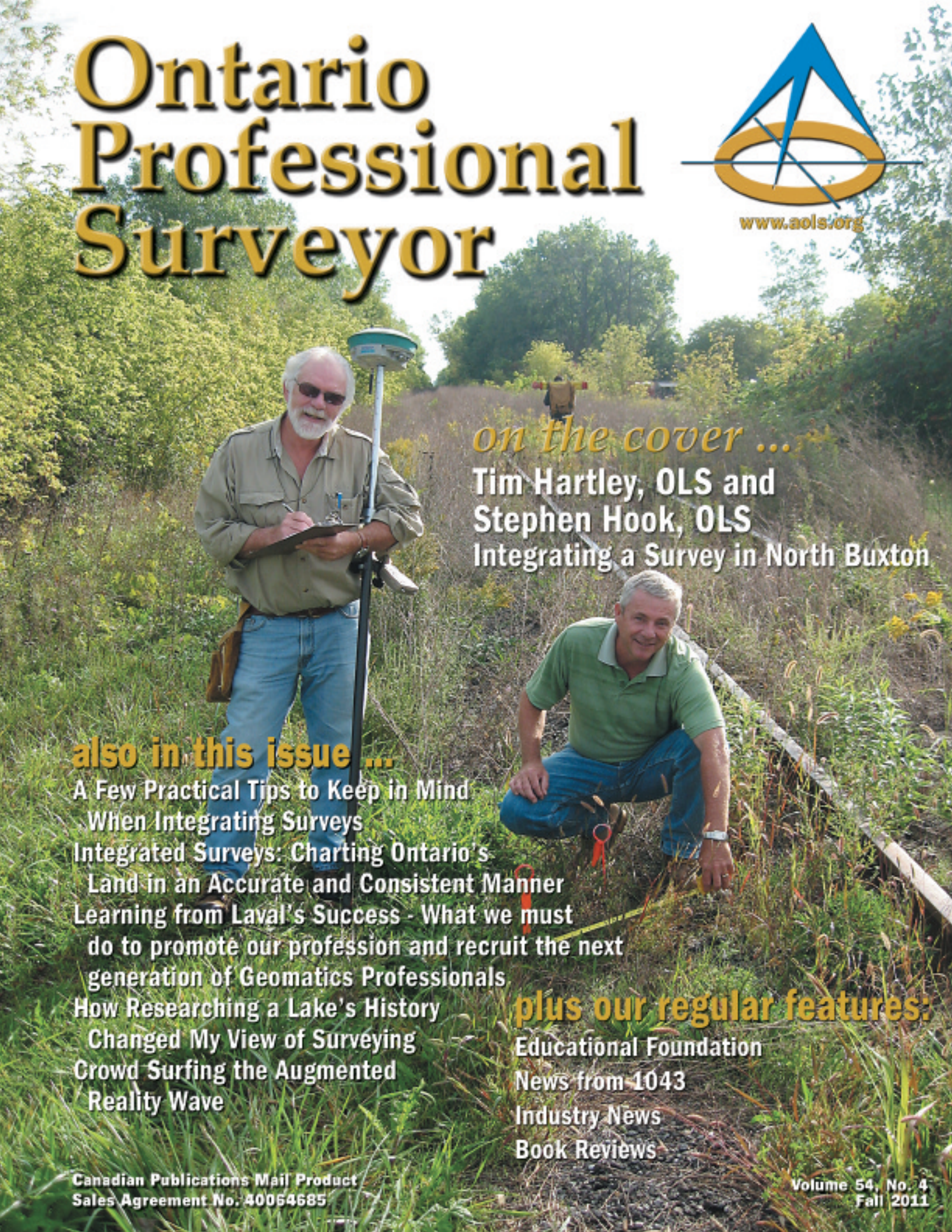
Ontario Professional Surveyor

www.aols.org



on the cover ...

Tim Hartley, OLS and Stephen Hook, OLS
Integrating a Survey in North Buxton

also in this issue ...

A Few Practical Tips to Keep in Mind When Integrating Surveys

Integrated Surveys: Charting Ontario's Land in an Accurate and Consistent Manner

Learning from Laval's Success - What we must do to promote our profession and recruit the next generation of Geomatics Professionals

How Researching a Lake's History Changed My View of Surveying

Crowd Surfing the Augmented Reality Wave

plus our regular features:

Educational Foundation

News from 1043

Industry News

Book Reviews

Canadian Publications Mail Product
Sales Agreement No. 40064685

Volume 54, No. 4
Fall 2011

ONTARIO PROFESSIONAL SURVEYOR

VOLUME 54, No. 4 Fall 2011

CONTENTS

REGULAR FEATURES

ADVERTISERS

ON THE COVER ...

Tim Hartley, OLS (standing left) and Stephen Hook, OLS (kneeling) are shown setting a point at the intersection of two great railways in North Buxton, Ontario, the Canada Southern Railway and the Underground Railroad (railway is the Canadian version and railroad is the American). The Canada Southern Railway ran from Niagara Falls to Windsor/Detroit and was the Ontario short cut for high speed express trains between New York and Chicago. It was the information highway of this era. The Underground Railroad brought many African Americans to freedom and to a safe and stable life in South Western Ontario. This rail line was the "blood, sweat and tears" of its time. Another crew member, Al VanHorne is shown walking along the tracks.

Professional Surveying in Ontario

encompasses the Disciplines of

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

President's Page

By David Brubacher, O.L.S., O.L.I.P.

I am pleased to let you know that this past June, Council and the Academic and Experience Requirements Committee (AERC) approved the addition of competency-based assessment as an alternate means of evaluation for entry into the profession. This is a significant decision that will have far reaching and beneficial impacts on the Association.

This initiative grew out of the *"Pathways to Fairness and Equity Project"* now in its fourth year. The main goal of the Pathways project is to improve the process for the evaluation of Internationally Educated Professionals (IEPs); more specifically, cadastral land surveyors trained in other jurisdictions, without reducing, in any way, the effectiveness of the certification process. The Project Leadership Team recommended that competency-based assessment was often the most appropriate way to accomplish this goal.

The first step in creating our new program was to identify all of the competencies that could be expected to be in the scope of knowledge of a cadastral OLS. This competency framework represents a significant body of work which required much discussion and research. Each of the more than 240 competencies and the criteria to attain them are described in a precise manner. Congratulations to the team; this task is done and we are ready to launch!

Two additional elements were developed in parallel with the competency framework. Resources have been listed for each competency (e.g. public domain Internet resources (URLs), posted readings, labs and assignments) which will enable learners to access valid and current content to assist in attaining competencies that they have not already mastered. Furthermore, two levels of self-assessment tools have been developed. There is a basic level, which deals with *Core Competencies,* and a comprehensive self-assessment tool that contains the full dictionary. These self-assessment tools will be housed on the AOLS web site, together with the competency descriptions and resource modules.

The AOLS is also offering and sponsoring courses using a blended delivery system. A blended delivery system means that some learners will attend sessions in person, while others will participate online. GoToTraining© is the software system currently being used for these courses. The courses currently offered are;

- Introduction to Canadian Common Law (Survey),
- Survey Law I & II,
- Municipal Planning,
- Professional Communications, and;
- Capstone Technical Writing.

The new resources and courses are in the process of user-acceptance testing and will be made publicly available.

The Project Leadership Team is working to establish *e-correspondence* companion courses for all courses that are currently offered, to meet the needs of learners who are unable to attend a scheduled class.

Achieving certification through this new process may involve *Learning Contracts*, in which the Assessor and AERC reach an agreement with the candidate as to exactly what is required for the candidate to become a cadastral OLS. This Learning Contract can include taking university courses, AOLS sponsored courses as well as self - or assisted - study to master identified gaps in competencies.

With the development of our competency toolkit, anyone from any location or background can see exactly what skills and knowledge are required to become a cadastral OLS. It will provide a path for our technologists and technicians to up-skill to the professional level, while receiving recognition for their existing competencies. Professionals in other related disciplines, such as Engineering, GIM etc. can easily identify what additional competencies they require to secure a cadastral OLS designation. Members will benefit from the toolkit as it will enable them to perform a self-assessment and build a Professional Development Plan. All professions change rapidly in technology and methodology; we now have a touchstone for keeping current.

These innovations have begun to transform the AOLS into a *Learning Organization*. The competency-based assessment process was built on the Adult Learner Friendly Institution (ALFI) principles. Courses are no longer place-bound, time-bound or role-bound, nor are there any minimum class sizes. The support and resource elements that are available mean that those folks who are prepared to dedicate themselves to the rigorous path of becoming a cadastral OLS can do so in an effective, efficient manner.

Competency-based assessment and processes are, in fact, more rigorous than course-based programs. Their advantage lies in the fact that provisions are made for recognizing prior learning, whether that learning is secured from formal education or from practical experience. It opens the door for people who already have many of the competencies in their skill set and allows them to receive credit for them.

Welcome to York University Professors Spiros Pagiatakis, Sunil Bisnath and Costas Armenakis who join lead assessor Professor Mike Chapman from Ryerson University on the assessment team.

These achievements address key priorities in our 2011 Strategic Plan. We will continue the momentum by expanding our competency framework to cover GIMS, Photogrammetrists, Geodesists and Hydrographers.

A Few Practical Tips to Keep in Mind When Integrating Surveys

By Tim Hartley, O.L.S., O.L.I.P.

Bearing Reference

Ensure that you are using the correct bearing reference.

If two receivers are being used and one is on "A" and the other is on "B", then the grid bearing is derived from simultaneous GPS observations from point A to B.

If using one receiver in a Real Time Network, then the grid bearing is derived from observed reference points A and B by Real Time Network observations.

When setting Observed Reference Points, measure them at the beginning of the survey and then re-observe them at the end of the survey.

Grid and Ground Coordinates

Do not be tempted to divide the grid coordinate by the combined scale factor to get some pseudo ground coordinate. There is no such thing as a ground UTM coordinate; a UTM coordinate is on the reference plane. If you want to use ground coordinates, then use a local coordinate system with an origin of 5,000, 5,000 and these local coordinates will not be confused and be construed to be UTM coordinates.

