Palmatier v. McKibbon*.^{iv} Differing from Justice MacLennan, my proposition was as follows:

In order for a quarter session or by-law road to be laid out over private property by virtue of a statute, the highway must have been laid out or established subsequent to the quarter session confirmation or municipal by-law; in other words, some act under authority of the confirmed report or municipal by-law actually took the land from the private owner and established the highway.^v

The Ontario Court of Appeal decision in *Meaford (Municipality) v. Grist* appears to strongly support the proposition with regards to municipal by-laws when the court writes:

Therefore while not entirely free from doubt, it would appear that the better view is that the mere passage of a by-law was inadequate to establish a road.^{vi}

Further, the dictum of Justice MacLennan may have been delegated to the *obiter* sideline of legal authority with regards to quarter session road confirmations when the court writes:

Moreover, the court’s ultimate holding [in *Palmatier v. McKibbon*] rested on the doctrine of dedication and acceptance.^{vii}

LOST HIGHWAYS

Some years ago, I located literally hundreds of road reports confirmed by the Courts of the Quarter Sessions and old municipal by-laws establishing highways that affected the general geographical area in which I practice. The reports and by-laws were found in archival sources remote from the land registry office. Due to the changing nature of early political boundaries and a current desire to ship old municipal records to the Archives of Ontario, these documents are often far removed from the land they purport to affect.

It became apparent that many confirmed reports and municipal by-laws purport to establish public highways where no other significant evidence of the highway exists

(neither on the ground nor through further documentary evidence.) Due to the sacrosanct nature of highways in both the common law and marketability of title legislation, I attempted to understand the legal significance of these purported highways. That research resulted in the publication of “Lost Highways.”

Academic style writings on Quarter Session road reports often point to Justice MacLennan’s portion of the decision within *Palmatier v. McKibbon*, and his dictum was offered as a legal authority in the *Meaford (Municipality) v. Grist* appeal.^{viii} While the historical context of Justice MacLennan’s dictum is correct, his final legal conclusion is very troubling:

I think it is very clear, looking at the whole Act, that it was the intention of the Legislature that, when the report of the surveyor was confirmed ... the road laid out by the surveyor and described in his report, should from that time be in law a public highway.^{ix}

His conclusion is troubling today because many miles of supposed highway within confirmed reports – although never acted upon in any significant way - could cause serious legal issues within settled private titles.

The same issues arise from old municipal by-laws passed to establish highways but never acted upon in a significant way. My research did not locate case law directly on point here, although some old cases seemed to suggest that perhaps something more than the passing of a municipal by-law was required to establish the highway.^x

Ontario Court of Appeal decision in *Meaford (Municipality) v. Grist*.

In the lower court decision,^{xi} it was decided (among other reasons) that a highway was not established solely at the passing of an 1854 by-law when Justice Daley writes:

Thus, on the record, the plaintiff’s allegations that a public highway was established, pursuant to By-Law 11 in and following 1854 over the lands presently owned by the defendants raise no genuine issue requiring a trial.^{xii}

On appeal, the appellant submitted (among other grounds) that the motions judge “erred ... in failing to recognize that By-law 11 was all that was required to legally establish the road.”^{xiii}

cont'd on page 36

After considering much of the same ground covered in “Lost Highways” as well as a passage from The Law of Canadian Municipal Corporations,^{xiv} the Court of Appeal writes (as I quoted earlier):

Therefore while not entirely free from doubt, it would appear that the better view is that the mere passage of a by-law was inadequate to establish a road.

In “Lost Highways,” I wrote:

I am going to suggest, without a citation in support, that a highway is “established” if some formal act was done under the authority of the municipal by-law that clearly showed a further intention by the municipality to create a highway.^{xv}


It would seem *Meaford (Municipality) v. Grist*, 2013 ONCA 124 CanLII supplies the lacking citation in the above quote.

