

# Ontario Professional Surveyor



*on the cover ...*

**The Cheltenham Badlands,  
Caledon, Ontario**

**also in this issue ...**

**Know your History – Part 6**

**GNSS for Land Surveyors – a Practical Overview**

**K2I Academy at Lassonde Engages Girl Guides  
in a Virtual Badge Day!**

**What you need to know about your professional  
liability when you retire or sell your land surveying business**

**What is Hydrospatial?**

**Seabed 2030**

**plus our regular features**

**Educational Foundation**

**News from 1043**

**Book Reviews**

**Sites to See**

SOKKIA



# YOU GIVE THE FULL MEASURE. SO DO WE.

Brandt delivers the entire range of Sokkia Fusion Technology. Complete with a total station, GNSS receiver, field computer, and data software, this lineup automates your dataflow, delivering more precise results, faster. Each product is also optimized for working in dense areas, so you can finish the toughest surveying jobs with ease. And as the exclusive Canadian dealer for Sokkia products, Brandt's nationwide network gives you seamless access to this equipment and 24/7/365 support, anywhere in Canada. **That's Powerful Value. Delivered.**

brandt.ca | 1-888-227-2638

 **Brandt**



# ONTARIO PROFESSIONAL SURVEYOR



VOLUME 63, No. 4

Fall 2020

## CONTENTS

GNSS for Land Surveyors – a Practical Overview - Dr. Robert Radovanovic ...6	
What you need to know about your professional liability when you retire or sell your land surveying business - Mark Sampson.....10	10
What is Hydrospatial? - Denis Hains .....14	14
Seabed 2030 - Denis Hains and Jamie McMichael-Phillips .....18	18
Discipline Decision - David Raithby .....22	22
Mediation Summery - P. Ardon Blackburn .....23	23
Know your History – Part 6 - Tom Bunker .....24	24
K2I Academy at Lassonde Engages Girl Guides in a Virtual Badge Day! - Krystel Reyes and Neena Govindhan .....28	28
News from our Members .....33	33

## REGULAR FEATURES

President's Page.....2	2
Sites to See .....2, 29	2, 29
Executive Director's Notes - Brian Maloney .....4	4
News from 1043.....13	13
Survey Review Department Forum - Tom Packowski.....30	30
Registrar's Review - Kevin Wahba.....33	33
Educational Foundation.....34	34
Book Reviews.....35	35
The Last Word - Canadian Standard for Mapping of Underground Utility Infrastructure - 2020 Update Published: CSA S250:20.....36	36

## ADVERTISERS

Brandt Tractor Ltd. .... 2nd cover	2nd cover
Mark IT Locates .....3	3
GeoMax Positioning .....5	5
J.P. Morasse Inc. ....9	9
Gallagher .....11	11
Phoenix Measurement Solutions Inc. ....15	15
The Connectors Insurance Group Ltd. ....17	17
Tekmet Ltd. ....19	19
Horizon Measurement Solutions .....21	21
Dias & Dias .....23	23
Northway/Photomap/Remote Sensing Ltd. ....29	29
Logan Wealth Management .....31	31
Cansel .....32	32
Leica Geosystems ..... 3rd cover	3rd cover
MicroSurvey Software Inc. ....4th cover	4th cover

## ON THE COVER ...

Photo © [May 28, 2016] Destination Ontario. **The Cheltenham Badlands** is one of Ontario's geological treasures, formed at the base of an ancient sea about 450 million years ago. The 36-hectare (91-acre) site, located on Olde Baseline Road in Caledon, ON, is owned by the Ontario Heritage Trust. Due to its importance as a groundwater discharge area, it is recognized as an *Environmentally Significant Area*. The Cheltenham Badlands is described in *Hiking Headwaters Country*, #46 of the 100 Destinations described in Noel Hudson's book in the Book Reviews on page 35.

*Professional  
Surveying  
in  
Ontario*

*encompasses  
the  
Disciplines of*

*Cadastral,  
Geodetic,  
Hydrographic,  
Photogrammetric  
Surveying  
&  
Geographic  
Information  
Management*





# President's Page

By Andrew S. Mantha, O.L.S.



You definitely picked a memorable year for me to be your President. Immediately after our February AGM in Huntsville, all live meetings of our fellow associations across Canada were canceled, and Zoom meetings became the new "normal".

After a spring and summer of isolation, and watching other Associations cancel their annual meetings, Council decided we needed to be proactive and voted to hold the 2021 AGM as a remote event. Why did we decide so early? Many factors were involved, the most immediate being that we needed sufficient time to cancel the event without suffering too much of a penalty from the host venue. We also needed the time to plan and organize a successful AGM within the confines of a new format. We are in new territory, but we have seen how other Associations have addressed this issue, so we aren't totally starting from scratch.

Our 2021 AGM will be held February 24th - 26th with a tentative theme of the very appropriate concept, "Dealing with Change". We intend to have a sufficient number of guest speakers and enough educational content to satisfy your expected CPD credits. More details will follow as we continue to work on the event.

As can be expected, the whole COVID-19 situation has taken quite a toll on our Association. We are still trying to process exactly what that toll might be. How we fund our operations needs to be reviewed and monitored. How we carry on business has had to be completely rethought in this new age of social distancing.

The Academic and Experience Requirements Committee (AERC) processed 9 new applications for articles at their

last meeting. The numbers will have an expected dip for this year, but we are confident that we will return to our usual numbers as the economy improves. Overall, though, we seem to be in pretty good shape.

Hopefully by the time you read this you will all have been able to successfully access and use our new website. This is definitely a work in progress, but we are confident that we have the architecture in place and a stable platform on which to build our online presence. The website is becoming more and more the main conduit by which the public can contact our association.

While hampered by our inability to hold face-to-face meetings, Council has still managed to get work done. Most recently, we reviewed and approved new risk-management-based guidelines for Registrar's Investigations. Furthermore, we approved mediation training for 15 members of various AOLS committees, including members of our Fees Mediation and Complaints Committees.

Council also reviewed and approved a proposal submitted by the Academic and Experience Requirements Committee to hold online Statutes, Professional written, and AIT exams. We are assured that the necessary remote platform will be in place in time for our students to write their exams online in November. I would like to add that a Survey Monkey will be circulated to our students for their feedback on changes to the articling process.

Finally, I can't properly write about the progress we have made without recognizing the outstanding efforts that our staff continually make serving as our face at 1043 McNicoll. We are so fortunate to have such knowledgeable and dedicated staff. I would like to offer my continuing thanks to them for always making me look good.



## Sites to See

**GIS Day - November 18, 2020**

<https://www.gisday.com>

Participate in the international celebration of GIS technology. GIS is a scientific framework for gathering, analyzing, and visualizing geographic data to help us make better decisions. On GIS Day, help others learn about geography and the real-world applications of GIS that are making a difference in our society. It's a chance for you to share your accomplishments and inspire others to discover and use GIS.

**MARK IT RIGHT™**  
...THE FIRST TIME

**MARK ✓ IT™**

**LOCATES INC.**



**PRIVATE LOCATES  
GPR SCANNING  
CCTV CAMERA INSPECTION  
SEWER LOCATES  
SEWER FLUSHING  
CONFINED SPACE ENTRY  
SUBSURFACE UTILITY MAPPING - ASCE CI 38-02**

[info@markitlocates.com](mailto:info@markitlocates.com)

[markitlocates.com](http://markitlocates.com)

1(855)337-9202

# Executive Director's Notes

By Brian Maloney



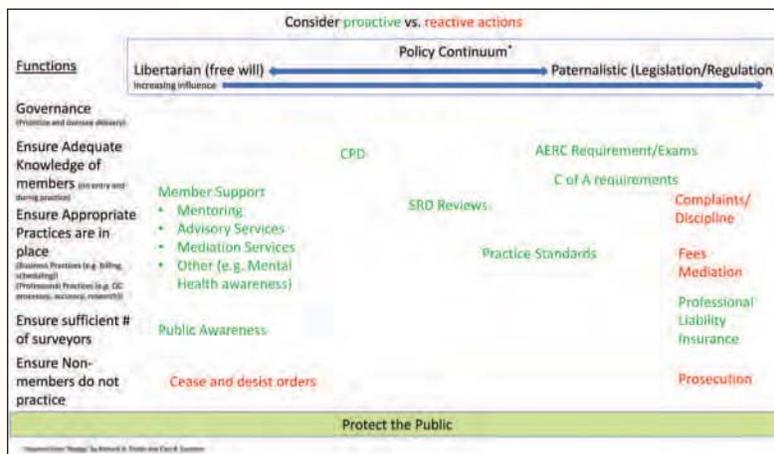
As we continue to see reform related to regulators across Canada, we need to challenge ourselves to ensure that we are doing the best job possible within our current legislation and fiscal limitations.

I have continued to think about “Right Touch Regulation”, a concept flowing from forward thinking in the U.K. There are eight elements that sit at the heart of Right Touch Regulation:

1. Identify the problem before creating the solution
2. Quantify and qualify the risks
3. Get as close to the problem as possible
4. Focus on the outcome
5. Use regulation only when necessary
6. Keep it simple
7. Check for unintended consequences
8. Review and respond to change.

As I have thought about this, I have started to concentrate on where we should invest our efforts and what changes we might consider. The following diagram attempts to show where various activities that we do, or could do, sit in terms of function, policy continuum and proactivity.

In past policy work, I considered a policy continuum that was inspired by the book “Nudge” written by Richard H. Thaler and Cass R. Sunstein in which they make arguments that policy outcomes can be achieved in various ways, many of which do not require laws or formal policy that is enforced. It also seems to me that if we can take proactive approaches to avoid problems, it is generally better than waiting for problems to arise and then dealing with them. The functions in the diagram flow directly from the



Surveyors Act, except for ensuring there are enough surveyors, which is a commonsense concern.

The formal complaints and discipline processes, which are included in the Surveyors Act, are reactive and mandatory. We have no choice but to deal with actions coming forward under the sections dealing with them. Although they serve a necessary purpose, they should be a last resort for the AOLS to ensure that the public is being served.

We do have many proactive services that help protect the public, such as mandatory continuing professional development (CPD), defined entrance requirements, and peer competence reviews. These are all required by our legislation and regulations, however, there is some flexibility on how

members choose to use some of these services. We have provided significant flexibility in how members choose their CPD and leave it up to them to select the development that suits their current needs. Although you cannot choose not to participate in the Survey Review Department reviews, you can choose how you engage. To get the most out of the process use it as a personal tune up/customized mentoring opportunity.

I have been considering other non-legislated, free-will, proactive services. Earlier this year a surveyor suggested a mediation service to address a boundary conflict with another surveyor. Although we have no such provisions in place and it was ultimately not used, it seems like a voluntary mediation service could result in a low cost and public service offering that could replace more costly alternatives, such as using the Boundaries Act or going through the courts. I understand that Alberta supports such a system and uses funds from their monument sales to do so, thereby not burdening the surveyors using the system with the direct costs. I have also wondered about some form of mentoring service. We have over 100 firms operated by sole proprietors that don't necessarily have the opportunity to discuss survey-related issues with another

surveyor when they are challenged with a tough decision. Such a service could increase their confidence and ensure more consistency in boundary decisions. It should be clear these are just thoughts at this time with no plans for implementation. I don't believe we should limit our thinking to only those items that are included in the *Surveyors*

*Act* but instead should consider other options that can protect the public while avoiding additional regulation and burdens on members.

Association staff and Council will continue to think about methods for improving our public service but in the end, it is up to each surveyor to keep up their knowledge and skills and to operate in a competent and ethical fashion. I would encourage all members to consider methods to ensure that our profession continues to improve in effectively meeting the needs of the public. Consider your own mentoring and developmental opportunities. I have no doubt that many surveyors would be willing to help you if you reached out to them.



**X-PAD**  
ULTIMATE

# The Simple Solution for Your Project Needs



## X-PAD Ultimate software works when you do.

Do the job faster and easier with just your Android phone and the right GeoMax instruments.

**Get a FREE Demo**

Contact  
Phoenix Measurement Solutions, Inc.  
(Authorised GeoMax Distributor)  
1-866-767-5888  
sales@phoenix-ms.ca

**GEOMAX**

geomax-positioning.com

PART OF  
**HEXAGON**

# GNSS for Land Surveyors – a Practical Overview

By Dr. Robert Radovanovic, P.Eng., A.L.S., C.L.S.

## Disclaimer!

Every region across the country enjoys its own particular “quirks” when it comes to the practice of Land Surveying, and so the material in this article is not intended to be specific to any particular jurisdiction, but rather a general discussion of principles relevant to Land Surveying.

The material in this article draws upon prior work and studies completed by the Author, and the views conveyed in this article are those of the Author alone. This article does not constitute professional advice – definitely validate for yourself any information you need from additional sources!

## Basics of RTK Operation

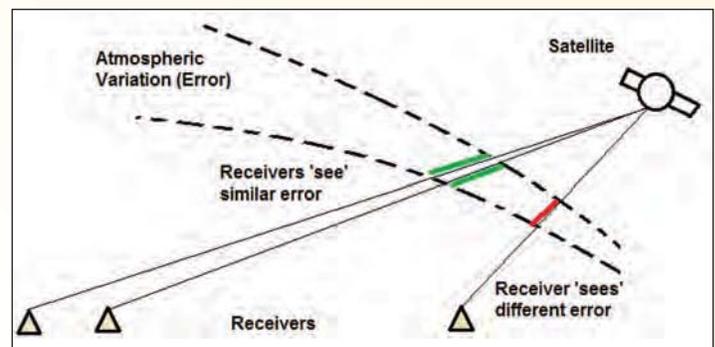
At its root, GNSS positioning determines the location of a receiver by measuring the distance between the receiver and a set of orbiting satellites via radio ranging. If we leave a single GNSS receiver to sit in one place and observe its calculated position over time, we will see the position vary based on the error in the various radio ranges it is measuring. The errors contaminating the ranging signal include things like:

- Receiver Noise – simply the noise we get in any measurement process.
- Multipath – errors induced in the ranging signal due to its reflection from multiple surfaces in the vicinity of the receiver.
- Atmospheric errors – the ranging signal is delayed by unknown amounts due to its passage through the atmosphere.
- Satellite clock error and orbital errors – the position and timing of the ranging satellites is not perfectly known, and as a result induce an apparent error in the ranging signal.

If we have a second GNSS receiver sitting closely beside the first, we will notice that the variation in the second GNSS receiver, with respect to its average position, closely mirrors the variation in the first receiver. This is because both GNSS receivers are receiving common ranging signals, and these ranging signals are contaminated by similar levels of error. However, as we move the second receiver further from the first, we will see that the position error traces begin to be less similar, largely since the ranging signals are passing through progressively different parts of the atmosphere.

Although admittedly a simplification, one could regard RTK as the concept that if we place the first receiver on a

known, fixed point (i.e. a ‘base’), we can then measure the errors in the ranging signals observed at the base in real time and transmit those to the second receiver (which is ‘roving’). If the base and rover are reasonably close together (< 20 km), then we can assume the majority of errors at each receiver is the same (i.e. correlated), which means that we can remove the predicted errors from the ranging signals observed at the rover to dramatically improve positioning accuracy (i.e. from metres for stand-alone GNSS to centimetres).



Principle of Differencing GNSS ranging observations

## GNSS and Surveying Positioning Accuracy

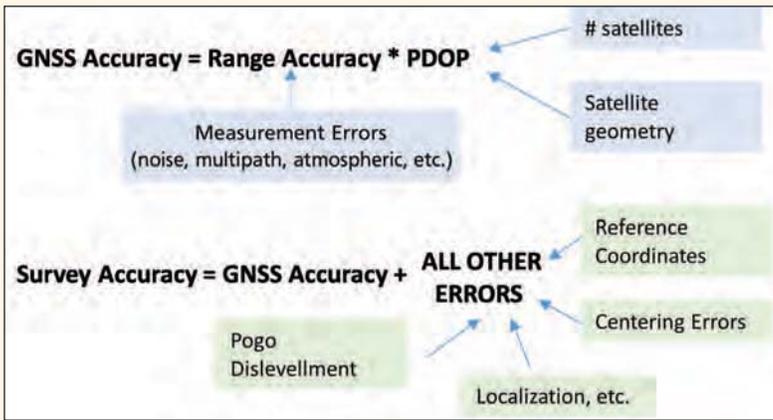
The ultimate accuracy of GNSS positioning depends on a number of factors, including the number of GNSS satellites visible at a given time of day (more is better), the length of time the receivers have to collect data (more is better), the amount of reflective material in the vicinity of the GNSS receivers (more is worse) and atmospheric effects (bigger receiver separation is worse).

In addition, the relative geometry of satellite to receiver view-angles (indicated by a metric known as *Position Dilution of Precision*, or PDOP) impacts the positioning accuracy, with widely separated satellites providing better results.

Beyond simply the base accuracy of the relative GNSS measurement, the actual accuracy of surveyed points is further dependent on a number of factors external to the measurement device itself. Often, these factors can actually have bigger impacts on the ultimate positioning accuracy than the GNSS itself.