Real Time Networks

Work in the Canadian Spatial Reference System (CSRS).

Epoch

Don't forget to state the epoch that you are using. In most cases it will be 1997. In the future, we will use a different epoch and we will have to know which one a plan is referenced to.

Convergence

When retracing a plan that has astronomic bearings, it is nice to be able to quickly calculate the convergence on the difference between the astronomic and grid bearings. Not only does this give a quick check on the observed convergence of a line, it allows you to find one monument and calculate the grid coordinates of another point and have the GPS navigate you to the point. The GPS is a very powerful "bar finder".

The formula is: $\theta = 32.39 L \tan\varphi$

θ = the convergence in seconds of arc

L = the distance in km from the Central Meridian (CM) (CM Easting is 500,000)

φ = the latitude (get this from the raw data in the data collector)

Field Notes

State on the field notes:

You are using grid distances or ground distances

You are using MTM, UTM(ORIG) or UTM (CSRS)

The combined scale factor

If you are using a network, then indicate which one.

Coordinates on the Electronic Version of the Plan

If the electronic version of the plan has grid coordinates, then explain this to your client. The inversed distances between the points will be the shorter grid distances and not the longer ground distances as shown on the plan.

Integration

Integration is simply tying the survey into a coordinate system. We are not amending the rules of evidence; a coordinate will not take precedence over a found monument. A coordinate is simply a form of measurement used to attempt to describe a point.

Observed Reference Point (ORP)

An ORP is a monumented point connected to a coordinate system by measurement, it therefore does not have to be the actual point of observation. It can simply be a monumented point on the survey that is connected to the actual point of observation. The actual point of observation could be on adjacent lands where we have no right to set a monument or even a point set in the ice on a frozen lake.

Accuracy

Remember that there are two definitions of the accuracy that we are trying to obtain

1. The objective absolute (network) accuracy and,
2. The subjective relative (local) accuracy.

Blunders

In order to check for blunders when measuring the coordinates of a point with a GPS, measure the point and then remove the receiver from the point, break the GPS lock and re-observe and have the receiver navigate you back to the point.

Setting out a Point

After you are satisfied with the position that the receiver has navigated you to, then mark this position on the ground with a pin or a nail. Offset this point by two right angled taped distances to two other pins or nails. Set the monument and check and adjust using the taped distances from the two off-set points. Break the GPS lock and have the receiver navigate you back to the set point.

These were some of the ideas and questions that arose during my part of Spiros Pagiatakis's Practical Steps to Integrated Surveys seminars. **Tim Hartley** is a practicing Ontario Land Surveyor. He can be reached at **timothydhartley@gmail.com.**

Integrated Surveys: Charting Ontario's Land in an Accurate and Consistent Manner

By Spiros Pagiatakis, PhD, P.Eng

We have recently completed the second series of continuing education seminars on the "*Practical Steps to Integration*", sponsored by the AOLS. These seminars focused on the practical aspects of integration based on the first series of seminars, given in 2010 that laid out the theoretical foundation. The seminars followed the "*Reverse Engineering*" or "*From Finish to Start*" approach that commenced with the requirements regarding the survey plan and its contents, it continued on with the data processing methodologies and strategies, and ended with suggested procedures in the field to achieve the accuracy requirements and overall high quality of the final plan.

The seminars made frequent links to Ontario Regulation 216/10 "*Performance Standards for the Practice of Professional Land Surveying*" that must be adhered to by all AOLS members regarding the integration of legal surveys into the national reference frame. Simple numerical examples and data processing demonstrations were given to accentuate the importance of rigorous data handling that ensures compliance with the accuracy and quality standards. Special attention was given to the field procedures and the concepts of geometrical strength of the observed reference points. Emphasis was also given on the variety of the on-line tools that are available from OMNR (COSINE) and the Geodetic Survey Division (GSD) of NRCan (Ottawa).

It is well understood that O.Reg. 216/10 requires that all legal surveys be referenced (integrated) to the national reference frame (NAD83). Since cadastral surveys are 2-D, at least for now, either realisations i.e., NAD83(original) or NAD83(CSRS+epoch) can be used as per O.Reg. 216/10. However, in order to achieve the required accuracy, at least in urban areas, it is strongly suggested to use NAD83(CSRS+epoch) where possible. As far as the actual field observations are concerned, there are many ways of integrating the surveys.

It appears that the majority of surveyors use the RTK network method to establish the required observed reference points (ORP) in the area of interest. Whereas RTK network providers have done a fabulous job in establishing, maintaining and providing access to their networks, there is a concern about the use of just one base station when establishing an ORP, particularly when the occupation time is very short. It has been emphasized that this approach does not provide adequate geometrical strength, and the use of a second base station would be very desirable, at least if urban accuracy is required.

Beyond the use of the RTK networks, other field methods are also possible and their description can be found in various documents published for instance by GSD and are also available on-line. These methods were discussed extensively during the seminars and are briefly summarized as follows:

a) Precise Point Positioning (PPP): This method may satisfy the surveys in remote areas when the ORP is occupied for long periods of time. Since the majority of the surveyors use GSD's on-line PPP processing tool, there should not be any concern regarding the transformation of the estimated positions, since the users can directly obtain the coordinates of the ORP in the NAD83(CSRS) frame. Caution should be exercised if other PPP software is used since the estimated positions may be given in the WGS84 system, in which case a transformation to NAD83(CSRS+epoch) will be required.

b) Direct connection of the established ORPs to Specified Control Points (SCP) via physical occupation: This is a well known approach, but the surveyor must be careful with the reduction of the observations. If doing a traverse using a total station, the measurements must be reduced onto the ellipsoid and then to UTM grid when using UTM coordinates for the SCP in the adjustment. Care must be exercised when reducing GPS baselines on the UTM grid. Once the observations are reduced onto the grid, UTM coordinates of the SCPs can be used to adjust the traverse or network.

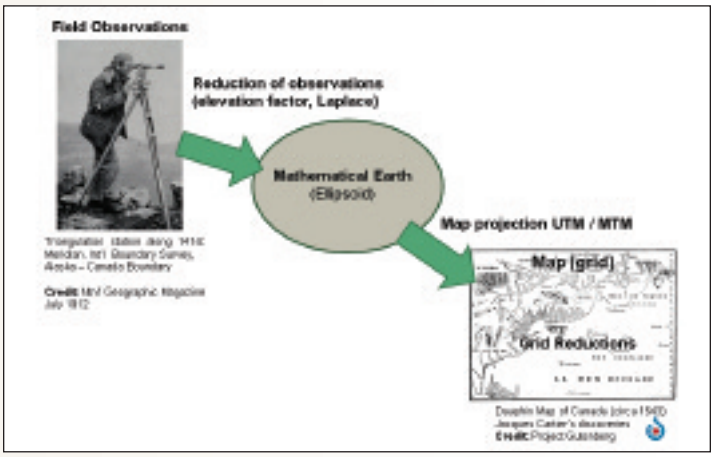
c) Advanced GPS users can follow the differential GPS mode to achieve higher accuracy estimates of the ORP coordinates. This would require two receivers, one at the base station (SCP) and the other at the ORP. Data must be collected at both stations and post-processed to obtain the ORP coordinates. Occasionally, the surveyor may use as a base station one of the continuously operating stations (e.g. CACS stations). In this case, CACS RINEX data from GSD for post-processing must be used. This approach will obviously require one receiver supplied by the user. Again, the surveyor should strive to have strong geometrical configuration to achieve the urban accuracy requirements. Transformations of the estimated baselines from WGS84 to NAD83(CSRS)

cont'd on page 8

may also be required depending on the GPS ephemerides used (WGS84 or NAD83(CSRS)).

d) A combination of the above methods is also possible.

As per O.Reg. 216/10, the coordinates of all points in the survey shall be expressed as grid coordinates in a Universal Transverse Mercator (UTM) map projection or a Modified Transverse Mercator (MTM) map projection. The observations obtained in the field, regardless of how they were obtained, must always be projected (or reduced) onto the reference ellipsoid (horizontal datum – see figure) before



any map projection is attempted. The reduction of the observations onto the reference ellipsoid is dependent, first and foremost, on the choice of the ellipsoid. It is critical to choose the ellipsoid that has officially been adopted in the country, in our case the GRS80 reference ellipsoid. The geodetic coordinates (ϕ, λ, h) or their grid equivalents (Northing, Easting) of all reference stations used are therefore dependent upon the adopted reference ellipsoid. The reductions to the ellipsoid include primarily the elevation factor for distances. Azimuths measured on the ground may not be reduced by the Laplace correction since in Ontario it may only reach a few seconds or arc. In a second step, all geodetic quantities (distances, azimuths, angles) on the ellipsoid must be projected onto the mapping plane (grid) using appropriate reduction formulas that were extensively discussed in the seminar. Of these reductions, the most important are the projection scale factor (UTM factor) for the distances and the meridian convergence for the azimuths. Other reductions for the angles also exist (e.g., T-t) but they are negligibly small for the usual extent of the cadastral surveys and thus can be neglected. Finally, least squares adjustments must always be performed to obtain the best solution as well as be able to provide confidence intervals at the 95% level, as required.

It was very pleasing to see the elevated interest of the participants and their substantial interventions through very well posed questions, comments and statements. This made the seminars more interesting, comprehensive and most importantly, useful. I have always regarded continuing education activities as important and necessary exercises for maintaining relevancy, leadership, professional advancement, and competency, all of which are, and must be, the characteristic elements of a professional who serves the public. The initiative of the Association to organise these seminars was timely and necessary and I'm hopeful that it will continue in the future to provide the required education to the membership.

I thoroughly enjoyed teaching as well as learning from a wonderful group of eager professionals! I sincerely hope that they got as much enjoyment from the seminars as I did. Tim Hartley, who delivered a significant portion of the seminars, has been a magnificent partner and a great communicator. Many members from the AOLS Integrated Surveys Committee contributed to the success of the seminars with ideas and suggestions on the format of the presentation. I have also had a great time working with Phillip Swift on the "Interpretive Guide" and other aspects of the integrated surveys. As always, it is marvellous to work with the AOLS staff who flawlessly organised all the seminars across Ontario.