Further, my attempt in “Lost Highways” to deal with Justice MacLennan’s dictum in various ways^{xvi} may now prove unnecessary. The Court of Appeal did what I am not qualified to do - that is, move the dictum to *obiter* when the court writes (as I quoted earlier):

Moreover, the court’s ultimate holding [in *Palmatier v. McKibbon*] rested on the doctrine of dedication and acceptance.

Conclusion

In my view, the decision rendered by the Court of Appeal in *Meaford (Municipality) v. Grist* protects the public interest by offering high level security to private titles from

(what I name) lost highways. A road report confirmed by the Courts of the Quarter Sessions or an old municipal by-law purporting to establish a highway is evidence a highway may exist; it is not proof. Therefore, my paper “Lost Highways” (when read in conjunction with the appeal court decision) continues to be a valid and useful tool. 

- i Talbot, Jeffrey P, “Lost Highways. A discussion of untravelled quarter session and municipal by-law roads created over private property prior to 1873.” *Geomatica* Vol. 60 No. 3 2006 pp 249 to 265. Members and associates of the Association of Ontario Land Surveyors can contact the author at plans@kwsurveys.ca for a pdf copy of the paper
- ii *Meaford (Municipality) v. Grist*, 2013 ONCA 124 CanLII
- iii For use of a portion of the dictum, see: Russell, W.D. (Rusty) *Russell on Roads* Toronto:Thomson Carswell 2005 1st Ed. p49. For use of the entire dictum, see: Ontario Ministry of Consumer and Commercial Relations “Highways in Ontario. A Compilation of Statute and Case Law” First Edition December 1978 at pp 3-5 Also see: *Schraeder v. Grattan Township* [1945] 4 D.L.R. 351 at p 355
- iv *Palmatier v. McKibbon* (1894), 21 O.A.R. 441
- v *Geomatica* p249. Also see p 256.
- vi *Supra*.at para [70].
- vii *Ibid.* at para [63].
- viii At para [61]
- ix *Supra* at p 453
- x See “Lost Highways” p 257
- xi *The Corporation of the Municipality of Meaford v. Grist*, 2011 ONSC 5195 (CanLII)
- xii *Ibid* at para [84]
- xiii Court of Appeal decision *supra* at para [36]
- xiv *Ibid* at Para [61] to [70]
- xv *Geomatica* p257
- xvi *Geomatica* p253-257



123rd AOLS Annual General Meeting
February 25 - 27, 2015 – Deerhurst Resort, Huntsville

NEWS FROM 1043

Changes to the Register

DECEASED

Alexander (Sandy) M. Mackay	828	July 31, 2014
John E. H. Shaver	667	Sept. 19, 2014
Raymond Matthews	744	Oct. 14, 2014
Kendall H.A. Shipman	1175	Dec. 10, 2014

RETIREMENT/RESIGNATION

Stefan E. Czerwinski	1628	Oct. 29, 2014
Ivan C. Dinsmore	823	Dec. 31, 2014
Robert Stirling	1513	Dec. 31, 2014
Colin S. Baillie	CR2	Dec. 31, 2014
Bruce Pettit	1787	Dec. 31, 2014
Al McCausland	CR181	Dec. 31, 2014
Anita I. Lemmetty	1896	Dec. 31, 2014
Peter J. Mullally	1358	Dec. 31, 2014

COFA'S ISSUED

Fiddes Clipsham Inc.
Halton Hills, Ontario
September 25, 2014

Protect Your Boundaries Inc.
Thornhill, Ontario
November 6, 2014

Surveyors in Transit

Ron M. Jason Surveying Limited has opened a consultation office located at Suite B., 8 Main Street South, Alexandria, ON, K0C 1A0. Phone: 613-525-2309. Hours are by appointment only.

John D'Amico is now with **Public Works and Government Services Canada** in Toronto.

Robert E. Clipsham is now the managing OLS at **Fiddes Clipsham Inc.** located at 16 Mountainview Rd. South, Suite 101, Halton Hills, ON, L7G 4K1. Phone: 905-877-2211.