## How far can we go?

Given the ease of measuring coordinates with RTK GNSS, it often becomes tempting to range ever further from



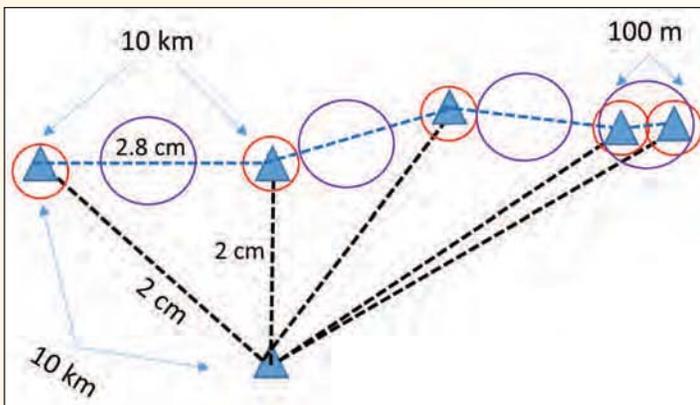
Breakdown of surveying accuracy with GNSS

the base station on an “evidence tagging expedition” and forget that you have other measurement tools in the truck.

Typical relative accuracies achievable with receivers located one kilometre apart operating in an RTK mode are 1 cm, with positioning accuracy degrading by 2 millimetres per kilometre of receiver separation. Relative height accuracies are usually 1.5 times worse than horizontal positioning accuracies. These guidelines mirror performance specifications provided by most GNSS manufacturers.

However, a key thing to keep in mind is that RTK surveys essentially look like very long side shots from a central point. And in most cases, the most important accuracy consideration is actually the relative positional accuracy of adjoining pieces of evidence with respect to each other. And furthermore, most provincial standards stipulate that the acceptable relative accuracy between these adjacent points is a function of their distance (i.e. 1:5000). So while two posts 100 metres apart may have an accuracy of 2 cm with respect to a base station 10 km away, their *relative accuracy to each other* is likely to be in the order of 3 cm, which is likely less accurate than can be measured with a total station.

### How long should we measure?



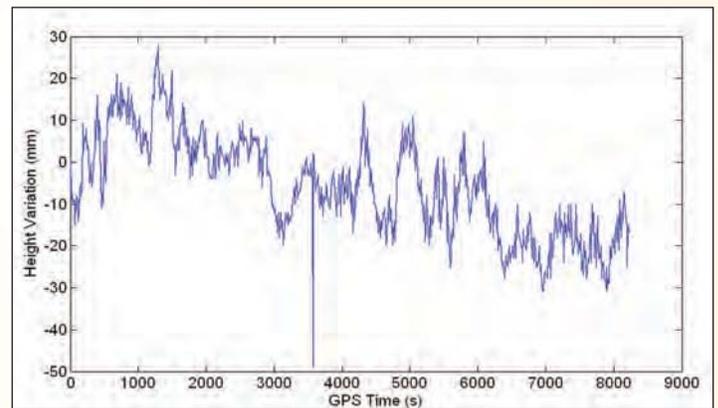
Relative accuracy between measured points vs relative accuracy to a base station

For RTK surveys, GNSS errors are highly correlated over time, since they are dominated by multipath and atmospheric errors, which change slowly. Shown on the right is a

typical height error plot for two GNSS receivers separated by 10 km and you can see that at any given moment, the height error is relatively similar over a period of 5-10 minutes and slowly changes between  $\pm 25$  mm.

Practically speaking, what this means is that one could take a measurement on a point, unknowingly be incorrect by 15 millimetres, wait 2 minutes, take another measurement, and still be incorrect by the same 15 millimetres. In this situation, averaging the measurements would not remove the common 15 millimetre error, and your ‘split’ would be minimal, which may lead you to believe that your resultant, combined measurement is more accurate than it really is.

Given that full decorrelation of multipath occurs over approximately 20 minutes, if a single measurement is accurate to approximately 2 cm, the average of two measurements separated by a minute is roughly 1.8 cm, while the average of two measurements separated by 20 minutes is approximately 1.4 cm. The converse of this concept means that measuring at high data rates (i.e. higher than 1 shot per 30 seconds) provides very little accuracy improvement beyond averaging out receiver noise (which is minimal) and pogo-stick wobble (which can be significant depending on the operator!).



Typical Relative Height Error profile for points separated by 10 km.

### Datum Definition

An important difference between using GNSS techniques versus conventional survey instruments is that GNSS fundamentally operates in a *global coordinate system* of latitudes, longitudes and height (or technically, in a set of coordinates centered on the middle of the Earth). On the other hand, conventional survey instruments such as total stations measure relative quantities at ground level, and through ties to local control can be used to derive coordinates within an arbitrary ground-level reference frame.

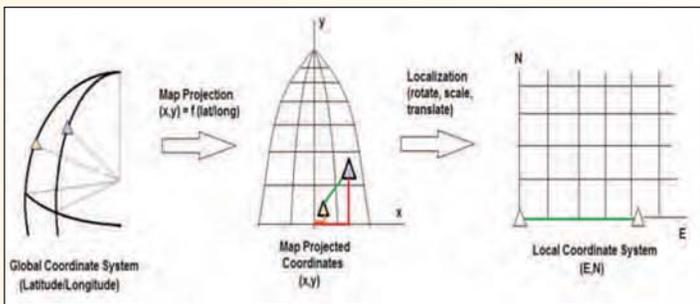
Generally, the latitudes and longitudes calculated by GNSS are converted into more “human-understandable” quantities known as map projected coordinates. However, it is important to remember that a map projection (such as UTM) only *approximates* a limited patch of the Earth, and

*cont'd on page 8*

isn't the same as our traditional local-level frames where a "metre is a metre" regardless where you are in it.

To use GNSS-derived global coordinate differences (or map projected coordinates) in a local/project coordinate system, a *localization* must be applied. This is effectively a modification of a map projection to rotate, scale and translate coordinates to suit a particular purpose (such as constraining a project boundary to run due East/West, or for a corner of a project to have a coordinate of 100 East, 100 North, or for distances to conform to ground level at a particular elevation).

Often, a local coordinate system will be defined by stipulating that the direction (or bearing) between two known points (survey posts, for example) is fixed to a certain value (due East, for example). This requires surveying the two points in the field using GPS such that their relative latitudes/longitudes are known, which in turn allows the localization to be determined. This process is illustrated in general below.



Converting global coordinates into local coordinates through localization

A typical pitfall is to re-localize each new day on a project through re-measurement of the localization points, since this effectively means you are using slightly different localizations each day (based on the accuracy of the measurements on a given day). Instead, a preferred practice is to keep the same base station position whenever possible, use the same localization file, and then check into the prior localization points as a check.

### Simple Operating Procedures for Ensuring Reliable GPS/GNSS Operation

Just like in conventional surveys, procedural checks and standardized procedures are needed to ensure reliable measurements via GNSS. These "standard operating procedures" sand the roughest edges off of potential problems one might encounter when surveying with GNSS, and ensure that your results are repeatable and traceable, if you need to demonstrate what was done at a later point in time.

Surveyors often have their own individual variations of QA/QC processes and field procedures, but these tips can be imagined to be a minimum requirement:

1. Calibrate/verify base station optical plummets and pogo-stick level bubbles on a regular basis (i.e. quarterly).
2. Establish a fixed check point that is measured by the

rover at the beginning and end of a day. This verifies that the base station was set up over the correct reference point, that the correct reference coordinate was used and that the base station remained level throughout the day. In addition, this is an additional check on the accuracy of the base station optical plummet and the pogo-stick level bubble.

3. Set the base station in an area free of nearby reflectors (i.e. trees or buildings). The base station should generally be set up in an area where there are no obstructions above 30 degrees of the horizon.
4. Document the localization strategy (i.e. how the local coordinate system is defined) or the map projection used for the survey. Do not recalculate a localization every time at the site, but rather re-use the same base station location and the localization file. Similarly, make sure the same geoid is used at all times within a particular project.
5. At the base station, record raw GNSS measurements that can be subsequently exported as RINEX. This will allow you to later verify the base station position via post-processing (i.e. through NRCan's PPP service). This provides a further check on base station stability and allows forensic analysis of the multipath/satellite geometries encountered during the survey.
6. At the rover, record processed differential GPS information or ideally, the raw satellite-receiver distance measurements. In an RTK positioning mode, GPS receivers have the ability to store the solution results stemming from differential coordinate determination. This typically includes the number of satellites that are visible, length of occupation, antenna height, an indication of satellite geometry quality, and statistics regarding the solution quality. In addition, the rover stores the raw differential coordinates in a global coordinate system, which is independent of the localization used. This allows for errors in localization, and for the quality of the measurements to be assessed.
7. Occupy a given rover point for approximately 30-60 seconds. This allows noise and pogo-stick wobble effects to be averaged out.
8. Re-occupy a measured point once again, once satellite lock has been lost. Ideally, raise the receiver head by a minimum of 30 centimetres before the receiver is allowed to regain lock. This provides a check on the validity of the prior fixed solution and averages out the effect of multipath to a certain extent. Lock can be lost either physically (i.e. hand over the antenna or inversion of the antenna) or electronically (i.e. by the receiver itself).
9. Rotate the pogo-stick by 180° horizontally between occupations of a point. This allows for a check on the plumbness of a pogo-stick and averages out any systematic level bubble error. You'd be surprised how effective averaging these two shots is.

10. Set limits on data collectors to prevent measurement when QA metrics indicate accurate measurement is not possible (i.e. only 4 satellites available, estimated coordinate positioning accuracy of above 2 cm, etc.)
11. And of course, keep field notes and sketches of evidence condition and configuration, operator info, field conditions, etc. – we're still doing Land Surveying after all!

standing of a few fundamental properties of this equipment, combined with standardized operating principles to ensure that everyone within a surveyor's operation is working in a consistent, repeatable fashion. Like everything in surveying, the largest issues seem to stem from operator error – keep that under control, and the equipment handles the rest!



## Conclusions

GNSS has become a key aspect of most land surveyors' toolkits, and with this adoption, great strides have been made in improved productivity, the ability to collect highly-accurate georeferenced data sets and support large-scale cadastral mapping operations. However, there continue to be questions about how the principles of reliability and redundancy, that have guided the use of 'conventional' surveying equipment such as theodolites, electronic distance measuring instrumentation and total stations, might be applied to acquiring position information with GNSS.

In my experience, maximizing one's chance of success (or minimizing the chance of headaches!) when incorporating GNSS into surveying practice boils down to an under-

**Dr. Radovanovic** is a passionate advocate of the Digitized Reality industry. He has over 20 years of experience in advanced mapping and surveying technologies and has been involved in both the technical development of emerging mapping technologies, as well as the growth of businesses focused on this sector. In addition, he is an active participant in both education and industry, providing courses and seminars on topics ranging from the pitfalls of point clouds to modernized GNSS positioning.

He is currently the Manager of Calgary Engineering operations at McElhanney Ltd., a consulting engineering and surveying company based in Western Canada, where he continues to develop opportunities to leverage 3D data and visualisation technologies into modern design workflows.

# WE'VE GOT THE SOLUTION

**GEODESY**

<u>MAGNETIC MARKERS</u>	<u>PROTECTIVE COVERS</u>
~ for soil	~ aluminium
~ for rock or concrete	~ mix
~ GPS marker	~ lifts
	<u>POST</u>
	~ witness post
	~ raised characters

**LEGAL SURVEY**

<u>MARKERS</u>	<u>STATIONS</u>
~ aluminium	~ PK nails
~ plastic	~ identified washers
~ steel	~ MAG nails
~ boundary	
~ terminus type	
~ CLS-77	
~ CLS-69	

**SERVICES**

- ~ installation on the site for geodesic markers
- ~ design of special markers on request
- ~ markers to fit federal and provincial standards
- ~ shipping all around the world

MORASSE

"ASK FOR OUR BROCHURE"

**J. P. MORASSE INC.** 1321, Marie-Victorin, St-Nicolas, Quebec, Canada G7A 4G4  
 Tel.: (418) 831-3811 ~ 1 800 463-6866 • Fax: (418) 831-7827 ~ 1 800 463-8138  
 WEB SITE: [www.morasse.com](http://www.morasse.com) • E-mail: [morasse@morasse.com](mailto:morasse@morasse.com)

# What you need to know about your professional liability when you retire or sell your land surveying business

By Mark Sampson, BBA, FCIP

I have travelled across the country meeting and conversing with land surveyors from every jurisdiction. The most common question I receive is “*What is my liability as a professional land surveyor when I retire or sell my practice? What protection do I have?*” Therefore, I thought it would be helpful to write an article on the subject.

Arthur J. Gallagher Canada Limited (Gallagher) manages the professional liability insurance programs for the Association of Ontario Land Surveyors (AOLS), Professional Surveyors Canada (PSC), and the Ordre des arpenteurs-géomètres du Québec (OAGQ). As the insurance programs differ between the Programs, this article will focus on the coverage available to land surveyors through the **AOLS Professional Liability Insurance Program**.

The first thing to understand is that a land surveyor is a professional. As such, the courts hold professionals to the standard of care of that of a “reasonable professional”, which is based on the standard prescribed by the professional’s peers. As a professional, land surveyors can be sued and held personally liable for the professional services they provided when they were practicing.

You do not need to have committed a negligent act to be sued. There simply could be an allegation of professional negligence. If you are personally named in a suit/action, you will be required to defend your interests or risk having a judgment made against you.

There is a defined limitation period that a land surveyor can be held liable for their professional negligence. In Ontario, the ultimate limitation period is 15 years. An OLS may be licensed to do work in other Provinces in which different limitation periods would apply. There are exceptions to stated limitation periods, so I recommend you review the current official *Limitations Act* for each province/territory that you operate in as well as consult legal counsel.

It is important to note that a professional land surveyor can still be sued for an error after the ultimate limitation period has expired. If this occurred, and you were insured with the AOLS Professional Liability program, the insurer would hire a lawyer on your behalf and would use the limitation period as part of your defence.

## Retirement scenarios

There are two common scenarios that describe how a land

surveyor traditionally retires from practice:

**Scenario #1** - A land surveyor retires and the firm remains in operation.

- In this scenario, the land surveyor is typically an employee of the firm or a retiring partner.
- If a land surveyor is personally named in a claim/action after he/she has retired, then the AOLS Professional Liability policy will cover/insure the retired land surveyor.
- Coverage would be triggered at the current limits of insurance in force at the time the claim is discovered and made.

**Scenario #2** - A land surveyor retires from practice and the survey firm no longer exists nor remains in operation.

- In this scenario, the land surveyor is typically a sole proprietor/owner and closes his/her practice.
- If a claim/action arises after the land surveyor has retired, then the individual land surveyor who signed the plan or gave the professional advice may be sued personally for the alleged error.
- The AOLS Professional Liability insurance program includes retirement insurance for those firms that have been insured with the Program for 5 consecutive years prior to retirement.

## Selling your survey firm

Land surveyors who own their practice have built long-term equity in their firm. At some point in their career, they may choose to sell their practice. The common methods of selling your firm are as follows:

**Method #1** - Sale of the “Shares” of the company.

- The land surveyor sells the entire shares of the company. This usually includes the assets and the liabilities.
- With this type of transaction, the purchaser usually assumes all of the liabilities of the former firm. Errors that are discovered in the future on plans signed by the seller become the responsibility of the purchasing firm.
- It is to the advantage of the seller to transfer their past liabilities to the acquiring firm. There may also be favourable tax treatment to the seller in the form of capital gains tax.

*cont’d on page 12*



# When you go aloft, be sure you're carrying the right insurance.

## Aviation Insurance Designed Exclusively for Land Surveyors

Gallagher Surveyors First provides coverage customized for drones, hull and aviation liability, non-owned aircraft liability and digital cameras used for surveying.

Gallagher Surveyors First provides cost effective insurance products designed exclusively for AOLS members, including;

- Professional liability
- Insurance protection for retirement
- UAV insurance
- Business coverage

For more information please contact:

Mark Sampson, Senior Vice President, Commercial Insurance  
800.267.6670 ext. 2631 | [mark\\_sampson@ajg.com](mailto:mark_sampson@ajg.com)

[ajgcanada.com](http://ajgcanada.com)

**Any challenge. Any risk.  
Anywhere in the world.**



- Conversely, it is a disadvantage to the purchaser to acquire the full shares of the past company if they assume the past liabilities. However, the purchaser may be able to include an indemnity agreement in the purchase and sale agreement that may help to mitigate the exposure to the purchasing firm. Typically, the purchasing firm may be able to negotiate a lower sale price if they are agreeing to assume the past liabilities.
- If the purchasing firm is insured with the AOLS Professional Liability program and a land surveyor of the acquired firm is personally named in a claim/action after he/she has retired, then the AOLS professional liability policy of the purchasing firm would cover the former or retired land surveyor. The coverage would be triggered at the purchasing firm's current limits of insurance in force at the time the claim is made.

**Method #2 - Sale of the "Assets" of the company only.**

- With this method, the land surveyor would sell the assets (physical assets, employees, clients, goodwill, etc.) of the company and retain the liabilities.
- It is to the advantage of the purchasing firm to only purchase the assets of another firm as they would not be burdened with any potential errors that occurred in the past. In addition, the purchasing firm may be able to obtain favourable tax treatment in writing down the goodwill.
- The disadvantage to the selling firm is that the previous owner will retain the liabilities of the firm.
- If a claim/action arises after the land surveyor has retired, then the individual land surveyor who signed the plan or gave the professional advice may be sued personally for the alleged error.
- The AOLS Professional Liability Insurance Program includes retirement/sale of business insurance for those firms that have been insured with the Program for 5 consecutive years prior to retirement.

time a claim is "made" responds to the claim (regardless of when the actual error occurred). Survey firms that are insured with the AOLS Program carry at least \$1 million per claim limit on their professional liability coverage. If a firm directly transitioned to the retirement program upon retirement/sale of their business, then the professional liability limits would reduce from \$1 million per claim to \$500,000 per claim.

This immediate drop in limits could be an issue as professional liability claims are often discovered months and sometime years after when the error actually occurred.