Spiros Pagiatakis, PhD, P.Eng is Professor of Geodesy and Chair of the Department of Earth and Space Science and Engineering. He can be reached by email at **spiros@yorku.ca.**

Insurance Advisory Committee Tips for Members

Practical Construction Tips

- Remind your field staff to always step back and have a good look at what they have staked. Does the layout make sense? If the top of the shoring is higher than the road, it is probably designed incorrectly or not staked out properly.
- When supplying temporary bench marks, always set two bench marks, preferably independent of each other and remind the contractor to use both.
- Report to your insurance advisor first. Do not admit liability.
- Always document your client's changes, especially with regard to onsite construction requests.

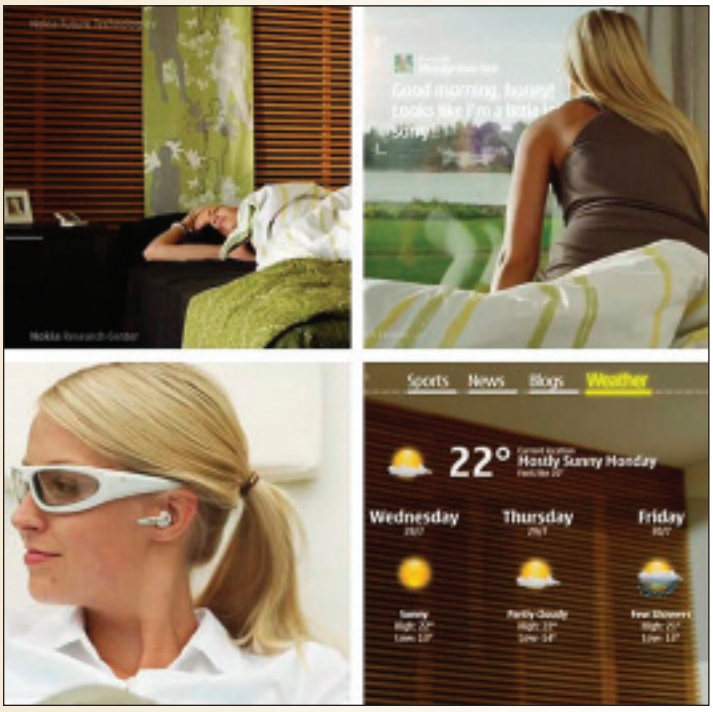
Crowd Surfing the Augmented Reality Wave

By Tanya Charles

As a collective GIS community filled with self-labelled geo-geeks, two key industry drivers constantly limit us: data and technology.

Fear not, as change is imminent and new technologies emerge daily. Lately we have seen the proliferation of smart phones, tablets, app stores, and social media. Geo-located information via Twitter, Facebook, and Foursquare is being gathered for free and used for both social and industrial applications. Flickr alone hosts over 100,000,000 geo-tagged photos. The big question is how to integrate new advances in hardware with relevant and meaningful information.

The hardware is coming. We all see the rapid rate at which hardware is developed and goes out of date. A pair of glasses, an earpiece, and a haptic wrist device will soon replace bulky computers. The goal of hardware producers is to make your access point completely seamless with your environment. Once we are able to wear our hardware as accessories, people will be truly 'plugged in'. Look at Bluetooth headsets, a seamless technology that when first released brought about jeers and laughter but has evolved to a functional accessory worn by the masses.



The real race, and the one CloverPoint is focused on, is not about hardware, it is about data. Our goal is to make life safer, faster, and easier by extending mobile communication beyond traditional methods. The key to this is in facilitating crowd accelerated innovation. People will interact and learn from their environment in a new way. They will be immersed in the augmented reality of the digital world that they have helped build.

CloverPoint is doing this today. We have developed a 3D simulated campus with the University of British Columbia. It is a common operating platform for multiple agencies within UBC to create, share, and disseminate critical business data to support their decision making process. Architects, planners, and facility managers alike can visualize the impact of new buildings. Academics and sustainability teams will use this virtual world as a living lab to test various scientific hypotheses. The entire system is built to function online and is based on accurate 3D models built from engineering drawings and placed in real world space with real data pulled from GIS services into a 3D environment. A security module allows different users to have different levels of access (CRUD - Create, Read, Use, Delete) based on user group permissions. The system provides administrators with the capacity to do 2D and 3D space management in a controlled environment while other users may only have access to view the system and get building information. More information on Insight UBC can be found at the following link:

http://www.cloverpoint.com/pdf/2011_09033_UBC_PDS.pdf.

Virtual cities and campuses are the perfect venue for gathering instantaneous geo-located data from the public. This method of gathering data has been coined Crowdsourcing. Crowdsourcing is defined as the trend of leveraging mass collaboration enabled by Web 2.0 technologies to achieve business goals. Campuses are home to lots of young technologically savvy students with mobile devices and laptops distributed across the spatial extent of the study area.

cont'd on page 10

The next step in virtual space management involves integration with crowd-sourced information. Digital blueprints and images are linked to 3D buildings that connect to centrally managed web services. Class location and schedule changes can be augmented into student virtual environments so they can visualise the location change in their augmented environment in real time. No more getting lost on campus.

So, we agree, technology is cool but it can only take us so far without good data and data is costly and time consuming to collect. LiDAR, GPS, air photography, and field mapping are all expensive and lengthy processes. Technological advances in hardware are producing innovative data collection methods going far above conventional methods for gathering data and the results are amazing.

No longer are field crews delivering a series of lines to denote pipe location. They are using ground penetrating radar to determine pipe length, diameter, and location in 3D space and integrating this content into information management systems. The applications for this use alone are astounding. Think about how many times a year primary intersections are shut down due to pipe breaks and gas leaks. Utility crews could take a wireless device into the field to view pipe locations and what agency they belonged to before an excavation allowing for timely temporary turn-offs thereby avoiding costly delays and damage.

Stantec, a CloverPoint business partner, is using internal LiDAR technology to create 3D models of building interiors. The accuracy and format of this data makes it readily analysed and incorporated so issues can be identified before they happen. This means fewer electrical fires, pipe bursts, and flooded basements. We are talking about a pipe network with intelligence based on solid foundation data. They aren't just pipes; they are pipes with a 3 dimensional location, compliance dates, manufacturer details, and material descriptions.

It is a lofty goal to have data like this accessible to everyone, but prepare to share as we are in the midst of a data paradigm shift. We see people sharing data from all levels of government, the public, institutions, First Nations, and private companies. Users are crying out for accurate, credible, and reliable foundation data available when people need it. The time for archaic expensive systems with disparate data that lack users is the past.

Embrace the crowd-sourced future. Enter the Web 2.0 world where information sharing, interoperability, and user-centered design provide a foundation for websites allowing users to interact and collaborate in a social media dialogue as creators (prosumers) of user-generated content in a virtual community. This contrasts the first generation of websites where users (consumers) were limited to the passive viewing of content created for them. The future of GIS data is in shared and augmented features manifested through crowd sourced accelerated innovation.

So where do you want to be when this paradigm shift becomes apparent to the general public: Clutching your ortho-digitized geodatabase with white knuckles, or at the leading edge blazing a path through the nuances of the spatial digital realm with people looking to YOU for guidance to a better GIS data future?

Tanya Charles started with CloverPoint after finishing her degree at University of Victoria in 2007. Due to her passion for data and technology, and her determination to be an innovator and a leader, she is now the head of Clover Point's GIS department. She is an expert at Geospatial techniques and technology and is now CloverPoint's GIS Project Manager and Practice lead. She has been an integral component to the company through its evolution from a GIS analysis and Cartography Shop to a cutting edge software development company that integrates the importance of spatial relevance with slick programming and solid databases. You can reach her by email at **tcharles@cloverpoint.com.** For more information on CloverPoint visit http://www.cloverpoint.com.

Learning from Laval's Success

What we must do to promote our profession and recruit the next generation of Geomatics Professionals

By Maureen V. Mountjoy, O.L.S., O.L.I.P., Deputy Registrar/Editor

One of the first things that Blain Martin did when he became the Executive Director was to assemble some statistics on our association's demographics. It opened our eyes to what would be a dim future for our association, or not if we take steps now. These statistics have forced us to ask the following questions: Where are the up and coming Geomatics Professionals? What can we do to attract young people to what has been to many of our members, a rewarding and lucrative career?

Number of Surveyors by Age

AGE	Total	Cad	Photo	Hyd	Geod	GIM
Total	626	539	10	1	16	60
20 - 29	3	3	0	0	0	0
30 - 39	40	39	0	1	0	0
40 - 49	105	98	0	0	3	4
50 - 59	229	191	8	0	8	22
60 - 69	193	155	2	0	3	33
70 - 79	48	45	0	0	2	1
80 - 89	8	8	0	0	0	0
Percentage over 50	76%	74%	100%	0%	81%	93%

AOLS Demographic Chart May 2011

While doing some research on the Internet for the Universities and Colleges Liaison Committee (UCLC), I found a copy of a PowerPoint presentation by Annick Jaton and Francis Roy, both of whom are professors from Laval University, titled "Bridging the gap between academic, government and private sectors to recruit the next generation of Land Surveyors & Geomatics Engineers – A success story in Québec, Canada". It was presented by Francis Roy at the International Federation of Surveyors - FIG Working Week in Marrakech, Morrocco this past May. The surveying program at Laval began in 1907, the first in North America. A Geomatics Program was introduced in 1986.

One of the slides from the presentation was a graph of the evolution of the number of undergraduate students in Land Surveying/Geomatics at Laval since 1986. It showed a peak in enrollment of over 300 in 1993 and then a steady decline to just over 100 in 2001. At this point, attracting students became a priority for Laval. It also became an issue for the surveying and geomatics industry because, as it became a more prosperous sector in Canada, there weren't enough graduates to fill the available jobs.

Organizations such as the Ordre des Arpenteurs-Géomètres du Québec (OAGQ), the Canadian Institute of Geomatics, private companies, municipalities such as the City of Montreal, and the Quebec Ministry of Natural Resources and Wildlife joined forces with Laval University and Limoilou College to develop some collaborative initiatives to attract young people to their geomatics programs. These initiatives have worked and the students are back. Since that low point in 2001, the number of undergraduate students in Geomatics has climbed to over 200.