Zachary Fiddes is now with **Fiddes Clipsham Inc.** in Halton Hills.

Meldrum Surveying Limited is now located at 17171 Cornwall Centre Road, Cornwall, ON, K6H 6N7. Phone and

Fax remains the same.

James Andrew Nicol is now with **J.D. Barnes Limited** in Barrie.

Thomas Hoppe is now with **VP Geomatics – Chartis Remote Sensing Solutions** located at 400 - 609 14th Street N.W., Calgary, AB, T2N 2A1.

Steven C. Ruttan is now the managing OLS at **Young & Young Surveying (Etobicoke 2006) Inc.** located at 310 North Queen Street, Suite 102, Toronto, ON, M9C 5K4.

Gerhard Auer is now with **Jewitt & Dixon Ltd. (a Division of Kim Husted Surveying Ltd.)** in Simcoe.

Chris Bunker is now the managing OLS at **T.A. Bunker Surveying Ltd.** in Gravenhurst.

Raymond James Sibthorp has moved to **MacDonald Tambllyn Lord Surveying Ltd. (A Division of J.D. Barnes Limited)** located at 50 Fleming Drive, Unit 2, Cambridge, ON, N1T 2B1. Phone: 519-621-9600.

Thomas Gondo is now with **Stantec Geomatics Ltd.** located at 300-675 Cochrane Drive, West Tower, Markham, ON, L3R 0B8. Phone: 905-944-7777.

Gregory Robinson is now the Managing OLS for **Sexton McKay Limited (A Division of J.D. Barnes Limited)** 140 Renfrew Drive, Suite 100, Markham, ON, L3R 6B3.

Maja Krcmar is the managing OLS for **Protect Your Boundaries Inc.** located at 1137 Centre Street, Suite 104, Thornhill, ON, L4J 3M6. Phone: 289-459-0210.

Line Delorme has moved with **Public Works and Government Services Canada** to a new location at 1010 Somerset Street West, Ottawa, ON, K1A 0S5. Phone: 613-244-2898.

Paul C. Wyman is no longer with **Public Works and Government Services Canada**.

The main office of **Rugged Geomatics Inc.** has relocated to 138 Main Street South, Kenora, ON, P9N 1S9. Phone: 807-468-8516. **Eric Rody** is the managing OLS.

Rugged Geomatics Inc.'s office at 276 Moate Road, PO Box 53, Dinorwic, ON, P0V 1P0 is now a branch office with **James Bowman** as the managing OLS.

J.D. Barnes Limited has acquired **Matthews, Cameron, Heywood – Kerry T. Howe Surveying Ltd.**, in Niagara Falls, along with the branch office **Coe, Fisher, Cameron Surveying** in Lindsay.

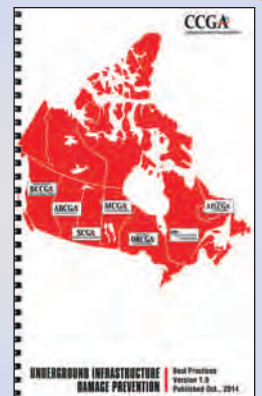
Sites to See

CCGA Best Practices Version 1.0

www.canadiancga.com/page-776157/3139500

The **Canadian Common Ground Alliance (CCGA)** is the voice of Canada's Regional Partner CGAs dedicated to working toward damage prevention solutions that will benefit all Canadians. The Association of Ontario Land Surveyors is a member of the Ontario Regional Common Ground Alliance, which is one of the regional partners.

The CCGA has completed the CCGA Best Practice Harmonization Project and has released the Underground Infrastructure Damage Prevention Best Practices Version 1.0 which is available for download.



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EDUCATIONAL FOUNDATION NEWS

Congratulations to the Fall 2014 Educational Foundation Award Winners



Keith Watson, OLS (right) presenting award to Trevor Noland.