To reduce the potential negative impact of the sudden reduction of limits, we strongly recommend surveyors purchase a "discovery policy" at their current limit of insurance before initiating the free \$500,000 per claim retirement policy. The one-time cost of the discovery policy is as follows:

- 1 year policy = 60% of the premium of your current policy
- 2 year policy = 75% " "
- 3 year policy = 100% " "
- 4 year policy = 125% " "
- 5 year policy = 150% " "
- 6 year policy = 175% " "

Upon expiry of the discovery policy, it will convert to the free retirement policy which is continuous until cancelled and there is no claim deductible. The retirement policy will cover you and your estate from errors that may have occurred while you were practicing that may be discovered and reported in the future.

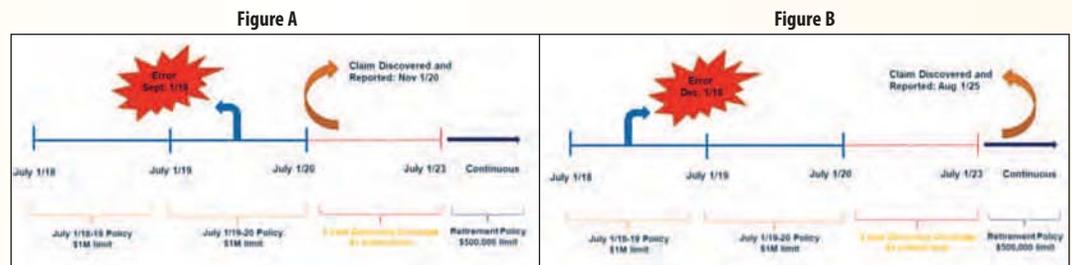
Here is an example that will illustrate the discovery and retirement coverage:

A surveyor retires and closes his/her practice on July 1, 2020. The firm used to carry \$1 million per claim limit on their professional liability policy for an annual premium of \$5,000. Upon retirement, the firm purchases a 3-year discovery policy at their current limit of insurance (for a one-time cost of \$5,000).

**Retirement and Sale of Business Coverage available under the AOLS Professional Liability Insurance Program**

The AOLS Professional Liability Insurance Program was designed specifically for professional land surveyors. It offers **free** retirement and sale of business coverage for a \$500,000 per claim limit to all of its members who participate in the program. This coverage is not available on standard professional liability policies and is only offered to members of the AOLS that have been insured with the program for at least 5 consecutive years at the time of retirement/sale of business.

Professional Liability policies are written on a "claims-made" policy form. This means that the policy in force at the



In Figure A, a construction-related error occurred on Sept. 1, 2019, however it was discovered and reported on November 1, 2020. In this scenario, the discovery coverage with \$1 million per claim limit would respond to the incident. If the survey firm did not purchase the discovery coverage, and immediately chose to initiate the free \$500,000 limit retirement policy, then it would respond to the claim.

Figure B depicts a different situation where a cadastral-related error was made on Dec. 1, 2018 and was discovered and reported on Aug. 1, 2025, almost 7 years after when the error actually occurred. In this situation, the free AOLS Retirement policy, with a limit of \$500,000, would respond to the claim.

If you have any questions regarding your professional

liability when you retire or sell your practice, please free to contact me directly at 1 800 267 6670, ext. 2631 or [Mark\\_Sampson@ajg.com](mailto:Mark_Sampson@ajg.com)



**Mark Sampson, BBA, FCIP** is the Senior Vice President of Arthur J. Gallagher Canada Limited.

## NEWS FROM 1043

### Changes to the Register

#### MEMBERS DECEASED

Benjamin Peter Redekopp	1037	May 14, 2020
Robert Thomas McCurdy	1046	July 14, 2020
Terrence O'Neil Callon	1017	July 14, 2020
Donald J. Smith	1205	Sept. 16, 2020

#### RETIREMENT

Perry A. Molloy	1681	June 30, 2020
-----------------	------	---------------

#### REINSTATEMENT

Dan J. Cormier	1801	July 16, 2020
Adam Michael Stephen	1948	Sept. 1, 2020

#### CANCELLED

Ward I. Houghton	1706	Aug. 28, 2020
------------------	------	---------------

#### COFAS APPROVED

Surveying Specialist Canada Inc.  
Brampton, Ontario  
July 20, 2020

#### COFAS RELINQUISHED

Leslie M. Higginson Surveying Ltd.  
Kingston, Ontario, August 6, 2020

#### COFAS REVISED

Was: Coote, Hiley, Jemmett Limited  
Now: Coote, Hiley, Jemmett Limited (a wholly owned subsidiary of Surveyors On Site Inc.)  
Bracebridge, Ontario, August 10, 2020

Was: NA Geomatics Inc.

Now: NA Geomatics Ltd.

Stratford, Ontario, September 8, 2020

### Surveyors in Transit

**Yuriy Bogdanov** is now with **GeoVerra (ON) Ltd.** located at 100 Commerce Valley Drive West, Thornhill, ON, L3T 0A1.

**RS Surveying Limited** has moved its office to 117 Ringwood Drive, Unit 9, Stouffville, ON, L4A 8C1.

**Stantec Geomatics Ltd.** has opened a branch office at 1263 Innovation Drive, Thunder Bay, ON, P7B 0A2. **Ralph T. Bode** is the Managing OLS.

**Sperling Surveying Inc.** has moved its office to 1337 Gelert Road, PO Box 254, Minden, ON, K0M 2K0.

**Surveyors On Site Inc.** has acquired **Clarke Surveyors Incorporated** located at 2535 Lesperance Road, Tecumseh, ON, N8N 2X1 and it will now operate as a Consultation Office.

**Douglas W. Jemmett** is no longer with **Coote, Hiley, Jemmett Limited.**

**John W. Hiley** is now the Managing OLS of **Coote, Hiley, Jemmett Limited (a wholly owned subsidiary of Surveyors On Site Inc.)** located at 127 Keith Road, Bracebridge, ON, P1L 0A1.

**J.D. Barnes Limited** has moved its Ottawa office to 62 Steacie Drive, Suite 103, Ottawa, ON, K2K 2A9.

**C. Wahba Surveying Ltd.** has moved its office to 285 Vaughan Valley Blvd., Woodbridge, ON, L4H 3B5.

**Gualberto Colonia** is now the Managing OLS of **Surveying Specialist Canada Inc.** located at 9720 McLaughlin Road North, Brampton, ON, L6X 0T8.

**Amir Keshavarz** is now with **McKechnie Surveying Ltd.** located at 85 McIntyre Dr., Kitchener, ON, N2R 1H6.

**Scott Dalziel** is now with **Genesis Land Surveying Inc.** located at 10 Four Seasons Place, 10<sup>th</sup> Floor, Toronto, ON, M9B 6H7.

**W. Bruce Clark** is now with the **Ministry of Natural Resources and Forestry - Office of the Surveyor General** at 300 Water St., 2nd flr. N. Peterborough, ON, K9J 8M5.

**Tareyn Gardner** is now with **TBT Surveyors Inc.** located at 1918 Yonge St. Thunder Bay, ON, P7E 6T9.

**Ignat Girin** is now with **West Corridor Constructors** located at 2000 Argentia Rd., Plaza 5, Suite 500, Mississauga, ON, L5N 2R7.

**Simeon Mitrev** is now with **Tarasick McMillan Kubicki Limited** located at 4181 Sladeview Cres., Unit 42, Mississauga, ON, L5L 5R2.

**Dan J. Cormier** is now with **Smith & Smith Ontario Land Surveyors (a Division of Ivan B. Wallace OLS Ltd.)** located at 637 Norris Court, Unit 1, Kingston, ON, K7P 2R9.

**Robin L. Fleguel** is now with **Everest Geomatics Corporation** located at 1861 Ridley Blvd. Orillia, ON, L3V 7H9.

**Rick Della Mora** is no longer with **Geoverra (ON) Ltd.**

**Tony Pu** is now the Managing OLS of **GeoVerra (ON) Ltd.** located at 100 Commerce Valley Drive West Thornhill, ON, L3T 0A1.

**Leslie M. Higginson** is now with **Hopkins Chitty Land Surveyors Inc.** located at 401 Advance Avenue, Unit 3, Napanee, ON, K7R 3Y7.

**Yifan Zhang** is now with the **City of Toronto, Engineering and Construction Services, Land & Property Surveys** located at 18 Dyas Road, 2nd floor Toronto, ON, M3B 1V5.

**Phillip S. Swift** is no longer with **R-PE Surveying Ltd.**

**Pasquale (Pat) Suppa** is no longer with the **City of Toronto.**

The Field Notes & Records of **John B. Dodd Ltd.** are now with **Jewitt and Dixon Ltd. (A Division of Kim Husted Surveying Ltd.)** in Tillsonburg, ON.

# What is Hydrospatial?

By Denis Hains, B.Sc., QLS (Ret.)

This Article was also published in *Hydro International Magazine* September/October 2020/Volume 25/Number 3 and is reprinted with permission. It reflects only the opinion of the Author and H2i.



In the last decades we have been progressing from “GRAPHIC”... to “DIGITAL”... and now to SPATIAL.

During the opening plenary session of the Canadian Hydrographic Conference (CHC) 2020, the author made a presentation on “*What is Hydrospatial?*” before inviting a panel of four senior figures and the audience to discuss the topic. This Article is a summary of a detailed published Note in the *International Hydrographic Review* (IHR), May 2020 Edition p.p. 84-93 at:

[https://iho.int/uploads/user/pubs/ihreview\\_P1/IHR\\_May2020.pdf](https://iho.int/uploads/user/pubs/ihreview_P1/IHR_May2020.pdf).

digital data environment in which we now operate. This word is “hydrospatial!”

## Why, When, Who, Where, How & What!

The type of data and the way hydrographers collect it is expanding, and its scope now goes well beyond nautical charting for safe and efficient navigation. This variety of data is now used and fused with data from land, coastlines, inland waters and offshore. This is the reason of the “why” and the “when” of hydrospatial!

Both defence and commercial shipping users of traditional

hydrographic products, data and information, now seek additional information and capabilities from hydrographic data. An ever-increasing community of additional users that seek a green future through a sustainable blue economy is joining them. They are users “who” need hydrospatial data!

The managers of coastal zones must consider sea level rise, coastal erosion, crustal subsidence and much more. Nearshore, offshore and remote areas everywhere (including polar regions) are becoming more accessible and attractive both for natural resources and for adventurers. All this drives the need for “where” hydrospatial is needed!

Faster adoption of all remote sensing technologies and various autonomous crafts for marine data acquisition (satellite, airborne, surface, underwater, etc.) is needed.

These are “how” high-tech capabilities evolve and deserve to be adopted by a name like “hydrospatial” that inspires inclusion beyond the traditional.

## The Suggested Draft Definition:

It is suggested that the definition of “what” hydrospatial is, be based on a modified version of the existing February 2020 International Hydrographic Organization (IHO) definition of hydrography, as follows:

*cont'd on page 16*

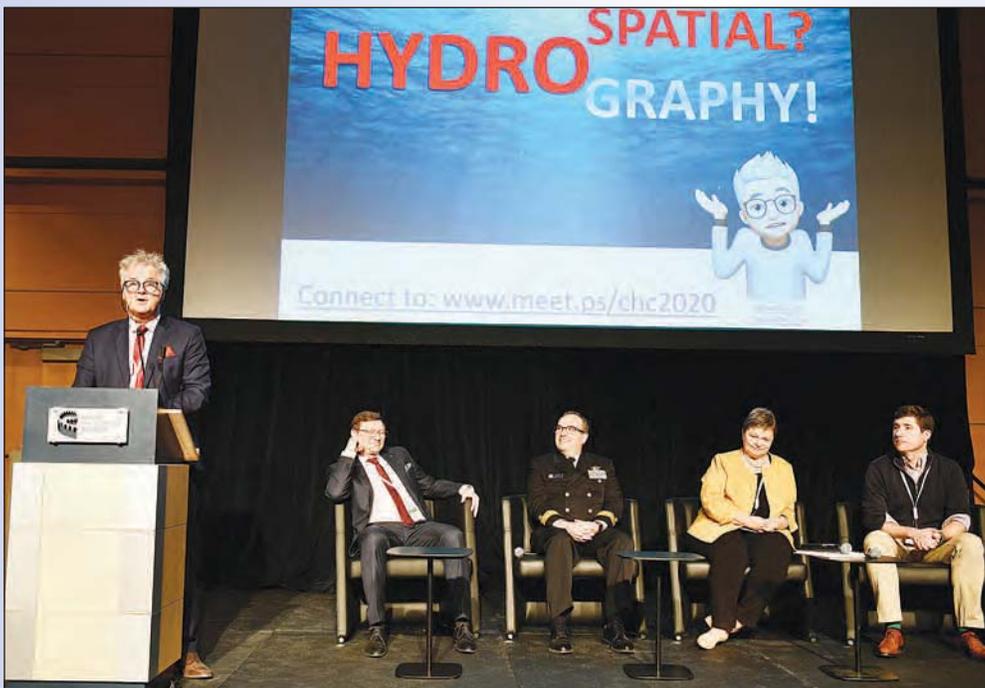


Figure 1: Denis Hains (speaker), seated Left to Right: Dr.Mathias Jonas, Secretary General of the International Hydrographic Organization (IHO); Rear Admiral Sheppard Smith, Director of the Office of Coastal Surveys with the United States National Oceanic and Oceanographic Administration (NOAA); Dr.Geneviève Béchar, Hydrographer General of Canada, and Director General of the Canadian Hydrographic Service (CHS); Dr. Ian Church, Chair of the Canadian Ocean Mapping Research & Education Network (COMREN), and Assistant Professor at the Ocean Mapping Group (OMG) of the University of New Brunswick (UNB), Canada.

## The issue:

What we do and its impact is obviously more important than a word can convey. However, words are the way we express ourselves, and in particular, the way that we transmit our ideas and concepts to others. The “Marine Geospatial” revolution is so dramatic that it is recommended to adopt a new word to describe it. It is not about eliminating the word Hydrography and to replace it, but picking a word that conveys more the image of the modern, hi-tech, multi-role,



SALES • SERVICE • RENTALS



CANADAS AUTHORISED GEOMAX DISTRIBUTOR

# GEOMAX

ZOOM 10



2" ACCURACY  
350m REFLECTORLESS  
BLUETOOTH & USB PORTS

ZOOM 90

Robotic Total Station



ZOOM 40



FIELDGenius ONBOARD  
AVAILABLE IN 2" OR 5"  
500M REFLECTORLESS



allegro<sup>2</sup>



mesa<sup>3</sup>

Geomax ZOOM90

Robotic Total Station

Available in 1" 2" & 5"

Reflectorless to either 500 or 1000m  
Open WinCE allows you to run either  
FieldGenius or X-PAD onboard.



Dave Whites

SitePro™

# Phoenix

FOR ALL YOUR SURVEY SUPPLIES AND NEEDS

1-150 RIVERMEDE RD. CONCORD, ON. L4K 3M8 • 905.482.0340 • sales@phoenix-ms.ca





Figure 2: Dr. Mathias Jonas providing his perspective.

2020/02/25 - **Hydrospatial** *“is the branch of applied sciences which deals with the analysis, understanding and access to static and dynamic marine geospatial digital and analog data and information, digital signals, measurement and description of the physical, biological and chemical features of oceans, seas, coastal areas, lakes and rivers from all possible available data sources in near-real time, real-time, including history and, the prediction of their change over time. For the purpose of providing timely access to a standard, quality and the most up-to-date marine spatial data infrastructure, including the safety and efficiency of navigation; aquatic and marine activities, for a sustainable Blue environment & economic development, security and defence, and scientific research.”*

### Quotes from the Panelists:

Based on the opening presentation, the four panelists aired their views, including the following quotes:

The IHO Secretary-General commented: ... *“to adopt a new word and official definition in the IHO Hydrographic Dictionary S-32 would require a formal proposal put forward to the affected experts of IHO’s Hydrographic Dictionary Working Group. Hydrography is clearly going through major important changes that will require an expanded role serving an increasing group interested in the Blue Economy proponent... If this requires a new word to express the expanded scope and to address the third and fourth dimension of our undertakings, “hydrospatial” will find its way into our spoken and written language.”*

The Hydrographer General of Canada remarked: ... *“showing how a new word can fill a gap by using it in sentences is more important than having it officially adopted. Just use it!”*

The Director, US Office of Coastal Surveys provided the comment: ... *“The field of hydrography is changing rapidly—we have access to both a wider variety and a massive volume of relevant data than ever, and the demand for our data and expertise is growing beyond charting. This*

*conversation about the language of identity is just the beginning. We need to also take a hard look at our education and qualifications in light of these changes.”*

The Chair of COMREN, representing Academia, said: ... *“accredited academic programs have already added material, courses and learning objectives that go beyond international requirements to adapt and keep up with the rapid technological changes in hydrography that could be qualified as hydrospatial...”*

### Engaging the Participants

During this session a live voting application to engage the audience (near 400 participants) was used. Detailed questions and results can

be found in the Note published in the IHR. The vast majority considered that hydrography: is going through a very important period of change; Education and Training adapts well; is impacted by Artificial Intelligence (AI); will invest more time in data quality from multi-sources than field work; will acquire data more through crowd-sourced bathymetry, satellite-derived bathymetry and autonomous platforms. The majority agreed to adopt the word “hydrospatial”.

