

# Canada's first Registered Utility Locator Technician (RULT) Lunch & Learn



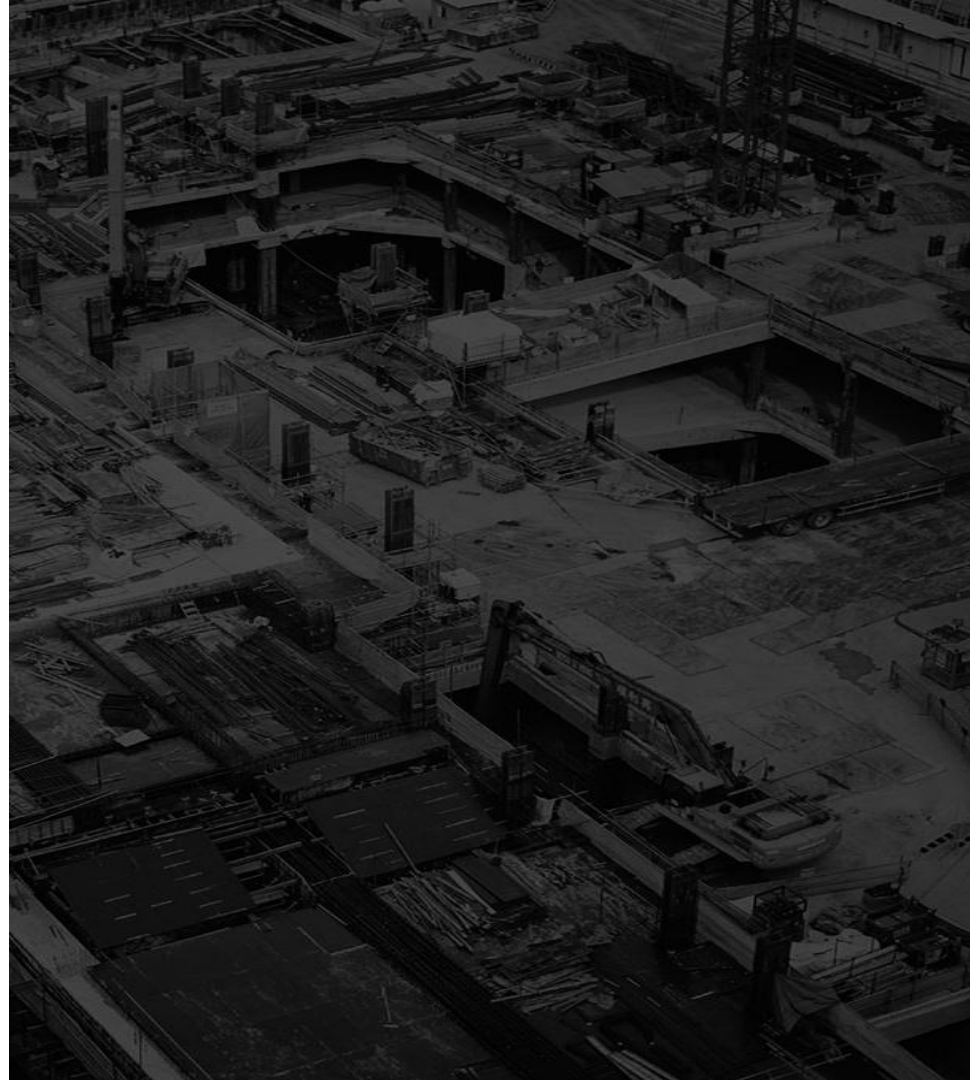
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**BCCGA**  
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# AGENDA

1. The Why?
2. The Industry
3. The Timeline of RULT
4. Utility Locating Training
5. Utility Locating - EM
6. Utility Locating - GPR
7. ASTTBC
8. Registration
9. Support
10. Complaints and Discipline
11. The Future





## The Why?

More than 45 **reported** damages per work day Canada Wide (2020)