On November 6, 2014, Keith Watson, OLS, attended the Loyalist College Undergraduate Awards Reception and presented the Eastern Regional Group Award to **Trevor Noland** for his scholastic achievement and leadership in the Survey Technician Program at Loyalist College.

On November 13, 2014, Deputy Registrar Maureen Mountjoy attended the Department of Civil Engineering, Ryerson University 2014 Awards Evening. She presented awards to third-year students **Mitchell**

Gerskup and **Markus Jesswein** who both achieved a minimum of A- in the second year CVL323: Fundamentals of Surveying course and have demonstrated an interest in pursuing Geomatics Engineering. **Owen Healey**, who was not able to attend the ceremony, received an award which is given to a third-year student entering fourth year of the Geomatics Engineering option who has demonstrated academic excellence in third-year engineering courses and is contributing to social activities at the university or in the broader community.

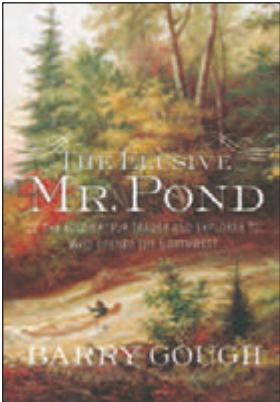
Mark your calendars

The Educational Foundation Annual Meeting of Members will be held on Thursday, February 26, 2015 at Deerhurst Resort in Huntsville, Ontario from 7:30 a.m. to 8:30 a.m.



Awards of any kind recognize students for their hard work and encourage them to achieve success in the future.

BOOK REVIEWS



Published by Douglas & McIntyre
ISBN 978-1-77162-039-0

The Elusive Mr. Pond The Soldier, Fur Trader and Explorer Who Opened the Northwest

By Barry Gough

How is it that Peter Pond, the soldier, fur trader and explorer who mapped much of the Canadian northwest, holds no real place in history? This founding partner of the North West Company opened the fur trade into the far distant Arctic watershed – further west than traders had ever been before – and also was a mentor and predecessor to Sir Alexander Mackenzie.

Implicated (but never charged) in two murders, Pond left the North West Company to work on his memoirs, only half of which survive.

Pond was near illiterate due to little formal education, and he didn't have the training in cartography to make his maps scientific, which severely reduced his opportunity to gain renown in his own time. Nonetheless, some of Pond's works still survive, and Gough uses these clues Pond left behind, as well as explorers' journals, letters written by acquaintances of Pond and many other sources, to create the most complete portrait of this eccentric, industrious and secretive fellow ever published.

Information taken from the publisher.

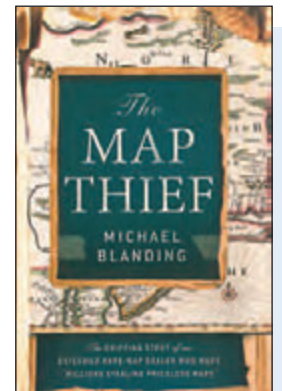
The Map Thief The Gripping Story of an Esteemed Rare-Map Dealer who made Millions Stealing Priceless Maps

By Michael Blanding

In *The Map Thief*, investigative journalist Michael Blanding takes us into the rarified world of map dealing as he untangles the tale of E. Forbes Smiley III, a respected map dealer turned obsessive thief. Weaving in the fascinating history of the maps Smiley studied, collected, dealt, and stole – maps that tell their own incredible story of the settlement of North America – Blanding teases out a tale of personal destruction and redemption played out against the dog-eat-dog world of a secretive subculture.

Once considered a respectable antiquarian map dealer, Smiley was highly esteemed for his knowledge and trusted by map librarians around the world – until he was arrested for delicately slipping maps out of their books. Blanding delves into the untold history of this fascinating criminal, interweaving it with the tales of explorers and mapmakers he knew better than anyone, and the inside story of the industry that consumed him.

Information taken from inside the front cover.