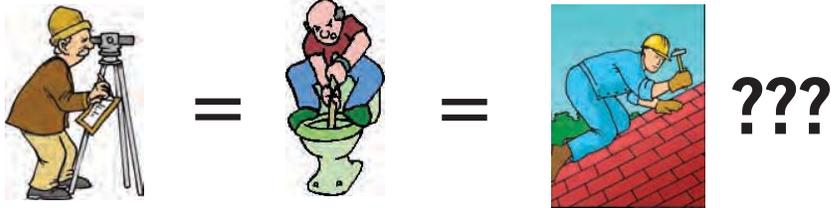
### Conclusion

Traditional hydrography as we know it, both in the past, now and for the future, is essential. It is not a question of opposing the word hydrography to hydrospatial, the two have their importance and role. Entering in the United Nations Decade of Ocean Science (2021-2030) and the Nippon Foundation Seabed 2030 Project; moving towards greater use of the word “hydrospatial” highlights the traditional benefits and role of hydrography, but will at the same time emphasize the new roles for our hydrographic/marine geospatial data and the expertise in an exciting, modern and inspirational way.



**Denis Hains** is Founder, President & CEO of H2i (Hains HYDROSPATIAL international inc.). He holds a B.Sc. in Geodetic Sciences, Laval University and is a Québec Land Surveyor. He worked 35 years in the Public Service of Canada between Fisheries and Oceans Canada – including the Canadian Hydrographic Service (CHS), the Canadian Coast Guard; and Natural Resources Canada’s Canadian Geodetic Survey. He retired as Director General CHS and Hydrographer General of Canada in 2018.

Denis is a Member of: the International Hydrographic Review Editorial Board; University of New Hampshire as Affiliate Research Scientist; Board of Directors CIDCO as Vice President; Strategic Advisory Group of The Nippon Foundation-GEBCO Seabed 2030 Project; and, Québec Land Surveyors, Modernization Committee 2020. He can be reached by email at [dhains@h2i.ca](mailto:dhains@h2i.ca)



**Does your employee benefits agent/broker/consultant think surveyors are the same as plumbers or the same as roofers?**

**MOST DO!**

You don't wear "one-size-fits-all" shoes!

You don't wear "one-size-fits-all" pants!

Why put up with a "one-size-fits-all" benefit plan?

Why not enjoy a plan that is "custom-tailored" for surveyors with special features you won't get anywhere else?

Your fellow surveyors have helped us custom-design the Land Surveyors Group plan over the past 24 years!

They told us what they wanted or needed, and we made changes.

Why not call Bob @ 1-888-747-7707 and have a look at a plan that is "custom-tailored for surveyors"?

Looks are free!



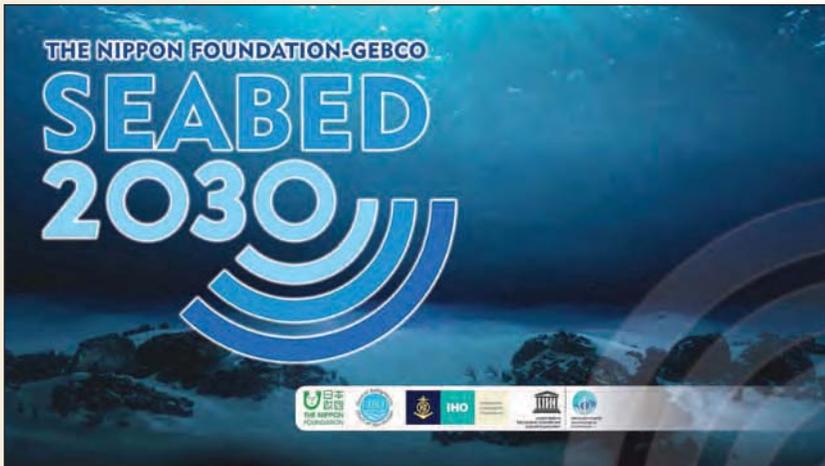
ROBERT J. MORROW CLU RHU CEBS

**THE CONNECTORS INSURANCE GROUP LTD.**  
SUITE 101, 299 GLENVIEW AVENUE  
OSHAWA, ONTARIO L1J 3H5

**(905) 721-7569 (905) 721-9154 fax**  
**1 (888) 747-7707 toll free**  
[bob.morrow@theconnectors.com](mailto:bob.morrow@theconnectors.com)

# Seabed 2030

By Denis Hains, B.Sc., QLS (Ret.) and Jamie McMichael-Phillips



81% of the World's Ocean Floor Remains Unexplored.

The Nippon Foundation-GEBCO Seabed 2030 (Seabed 2030) is a collaborative project between The Nippon Foundation and the General Bathymetric Chart of the Oceans (GEBCO) to map the world's entire ocean floor by 2030. <https://seabed2030.gebco.net> The Nippon Foundation is Japan's largest private non-profit foundation. Its overall objectives include social innovation, assistance for humanitarian activities and global ocean management. Operating on a not-for-profit basis, GEBCO has its origins in the ocean chart series initiated in 1903 by Prince Albert I of Monaco. Today GEBCO operates under the auspices of the International Hydrographic Organization (IHO) and the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational Scientific and Cultural Organization (UNESCO).

The primary author of this article (D. Hains) had the privilege to contribute to the development of the framework of the Seabed 2030 Project, attending the original workshop held in 2016, while he was still Hydrographer General of

Canada. He considers this initiative a major and global Hydrospatial project. He has now the honour to be the only Canadian part of the five current international members of the Seabed 2030 Strategic Advisory Group (SAG), see Figure 1. The purpose of the SAG is to provide independent expert advice to the Seabed Project Team, in addition to augment and compliment the input and contribution from GEBCO sub-committees and the Project Team.

The ocean floor shape influences a whole host of earth processes and is a key component in addressing a range of global safety, security and health issues including climate change, sea level rise, tsunami wave propagation, biodiversity, and safety of navigation. This is Hydrospatial. (D. Hains 2020). Our oceans cover almost three quarters of the earth's surface, yet today we know surprisingly little about the shape of the ocean floor with 81% yet to be fully explored.

Seabed 2030 needs organisations and individuals to take part in helping us to gather data to complete the map of the ocean floor for the benefit of humanity. Covering just over 71% of the surface of planet Earth, the oceans are the last frontiers, which remain unexplored. As has been said many times, we know more about the surface of the Moon and Mars than we do of our own planet.

The shape of the seabed is key to understanding how ocean current circulation affects climate and weather patterns; and to understanding the effects on the vulnerability of glaciers towards the inflow of warmer water, affecting sea level rise. The shape of the seabed is a crucial parameter in forecasting and assessing the impact of tsunami wave propagation and of underwater geo-hazards such as earthquakes, landslides, rising fluids/gases, volcanic eruptions, and coastal erosion. It also

provides a fundamental base layer for work in safety of navigation, marine spatial planning; protection of marine ecosystems & habitats; and predicting tidal systems, wave action, sediment transport and many other developments.

Generally, we are familiar with high resolution and accurate paper and digital maps that cover the landmasses of our planet. In many respects, these "dry parts" can be much easier to explore. Land mapping, at optical quality, is largely based on satellite imagery and is relatively straightforward to acquire. Light does not penetrate very far through water and so to map the seabed, particularly in the deep areas, we are very much reliant on the data gathering using echo sounder

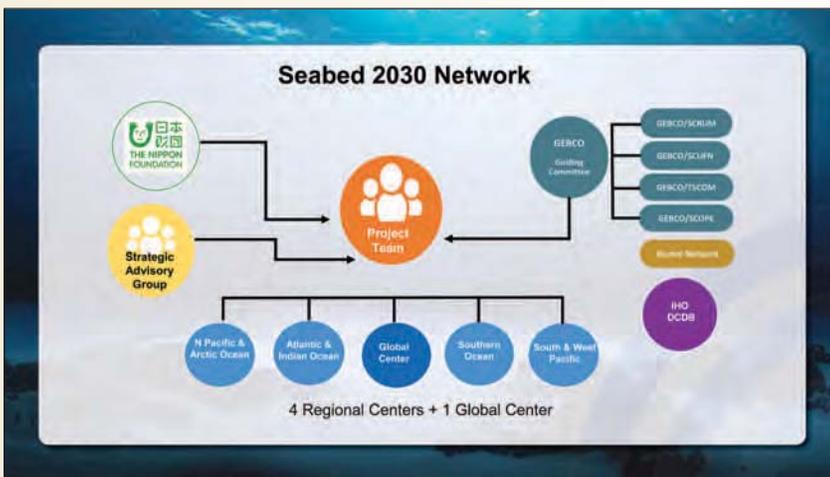


Figure 1

systems, which is a slower process. There are also enormous challenges in gathering data beneath ice shelves and thick sea ice. Noting the vast extent of our oceans, mapping them by traditional means hitherto has been very time consuming but it is something that can be accelerated through combining existing resources, and also through leveraging innovation and new technology.

Establishment of Seabed 2030 and the successful operation of its five Data Assembly and Coordination Centers, one Global and four Regional, has brought together team members that are expert in ocean mapping (Figure 1), with a network of deeply enthusiastic contributors across governments, academia, industry and philanthropy. This has catalysed the supply of more data to the GEBCO Grid. Now in its third year, the Project began with a baseline of 6% of mapped ocean and, within the first two years, tripled this to 19% - incorporating more data than was gathered in 100 years (Figure 2). This progress has been largely based on accessing existing data supplies that were shared by our contributors. There is a need to acquire new data and also to bring many more contributors onboard.

Seabed 2030 partnerships also extend to many other sectors, with 133 organizations pledging support so far. To meet the 2030 target, much more needs to be done. To main-

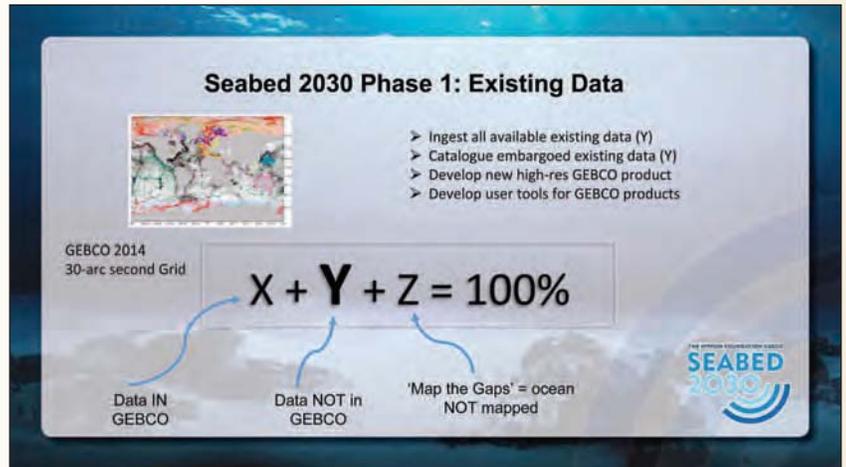


Figure 2

tain the momentum, in October 2019 at the Royal Society in London, the Chairman of The Nippon Foundation Mr. Yohei Sasakawa announced three initiatives to support increased data acquisition (Figure 3):

- Crowd-Sourced Bathymetry (CSB): harnessing the capabilities of non-research vessels such as fishing fleet vessels, tourist boats, and pleasure craft around the world through installation of data loggers. Whilst going about their everyday business, these vessels will be able to provide data to increase our mapping capacity.

cont'd on page 20

**TEKMET**  
since 1970  
Survey Markers  
"making a point for the future"

**Ontario's Leading Survey Bar Manufacturer**

Online Ordering

Prompt & Efficient Delivery

Volume Discounts

6590 8<sup>TH</sup> Line, Beeton, ON

www.tekmet.ca

tekmet@bellnet.ca

905-729-2673

- Ocean Frontier Mapping: funding dedicated mapping days for already scheduled expeditions in some of the most remote and poorly mapped frontiers of the ocean. Also leveraging the skills of the alumni from the training program to provide experienced echosounder operators who can assist expeditions to ensure that vital mapping data are collected at all times, including during transit. This model was recently employed in Seabed 2030's partnership with the Five Deeps Expedition, as well as with the Ryder 2019 Expedition – the latter was the first ever to enter and map the Sherard Osborne Fjord on northern Greenland.
- Innovation: championing the development of innovative, scalable new solutions to increase the efficiency, safety, and cost-effectiveness of deep-sea mapping whilst paving the way for public participation on the widest scale possible to meet the Seabed 2030 goals. This undoubtedly will include the ever-increasing capabilities of autonomous surface and underwater vehicles.

utor to Seabed 2030 is Fisheries and Oceans Canada's Canadian Hydrographic Service and other agencies such as Natural Resources Canada's Geological Survey of Canada as well as the Canadian Ocean Mapping Research and Education Network (COMREN). Everyone has a part to play in contributing to the ocean mapping journey; a journey that will greatly benefit humanity.



**Denis Hains** is Founder, President & CEO of H2i (Hains HYDROSPATIAL international inc.). He holds a B.Sc. in Geodetic Sciences, Laval University and is a Québec Land Surveyor. He worked 35 years in the Public Service of Canada between Fisheries and Oceans Canada – including the Canadian Hydrographic Service (CHS), the Canadian Coast Guard; and Natural Resources Canada's Canadian Geodetic Survey. He retired as Director General CHS and Hydrographer General of Canada in 2018.

Denis is a Member of: the International Hydrographic Review Editorial Board; University of New Hampshire as Affiliate Research Scientist; Board of Directors CIDCO as Vice President; Strategic Advisory Group of The Nippon Foundation-GEBCO Seabed 2030 Project; and, Québec Land Surveyors, Modernization Committee 2020. Denis can be reached by email at [dhains@h2i.ca](mailto:dhains@h2i.ca)

**Jamie McMichael-Phillips** is the Director of The Nippon Foundation-GEBCO Seabed 2030 Project. He is a chartered surveyor, hydrographer and mariner and has extensive experience in strategy and policy formulation, together with international engagement, negotiation, leadership, and mentoring, gained during his Royal Navy career and in civilian life.

Jamie has managed government-to-government relationships for exchange of geospatial data for navigational safety and for the benefit of the wider Blue Economy. He has also led on outreach and capacity building of fledgling organisations in marine data collection, assessment, and cartography. For over 9 years, he chaired the International Hydrographic Organisation's Worldwide ENC (Electronic Navigation Chart) Database Working Group, responsible for monitoring the global footprint of electronic charts needed for safe navigation by commercial shipping. Jamie can be reached by email at [director@seabed2030.org](mailto:director@seabed2030.org)

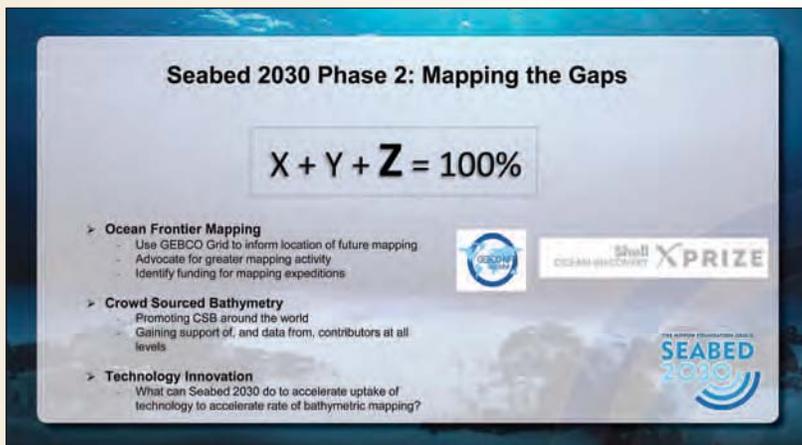


Figure 3

To achieve the Seabed 2030 goal of mapping the entire ocean floor by 2030, the efforts in CSB and Ocean Frontier Mapping needs to be expanded; the innovation and new technology to accelerate data collection needs to be leveraged, particularly in more inaccessible areas such as under ice. Most of all, organizations, and individuals across all sectors of government, industry, academia, philanthropy, and the public, need to be engaged. In Canada, the primary contrib-

### References:

- D. Hains (2020); WHAT'S HYDROSPATIAL?; International Hydrographic Review, May 2020 Edition; Note pp 84-93. [https://iho.int/uploads/user/pubs/ihreview\\_P1/IHR\\_May2020.pdf](https://iho.int/uploads/user/pubs/ihreview_P1/IHR_May2020.pdf)
- L. Mayer, M. Jakobsson, G. Allen, B. Dorschel, R. Falconer, V. Ferrini, G. Lamarche, H. Snaith and P. Weatherall (2018); The Nippon Foundation-GEBCO Seabed 2030 Project: The Quest to See the World's Oceans Completely Mapped by 2030; Geosciences MDPI 2018, 8, 63; Concept Paper. [https://www.researchgate.net/publication/323087253\\_The\\_Nippon\\_Foundation-GEBCO\\_Seabed\\_2030\\_Project\\_The\\_Quest\\_to\\_See\\_the\\_World%27s\\_Oceans\\_Completely\\_Mapped\\_by\\_2030](https://www.researchgate.net/publication/323087253_The_Nippon_Foundation-GEBCO_Seabed_2030_Project_The_Quest_to_See_the_World%27s_Oceans_Completely_Mapped_by_2030)
- J. McMichael-Phillips (2020); THE NIPPON FOUNDATION-GEBCO SEABED 2030; Environment Coastal & Offshore magazine (ECO Magazine); Article May/June 2020; <http://digital.ecomagazine.com/publication/?i=659148&ver=html5&p=1>
- J. McMichael-Phillips (2020); THE NIPPON FOUNDATION-GEBCO SEABED 2030; Power Point presentation slides; presented at different venues.
- THE NIPPON FOUNDATION-GEBCO SEABED 2030 – Web Site; <https://seabed2030.gebco.net>
- [https://seabed2030.gebco.net/news/gebco\\_2020\\_release.html](https://seabed2030.gebco.net/news/gebco_2020_release.html)



# SURVEY EQUIPMENT SALES, SERVICE & RENTALS

NEW PRODUCT

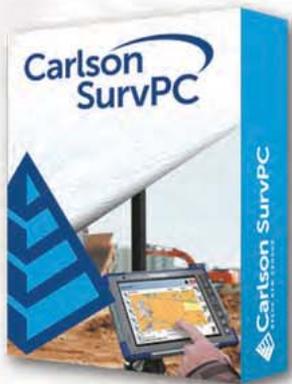
## Carlson Scan2K

"The Carlson Scan2K is the latest in 3D technology. With a user-friendly on-board operator interface, menu-driven operations for quickly collecting and referencing data, integrated high-resolution camera, inclinometers, a compass, a L1 GNSS receiver, and weather-proof housing, the Scan2K can be deployed in many environments and orientations. Whether on a tripod, vehicle, or moving platform, the outstanding performance of the Scan2K makes it the most versatile terrestrial laser scanner on the market"



Horizon Measurements is expanding across Canada with new offices in Manitoba, Quebec, New Brunswick, and 2 locations in Ontario.