- <https://www.canadiancga.com/resources/Documents/DIRT-Reports/National%20DIRT%20report%202020%20-%20CCGA%20September%202021.pdf>
- <https://blog.hexagongeosystems.com/how-to-reduce-utility-strikes/>
- <https://electroscanqld.com.au/how-to-avoid-utility-strikes-2021/>

## And those issues are costing us all

**12,000** UNDERGROUND  
UTILITIES

damaged every year in Canada

**\$50-100B** ANNUAL COST  
OF DAMAGE

at an average cost of US\$4,000 per hit in the US

**>\$1 Billion** IN DAMAGES

annually in Canada alone

Change orders due to errors  
account for **8-14%** of all capital  
construction dollars and cost  
the Canadian construction  
industry **\$44 Billion**

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<sup>1</sup> <https://www.canadiancga.com/>

<sup>2</sup> <https://geospatial.blogs.com/>

## A Local Example

On July 24th, 2007 a Kinder Morgan Crude Oil Pipeline was pierced by an excavator digging a storm sewer trench.

The excavator caused the pipe to rupture and spray 234,000 liters of crude oil into the residential neighbourhood and ocean adjacent to Hastings Street in Burnaby, British Columbia.

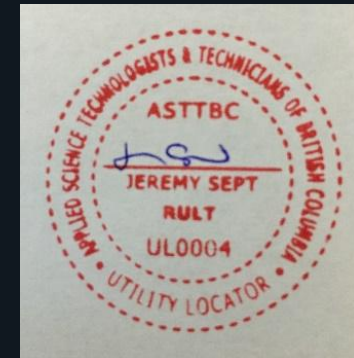
***It was reported that 70,000 liters of crude oil flowed into the Burrard Inlet resulting in a clean-up cost of more than \$15 Million.***

- <http://www.burnabynow.com/news/kinder-morgan-ordered-to-pay-150-000-in-burnaby-oil-spill-1.410790>
- <http://www.vancouversun.com/news/Five+years+after+Burnaby+pipeline+rupture+residents+rally+against+Kinder+Morgan+expansion/7102782/story.html>



# The Utility Locating Industry

- Unregulated Industry
- BC One Call
- Associations such as Common Ground Alliance



# RULT: TIMELINE

BCCGA  
Members  
highlighted  
the need for  
UL  
certification

The RULT  
Board was  
created

ASTTBC  
review of  
RULT due to  
PGA

2013

2014

2015

2016

2021

2024

Collaboration  
with ASTTBC  
started

The first  
RULT's  
Issued

13 RULT's

# BC Ferries RFP - Staff Qualifications

## PART B – REQUIREMENT OVERVIEW

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### 2.5 STAFF QUALIFICATIONS

The Utility Engineer reviewing the work, stamping and sealing the utility drawings and reports shall have the following:

- Minimum 3 years working with ASCE 38-02
- Working understanding of Geophysical principals for the designation of utilities
- Professional Engineering registration (in good standing) with Engineers and Geoscientists of BC

The primary SUE Technician attending site and conducting the investigation should meet the following minimum requirements:

- Registered Utility Locator Technician (RULT) certification with ASTTBC, or equivalent.
- Minimum 2 years' experience conducting subsurface utility investigations.
- Confined Space Awareness Training/Certification.
- Basics of Fall Protection Training/Certification.

# Professional Utility Locator Training Example

Rigorous training schedule for a brand new trainee:

1 - 4 months

- Shadowing senior techs
- Basic in-house training and exams
- **BCMSA 1 day training course\***

4 - 6 months

- Leading jobs under supervision
- Advanced practical & theory exams
- **BCMSA 3 day training course\*\***

6 - 9 months

- Solo jobs with schedule of audits

9 – 12 months

- Graduate to junior tech

\*<https://www.bcmsa.ca/fundamentals-of-underground-utility-locating/>

\*\*<https://www.bcmsa.ca/utility-locator-specialist/>



# Electromagnetic (EM) Locating Induction

- EM locating involves inducing an electromagnetic signal on to a conductive utility.
- Used for locating metallic items such as some pipes, telephone lines, power lines, co-axial communication lines, gas tracer wires.
- Transmitter emits an electromagnetic frequency, that induces an EM field onto metallic pipes and cables. Receiver computes the signal strength to determine location and depth.