We contacted Annick and Francis and asked them if they would share some of the secrets for their recruitment success. We set up a teleconference with them, and Pierre Tessier, Vice President of OAGQ and a few members of the UCLC, i.e. Chair Nigel Day, Bill Buck, Blain Martin and me. They didn't disappoint us.

The first piece of advice they gave us was to stop trying to define the word "Geomatics". Instead, tell students what you do in your day to day work, what attracted you to the profession and how much money you make.

They also shared details of some of the collaborative initiatives that worked for them:

- Alumni from Laval (Geomatics Ambassador's Network) visit high schools to talk to students about their careers and what they actually do in their day to day jobs.
- A popular map competition was developed for high schools
- A booth is shared at Education Fairs every year and dynamic surveyors, engineers, professors and students work together at the booth. They show maps and images and 3D views of all applications to the field of surveying/geomatics.

cont'd on page 14

- The OAGQ completed a salary survey and shared the results. Annick and Francis advised us to tell young people that we offer fantastic jobs with good salaries on par with other professionals, such as engineers and architects.
- Laval University posts career information on their website and lists employment opportunities. If students know that there are jobs available upon graduation with good salaries, they are going to enroll in the geomatics program.

The UCLC will consider these initiatives to see if some of them can be worked into the AOLS Strategic Plan or be combined with initiatives that both the UCLC and the Public Awareness Committee (PAC) are already working on.

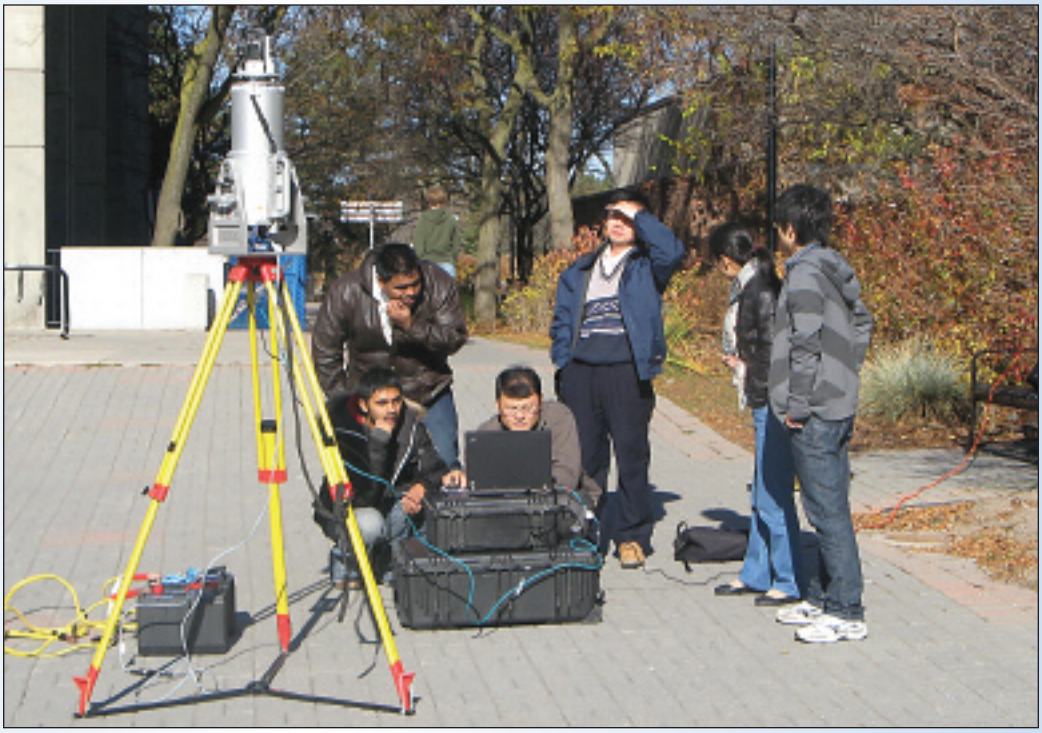
AOLS Initiatives

In October of last year, Nigel Day and Michael Matthews (sponsored by the AOLS), and a few of the Eastern Region staff of the Ministry of Transportation Ontario staffed an exhibit booth at the Ontario Association for Geographic and Environmental Education (OAGEE) Fall Conference for geography teachers. Their purpose was to highlight the importance of Geomatics and its applications and make the teachers aware of the many career opportunities that are available through membership in our Association. One of the most important outcomes from the conference was meeting Kim Wallace, the Education Officer of the Ministry of Education. Ms. Wallace is currently spearheading the revisions to the *Ontario Curriculum for Canadian and World Studies, Grades 9-12,* which includes all of the Geography courses. The AOLS, as a stakeholder, was asked to identify key Geomatics issues that would impact the proposed curriculum. Together with members of the UCLC, Nigel and Michael drafted a response and from that point on the AOLS has played a key role in the curriculum review.

In March, I represented the AOLS at a curriculum review session in Ancaster. I was placed with a group of Geography teachers from the Halton Region. We reviewed and commented on the draft of the Grade Nine *Geography of Canada* (CGC1D) course. The Association was then asked to complete an online survey about the course and all other geography courses that contained a Geomatics component.

The AOLS then invited Kim Wallace to a meeting at the AOLS office to discuss how our association could continue to assist her with the revision of the entire geography curriculum. Sue MacGregor, Nigel Day, Jean Tong from ESRI, Blain Martin and I also attended. The group was asked to determine what key skills students need to have in geography from grade one all the way up to the high school level. At a second meeting 2 weeks later the same group, with the addition of Iain Greensmith from ESRI but without Sue MacGregor, focused on what key skills were necessary for the "Purposeful Introduction of Map and Globe Skills" starting from the grade one level. Kim Wallace felt that the meetings were very beneficial to the curriculum review process and we will continue to work with her. From our viewpoint if students are exposed to Geomatics at an early age and develop an interest that leads them to a career with our association, then we have created a valuable source for recruitment.

For the past several years, members of the PAC have staffed an exhibit at the Ontario Universities Fair, which is held at the Metro Toronto Convention Centre each fall. This fair attracts up to 90,000 students and their parents and teachers. We work together with professors and staff from York University, Ryerson University and the University of Waterloo. We hand out material on each of their respective Geomatics programs and direct interested students to their exhibits. They in turn send students who are interested in their programs to our booth to discuss career opportunities after graduation. Our goal this year is to get more "young ambassadors" to help us at our booth because students tend to feel more comfortable talking to young people, especially recent university graduates who can give them firsthand knowledge of their university experience. Members of the UCLC/PAC will be exhibiting in November at the Ontario School Counselors Conference and for the second time we



York University Geomatics Engineering students conduct a terrestrial laser scanning survey for a 3D building modeling project.

will have a booth at the OAGEE Fall conference.

These are a few of the recruitment strategies that members of the UCLC and PAC are working on, but it is not their sole responsibility to recruit future members. What can you do to promote your profession?

Member Initiatives

Be an ambassador - The best ambassadors for our association are you, the members, and alumni from the current post-secondary Geomatics programs. Most high schools have annual career fairs or career days and they are quite eager to offer a table and a chair to a Geomatics Professional to promote career opportunities for their students. The Association has career pamphlets, bookmarks and portable displays that are available for members at no charge for these types of events.

Offer summer jobs or co-op positions - If you ask many of our current cadastral members why they chose surveying as a career, many will answer that they had a relative who was a surveyor or that they had a summer job in surveying. Many high schools and post-secondary institutions have co-op programs and are looking for employers to hire their students, in any of our five disciplines.

Take Our Kids to Work Day - Every year for the past 16 years there has been an opportunity to take a grade nine student to work for one day to show them what you do. It doesn't have to be your own child; it can be a relative or a friend's child. This year it is scheduled for Wednesday, November 2.

Promote Your Profession

One of the most important outcomes for students to consider when they choose a university or college program is whether they can get a job after they graduate. This factor played a very large role in my own university experience and was the reason that I became an Ontario Land Surveyor. In 1972 when I was entering into my 2nd year as a Biology student at Erindale College, I discovered the newly formed Survey Science program. I did well in Mathematics and I loved the outdoors, so I took the introductory surveying course. When I found out that surveyors were in demand and I was guaranteed a job after graduation, it didn't take me long to change my major to Survey Science. When you look at the current decline in our membership and the graph of our demographics, it is imperative that we let prospective students know that Geomatics Professionals are in demand. If we all work together, we can increase the number of students in post-secondary Geomatics programs and recruit new members. It's time for you to step forward and promote your profession; the future of our association depends on it.

Sites to See

FIG Young Surveyors Network

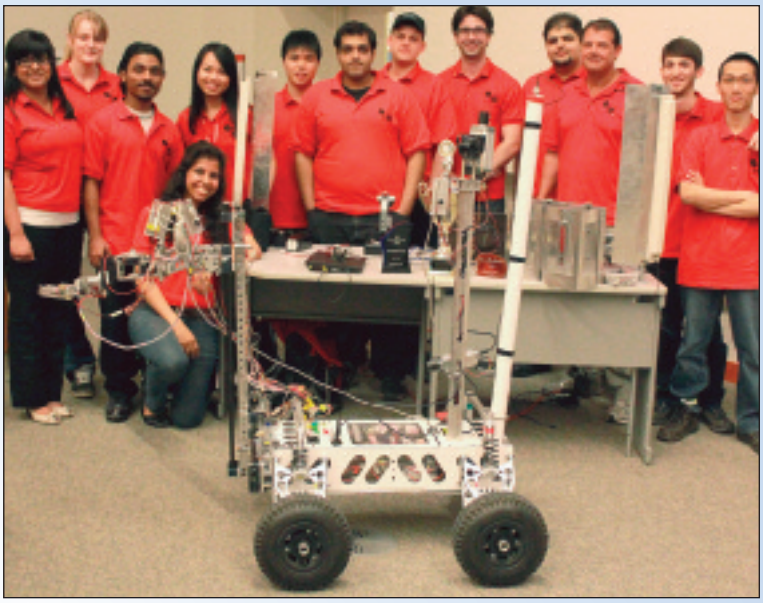
www.fig.net/ys/index.htm

In a time where many of the International Federation of Surveyors (FIG) member organizations are facing difficulties to attract young people to the profession of surveying FIG has created the Young Surveyors Network as a global working group. The goal is to create connections between "older" and "younger" surveyors.