[sales@horizonmeasurements.com](mailto:sales@horizonmeasurements.com)



# HORIZON MEASUREMENTS.com

**IN THE MATTER OF** the Surveyors Act, R.S.O. 1990,  
Chapter S.29, as amended

**AND IN THE MATTER OF** David Raithby, O.L.S.

**AND IN THE MATTER OF** a Disciplinary Hearing  
of the Discipline Committee of the Association of  
Ontario Land Surveyors held in accordance with  
Sections 26 and 27 of the said Act

### **SUMMARY OF THE DECISION OF THE DISCIPLINE PANEL**

A discipline hearing into allegations of professional misconduct and incompetence by David Raithby, O.L.S., proceeded before a Panel of the Discipline Committee on June 11, 2020. Due to ongoing restrictions on public meetings resulting from the coronavirus pandemic, the Panel, with the consent of both parties, had concluded that the Hearing should take place virtually in accordance with Rule 9.2.1 of the Discipline Panel Rules. Because the Hearing was proceeding virtually, the Chair, on behalf of the Panel, ordered that the Hearing would not be open to the public, pursuant to Rule 9.2.2 of the Discipline Panel Rules. At the Hearing, the Panel was advised by Association Counsel that the Association was no longer proceeding with any allegations of incompetence; that those allegations were to be considered withdrawn as having no reasonable prospect of conviction; and that the only allegations to be considered by the Panel were those of misconduct as set out in Schedule A attached to the Notice of Hearing.

The Association and Mr. Raithby jointly advised the Panel that Mr. Raithby was prepared to plead guilty to certain allegations; the parties had prepared an Agreed Statement of Facts as well as a Joint Submission on Order with respect to the penalty they proposed the Panel should accept.

The Statement of Facts provided facts regarding the complaint made by the Registrar, Kevin Wahba, O.L.S. Those facts can be summarized as follows.

#### The Facts

The allegations against Mr. Raithby arose out of three Survey Review Department (SRD) reviews which exceeded the threshold of twenty-five points per plan as set out in Reports delivered to the Registrar in December of 2016, February of 2018 and June of 2019. Following receipt of the SRD review in June of 2019, the Registrar submitted a complaint to the Complaints Committee. After investigating, the Complaints Committee issued a decision to refer Mr. Raithby to Council with a recommendation that he be referred to the Discipline Committee. Council resolved that the matter be referred to the Discipline Committee.

#### Mr. Raithby's guilty plea

Mr. Raithby was found to have breached Sections 33(2)(a), 33(2)(f), 35(1), 35(2), 35(3), and 35(21) of the *Surveyors Act*, R.R.O. 1990, Regulation 1026.

On the basis of the agreed facts the Panel accepted Mr. Raithby's guilty plea.

#### Penalty

The Panel accepted the Joint Submission after confirming that the parties would agree to small clarifications. The penalty imposed by the Panel including those clarifications was:

- a cancellation of Mr. Raithby's licence to be deferred provided Mr. Raithby complies with the remaining terms of the Order;
- Mr. Raithby would fully comply with all legislation, regulations and Standards of Survey as these may prevail and apply to SRPR's and all survey products rendered by him and his firm, NA Geomatics (the "Firm") and to permit access to surveyor project files under his supervision to be inspected by an Inspector on a random basis for 12 months from the 14<sup>th</sup> day after the date of the Hearing, calculated as June 25, 2020;
- certain terms, conditions and limitations on Mr. Raithby's licence, being:
  - o Mr. Raithby is to practice in consultation with a Monitor (a current or retired OLS accepted by the Registrar);
  - o To cooperate fully with the Monitor;
  - o To implement any reasonable (in the opinion of the Registrar) recommendations made by the Monitor;
  - o To make best efforts to ensure that the Monitor provides quarterly reports regarding Mr. Raithby's practice to the Registrar;
  - o To reimburse the AOLS for the cost of the Monitor;
- Costs of the discipline hearing in the amount of \$9,000 to be paid in 18 equal monthly instalments of \$500 by postdated cheques;
- Publication of a summary of the decision and reasons in the Quarterly, in In Sight, and on the AOLS website.

#### Discipline Panel Members

Robert Fligg (Chair)   Terry Dietz   Gerhard (Gary) Auer   Robert Jordan   Peter Meerveld, LGA

## Summary of Mediation and Mediation Agreement

Between the Association of Ontario Land Surveyors and P. Ardon Blackburn, O.L.S.

In a decision dated February 7, 2020, the Complaints Committee of the Association of Ontario Land Surveyors, pursuant to Section 22.(4.3)(a) of the *Surveyors Act*, referred P.A. Blackburn, O.L.S. to Council with a recommendation that the matter be referred to the Discipline Committee.

The Council of the Association of Ontario Land Surveyors, under the authority of the *Surveyors Act*, R.S.O. 1990, Chapter S.29 Section 25.1 decided that the matter should be referred to mediation and passed a motion dated April 21, 2020 to appoint Ron Emo, O.L.S. (Ret) as the mediator.

The main issue, as described in the Final Decision of the Complaints Committee, was that Mr. Blackburn did not provide a written estimate for a client before commencing work on his survey project in accordance with a previous undertaking.

The Complaints Committee noted that as a result of a previous complaint in 2012, Mr. Blackburn had been referred to Discipline for failing to provide a client with a written estimate of potential survey fees. In a Joint Decision of the Discipline Committee, dated July 17, 2012, Mr. Blackburn pled guilty and provided a signed undertaking that prior to conducting any legal surveys, he would provide a written estimate of the fees likely to be incurred.

On June 8, 2020, due to the COVID-19 pandemic, a mediation meeting was held by GoToMeeting rather than in the offices of the Association of Ontario Land Surveyors. Present at the meeting were the Mediator, Ron Emo, O.L.S. (Ret), Ardon Blackburn, O.L.S., the Deputy Registrar, Maureen V. Mountjoy, O.L.S. representing the Association of Ontario Land Surveyors (AOLS), and Peter Meerveld, the Lieutenant Governor Appointee to the AOLS Council.

After discussing the issue, the participants were assured by Mr. Blackburn that in most instances he did follow the terms of his signed undertaking, but he did acknowledge that in some rare and extenuating circumstances, such as this case, he had not provided a written estimate. When asked during the meeting, to show proof that he did prepare written estimates, Mr. Blackburn produced two signed estimate forms, which were randomly selected from his survey files.

All parties in the mediation agreed that this issue could be settled if a new undertaking would be signed by Mr. Blackburn stating that he will provide all potential clients with a written estimate of the fees likely to be incurred in conducting the requested survey.

The mediation agreement further provides that Mr. Blackburn will send copies of all of his fee estimates to a Monitor, who will be appointed by the AOLS Registrar, on a monthly basis for a period of two years. At the end of that time, the Registrar will report on the Monitor's findings to Council. Mr. Blackburn is to be responsible for all the Monitor's fees and costs as well as the costs of the mediation and the mediator.

It was also agreed that should any similar complaint arise in the future, in which Mr. Blackburn is found to have contravened this most recent undertaking, such complaint will go directly to Council to be referred to Discipline.

The agreement was signed by all parties.

**www.BATTERYREVIVAL.com**

*Send your batteries to the company Land Surveyors have come to trust since 1994*

**Battery Re-celling:**  
**Total-Stations, Radios, Drills, etc.**  
**Data Cable Repairs**  
**Bar Finder Repairs**

[www.magnetic-locator-repair.com](http://www.magnetic-locator-repair.com)  
[www.batteryrevival.com](http://www.batteryrevival.com)

(416) 823-0489 (talk or text)

**Dias & Dias Electronics**  
 1992 Davebrook Rd, Mississauga, ON, L5J 3M5

# Know your History — Part 6

By Tom Bunker, O.L.S., C.L.S., P.Eng., C.P.A. (Ret)

The following article is Part 6 in a series of historical articles by Tom Bunker.

## Ordinary Lives, Extraordinary Records

Facebook provides its members with the opportunity to record and share personal stories. Before the age of Facebook (yes, there was a time) some people recorded their daily lives in diaries.

While undertaking research on surveys we may have read project diaries related to original Township surveys, and you may in fact have your own work log/diary to maintain records of hourly/daily project work detail. Do you record other events?

My interest in historical records and genealogy led me to discover the diaries of surveyor Frank Armstrong, which also gives us a personal insight into the joys and struggles of his time.

### A Surveyor's life in the late 19<sup>th</sup> Century

The usual AOLS biography of Francis Woodward Armstrong (1849 – 1927) is published in the Annual Report of 1928. He was born in Dublin<sup>i</sup>, Ireland to Irish parents, and his clergyman father moved the family to England while Frank was about 5 years old. They resided in Berkshire in 1861<sup>ii</sup>. Frank travelled from England in 1867 and accepted a

training position with Wadsworth and Unwin (W & U) at Toronto.

In addition to his field notes and plans in the records of Dearden and Stanton at Orillia, he maintained a set of pocket diaries<sup>iii</sup> that found their way to the records of Coote, Hiley, Jemmett Limited in Bracebridge and consist of ten of the years between 1871 and 1883. His diaries can confirm but also correct information found in other sources. As an example, he clearly records his birthday as April 9 in two years while the “official” death record has April 6, as provided by his daughter Ethel.

His 1871 diary reflects some of his time in Toronto where he boarded<sup>iv</sup> with Frank Farmer, a young engineer, at the home of engineer Wm. Summerville in the Ward of St. George, West Toronto<sup>v</sup>. It seems his training time was primarily tracing various plans including working on notes and plans of P.L.S. Scott's survey of Muskoka and Wood Townships. He wrote his final surveyor exams over one week in May but was unsuccessful and had to try again in October. He indicates several field trips including: one to survey a gravel pit near Barrie with assistant Nelder; a trip to Collingwood “with Thompson<sup>vi</sup>” for Huron Street and soundings; one in Toronto with V.B. Wadsworth (V.B.W.) to the corner of Queen and George Streets and one with C. Unwin when he carried out a Polaris observation. He doesn't explain why, but “got sack” by W & U on September 16, shortly after the field work with V.B.W. and C. Unwin. Frank “received from home £20” the same day and didn't seem too distraught at losing his position, going to a concert with friends that evening. On Sept 22, V.B.W. “talked with him about Orillia”. At age 22 Frank passed his final exam on Oct 4, was sworn in as a Provincial Land Surveyor (P.L.S.) on Friday, Oct 6, paid his \$25.50 fees, obtained his Standard Measure, and placed a notification in the newspaper. After a celebration on Saturday and arranging for advertising bills and cards, having photos taken and attending St. John's Church, he was ready to leave for Orillia on Oct. 9 to find an office space and living accommodation.

### His survey practice

His diary offers a glimpse into starting a new practice. On Oct 10, 1871 he met with P.L.S. Albert Fowlie<sup>vii</sup> “and arranged with him for his office and field notes, etc., ordered new (*advertising – my notation*) bills to be printed and advertisement in the paper”. On Oct. 11 he looked to rent a house at \$9 per month, but it was too expensive, so he arranged to board at a private home. Oct. 25 he arranged to



buy a horse (to be paid over 3 months) and later a buggy (the wheel fell off on the way to a job), waited for an instrument to arrive from Potter and met with the other surveyors in the market (Fowlie<sup>viii</sup>, Burnet and Lumsden) who offered encouragement and subcontracts.

He quickly learned that many would engage the work only to make a fuss about the account or advise not to finish “until spring” as there was no cash. Many of the jobs were remote requiring considerable travel and he often stayed at clients’ homes. For October 1871 he collected \$50.14 in fees, borrowed \$10, had accounts receivable of \$25.50 and had expenses of \$66.91.

In March of 1872 he took on Robert J. Jephson<sup>ix</sup>, also the son of a clergyman, as a student and they spent time at Gravenhurst and Bracebridge on a variety of surveys: township lots, village lots, Crown survey, etc., as well as surveys in Rama, Oro, Medonte and Tay Townships.

In June 1872, he did road deviation work for Draper Township Council staying at the nearby home of Reeve Albert Spring. My wife Josie Bunker’s 3<sup>rd</sup> Great Aunt Desiré Emery was a witness at Albert’s parents’ wedding in Markham Township in 1814 and she became Albert’s aunt by marriage the following year to his uncle Daniel Spring. As they say: “Small World”.

Staying at a client’s home wasn’t always pleasant. While in Mara on July 30, 1877 he wrote: “slept at \*\* A most dirty disgusting buggy place”.

The diaries reflect the broad range of clients: individuals for lot lines and severances; Township Councils for road allowance determination and deviations; descriptions and deeds prepared for lawyers; surveys for Crown Land disposition; new village lots at Gravenhurst and Bracebridge and the new “Midland City” for the Midland Land Company; gravel pit surveys; railway lines and station grounds; Indian Lands in Rama; water soundings for wharfs and bridges; valuations for mortgage companies; timber valuations in areas of trespass; cemetery lots; and drawings of machinery for patent applications. For the year 1874 he totals a business income of \$1,421.97.

In December 1878 he was frantically looking for work or

to collect on accounts (see prior 3 months travel to England in family life section). His father sent him some funds from England. In early 1879 he was sued and harassed by creditors. Times were desperate and Frank had “no money at all” in March 1879: started month with \$14.07 on hand,

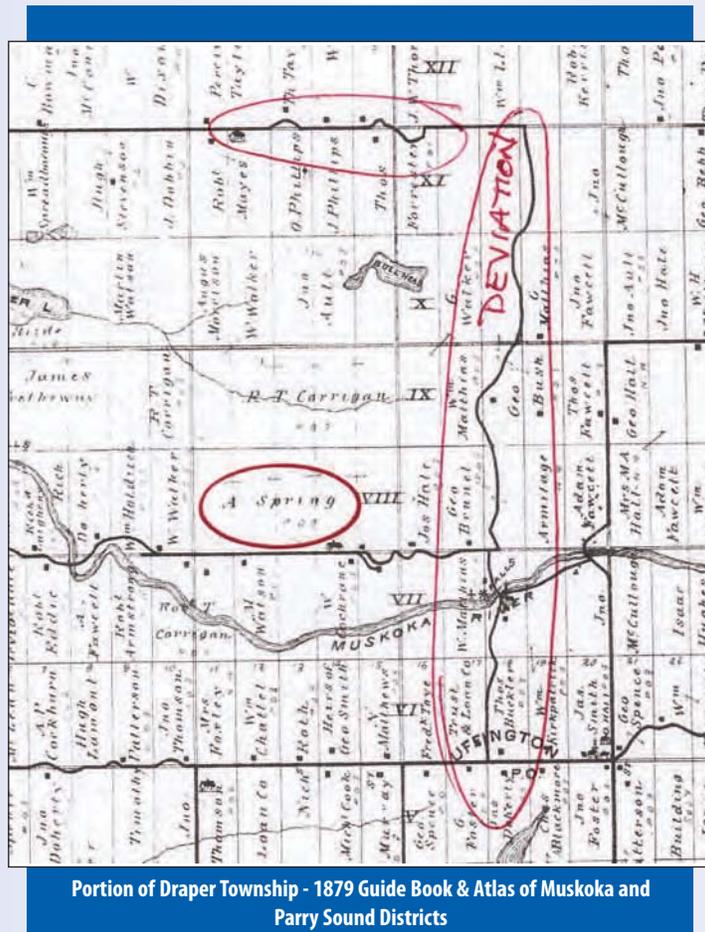
Revenue \$37.77, expenses \$50.82 include household \$29.64. On March 10 he only had the 10¢ to send his wife to a Church concert while he stayed home. He had borrowed to finance his business and lifestyle and his diary reflects that in 1879 he had several rotating notes payable that fell due through the year. He landed some government work and had a partial reprieve when he received Bazett board money in June. His funds shortage didn’t deter him however from extensive travel for cricket matches.

There is no record after November 1879 until Jan 1, 1881 where we find Frank on Township surveys in the Territories with R. J. Jephson who was a Dominion Land Surveyor<sup>x</sup> by this time. He returns a brief time to file his survey returns, being home

only May 29 – June 20, 1881 where he notes his income share of the season was \$1,362. He found the Dominion work more lucrative and seems to have stayed with that work for the rest of his career that ended in 1884. There are only a few entries for 1882 and he returned to Orillia on Oct 16, 1883 to see his son Francis (born Sept 1882) for the first time, after running more than 520 miles of survey during the prior season. His 1883 diary includes a 4-page handwritten dictionary of CHINOOK language words. There is no record<sup>xi</sup> that Armstrong ever qualified as a Dominion Land Surveyor while he supervised about four years in that work.