# Electromagnetic (EM) Locating Induction

## Advantages:

- Reliable when locating well maintained metallic pipes and cables in non congested areas.
- Can locate and detect small cables.
- Operated quickly and efficiently. Easy to pack and move.
- Easy to learn and understand the basic functionality.



# Electromagnetic (EM) Locating Induction

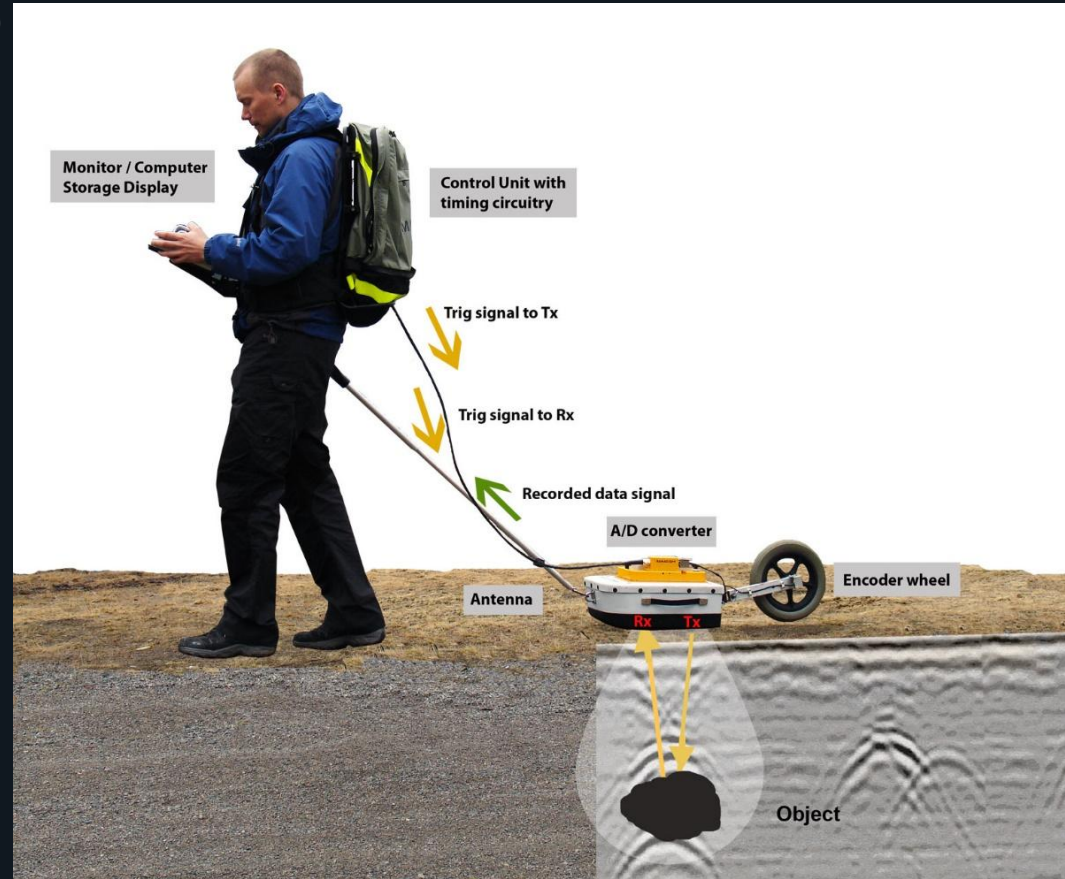
## Disadvantages:

- Electromagnetic field can jump to the path of least resistance. Can create “bleed” onto other utilities in congested areas. This increases difficulty in reading and understanding EM signals.
- Accurate EM locating requires an accessible point to “clip on”/connect to the utility.
- Limited to conductive materials, unable to locate plastic lines unless a tracer wire (Conductive) has been installed correctly to the utility.