YorkU Rover Team
Survey Task Backgrounder

By Jordan Bailey and Shailja Sahani

The York University Rover Team was a national winner at the International University Rover Challenge (URC) which is a project of the Mars Society (http://urc.marssociety.org). Our team is in its fifth year and have placed in the top three every time in this annual competition, with first place in 2009.



York U Rover Team (left to right): Shailja Sahani, Richelle Leonard, Chitiiran Krishnamoorthy, Manjeet Kaur, Carina Hoang, Dennis Liu, Vaibhav Kapoor, Jordan Bailey, Isaac DeSouza, Saurabh Bhardwaj, Walter Griffatong, Pablo Saldarriaga, Stanley Lio. Members not in the photo: Mark Post, Houman Hakima, Vincent Huynh, Alejandro Saldarriaga, Tom Young, Daanish Maan and Herman Badwal.

What we do:

As a team we build a new rover every year, while educating the incoming members on the practical aspects of surveying. The previous rovers are now used very creatively - one of them is housed in the Canada Air and Space Museum, another one is being is used by faculty members for remote surveying research at York.

A huge component of the Rover, and the competition, is focused on remote site surveying. We created an economical and tele-operated total station a few years ago using an off-the-shelf rangefinder, telescope, cameras, GPS system and in house micro-controllers. The current equipment has worked really well but it is past its shelf life. With your involvement and expertise, we plan to improve our current systems dramatically.

The Survey Task has been a part of the URC since the first competition. The goal of the task is to show how a rover can be used on Mars to accurately map the terrain. To that end, the task consists of determining the GPS coordinates of a series of unknown points, using only two known points and the equipment on your rover. E.V.E.'s survey station consists of a user interface program written in Java communicating with an off-the-shelf computer-controlled telescope. A range finder wired to a microcontroller provides range information when commanded to do so. Both devices have cameras mounted on them to enable tele-operated surveying. Accuracy is limited by the quality of the GPS coordinates and the +/- 1m accuracy of the range finder. All software was written from scratch. The telescope and rangefinder function as a home-built total station, providing angles and ranges which are then plugged into the student-programmed surveying software. The program can also focus the 36x magnification telescope by controlling a motor mounted to the focus knob. This setup was picked due to its low cost (approximately $1000, compared with $10000+ for a Total Station) and relatively high accuracy. Cost is an issue because the total cost of the rover must not exceed $15000.

In past years both the GPS coordinates of a known landmark and a reference point from which all the markers can be seen were given. This year only the latter was provided by the judges, forcing us to rethink our strategy. Not having a known landmark to work with made it next to impossible to accurately solve for the GPS coordinates of the unknown markers using the triangulation method. Instead of using the telescope and rangefinder to make measurements, the telescope was used in conjunction with the on board cameras to scout the unknown markers (white poles with markings) and the rover was driven to each of the markers in turn. GPS coordinates of the rover's location provided by the onboard GPS system were used for the markers' location. Two of the markers were not seen but the navigator was able to estimate their locations with some calculations using the terrain map and the location of the other markers.

This task would not have been possible without this year's sturdy suspension system which was able to take the rover to the unknown markers. These markers were placed by the judges in locations that were considered to be unreachable due to rough terrain. The team scored **100%** on this task and placed 2nd overall in the competition.

Why support us?

Our motto is to *Innovate, Educate and Compete*. We hold

cont'd on page 18

workshops, do numerous outreach events and in turn provide opportunities to promote our sponsors on a regular basis. There is a heavy focus this year on improving our industry relations. We hold design reviews through the year to inform our industry partners on our progress to date; it would be fantastic if members of the AOLS were represented to provide valuable feedback on our work. Finally, our media coverage is outstanding for a university team, and all of our media coverage always includes our sponsors. Currently we are in the process of preparing a sponsorship package for 2011/2012. The total budget this year is $50,000.00 and the team operates on sponsorship alone. With this budget, the team will be able to build a new rover and compete in two competitions this year, the previously mentioned URC and a new one this year, NASA's Lunabotics Mining Competition, where the challenge is for students to design and build an excavator, called a Lunabot, that can mine and deposit a minimum of 10 kilograms of lunar simulant within 10 minutes.

York U Rover competing in the International University Rover Challenge.

For further information about how you can offer assistance to the YorkU Rover Team contact Shailja at ssahani@yorku.ca. The York Team provides tax receipts for personal donations. The Team Website is: www.yuroverteam.com.

Sites to See

Geomatics Canada

www.geomaticscanada.com

Geomatics Canada is an online job board for GIS, remote sensing, surveying, geodesy and engineering jobs.

How Researching a Lake's History Changed My View of Surveying

By Andy Thomson

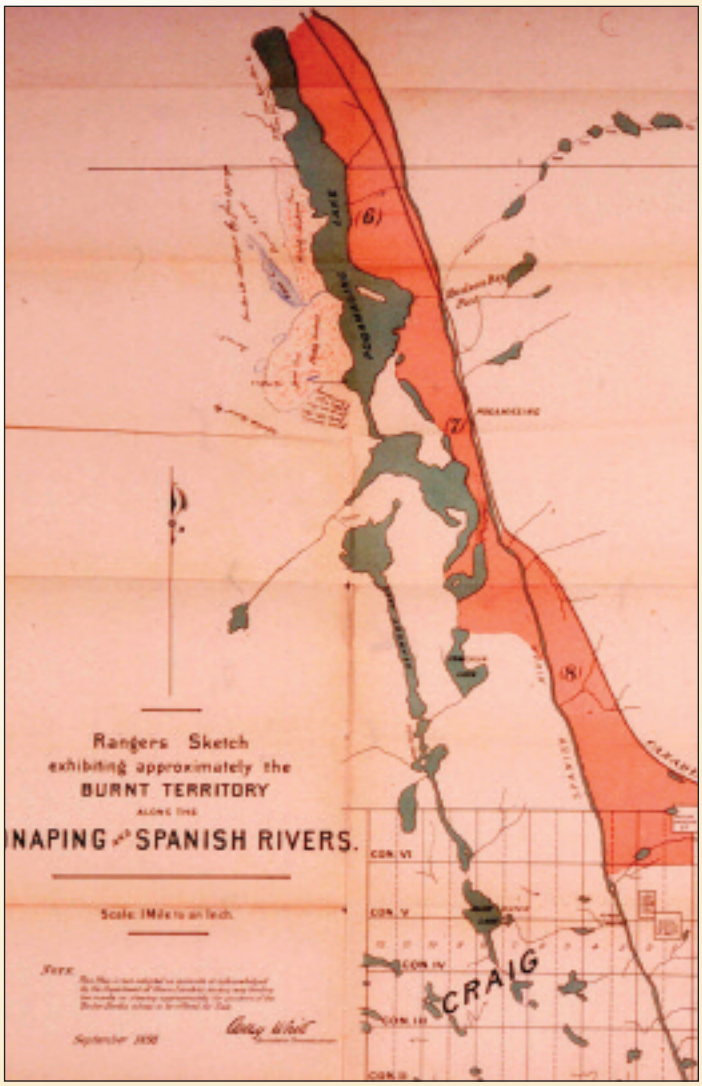
Few Canadians appreciate the importance of surveying in the development of Canada. I seldom came across the topic in the Ontario curriculum as a history teacher for more than thirty years. There were a few exceptions: the Riel Rebellion in Manitoba, which resulted from the federal government's survey of the *Metis* lands; David Thompson's extensive mapping of the North West, and Sir Sandford Fleming's surveying of the Canadian Pacific (CPR) transcontinental railway.

My limited knowledge of surveying changed when I began to research the history of Lake Pogamasing in Northern Ontario where my family has had a summer residence for seventy years. Lake Pogamasing is located in the Sudbury District, some 85 kilometres north-west of Sudbury alongside the CPR mainline and the Spanish River. After retiring from teaching, I wanted to write a history of the lake and the region. What amazed me was that this small lake witnessed so many of the notable Canadian developments in the 19th and the first half of the twentieth century: an Aboriginal community, a Hudson's Bay Company post, the building of the first transcontinental railway, logging pine for fifty years, a sawmill operation during the Great Depression, and tourism based on trout fishing after the Second World War. The area was a microcosm of the evolution of the Canadian wilderness.

Surveying was not one of the topics I initially considered for my book, but that soon changed when I came across a number of interesting reports, drawings and maps of the early surveyors' work in the Archives of Ontario. In addition, I found this map created by the Department of Crown Lands in preparation to auction off a burnt limit along the CP line because of a massive forest fire in 1891. I also discovered some relevant survey documents such as the instructions given to the Code brothers of Cobalt in 1911 to create the townships in the Pogamasing area. I was also encouraged by the Archives' staff to go to the Ministry of Natural Resources (MNR) in Peterborough as this is where most of the records were located.

Off I went to Peterborough where I met Allen Day, who was then the manager of the survey records for the Ministry. Anyone who has been to this department will remember Al, who is now retired. He was a gold mine of information and helpfulness in finding the maps, township files and survey reports of the Pogamasing area for me. In addition, he recommended two books, *They Left Their Mark* and *Renewing Nature's Wealth* that provided useful insights into the very comprehensive nature of the surveyor's task. I quickly came to understand the essential work they accomplished in the opening and development of Northern Ontario.

A third source of information for my research was the *Annual Reports of the Association of Ontario Land Surveyors*. From these I could see that at the association's annual meetings, veteran surveyors shared their experiences with the younger members. What intrigued me most about their reports were the detailed descriptions of their working conditions. They worked in all seasons, usually in very



Map of Burnt Timber, 1891

remote areas, for months at a time. Surveying parties consisted of a surveyor, to manage the project; a cook, possibly a forester; and any number of axemen and chainmen to cut and measure the line, with a 66 foot chain prior to 1900.