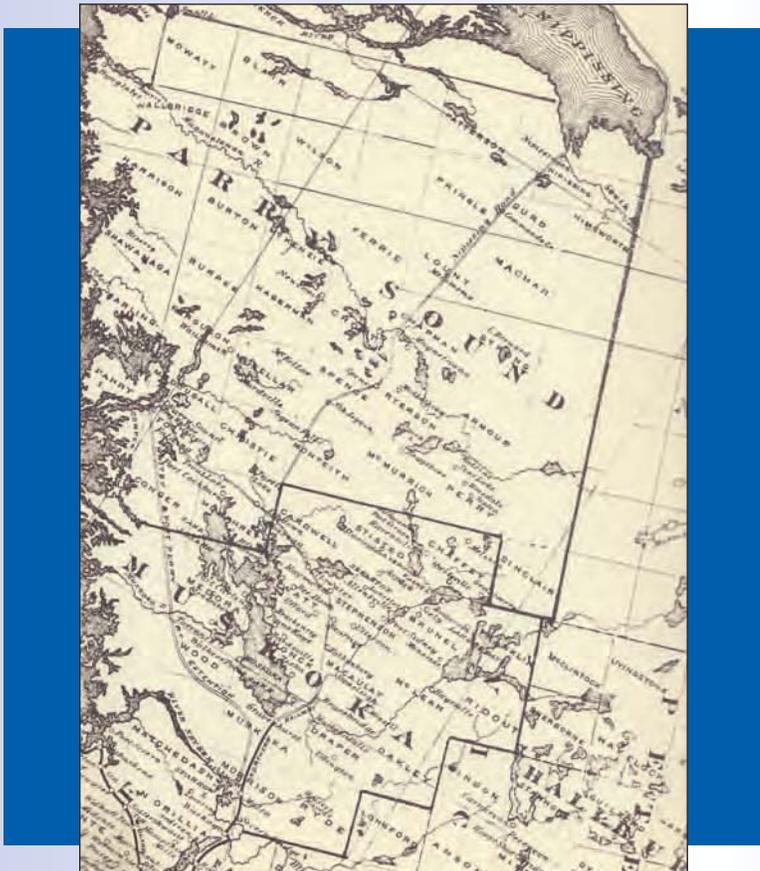
### Articled students

- By April 1877 Jephson (R.J.J.) was qualified as a P.L.S. and soon moved to open his own practice in Bracebridge. The last reference to R.J.J. on a crew is May 28, 1877. Jephson is particularly noted as being at Bracebridge in June 1878.
- Frank took on local Orillia lad Charles E. Fitton<sup>xiii</sup> in 1876 as an articled student. Charlie (C.F.) had completed his preliminary exams in 1875<sup>xiii</sup>.



Portion of Draper Township - 1879 Guide Book & Atlas of Muskoka and Parry Sound Districts

Charlie was introduced to surveying by endurance. Frank and Charlie left Orillia for Parry Sound April 12, 1876 arriving on the 14<sup>th</sup>. On April 16 they walked with the client and “2 Indians” 28 miles up Georgian Bay to Shawanaga Point, sleeping under boughs in the bush, then 20 miles further the next day to the lighthouse at Byng Inlet, with two men breaking through the ice. The following day they were up at 6 AM to walk up Byng Inlet to Dill’s lodging for breakfast and lunch, then overland to the client’s shanty by 9 PM, breaking through into a creek on the way. After 4 days on the survey of a “timber limit” at Henvey Inlet they all



Portion of Muskoka & Parry Sound Districts - 1879 Guide Book & Atlas of Muskoka and Parry Sound Districts

walked back to Dill’s, staying a day then heading out on foot on April 24 for home. The first day they covered 28 miles walking in water up to their knees in swamps. They reached Parry Sound at 4 PM on the 26<sup>th</sup>, arranging to head by horse and wagon to Pratt’s (at Rosseau Village). At 10 PM the horse fell on the wagon tongue and broke it, so they had to walk ahead of the horse with a lantern. The approach to the Broad Creek bridge was washed out when they arrived at 3:15 AM and they waited until daylight to make bridge repairs, arriving at Rosseau at 5 AM, April 27. They took the stage to Bracebridge where Frank caught the train at 10 PM. Frank “had to leave Charlie behind walking” home to Orillia, arriving on April 28.

Frank records a transfer of articles in February 1877 for Charlie to A. Clifford Thomson (OLS #57<sup>xiv</sup>) at Barrie, likely due to a shortage of work at Orillia. Frank spends all of

March and into April that year drafting plans and notes of Sunnidale for P.L.S. H. Creswicke. The transfer of articles must have been short lived as C.F. is back working with Frank on plans by March 29.

In July 1877 Frank’s theodolite was knocked over by a child because of “C.F.’s carelessness” and cost \$45 to repair. Frank asked Fitton to compensate him but received only \$25.

Armstrong had arranged to purchase a theodolite on Charlie’s behalf while in London, England and it arrived Nov 16, 1878. Charlie went on to qualify as a P.L.S. on 10 Apr 1879. Charlie qualified as a D.L.S. on 12 May 1880 and opened an office at Midland<sup>xv</sup> that year.

- Frank received a letter from England on February 17, 1877 about a position for the son of another English clergyman and Edward Bazett<sup>xvi</sup> arrived in Orillia on May 15.

Bazett must have wondered what he had gotten into since he had only been living with Frank and his family five days when Frank asked to borrow \$5.00. We later learned that Bazett’s father is sending \$145 periodically to cover his son’s room and board.

Bazett worked often with C.F. during his formative years of training. On Dec 27, 1877 Frank, C.F. and Bazett skated across Lake Couchiching to survey at Mara Township.

Bazett went on to qualify as a P.L.S. on 8 July 1881 and opened his own practice in 1885 at Burk’s Falls<sup>xvii</sup>. He apparently spent time on Dominion surveys but was never registered as a Dominion Land Surveyor<sup>xviii</sup>.

- While only payment references to F. W. Norton (Frederick William)<sup>xix</sup> are made in his 1882 journal of Territorial work, Frank also trained another English clergyman’s son from 1880<sup>xx</sup> until Fred qualified in 1883. Fred then left to work for railway companies<sup>xxi</sup>.

### Political and social involvement

Frank attended a session of the legislature on February 10, 1871 when there was debate about the creation of a Provincial Agriculture College<sup>xxii</sup>. He participated June 6 – June 19, 1871 at a militia camp at Niagara<sup>xxiii</sup> but was discharged early due to illness.

At Orillia he often recorded “electioneering” at year end when local Councils were elected. He would spend a few days likely promoting a candidate and getting out the vote. He regularly attended Council meetings to support his business.

He seems to have had close business ties with lumberman Andrew Tait and lawyer Charles Corbould, often attending to their offices and survey projects.

We learn that Frank was an avid player of cricket, attending many matches both as a spectator and participant, travelling as far as Hamilton, Cobourg and Ottawa to play in week-long tournaments over the years.

He was a regular church attendee and active in his church choir and a local glee club (“the Quartette”) practicing weekly and putting on performances. He attended dances, music performances at the hall and regularly visited other families.

### Family life

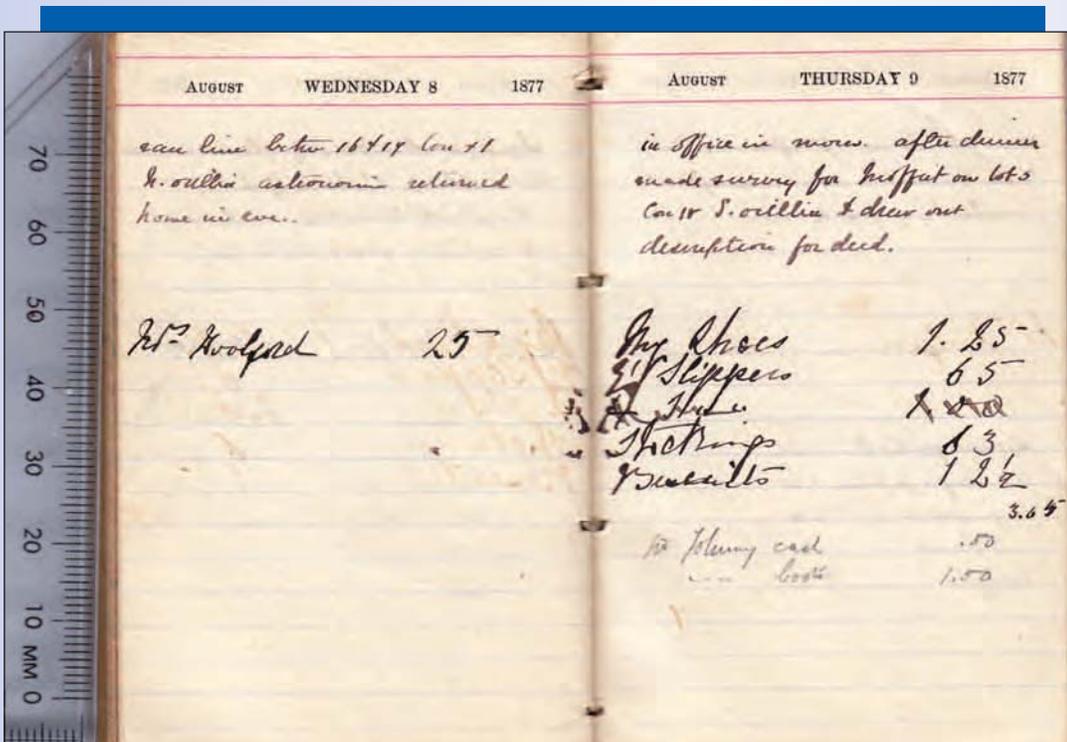
While in Toronto Frank had developed a relationship with “Dory” or “D”, seeing her almost daily and was corresponding often by letter and occasional visits from Orillia through 1872. At the same time, he was spending time at Orillia with two other young ladies and going to dances, etc. His 1873 diary is missing but we know that he married “D” (actually Alfreda Euphemia Miller) in February 1873<sup>xxiv</sup>. It’s not clear what their initial living arrangement was but Frank notes on January 31, 1874 that he “started housekeeping for the first time in his life”. Married home life was quickly assisted by a hired girl in their rental house at Orillia.

Their family grew and children’s births are recorded, although most were not officially registered: Harold born April 23, 1874; Ethel born April 12, 1875; an unnamed baby born May 11, 1876, while he was at Gravenhurst – the baby died June 21; Beatrice born May 3, 1878; and John born July 13, 1879. Son Francis was born Sept 26, 1882, although there is no diary except a few weeks in October for that year.

On July 16, 1878, the family left for Toronto on their way to Wales, via New York City, arriving at Dolgelly on July 30. They visited family and friends in Wales, travelled to Berkshire and London to visit typical tourist sites as well as the Armstrong and Bazett families and other families and friends. They left Liverpool on October 17 and were at Quebec City 10 days later and back at Orillia on October 31.

### Religious conviction

Throughout his life, Frank exhibited a strong connection to his church. He not only attended every Sunday (unless ill) but also assisted in the choir, fund raising, church decorating and leading study groups. In April 1877 he spoke to “D” about becoming a Christian which “made her mad”. He records discussing Christian conversion with other ladies from time-to-time. He acted as a lay minister occasionally and seems to have collected a small stipend from the weekly collection plate. He preached one week at Omemee in 1877. He became involved with St. Paul’s Church and performed church services there. Once he retired from surveying, he became a church minister full time.



These pages of the 1877 diary (pages only 9.5cm tall) show Frank’s notations about surveys at the top while his wife “D” has made notations about daily expenses. The largest of the pocket diaries is only 15 cm tall.

<sup>i</sup> Page 66, Early Exploration and Surveying of Muskoka District, Robert J. Boyer, 1979, Herald-Gazette Press, Bracebridge, ON

<sup>ii</sup> 1861 Census of England; Class:RG 9; Piece: 748; Folio: 98; Page: 6; GSU Roll: 542695

<sup>iii</sup> The set of diaries will be donated to Simcoe County Archive at Midhurst, ON in 2020

<sup>iv</sup> Mar 6, “paid Mrs Somerville board to now and washing for coming month”

<sup>v</sup> 1871 Census of Canada, Toronto West, page 7, families 25 and 26. Family 23 is surveyor Thomas Devine

<sup>vi</sup> Perhaps A. Clifford Thomson, PLS (later OLS#57)

<sup>vii</sup> It appears that Albert Fowlie was a friend of the Clifford Thomson family as he is resident with Clifford’s sister Cornelia and her husband Frank Evans according to the 1871 Canada Census.

<sup>viii</sup> At the time Fowlie was primarily a lumber merchant, Burnet was in private practice, Lumsden was heavily involved with Railway development

<sup>ix</sup> Know Your History – Part 1, Ontario Professional Surveyor, Vol 62, No. 3, Summer 2019, pg 12

<sup>x</sup> ibid

<sup>xi</sup> E-mail June 1, 2020 from the Association of Canada Lands Surveyors

<sup>xii</sup> Biography of Charles E Fitton, AOLS Annual Report 1938, page 155

<sup>xiii</sup> Commissioner of Crown Land Reports; Report of the Board of Examiners of Land Surveyors for Ontario for the year 1875.

<sup>xiv</sup> Clifford Thomson was born near Orillia, earned his PLS with Wadsworth and Unwin in 1861 and practiced as a Civil Engineer, surveyor, and architect at Barrie – there are no survey records listed with the AOLS

<sup>xv</sup> Biography of Charles E. Fitton, AOLS Annual Report 1938, page 155

<sup>xvi</sup> Biography of Edward Bazett, AOLS Annual Report 1931, page 104

<sup>xvii</sup> ibid

<sup>xviii</sup> E-mail June 1, 2020 from the Association of Canada Lands Surveyors

<sup>xix</sup> 1881 Canada Census shows Frederick Naughten [sic] 19 years old in household of Frank Armstrong

<sup>xx</sup> 1903 application to The Institution of Civil Engineers, England

<sup>xxi</sup> See 2020 Biography of PLS Frederick William Norton, AOLS Archives Committee

<sup>xxii</sup> PLS Wm. Brown, of Orillia, appointed first Professor of Agriculture at Guelph, ON in 1876

<sup>xxiii</sup> Canadian militia was enrolled to stand ready to repel Fenian Raids from the USA between 1866 and 1871

<sup>xxiv</sup> Belfast, Northern Ireland, The Belfast Newsletter (Birth, Marriage and Death Notices), 1738-1925 [database on-line]. Provo, UT, USA: Ancestry.com Operations, Inc., 2011.

# K2I Academy at Lassonde Engages Girl Guides in a Virtual Badge Day!

By Krystal Reyes and Neena Govindhan

The K2I Academy at the Lassonde School of Engineering is committed to providing learning opportunities for elementary and secondary students! In partnership with Ontario Women in Engineering (ONWiE), the K2I Academy Team created the very first Virtual Badge Day for Girl Guides Canada members. Over thirty Grade 5 to 11 students from all over Ontario engaged in a full day of online activities in Geomatics and Coding in Python, led by Lassonde undergraduate students. Lassonde's Badge Day was an exciting opportunity for Girl Guides to earn their Engineering badge, while learning about the fascinating world of Science, Technology, Engineering and Math (STEM). Sonia Szubelak, the Project Assistant for K2I Academy, started the day by welcoming the participants to Lassonde. Krystal Reyes and Neena Govindhan are current Lassonde students who led activities that introduced concepts in Geomatics and Software Engineering.

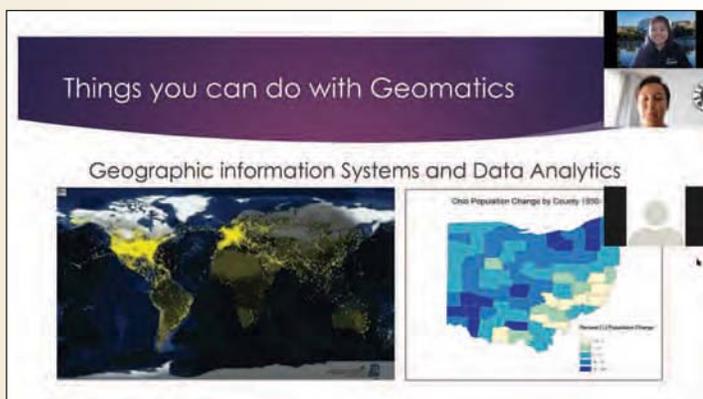


Figure 1: Grade 12 student, Hanna Cole (bottom photo) explains how GIS and Data Analytics can be represented in maps.

With 60% of the participants saying they had not heard of Geomatics before; the girls had the chance to learn about Geomatics and its applications. The participants engaged in activities focused on GPS and how it is used to make decisions using maps. Hanna Cole, a grade 12 student volunteer, shared her experience with ArcGIS in her Geography class. Digital tools were leveraged during the learning experience to create an interactive program. For example, participants played an online trivia game in Kahoot where they learned some fun facts about GPS and how it works. Participants were challenged to create an interactive map through Google My Maps that can be used by new Canadian families when they are making decisions about where to live.