Published by Gotham Books
(the Penguin Group)
ISBN 978-1-592-40817-7



Published by McGill-Queen's University Press
ISBN 978-0-7735-4206-8

Landscape Architecture in Canada

By Ron Williams

Landscape Architecture in Canada provides a detailed panorama of the man-made landscapes that vary as widely as the country's geography. The book profiles the projects and people that defined landscape architecture, illuminating the motivations and aspirations that drove landscape architects and explaining the intellectual climate in which they worked. Williams casts a wider net and examines the varied traditions and impacts of Canada's first peoples, its early colonists, later immigrant communities, the remarkable landscape inno-

ventions of the nineteenth-century industrial cities as well as agricultural landscapes and the protected natural environments of national parks. He also shows how stimulating new ideas from recent decades have expanded landscape architecture and opened the door to projects that embody a distinctive Canadian approach, reflecting the social and natural diversity of contemporary society and its responses to rapid change.

Information taken from the back cover.

The Last Word

Celebrating Sir John A. Macdonald (January 11, 1815 – June 6, 1891) The Nation Builder - First Prime Minister of Canada (1867-73, 1878-91)

The Orillia Museum of Art & History is commemorating the bicentennial of the birth of the first Prime Minister of Canada with an exhibit titled *Sir John A. Macdonald & His Era*, which will be on display until February 7, 2015. This multi-media exhibit will portray the life and times of Sir John A. Macdonald, explore settler society as it moved westward and highlight the building of the Transcontinental Railway. <http://www.orilliamuseum.org/exhibitions>

One of the principal themes of the exhibition is *The Price of Confederation – Tracks across a Continent* with a related sub-theme titled *Never Mind the Last Spike - What About the First Surveyors?* The museum's guest curator Qennefer Brown recognized the important role that surveyors played in opening up the west and in laying out the railroad. She said in an interview published in the Orillia Packet and Times, "Everybody knows about the last spike, but we said, 'Okay, where did this start?' ... And it started with the surveyors." To illustrate this point Qennefer contacted the AOLS Archives and Historical Committee and borrowed some antique surveying equipment to create a



display that focuses on the role that surveyors played in making Macdonald's vision of a transcontinental railroad a reality (see the picture below).

It is well known to most surveyors that one of the important instruments that Sir John A. Macdonald created for surveying, subdividing and settling the prairies was the Dominion Lands Act of 1872. It established provisions for free homestead land grants based on quarter-sections, a plan that resembled the American rectangular system of survey but on a larger scale. "The Canadian West *could* have been settled *without* any surveying –but the result would have been chaos on a large scale."¹ Scores of teams of surveyors traversed the west. Don Thomson writes in *Men and Meridians*² that during 1883, 11,300 miles of township lines were surveyed and 1,221 townships were subdivided and that this accomplishment stands unrivalled in the long history of land subdivision in the western world.



¹ Don W. Thomson, *Rocks and Minerals in Canada* magazine, March/ April 1980.

² Don W. Thomson, *Men and Meridians*, Vol.2, page 43.

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Editor & Publication Manager:

Maureen Mountjoy, O.L.S., O.L.I.P.

Production Manager:

Lori Veljkovic

Advertising Manager:

Maureen Mountjoy, O.L.S., O.L.I.P.

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	1 time	4 times
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2nd and 3rd Cover	Not Sold	\$715
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1/2 page B&W	\$280	\$245
1/2 page 4 Colour	\$500	\$465
1/4 page B&W	\$190	\$165
1/4 page 4 Colour	\$410	\$385

Inserts (supplied): Page rate plus 25%.

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Digital File Requirements:

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Note: The "Marks Offset" should be set to the same value as bleed (for example .125") to avoid marks protruding into bleed area and thereby reducing bleed. Four Colour images should be in CMYK mode with a resolution of 300ppi.

Colour profile included in the file should be GRaCo_2006_Coated with Relative Colorimetric Intent.

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Ont. Land Surveyors & Associates	986
Other Professional Affiliations	309
Advertisers	21

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The *Ontario Professional Surveyor Magazine* is distributed to all members of the Association.

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