One of the more prominent surveyors at that time, Alexander Niven, described what it was like to work one winter in the early 1900s. They required snowshoes every day until the middle of April and lived in tents with only an outside fire for warmth. "Our food was of the usual kind for surveys in the early days — flour, pork, beans, split peas and tea, with a little sugar for the exclusive use of the cook. We carried a muzzle-loading rifle and shot a caribou, caught a few fish through the ice, and I remember that we shot 76 partridges with a horse pistol during the winter."

Map of Proudfoot's Line through the Lake Pogamasing area

Surveyors hired Aboriginal men as guides, axemen or packers. They were sent miles ahead, without maps, to find and set up camp on "the edge of a small lake just about where the line will cross" while the daily survey was conducted. These scouts had a strong sense of direction and awareness and were very accurate navigators. When the survey party was about to finish the day's work, a gun was fired to alert the scouts and within 20-30 minutes they would meet the survey crew. On one occasion, surveyor T. J. Patten reported that when they arrived at camp, the Native had been so precise that he had to take his tent down as it was on the line.

It was in the reports and drawings from the Peterborough archives where I found the important details of the surveyors' work in the Pogamasing area. Hume B. Proudfoot, a civil engineering graduate from the University of Toronto, conducted the initial baseline survey of the area in 1888. He surveyed a 42 mile baseline from Roberts Township, approximately 36 miles due east of Lake Pogamasing, crossed the recently completed Canadian Pacific rail line, the Spanish River and finished six miles west of Lake Pogamasing (the last three miles are illustrated in this map). All subsequent surveys in the area cited Proudfoot's baseline as their reference line and his baseline constituted the border between 14 townships. Other surveyors (Speight, DeGurse and Robinson) completed township surveys south of the Pog area. There were only minor variations in the surveyors' observations as their reports echoed common characteristics of hilly terrain, good pine, plenty of water and poor agricultural possibilities. Speight did report on the mineral possibilities in Stralak Township, but the results were insufficient to open a mine.

The problem of forest fires was constantly mentioned in the surveyors' reports. For example, Proudfoot observed that: "Nearly all the country crossed by this line has been burned at different times, some very recently, and other parts a great many years ago." Forest fires were more frequent then, as the government did little in the way of fire prevention, or to initiate action to extinguish them. Proudfoot's remarks on the ubiquitous nature of forest fires was confirmed by Elihu Stewart, who created 20 townships along the CPR mainline north of Pog in 1891 and found that "the greater part of the country passed over was ruined by fires, killing most of the timber."

The other important function of the surveyors in this area was to generate timber berths as lumbermen were eager to get access to the Spanish forests opened up by the CPR in 1884. The huge fire of 1891, as illustrated by the previous map, forced the government to open the area sooner for fear that the bugs would destroy the pine. Consequently, logging began in the fall of 1891 after an auction of the burnt limits. The following year A. J. Whitson created the first timber berth on the west shore of Lake Pogamasing. Further surveys around Lake Pogamasing led to the creation of a 120 square mile timber berth that became known as the Charlton Limit named after the first lumberman to log it.

By 1911 most of the meridians and baselines were complete and it fell to the Code brothers, mentioned earlier, to complete the missing lines to create townships. Besides

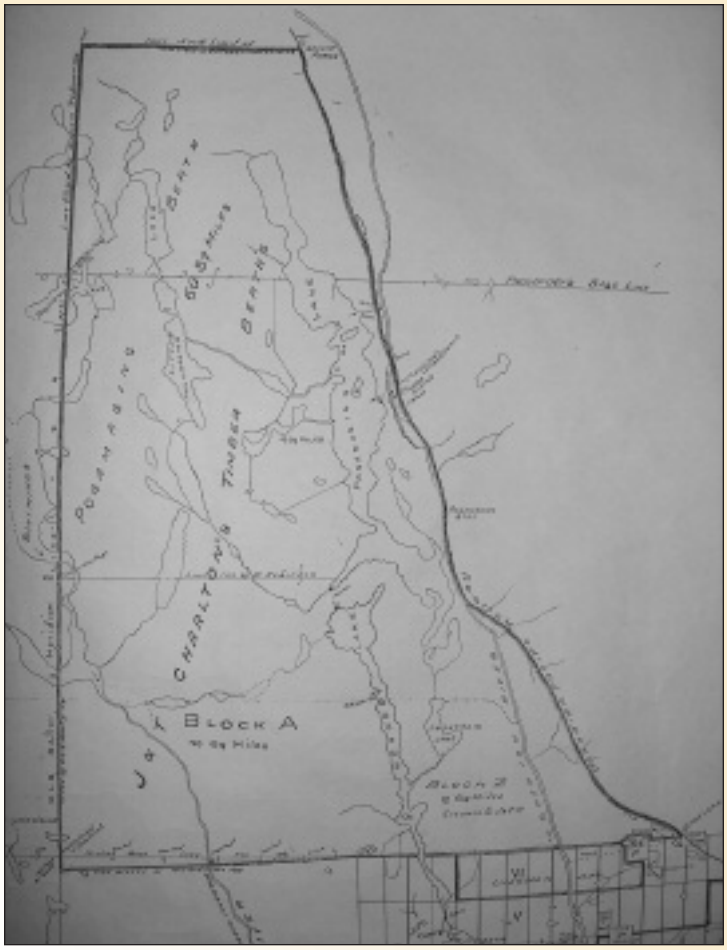
cont'd on page 22

the drawings which led to the township map drawn by the Codes, the other interesting aspect of the surveyors' work was the first reports of the area's topography, wildlife, timber species, and waterways.

As well as the land surveying conducted by the Ontario government, surveyors were employed by the federal government to assess the area for minerals. William Bell was one such surveyor who drew the first map of Lake Pogamasing and other waters in the area. Given that there has been very little mining activity in the area suggests his reports were not favourable to the possibility of finding minerals.

Proudfoot, Niven *et al* were instrumental in the opening of Northern Ontario by charting the unknown territory opened by the railroad. In addition, their reports encouraged lumbering and discouraged mining and agriculture in both the Pogamasing and wider area. My fascination with their work and appreciation of their vital work led me to include a chapter on surveying in my history of Lake Pogamasing. As well as surveying, I highlight the roles of Chief Louis Espagnol as the Aboriginal manager of the Hudson's Bay post on Pogamasing, and W. B. Plaunt, my grandfather, who operated a sawmill operation there before and during the Great Depression. To learn more about my book and how to obtain a copy of *Pogamasing: The Story of a Northern Lake*, see http://pogamasing.com. The book is featured in the Book Reviews section on page 34.

Drawings and maps courtesy of the Archives of Ontario and the Ministry of Natural Resources.



Charlton Timber Limit

Calendar of Events

November 1 to 4, 2011
GIS-Pro 2011
Indianapolis, Indiana
www.urisa.org/gispro2011

November 16, 2011
GIS Day
Discovering the World Through GIS
www.gisday.com

January 23 to 25, 2012
International LiDAR Mapping Forum
Denver, Colorado
www.lidarmap.org/ILMF.aspx

February 22 to 24, 2012
120th AOLS Annual Meeting
Ottawa, Ontario
www.aols.org

May 14 to 17, 2012
Global Geospatial Conference 2012
Spatially Enabling Government, Industry and Citizens
Quebec City, Quebec
www.gsdi.org/gsdiconf/gsdi13/index.html

May 15 to 17, 2012
2012 Canadian Hydrographic Conference
The Arctic – Old Challenges, New Approaches
Niagara Falls, Ontario
http://chc2012.ca

Professional Matters

By Sam Goldstein, LLB

Under normal circumstances, most professionals consider their association as a rich resource for advocacy, education and networking. When faced with the prospect of a professional audit, however, the once amiable relationship between member and association can seem to make an about-face, as the possibilities and implications of regulatory discipline loom large.

Of course, for most organizations, a professional audit is standard procedure within the first few years of membership, and will be followed by another random audit after several years. But what if the audit comes as a result of a complaint about or inquiry into your professional conduct?

The reality is that regardless of what triggered the audit, you can still rely on your association to support you in many ways that will contribute to the best possible outcome for you, will ensure that your name remains as unblemished as possible, and will protect your customers as well.

Keeping in mind the best defence is always a good offence, here are some key suggestions that can help you to avoid the worst-case scenarios that ruin careers and leave reputations shattered:

First and foremost, bear in mind that your professional accreditation is a privilege and not a right. As with any governing body, your professional association is duty-bound to protect the public, not you. Its mission is to advance the profession and enhance client outcomes; regulations are put in place to ensure the highest standards are maintained. You may be a paying member with an impeccable record (until now), but that does not mean you can expect any infractions to be overlooked or any more serious charges to be watered down.

You have a duty to respond to any letter or inquiry by your professional body. In some professions, your organization may even have the right to search and seize professional documents and client files. Despite your instincts to dispute such actions, it is a professional misconduct offence to interfere or prevent the collection of these records.

It would be naive to expect your governing body to stand behind you no matter what. The truth is that in such a situation, they are not your friend, but they are not your worst enemy, either. Cooperate. Be professional. And use them to your best advantage. Take a good look at the resources at hand. This is the perfect time to make certain you are up-to-date and complying with your professional obligations.

You will have some say in the scheduling of your audit. Select a date that allows you adequate time to prepare your records and have all the required items assembled. If you anticipate having difficulty managing this task, you may need to budget the time and money to have an assistant ensure things are in order. Failing to produce documents on time only results in delays and aggravation for all concerned. Again, be professional and be prepared.

In the event you are required to hand over accounting records, it is a good idea to have your bookkeeper on hand to assist with all compliance. It never hurts to have a second set of eyes on documents, especially when you are feeling nervous and the consequences are significant.

If there are any deficiencies found in your practice, adopt the approach that constructive criticism aids in our professional and personal development. By all means, take advantage of the opportunity to receive specific guidance in best practice management from the experts. Ask any questions you may have and be sure you understand the explanations offered. The more you can take away from the audit experience and apply to your everyday work, the more likely you are to steer clear of future difficulties.

As with any official correspondence, be sure to get copies of any documents requiring your signature. These records are essential in order to protect you down the road. Do not assume you'll never have need of them again. (Another golden opportunity to set up or improve your record-keeping.)