# Ground Penetrating Radar (GPR)

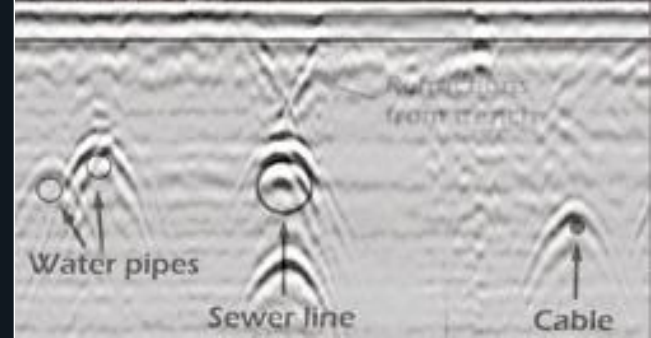
- Can be utilized for a wide range of applications.
- Often used for locating Metal, Plastic, PVC, Concrete and Unknown Utilities.
- Most effective when the electromagnetic properties and densities of the target and surrounding material differ
- Used to increase the precision when combined with previous EM induction results. - Verification Check
- The GPR antenna emits an electromagnetic pulse and records the time delay and amplitude of subsurface targets.



# Ground Penetrating Radar (GPR)

## Advantages:

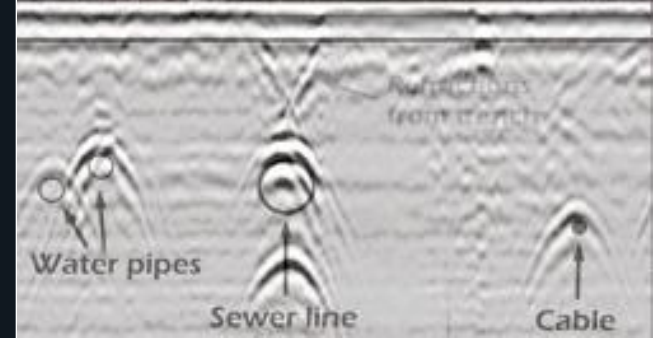
- Detects metal and non metallic objects, as well as underground irregularities ( Voids, Trenches, Slopes )
- Visual Data can be provided in real time, allowing for in the field interpretation of geophysical subsurface.
- Able to locate undocumented utilities that have no surface indication
- Can produce 3D images of the subsurface allowing for multiple disciplines to utilize the data (engineers, excavators, installation)