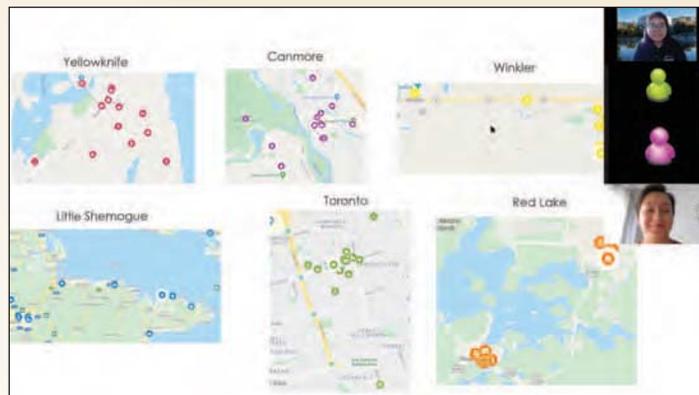


Figure 2: Lassonde Geomatics Engineering student, Krystal Reyes (top photo) guides students through an activity comparing liveability factors in various Canadian cities.

In the coding workshop, participants had an opportunity to explore Python, a very popular coding language. Most of the Girl Guides had little to no experience with Python. The participants learned that “code is everywhere” today – it is part of our everyday world. With the help of two wonderful volunteers, Niharika Rajnish, a 2nd year Software Engineering student, and Emily Huynh, a grade 12 student, participants then learned how to draw using the Turtle Module in Python. This program concluded with a digital escape room where they put their knowledge of coding to the test!

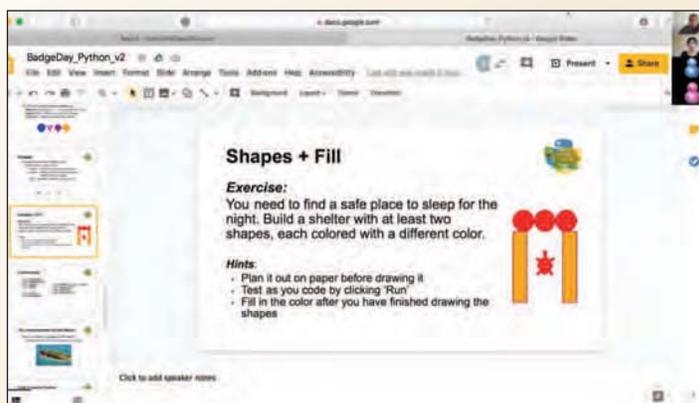


Figure 3: Lassonde students, Neena Govindhan (top photo) & Niharika Rajnish (bottom photo) and Grade 12 student, Emily Huynh (not pictured) teach students Python commands using a Turtle module.

The full-day program was designed to introduce the participants to Geomatics and Software Engineering and connect with Lassonde students who are pursuing their own studies in these areas. Women are underrepresented in many STEM fields. This program was designed to provide early exposure to STEM learning and an opportunity to connect

with women role models in Geomatics Engineering and Software Engineering.

### About K2I Academy

The Kindergarten to Industry (K2I) Academy at Lassonde School of Engineering, York University is committed to providing equitable and inclusive STEM learning opportunities for youth. We want to push, bend, twist and break apart the boundaries of current K-12 outreach programs and offer innovative programming that drives larger system changes in the K-12 system. K2I will work

with innovative partners to create programs that will encourage and support diverse participants in STEM career pathways. K2I Academy will prototype and test new and emerging ideas in STEAM (Science, Technology, Engineering, Arts and Math), Computer Science, and Earth, Space & Atmospheric Science Outreach programming through large-scale and multi-sector collaboration. The K2I Academy is headed by Lisa Cole, Director of Programming.



For more information about K2I Academy, email us at: [k2i@lassonde.yorku.ca](mailto:k2i@lassonde.yorku.ca)

## Sites to See

### Archives of Ontario – New Online Exhibit

<http://www.archives.gov.on.ca/en/explore/online/jamesbaytreaty/index.aspx>

The James Bay Treaty - (Treaty No. 9) is an agreement between Ojibway (Anishinaabe), Cree (including the Omushkegowuk) and other Indigenous Nations (Algonquin) and the Crown (represented by two commissioners appointed by Canada and one commissioner appointed by Ontario). The treaty, first entered into in 1905-1906, covers the James Bay and Hudson Bay watersheds in Ontario, about two thirds of the province's total landmass. The treaty embodies the nation-to-nation relationship between First Nations and the Crown.

This exhibit explores different interpretations of the James Bay Treaty, the background behind the treaty's creation and its impact on Indigenous communities, and the role that archival records and other forms of memory have come to play in the story of Treaty No. 9.



## NORTHWAY/PHOTOMAP/REMOTE SENSING LTD.

Choose the service that's right for you.

Aerial Photography   GPS Surveying   LiDar Scanning   Topographic Mapping   Land Information Services   Modelling

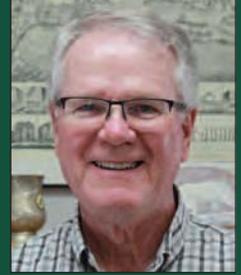


Contact Us Today For A Full List Of Services

[pfrancis@photomapltd.com](mailto:pfrancis@photomapltd.com) | 705.730.6694 | [www.northway-photomap.com](http://www.northway-photomap.com)

2-1630 George Johnston Road, Minesing, Ontario L9X 1J1

# Survey Review Department Forum – Navigating the new AOLS Website



By Tom Packowski, O.L.S., Survey Review Department Manager

The new AOLS Website has been up and running since late July. Around that time, you would have received a notice from the AOLS inviting you to log in and change your password. If you are having any trouble logging into the site, please contact member services at [memberservices@aols.org](mailto:memberservices@aols.org). You are encouraged to sign in and have a look around the website.

Like the original site, the current site is divided into a Public side and a Members' side however, they are two separate sites. Some of the information on the Public side is automatically available on the Member's side through links. For instance, information concerning Public Protection is available on both. Another example, the Code of Ethics (O. Reg. 1026, Section 33), is set out in full on the Public side and a link can be found under Practice Manual/Business Practice on the Members' side. For ease of use, the Standards of Practice set out in Section 34 are summarized on the Public side to include those portions of the regulation that are directly concerned with public protection. A link to all of Section 34 is found on the Members' side. Other information, such as back issues of the Ontario Professional Surveyor magazine (since 2011) are only available on the Public side.

This article deals with what is available to the membership and in particular, how to find it. So, what is available? To list all the items of interest to a member or an articling student of the Association would take up the allotted space available for this article. A more helpful approach would be to list 'use cases' that the Continuing Education Committee and the Survey Review Department have been asked to comment on over the last few months since the website launched.

## How do I find what constitutes a current survey?

This is something the SRD Consultants will see occasionally during the course of a Comprehensive Review. The practitioner may be involved in a land development project that may take many years to see to fruition. The practitioner may be under the impression that field work undertaken at the start of the project, say five years ago is still current today. But what does Council say, not only to the SRD Consultants but to the practitioner as well? Council has defined a current survey in Section 16. (1) of the **Interpretive Guide and Supplement to The Performance Standards for the Practice of Cadastral Surveying (Ontario Regulation 216/10)** and it is discussed in **Bulletin**

**1982-015 (Misrepresentation)**. The guideline and bulletin may be located as follows. Log into the Members' side of the website; there, you will be on the home page (H). From the home page (H) select the 'Splash Page' (S) – the splash page is the 'world' icon on the lower left side of the home page – from the splash page select Member Tools (MT); from member tools, select Policies (P); on the left side of the Policies page are the following items: Regulations, By-laws, Guidelines, Bulletins and Internal Policies. Select 'Guidelines' and there you will find the Interpretive Guide. Other guides you will find from the policy page include Guideline for the Preparation of Field Notes, Field Notes and Field Procedures, Guideline for Total Station Field Notes and the Integration Guide.

The following is a convenient shorthand for the above direction to the location of the Interpretive Guide on the website:

**H > S > MT > P > Interpretive Guide**

This shorthand can also direct you to the current bulletins including Bulletin 1982 -015:

**H > S > MT > P > Bulletins > 1982-015 Misrepresentation of Field Work > View**

Section 16. (1) of the Interpretive Guide reads as follows:

- (1) For the purposes of this section a survey may be deemed to be "current" if,
  - (a) the survey complies with the applicable requirements of the statutes and regulations of Ontario;
  - (b) upon a field inspection it can be determined that no changes have taken place to the property or to the monumentation since the survey was made that would necessitate a change in the survey; and
  - (c) an up-to-date search for documentary evidence has been made, as required by subsection 8(a) of the Performance Standards Regulation (O. Reg 216/10), and no changes have occurred that would necessitate a change in the survey.

To get back to the example above as to whether the ongoing survey over the course of five years is current, a professional survey would have to confirm compliance with the above noted requirements at the time the survey is signed.

## What are my obligations with respect to client correspondence?

There are several sources of information available from the website outlining what should be provided in a Surveyor's project report to their client. These include O. Reg. 216/10 and specifically Section 4 and the Interpretive Guide referred to above. In addition, the website includes a presentation titled "Business Communications Manual" as well as a summary of sample business communication documents provided at a seminar presented by Ms. Julia Meldrum Smith O.L.S., during our Annual General Meeting held in Huntsville in February of this year. The samples provided by Ms. Meldrum Smith must only be considered as a starting point and must be amended to suit the particulars between the client and the Surveyor in their contractual relationship. They are starting points and are for consideration only.

All of the Ontario Regulations can be located from the government of Ontario website [Ontario.ca/laws/regulations](http://Ontario.ca/laws/regulations) or from the AOLS website as follows:

**H > S > MT > Survey Review Department > Related Downloads.**

The Business Communications Manual and sample communication documents provided at the seminar may be located on the website as follows:

**H > S > MT > Practice Manual > Survey Practice**

## > Best Practices.

The sample documents include a suggested construction layout template as well as templates dealing with items such as boundary surveys, building layout, draft Plans of Subdivision, Reference Plans, Site Plans, Surveyor's Real Property Reports, Invoices, and a suggested digital data disclaimer. It is recommended that you review the Business Communications Manual, then consider the various templates and sample documents. If you do not have any formal communications policies or procedures as part of your business practice the information from this seminar just might be a good place to start.

Each of the above examples began with Home Page, Splash Page and Member Tools. From there we were able to access Policies, the Survey Review Department, the Practice Manual, Survey Practice and Best Practices. Please take the time to explore the website, review the materials available and incorporate any of the information as it relates to your office procedures and business practice.

## What else is on the web site?

The website also posts Council Minutes and the newest information document, the 'Dashboard'. The minutes and dashboard may be accessed from the website as follows:

**H > S > MT > AOLS Involvement > Council.**

*cont'd on page 32*

# It's business and it's personal.

**AFTER ALL**, getting to know you better is what allows us to truly understand your investment needs. And that means a world of difference for you. We take the time to customize an investment plan that fits your life, so you can focus on what really matters—living it.

To register for one of our educational webinars,  
visit [loganwealth.com](http://loganwealth.com)



The Council minutes beginning March 2019 and up to the present are available. The dashboard is relatively recent and includes data presented at the June and July 2020 Council meetings. The dashboard provides a wealth of statistical information including member demographics, AOLS finances, insurance claims, complaints, and committee activity. For example, if you were curious about the progress of any committee this is available for review by the membership.

**What about my Continuing Professional Development (CPD)?**

In Issue number 16 of In Sight, emailed to the membership on August 14, 2020, Julia Savitch posted a detailed essay on how to access your CPD through the new website. The article was logical and well written with clear and concise information, including screen shots, on accessing your CPD records. As we are just past the halfway point of the 2019 – 2021 CPD cycle, where the majority of the current members are located; NOW would be an ideal time to familiarize yourself with the new website and in particular your CPD. Please review the In Sight article, the new web site and your CPD record. If you have any trouble with the website or your CPD, this would be the time to find out.

The article will lead you through the log-in process if this

is your first time accessing the site, and from there, onto the CPD site itself. Using the convention in this article it is as follows:

**H > S > My Membership > My CPD.**

As you may recall, in January of this year all CPD records were moved to the GeoEd Canada website which is a website for the continuing professional development of Canada’s professional Land Surveyors. In order to access your CPD records you will have to access GeoED. It is important to note that the GeoEd site is completely different from the AOLS website. Your email login for the AOLS site should be your personal email while your email login for GeoEd would be the email address that the Association had on file at the time of the migration earlier this year (most likely your work email at that time).

The AOLS website is a living document with upgrades, additions and new features are being added regularly. It is a valuable resource with an incredible amount of information already and there is more to come. If you have any questions related to CPD, or suggested improvement or are experiencing difficulty with logging in to either the AOLS Members-only Portal or the GeoEd site, please don’t hesitate to contact the AOLS office or email member services at [memberservices@aols.org](mailto:memberservices@aols.org)



**Cansel**  
Improving field to finish productivity

**Save the day with Precision Utility Locators**

Find exactly what you’re looking for with Radiodetection’s range of locators, featuring the new Schonstedt Loki.

- The Schonstedt Loki is designed to detect the path and depth of a range of high and low frequency pipes and cables
- Capability to find well insulated utilities such as twisted pair telecom cables
- Helps protect and maintain infrastructure networks

**Easy to use, easy to buy.**  
Shop Radiodetection and more at [cansel.ca](http://cansel.ca)

[www.cansel](http://www.cansel) | 1.888.222.6735  
Copyright © 2019 Radiodetection Ltd. All rights reserved.

**SURVEY | MAPPING | AUTODESK | WIDE FORMAT | GENERAL LINE CONSTRUCTION | PROFESSIONAL SERVICES**

# Registrar's Review



By Kevin Wahba, B.Eng., LL.B., O.L.S., Barrister & Solicitor

Over the past year, I have received several requests from retired members to have their licences reinstated. There are several variables that change the process when handling these types of requests. First and foremost, reinstatement requests must follow the authority provided to me and the Committees of AOLS under the *Surveyors Act* (the *Act*) and its Regulations.

Subsection 12(1) of the *Surveyors Act* allows the Registrar to issue a licence to an individual who applies therefor in accordance with the regulations and who has satisfied the following requirements:

- (a) is a citizen of Canada or has the status of a permanent resident of Canada;
- (b) is not less than eighteen years of age;
- (c) has complied with the academic requirements specified in the regulations for the issuance of the licence and has passed such examinations as the Council has set or approved in accordance with the regulations or is exempted therefrom by the Council;
- (d) has complied with the experience requirements specified in the regulations for the issuance of the licence; and
- (e) is of good character.

In recent practice, if the individual seeking reinstatement has held a licence within the previous twelve months from when the request for reinstatement was made, I have reviewed the application independently. In doing so, I have relied on subsection 12(1) of the *Act* as well as subsection 17(1)(c) of the *Act* which allows the Registrar to issue a licence, certificate of registration or certificate of authorization subject to terms, conditions or limitations. Depending on the circumstances, reinstatements have been granted with specific CPD requirements, payment of previous and/or current member fees, the requirement to take a specific course or write an exam, or reinstatement may be granted with no conditions attached. If the member does not accept conditions

or limitations attached to the approval of their reinstatement request, the member has the right to appeal my decision to the Registration Committee in accordance with section 17 of the *Act*.

If a member has been retired for over twelve months, the practice has been to refer the request to the Academic and Experience Requirements Committee (AERC). Subsection 12(3) of the *Act* allows the Registrar, on his or her initiative, to refer a request for a licence to the AERC. Once the matter has been referred to the AERC, the Committee could make a decision to refuse the request, approve the request, or approve the request subject to conditions or limitations as specified by the Committee. Once a decision is made, it is final and binding on the Registrar and on the applicant as per subsection 12(5) of the *Act*.

A third situation which may arise is if a former member whose licence was revoked or suspended for cause under the *Act* applies for reinstatement of his or her licence. In this situation, the member may apply directly to the Registration Committee for restoration of his or her licence in accordance with section 35 of the *Act*. In doing so, the former member would benefit from displaying that he or she has attempted to rectify the issue which led to the revocation or suspension. In the end, the Registration Committee would issue a decision either denying the application, approving the application, or approving the application subject to certain conditions or limitations. Despite this provision, subsection 35(4) of the *Act* gives Council the authority to, at any time, issue a licence to an applicant in this situation, subject to such terms, conditions or limitations as the Council considers appropriate.

If you are thinking of retiring or relinquishing your licence in the near future, you may wish to make reference to the provisions outlined in this article to assist you with your future planning.



## News from our Members

### Another Third Generation Family Member joins Krcmar Surveyors Ltd.

The Krcmar Family is pleased to announce that Victoria Donko, daughter of Maja Krcmar, has joined Krcmar Surveyors as an articling student under Tom Krcmar. We are very proud of Victoria's achievements which include several academic awards through the Geomatics Program at the Lassonde School of Engineering at York University. These awards include:

- 2019 AOLS Educational Foundation David W. Lambden Award
- 2019 AOLS Educational Foundation LE/ESSE 4670 Survey Law Award
- 2018 AOLS Educational Foundation Henriette Verhoef Award
- 2018 Cansel Award, Geomatics Engineering

We anticipate a unique new style and energy from Victoria and look forward to the contribution she will bring to our family, Krcmar Surveyors and the surveying community in general. Congratulations Victoria!