Professionals need to understand the legal implications of any disciplinary action and how it can impact their future. If the situation deepens and you are charged with an offence by your professional body, you need to seek legal advice. Do not face charges without the benefit of solid legal counsel; the cost will certainly be far less than the financial and emotional losses that could befall you if you fail to protect yourself.

Finally, the best advice of all: take the time to learn and comprehend your association's regulations. Stay current on industry news and updates. The health of your career depends on it.

Sam Goldstein is a criminal lawyer practising in Toronto. Sam has extensive background representing professionals dealing with licensing, regulatory and disciplinary issues. He can be reached at **sam@samgoldstein.ca** or (416) 927-1211.

NEWS FROM 1043

Changes to the Register

Members Deceased

John B. Fleguel	1647	July 3, 2011
George Stephen "Steve" Hook	1007	July 3, 2011
Robert "Bob" J. Meisner	1212	Aug. 15, 2011
Charles W. Gibson	628	Sept. 23, 2011

Retirements/Resignations

Michelle Grenier	CR91	Jan. 2, 2011

CofA's Issued

MRM Surveying Ltd.
Richmond Hill, August 12, 2011

CofA's Relinquished

D. G. Marr, OLS
Wainfleet, June 30, 2011

H.L. Mellish Surveying Ltd.
Penetanguishene, July 1, 2011

David Horwood Limited.
Markham, June 30, 2011

Surveyors in Transit

Doug Marr has relinquished his CofA and is now working for **Lanthier & Gilmore Surveying Ltd.** in Port Colborne. Contact Doug directly for his notes and records.

Francis "Ted" Wall is now working for **D.S. Urso Surveying Ltd.** in Sault Ste. Marie.

Until further notice, **Dave Urso** is working for **NRCan - Surveyor General Branch** in Yellowknife, NT. **Ted Wall** is the OLS in charge at **D.S. Urso Surveying Ltd.**

Herb Mellish has relinquished his CofA and has sold his business to **Eplett and Worobec Surveying Ltd**.

Greater Toronto Acres Surveying Inc. has a new address at 7003 Steeles Ave. West, Unit 12, Toronto, ON, M9W 0A2. All other contact information remains the same.

Rowan-Stanciu Ltd. has moved to 10211 Yonge Street, Suite 202, Richmond Hill, ON, L4C 3B3. All other contact information remains the same.

Spiro Sinnis is now working at **Stantec Geomatics Ltd.** in Markham.

Manouchehr Mirzakhanlou is the managing OLS at **MRM Surveying Ltd.** located at 3 Linda Margaret Crescent, Richmond Hill, ON. Phone: 416-984-1700. Fax: 905-780-1446.

Industry News

MicroSurvey® Releases FieldGenius® 2011

MicroSurvey is pleased to announce a major version update to MicroSurvey FieldGenius, the world's most powerful data collection software for land surveyors. FieldGenius 2011 now supports more devices than ever, under a wider variety of hardware configurations – high definition, standard definition, tablet-style, portrait or landscape oriented. Also, FieldGenius users retain their freedom of choice when it comes to hardware; no proprietary tethering between the software, the data collector and the total station or GPS receiver.

Along with many resource and processing optimizations, FieldGenius 2011 now sports high resolution graphics along with larger buttons with clear & informative icons. Stake your points with ease – view your linework in real-time with sharp graphics and large, crisp labels. The best part: this update is free for MicroSurvey maintenance subscribers. Join the multitude of land surveyors who have discovered how to achieve an incredible pace in the field, call us or visit our website today.

MicroSurvey Software Inc. has been developing software and hardware solutions for surveying and mapping for over twenty five years. MicroSurvey Software is a two-time winner of PROFIT Magazine 100 Fastest Growing Companies and a winner of Deloitte Technology Fast 500. Both have recognized MicroSurvey Software for its outstanding sales growth. For more information visit www.microsurvey.com.

The address for **Nisbet, Robertson** has changed to 453 Christina St., Sarnia, ON, N7T 5W3.

W.J. Johnston Surveying Ltd. has a new physical address at 12050 Main Street, Winchester, ON, K0C 2K0. The mailing address remains unchanged at P.O. Box 394, Winchester, ON, K0C 2K0. The phone number remains unchanged.

McIntosh Perry Surveying Inc. has a new consultation office. The office is located at 115 Walgreen Road, Carp, ON, K0A 1L0. The managing OLS is **Brian Kerr.** Phone number is 613-836-2184.

Robert Murdoch is now employed with **CGI** in Markham.

Yordanka Zaharieva is now employed with **R. Avis Surveying Inc.**

The phone number of **W.R. Wollerman Surveying Inc**. has changed to 613-242-0412.

Martha L. Petrie, Surveyor General Branch, Natural Resources Canada, has resumed the use of her maiden name, **Martha L. Burchat.**

THE AOLS IS PLEASED TO ANNOUNCE THAT ANOTHER ONTARIO LAND SURVEYOR WAS SWORN IN:

Simeon E. Mitrev 1946 July 29, 2011

Industry News

Topcon announces MR-1 modular GNSS receiver

Compact, advanced technology, rugged design, simple integration

Topcon Positioning Systems (TPS) announced the release of the MR-1, a rugged, compact GNSS modular receiver with advanced technology.

"The new MR-1 receiver is a ruggedized GNSS platform that delivers Topcon's G3 and VISOR™ technologies in a compact and easy to integrate package," said Charles Rihner, vice president of the Topcon Emerging Business Unit.

The MR-1 receiver incorporates 72 universal tracking channels and is capable of tracking all signals from GPS, GLONASS and SBAS satellite systems that are currently operational and available for public use. VISOR technology, with dual antenna input support on the receiver, extends capability to enable precise heading determination through use of differential phase computations.

"It has superior tracking capabilities in the most challenging environments," Rihner said. "It is built to withstand harsh conditions, offering an IP67 dust and water resistance rating as well as a superior level of vibration and shock tolerance."

The MR-1 was designed with ease-of-use in mind for the operator with "a simple API interface supporting easy system integration and setup."

Rihner said, "The mature communication interface of the MR-1 allows operators to quickly integrate Topcon's premium GNSS tracking performance within new systems, and quickly delivers world-class positioning and navigation support to varied applications."

For more information visit www.topconpositioning.com.

EDUCATIONAL FOUNDATION

Lifetime Members at September 30, 2011 (Individual)

BOB MORROW (Honorary)
DONALD ANDERSON
DREW ANNABLE
GEORGE D. ANNIS
DOUG ARON
BRUCE BAKER
J.D. BARNES
JOHN BARBER
WILLIAM E. BENNETT
GEORGE W. BRACKEN
WILLIAM A. BREWER
HARRY BROUWERS
TOM BUNKER
WILLIAM H. CARD
J.B. CHAMBERS
A.J. CLARKE
W. BRENT COLLETT
RICHARD H. CREWE
ERIC CRONIER
DANIEL A. CYBULSKI
TOM CZERWINSKI
JAMES D. DEARDEN
ARTHUR DEATH
DON ENDLEMAN
WILLIAM M. FENTON
CARL F. FLEISCHMANN
ERNEST GACSER
DONALD H. GALBRAITH
BOB GARDEN
CHARLES W. GIBSON
GORDON GRACIE
HOWARD M. GRAHAM
JOHN GRAY
ROBERT C. GUNN
ROBERT HARRIS
JOHN M. HARVEY
GORDON W. HARWOOD
JAMES HILL
HAROLD S. HOWDEN
ROY C. KIRKPATRICK
CINDY KLIAMAN
ANNE MARIE KLINKENBERG
WALLY KOWALENKO
LENNOX T. LANE
RAYMOND T. LANE
ANITA LEMMETTY
OSCAR J. MARSHALL
BLAIN MARTIN
RAYMOND J. MATTHEWS
LARRY MAUGHAN
MIKE MAUGHAN
KENNETH H. MCCONNELL
JAMES A. MCCULLOCH
SCOTT MCKAY
RONALD G. MCKIBBON
LAWRENCE A. MILLER
PAUL A. MILLER
MANOUCHEHR MIRZAKHANLOU
W. HARLAND MOFFATT
J.W.L. MONAGHAN
PATRICK A. MONAGHAN
JOHN D. MONTEITH
PETER MORETON
JIM NICHOLSON
DONALD W. OGILVIE
FREDERICK J.S. PEARCE
E.W. (RED) PETZOLD
N. LORRAINE PETZOLD
JOHN G. PIERCE
HELMUT PILLER
ROBERT POMEROY
YIP K. PUN
VALDEK RAIEND
PAUL A. RIDDELL
RONALD W. ROBERTSON
TALSON E. RODY
HENRY ROESER
GRENVILLE T. ROGERS
CARL J. ROOTH
ERICH RUEB
FRED SCHAEFFER
H.A. KENDALL SHIPMAN
JOHN SMEETON
EDWIN S. (TED) SMITH
RALPH A. SMITH
TAD STASZAK
JAMES STATHAM
RON STEWART
NORM SUTHERLAND
MIKE TULLOCH
E. HENRY UDERSTADT
DAN R. VOLLEBEKK
AL WOROBEC
ROBERT H. WRIGHT
GEORGE T. YATES
JACK YOUNG
GEORGE J. ZUBEK

Individual Sponsoring Members

ANDRÉ BARRETTE
TERRY DIETZ
CYNTHIA TSAI-LIANG
PAUL CHURCH
JAIME GELBLOOM
BOB MOUNTJOY
DAVID WOODLAND

Corporate Sponsoring Members

DAVID N. CHURCHMUCH LTD.
THE CONNECTORS INSURANCE GROUP
GEORGIAN BAY REGIONAL GROUP
LLOYD & PURCELL LTD.
NORTH WESTERN REGIONAL GROUP

Sustaining Corporate Members

A.J. CLARKE & ASSOCIATES LTD.
ARCHIBALD, GRAY & MACKAY LTD.
R. AVIS SURVEYING INC.
THE CG & B GROUP
EASTERN REGIONAL GROUP
GALBRAITH, EPLETT, WOROBEC SURVEYORS
HAMILTON & DISTRICT REGIONAL GROUP
J.D. BARNES LIMITED
LEICA GEOSYSTEMS LTD.
STEWART McKECHNIE SURVEYING LTD.
MMM GEOMATICS ONTARIO LIMITED
MONTEITH & SUTHERLAND LTD.
NORTH EASTERN REGIONAL GROUP
SOKKIA CORPORATION
SOUTH CENTRAL REGIONAL GROUP
SOUTH WESTERN REGIONAL GROUP
STANTEC GEOMATICS
TERANET INC.