The Krcmar surveying family from left to right: Proud grandfather Vladimir, Maja, Victoria, Jamie, Tom and Saša

# EDUCATIONAL FOUNDATION

## Lifetime Members at September 30, 2020 (Individual)

BOB MORROW (Honorary)	ROSS A. CLARKE	ROBERT C. GUNN	SCOTT MCKAY	CARL J. ROOTH
ANNA AKSAN	W. BRENT COLLETT	ROBERT HARRIS	RONALD G. MCKIBBON	ERICH RUEB
DONALD ANDERSON	RICHARD H. CREWE	JOHN M. HARVEY	LAWRENCE A. MILLER	FRED SCHAEFFER
DREW ANNABLE	ERIC CRONIER	GORDON W. HARWOOD	PAUL A. MILLER	ANDY SHELPH
GEORGE D. ANNIS	DANIEL A. CYBULSKI	ED HERWEYER	MANOUCHEHRMIRZAKHANLOU	H.A. KENDALL SHIPMAN
DOUG ARON	TOM CZERWINSKI	JAMES HILL	W. HARLAND MOFFATT	DOUG SIMMONDS
BRUCE BAKER	JAMES D. DEARDEN	RUSS HOGAN	J.W.L. MONAGHAN	JOHN SMEETON
STEVE BALABAN	ARTHUR DEATH	HAROLD S. HOWDEN	PATRICK A. MONAGHAN	EDWIN S. (TED) SMITH
J.D. BARNES	RON DENIS	ROY C. KIRKPATRICK	JOHN D. MONTEITH	RALPH A. SMITH
JOHN BARBER	TERRY DIETZ	CINDY KLIAMAN	PETER MORETON	TAD STASZAK
ANDRÉ BARRETTE	DAN DOLLIVER	ANNE MARIE KLINKENBERG	BOB MOUNTJOY	JAMES STATHAM
GRANT BENNETT	DAN DZALDOV	WALLY KOWALENKO	JIM NICHOLSON	RON STEWART
WILLIAM E. BENNETT	PAUL EDWARD	VLADIMIR KRCMAR	DONALD W. OGILVIE	NORM SUTHERLAND
ANDREW BOUNSALL	RONALD EMO	LENNOX T. LANE	FREDERICK J.S. PEARCE	MARK TULLOCH
GRAHAM BOWDEN	DON ENDELMAN	RAYMOND T. LANE	E.W. (RED) PETZOLD	MIKE TULLOCH
GEORGE W. BRACKEN	WILLIAM M. FENTON	JARO LEGAT	N. LORRAINE PETZOLD	E. HENRY UDERSTADT
WILLIAM A. BREWER	CARL F. FLEISCHMANN	ANITA LEMMETTY	JOHN G. PIERCE	DAN R. VOLLEBECK
BRUCE BROUWERS	ERNEST GACSER	OSCAR J. MARSHALL	HELMUT PILLER	BRIAN WEBSTER
HARRY BROUWERS	DONALD H. GALBRAITH	BLAIN MARTIN	ROBERT POMEROY	GORDON WOOD
TOM BUNKER	BOB GARDEN	RAYMOND J. MATTHEWS	YIP K. PUN	DAVID WOODLAND
KENT CAMPBELL	JAIME GELBLOOM	LARRY MAUGHAN	VALDEK RAIEND	AL WOROBEK
WILLIAM H. CARD	CHARLES W. GIBSON	MIKE MAUGHAN	PAUL A. RIDDELL	ROBERT H. WRIGHT
J.B. CHAMBERS	GORDON GRACIE	KENNETH H. MCCONNELL	RONALD W. ROBERTSON	GEORGE T. YATES
PAUL CHURCH	HOWARD M. GRAHAM	ROBERT MCCONNELL	TALSON E. RODY	JACK YOUNG
DAVID CHURCHMUCH	JOHN GRAY	JAMES A. MCCULLOCH	HENRY ROESER	GEORGE J. ZUBEK
A.J. CLARKE	NANCY GROZELLE		GRENVILLE T. ROGERS	

### Individual Sponsoring Members

BILL BUCK  
MARC FOURNIER  
TRAVIS HARTWICK  
BRIAN MALONEY  
GEORGE WORTMAN  
PAUL FRANCIS  
BILL HARPER  
MICHAEL MACEK  
MIKE POWER  
DAVID WYLIE  
TOM PACKOWSKI

### Corporate Sponsoring Members

DINO ASTRISURVEYING LTD.  
KIRKUP MASCOE URE SURVEYING LTD.  
RON M. JASON SURVEYING LTD.  
E.R. GARDEN LTD.  
MTE ONTARIO LAND SURVEYORS LTD.  
P.A. MILLER SURVEYING LTD.  
RUGGED GEOMATICS INC.  
TULLOCH GEOMATICS INC.

### Sustaining Corporate Members

A.J. CLARKE & ASSOCIATES LTD.  
A.T. MCLAREN LIMITED  
ADAM KASPRZAK SURVEYING LTD.

### D. CULBERT LTD.

ANNIS O'SULLIVAN VOLLEBECK LTD.  
ARCHIBALD, GRAY & MACKAY LTD.  
CALLON DIETZ INCORPORATED  
DAVID B. SEARLES SURVEYING LTD.  
GEORGIAN BAY REGIONAL GROUP  
GENESIS LAND SURVEYING INC.  
R. AVIS SURVEYING INC.  
THE CG & B GROUP, PART OF ARTHUR J. GALLAGHER CANADA LIMITED  
EASTERN REGIONAL GROUP  
GALBRAITH, EPLETT, WOROBEK SURVEYORS  
HAMILTON & DISTRICT REGIONAL GROUP  
J.D. BARNES LIMITED  
KAWARTHA-HALIBURTON REGIONAL GROUP  
KRCMAR SURVEYORS LTD.  
LEICA GEOSYSTEMS LTD.  
LESLIE M. HIGGINSON SURVEYING LTD.  
LLOYD & PURCELL LTD.  
STEWART McKECHNIE SURVEYING LTD.  
MMM GEOMATICS ONTARIO LIMITED

### MONTEITH & SUTHERLAND LTD.

NORTH EASTERN REGIONAL GROUP  
NORTH WESTERN REGIONAL GROUP  
SOKKIA CORPORATION  
SOUTH CENTRAL REGIONAL GROUP  
SOUTH WESTERN REGIONAL GROUP  
STANTEC GEOMATICS  
TARASICK McMILLAN KUBICKI LIMITED  
TERANET INC.  
THAM SURVEYING LIMITED  
WSP GEOMATICS ONTARIO LIMITED  
**Members as of September 30, 2020 (Individual and Corporate)**  
ERIC ANSELL  
SHAWN HODGSON ANNE COLE  
JAMES LAWS RICK DELLA MORA  
RASCH & HYDE LIMITED  
ROBERT C. THALER SURVEYING LTD.  
VLADIMIR DOSEN SURVEYING INC.  
GREATER TORONTO ACRES SURVEYING INC.

## EDUCATIONAL FOUNDATION NEWS

### Congratulations to our Spring Educational Foundation Award Winners

**Loyalist College** – The *Eastern Regional Group Achievement Award*, which is presented to a graduating student in the Survey Engineering Technician Program for achievement in Survey Drafting, was presented to **Tyler Masse**. The *Eastern Regional Group Leadership Award* was presented to **Matthew Sullivan**, who is also a graduating student in the Survey Engineering Technician program, for his achievement in several Geomatics courses and overall leadership qualities. Both awards are co-sponsored by the Eastern Regional Group.

**Fleming College** – **Rylie Nellis** received the *AOLS Educational Foundation GIS Award*, which is presented to the student in the GIS Applications Specialist Program who exemplifies leadership in project management. **Ben Colgan** received the *Kawartha-Haliburton Surveyors Scholastic Award*, this year named in memory of John Stuart Duncan. This award, which is co-sponsored by the Kawartha-Haliburton Regional Group, is presented to a student in the GIS Applications Specialist program who excelled in Survey Camp and exemplified leadership in the participation of assignments.

**University of Waterloo** – A *Geomatics Excellence Award* was presented to **Johannah Young-Kay Kwok**, based on her academic excellence as a full-time undergraduate student enrolled in year three of the Geomatics program in the Faculty of Environment.

### Nov. 1st - "Invest in our Future" and join or renew your Membership

Charities are hurting and so is the economy. It is understandable that financial choices have to be made. Please remember the needs of Geomatics students as they struggle to pay for their education. They are the future of the surveying profession and our association.

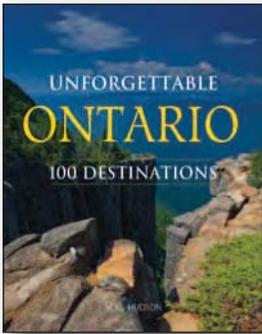
This past year, through the generosity of donors and members, the Educational Foundation was able to award a total of \$49,500 to post-secondary students enrolled in surveying and geomatics courses at many colleges and universities. Since 1975, the number of award winners, who have become Ontario Land Surveyors, has increased to **99** and **19** of our current articling students have received awards. To continue to offer these awards we need your support. Please *Invest in our Future* and donate to the Educational Foundation.

The Educational Foundation would like to recognize with thanks a donation made in the memory of Bob McCurdy.

# BOOK REVIEWS

## Unforgettable Ontario: 100 Destinations

By Noel Hudson



Published by Firefly  
Books Ltd.

ISBN 978-0-2281-0025-6

*Unforgettable Ontario* explores Ontario at its best.

This beautifully illustrated guide celebrates 100 of the communities, events and festivals that help to make a visit to Ontario unforgettable. Author Noel Hudson reflects the province's rich cultural and geographic diversity as he travels Ontario's countryside, from its villages, towns and cities to cottage country

and the north. Each entry offers a fascinating glimpse into Ontario's dynamic past and present, its spectacular landscape and the spirit of its citizens. *Unforgettable Ontario: 100 Destinations* is the perfect reference for travelers in search of a single guide to the province's many attractions.

*Information taken from the publisher.*

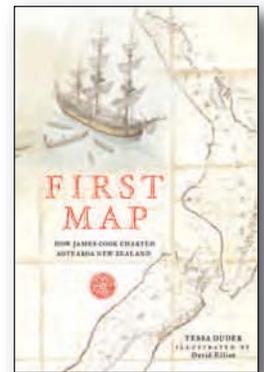
## First Map: How James Cook Charted Aotearoa New Zealand

By Tessa Duder

Since it was published by the Admiralty in 1816, James Cook's chart of New Zealand has long been regarded as one of the most extraordinary achievements in the history of cartography. *First Map: How James Cook Charted Aotearoa New Zealand* tells the human story behind the creation of Cook's famous chart, following the progress of his six-month circumnavigation of New Zealand and piecing the map together as the narrative on H.M.B.

*Endeavour* unfolds. It is a story of courage, dogged perseverance and Cook's extraordinary skills as both cartographer and seafarer. Scenes from Tessa Duder's evocative text are beautifully recreated by award-winning illustrator David Elliot in this exquisite large format edition. Published to coincide with the Tuia - Encounters 250 commemoration of James Cook's 1769-70 journey around New Zealand.

*Information taken from the publisher.*

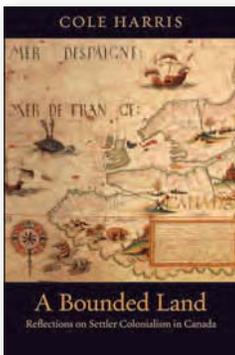


Published by  
HarperCollinsPublishers  
Australia

ISBN 978-1-7755-4094-6

## A Bounded Land Reflections on Settler Colonialism in Canada

By Cole Harris



Published by UBC Press

ISBN 978-0-7748-6441-1

Canada is a country of bounded spaces – a nation situated between rock and cold to the north and a political border to the south. In *A Bounded Land*, Cole Harris seeks answers to a sweeping question: How was society reorganized – for Indigenous and non-Indigenous people alike – when Europeans resettled this distinctive land?

Through a series of vignettes that focus on people's experiences on the ground, Harris exposes the underlying architecture of settler colonialism as it grew and evolved, from the first glimpses of new lands and peoples, to the immigrant experience in early Canada, to the dispossession and resettlement of First Nations

in British Columbia. In the process, he explores how Canada's settler societies differed from their European progenitors and, more theoretically, how colonialism managed to dispossess.

At a time when Canada is seeking to overcome the legacies of colonialism, *A Bounded Land* is essential reading. By considering the whole territory that became Canada over 500 years and focusing on sites of colonial domination rather than on settler texts, Harris unearths fresh insights on the continuing and growing influence of Indigenous Peoples in Canada and argues that the country's boundedness is ultimately drawing it toward its Indigenous roots.

*Information taken from the publisher.*

# The Last Word

## Canadian Standard for Mapping of Underground Utility Infrastructure - 2020 Update Published: CSA S250:20

Submitted by the AOLS Underground Utilities Committee

All too often there's uncertainty about the utilities that are underground but alive with activity: pipes carrying water to, and sewage away from homes and offices, pressurized and flammable gas transmission and distribution lines, electrical power cables, and communication ducts that link us to an increasingly important network of information, sensors and controls.

Where *exactly* are these arteries of commerce? How deep are they? When were they installed, by whom, and of what are they made? All too often, answers are murky with locations and details forgotten in time, poorly mapped, and of uncertain reliability.

### How close will existing utilities be to planned infrastructure?

This murkiness exposes the public to both physical and financial risk: risk of design conflict, construction delays, utility damage and hazard to property and human safety. It was these risks that the Canadian Standards Association (CSA) S250 Technical Subcommittee set out to reduce by crafting a 2011 best practices and standards document *Mapping of underground utility infrastructure CSA S250-11* for those owning, designing, operating, regulating and mapping underground utilities. In 2020, a new version of this national standard was published: CSA S250:20.

### What's in CSA S250:20?

The 83-page standard describes how best to measure, record,

preserve, and exchange utility location data so that subsequent users can find it easily and rely on it with confidence. It provides a set of definitions and provides a scheme for classifying the accuracy of georeferenced information. It also sets out a common means of labelling utilities on CAD plans. Newly added to the appendix is a reminder that only licensed surveyors should be relied upon for boundary work.

### Is it mandatory to follow CSA S250:20?

As a technical document, S250:20 has no *inherent* force of law, but owners and regulators could very well and would be wise to make it obligatory by referencing it in design, survey, and construction contract tenders. By doing so, parties to legal agreements would benefit by having a common understanding of underground utilities depicted on plans and profiles and when following safety regulations.

Moreover, when courts seek to settle claims arising from damage and allegations of negligence, they may well point to CSA S250:20 as providing a minimum requirement of the reasonable practitioner when creating, managing, interpreting, and sharing underground utility information. Forewarned is forearmed! Learn more about CSA S250:20 and purchase it at [csagroup.org/standards/](http://csagroup.org/standards/)



### Published by:

The Association of Ontario Land Surveyors  
(Established 1892)  
1043 McNicoll Avenue  
Toronto, Ontario, Canada M1W 3W6  
Phone: 416-491-9020 FAX: 416-491-2576  
admin@aols.org \* www.aols.org

### 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.

Unless otherwise stated, material which originates from our membership may be re-printed with acknowledgment.

Printed by Colour Systems Incorporated  
Original graphics design by Uniq Graphics and Design, Toronto, Ontario  
Computer implementation by nu Vision Images Inc., Toronto, Ontario

Views and opinions in editorials and articles are not official expressions of the Association's policies unless so stated. The Ontario Professional Surveyor Magazine and its publisher accept no responsibility for these views and opinions.

### Advertising Rates:

	1 time	4 times
1st Cover	Not Sold	Not Sold
2nd and 3rd Cover	Not Sold	\$715
4th Cover	Not Sold	\$825
Full page 4 Colour	\$705	\$660
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%.

### Mechanical Requirements:

Typed page: 48 picas wide by 63 picas deep  
Bleed size: 8.75 wide by 11.25 deep  
Non-bleed image area of a single page should be 7.5 x 10  
D.P.S.: 17.25 wide x 11.25 deep with bleed  
D.P.S.: 16 wide by 10 deep without bleed

### Digital File Requirements:

Supplied files should be "Press Quality" PDFs with trim and bleed marks included and with all fonts applied in the ad embedded.

**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 GRaCol\_2006\_Coated with Relative Colorimetric Intent.

### Circulation (This Printing)

Ont. Land Surveyors & Associates	807
Other Professional Affiliations	247
Advertisers	15

The *Ontario Professional Surveyor Magazine* is published quarterly as a medium of communication between the Association and its members. Readers are invited to comment and express their opinions on relevant subjects.

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

Subscription Rates to others: \$40.00 per year or \$10.00 per copy. All rates to us - no provision for commissions or discounts.

Canadian Publication Sales Agreement  
# 40064685  
Postage paid Mississauga / Gateway

Published Quarterly:  
next publication deadline:  
November 15, 2020

ALL PRICES LISTED ARE SUBJECT TO  
13% H.S.T.

# THE POTENTIAL OF ONE

Helping you move your business forward has always been at the heart of Leica Geosystems' work. Now more than ever, we understand the importance of keeping your crews safe and driving productivity while scaling your business.

Our latest solutions empower a single surveyor to do far more than what anyone ever thought possible.

Visit [www.Pure-Surveying.com](http://www.Pure-Surveying.com)



 **MicroSurvey**

NEED WORLD CLASS SURVEYING  
TECHNOLOGY WITHIN YOUR EXISTING  
AUTODESK WORKFLOWS?

MicroSurvey STAR<sup>®</sup>NET 10 adds powerful least squares adjustment workflows and is a compatible companion to Autodesk<sup>®</sup> software. inCAD 2021 adds land surveying tools to your existing Autodesk software as a plugin, and embeddedCAD 2021 is a built for purpose standalone AutoCAD<sup>®</sup> based package with perpetual licensing.

**CALL: (800) 668-3312**

**Products:**

[microsurvey.com/starnet10](http://microsurvey.com/starnet10)

[microsurvey.com/emcad2021](http://microsurvey.com/emcad2021)

[microsurvey.com/incad2021](http://microsurvey.com/incad2021)

**SURVEY  
SOFTWARE  
EASY  
WORKFLOW**