Members as of September 30, 2011 (Individual and Corporate)

ANNA AKSAN
BRUCE BROUWERS
WAYNE BRUBACHER
ANDREW BOUNSALL
DAVID BRUBACHER
BILL BUCK
KENT CAMPBELL
RON EMO
NANCY GROZELLE
RUSS HOGAN
ROBERT MCCONNELL
MIKE O'SULLIVAN
PHILLIP SWIFT
ROBERT WANNACK
BRIAN WEBSTER
GEORGE WORTMAN
ANNE COLE
DALE EPLETT
TRAVIS HARTWICK
BRIAN MALONEY
DAVID NORGROVE
ERIC RODY
JAMES SWINNERTON
GEORGE WEGMAN
ALEX WILSON
DAVID WYLIE
PAUL WYMAN
COOTE, HILEY, JEMMETT LIMITED
ADAM KASPRZAK SURVYING LIMITED
KAWARTHA-HALIBURTON REGIONAL GROUP
L.U. MAUGHAN COMPANY LTD.
I.M. PASTUSHAK LTD.
TARASICK MCMILLAN KUBICKI LIMITED

EDUCATIONAL FOUNDATION NEWS

Two New Geomatics Engineering Entrance Awards to be offered at York University

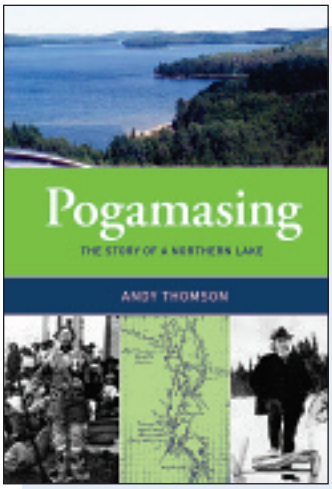
Two new awards of $1000 each will be awarded this September to the 2 top Ontario secondary school students entering the first year of the Geomatics Engineering Program at York University. The aim of the awards is to help attract high caliber students to the program. The awards are in addition to the 5 other $1000 awards that are currently available to 3rd and 4th year Geomatics Engineering students at York. One of these awards is the Hubert J. Reinthaler Award, which is named in honour of one of our past members. It is presented to a well-rounded student in 3rd or 4th year who has achieved high academic standing and possesses enthusiasm, leadership and professionalism.

November 1st – Time to join or renew your membership

Since 1975 the Educational Foundation has awarded over $258,000 to 255 students in several post-secondary Geomatics programs. Of those award winners, 66 have become Ontario Land Surveyors. Currently 11 of the association's articling students are Educational Foundation award winners. This year the Foundation is making $20,850 available for awards to students in Geomatics programs at Ryerson University, York University, the University of Waterloo, Loyalist College and Fleming College. You too can show your support for students by becoming a member of the Educational Foundation or by sending a donation. For further information please contact the AOLS office.

The Educational Foundation would like to recognize with thanks a donation made by the members of the Kawartha-Haliburton Regional Group in the memory of Jack Fleguel and donations made in the memory of Steve Hook and Bob Meisner.

BOOK REVIEWS



Published by Why Knot Books

ISBN 978-0-9810609-7-2

Pogamasing
The Story of a Northern Lake

By Andy Thomson

Lake Pogamasing is a unique lake within the Sudbury District of Northern Ontario. Not many lakes in Northern Ontario can claim to have been the:

- site of a Hudson's Bay Company post managed by an Anishnabe chief,
- centre of a logging and sawmill operation and village during the challenging Depression decade, and
- home of a flotilla of Second World War DUKWs.

These uncommon attributes are only a few examples of what makes the history of Pogamasing so compelling. Its story is also a microscopic view of what happened not just in Northern Ontario, but in Canada, from the mid 19th century to the present.

Supported by original archival research and over 100 photographs, maps and illustrations, this story of Pog is enlivened by fascinating first-hand accounts of life in the bush from the intrepid people who have ventured and lived there.

Information taken from the back cover.

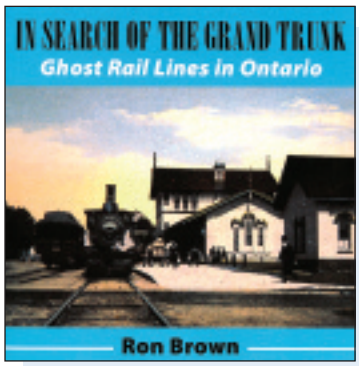
In Search of the Grand Trunk
Ghost Rail Lines in Ontario

By Ron Brown

Join Ron Brown as he explores Ontario's forgotten rail lines, and experiences the legacy and lore of Ontario's vital railway history. At its peak between 1880 and the 1920s, Ontario was once spanned by more than 20,000 kilometres of track. Trains once hauled everything from strawberries and grain to lumber and iron ore. Villagers depended on trains to visit friends, to attend weddings, to shop, and to go to school. They gathered on the station platforms to await their mail or to greet long-lost relatives. Vacationers packed their trunks and headed north for extended summer stays at their favourite resorts.

Today all of that is but a distant memory, since most of Ontario's once-essential transportation links lie abandoned and forgotten. While some are overgrown and barely visible, others have become rail trails and now transport hikers, cyclists, equestrians, and snowmobilers. Regardless of how these early routes are followed, travelers will still find preserved stations, historic bridges, and railway-era buildings, all of which hearken back to a bygone era.

Information taken from the back cover.

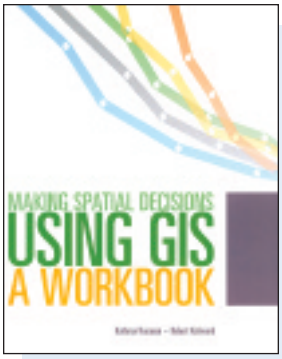


Published by Dundurn Press

ISBN 978-1554888825

Making Spatial Decisions Using GIS
A Workbook

By Kathryn Keranen and Robert Kolvoord



Published by Esri Press

ISBN 978-1-58948-280-7

Making Spatial Decisions Using GIS: A Workbook, second edition, provides scenario-based lessons that develop GIS skills and critical thinking. Students will use organized workflows, spatial analysis, and visualization to make decisions rooted in real-world issues about crime, hazards, hurricanes, demographics, and urban planning.

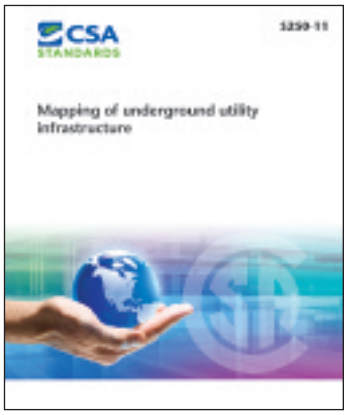
Designed for a college curriculum, *Making Spatial Decisions Using GIS: A Workbook* develops GIS skills using step-by-step instructions, guided activities that reinforce learned concepts, and independent projects that encourage students to find local data and situations. The first edition was part of the Our World GIS Education series published by Esri Press, which won the 2008 Geographic Excellence in Media award from the National Council for Geographic Education.

Making Spatial Decisions Using GIS: A Workbook includes a DVD containing data for the exercises. A 180-day trial of ArcGIS® Desktop 10 and in-depth instructor resources are also provided.

Information taken from the back cover.

The Last Word

CSA S250 *Mapping of Underground Utility Infrastructure*



The Canadian Standards Association has just published a new standard for mapping underground utility infrastructure. CSA S250 *Mapping of Underground Utility Infrastructure*, which originated from mapping best practices and internal utility company mapping standards, has been developed by a committee of nationwide industry subject matter experts, regulators, general interest and user groups to improve the overall quality and consistency of mapping and records information.

Until recently, accurately recording the presence and location of utility infrastructure was not formally required nor was it carried out in a consistent manner. Today, many of the map records that do exist are inaccurate or obsolete or are in formats that are incompatible between utilities, making it difficult to share data or position one company's pipes relative to another's cables.

One of the key benefits of the standard will be improved accuracy and reliability in the location and mapping of underground infrastructure and record keeping that will enhance the safety of company and contractor employees as well as the general public by reducing the potential for utility hits or strikes. The standard establishes accuracy levels that set tolerances for the spatial accuracy of as-builts. It also specifies the utility attributes (e.g. colours, naming conventions, symbology) to be used for describing and depicting underground utilities. This will encourage consistency when data is shared and reviewed. The standard also supports a management systems approach to mapping and record keeping and establishes procedures for improved mapping accuracy and a uniform format for utility feature descriptions, as well as processes for notification of GIS errors and practices when sharing data.

A copy of *CSA S250 Mapping of Underground Utility Infrastructure* can be purchased at www.shopCSA.ca.

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.

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

Advertising Rates:

	1 time	4 times
1st Cover	Not Sold	Not Sold
2nd and 3rd Cover	Not Sold	$650
4th Cover	Not Sold	$750
Full page 4 Colour	$640	$600
1 page B&W	$440	$400
1/2 page B&W	$255	$225
1/4 page B&W	$175	$150

Colour ads: Add $50 for each colour up to 4 colours
Inserts (supplied): Page rate plus 25%.
(overleaf blank): plus 50%

Mechanical Requirements:
Printed Offset
Typed Page: 48 picas wide x 63 picas deep
Bleed Size: 8-3/4" wide x 11-1/4" deep
D.P.S.: 17" wide x 11" deep with bleed
D.P.S.: 16" wide x 10" deep without bleed

Material Requirements:
Four colour: Colour separations supplied, type assembly and progressive proofs with colour bars. Black, black and one or two colours: Either film or art supplied with layout and copy; or complete assembly.

Circulation (This Printing)

Ont. Land Surveyors & Associates	984
Other Professional Affiliations	342
Advertisers	22

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, 2011**

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