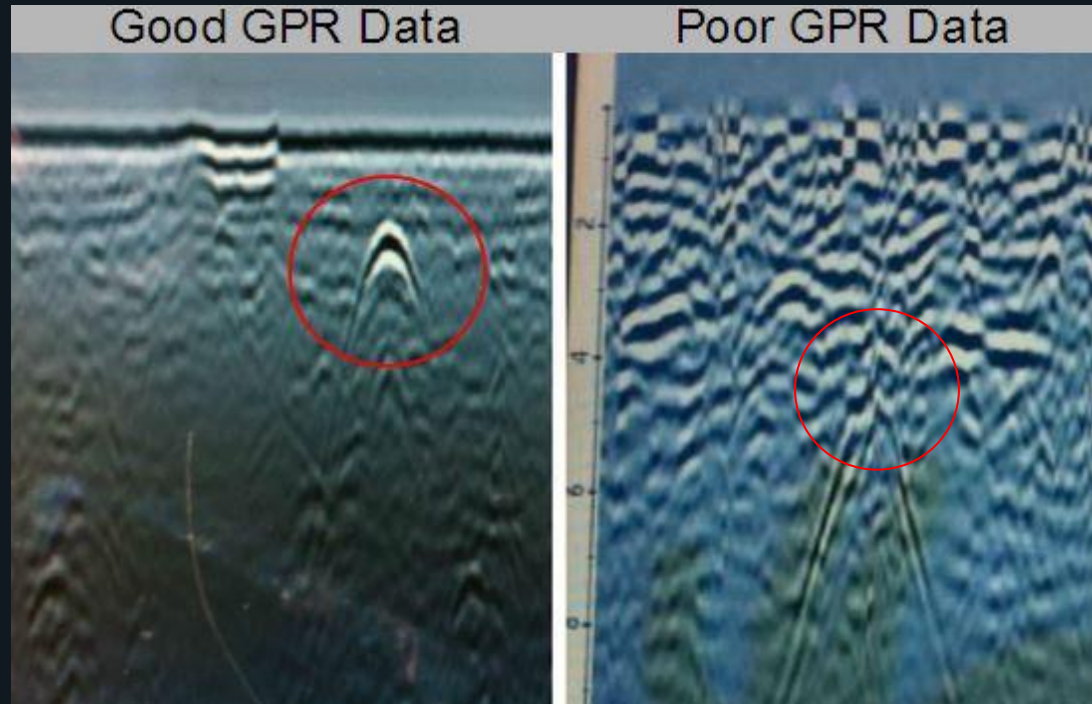
# Ground Penetrating Radar (GPR)

## Disadvantages:

- More time consuming than EM induction methods. - Not tracing an active signal.
- Conductivity and Dielectric Permittivity influences the emitted signal attenuation (Penetration Depth) - Materials, Densities, Layers, and Water create Signal Distortion.
- Scattering of signal can also occur from congested utility areas.
- Requires a somewhat smooth surface clear of vegetation in order to collect interpretable data.
- Can take time to learn, raw data requires skilled interpretation.



# GPR Data



Sand Based Soil

Clay Based/Saturated Soil

# What is ASTTBC?

- ASTTBC was founded in 1958 as a society, received its own legislation as a professional association in the 1980s and then was designated a professional regulatory body in 2021 when the Professional Governance Act (“PGA”) was enacted.
- Regulators are to uphold registration requirements, practice standards and discipline
- ASTTBC regulates Applied Science Technologists (“AScT”), Certified Technicians (“Ctech”) and a variety of registered technical specialists (e.g. Registered Fire Protection Technicians, Registered Onsite Wastewater Practitioners and Registered Underground Locator Technicians.
- ASTTBC is overseen by the provincial government through the Office of the Superintendent of Professional Governance

# Reserved and Regulated Scope of Practice

- ASTTBC registrants currently have a regulated practice and some classes have reserved practice through other legislation (e.g. Sewerage System Regulation)
- **Reserved Practice:** a scope of practice that is limited to only registrants of a regulatory body due to risk posed by unregulated individuals engaging in work.
- **Regulated Practice:** all regulatory bodies' registrants engage in a regulated practice involving a defined body of knowledge or disciplines that that the advice and services of that profession relates to. May include ancillary advice or services. Registration is not required to engage in regulated practice.

# Registration

## To be registered, applicants must meet:

1. The general requirements for registration (e.g. proficiency in English, good character, etc.)

### AND

2. The specific educational and experiential requirements for the class of registration sought

**RULT:** the CGA Utility Locator Specialist Training Program or Equivalent and 12 months experience working on locating projects while under supervision of a RULT or equivalent (meeting the outlined competencies)

# *Practice Support*

1. Establishing Practice Standards (both specific and general)
2. Administering continuing professional development (CPD) requirements
3. Conducting practice audits/review
4. Administering the practice advice program

# *Complaints and Discipline*

- ASTTBC is required to investigate complaints and reports made by registrants pursuant to the duty to report.
- Determine if professional misconduct, conduct unbecoming or incompetent practice has occurred.
- Investigation Committee oversees investigations and can propose a disposition (e.g. caution letters, reprimands, consent orders)
- If no disposition accepted, issue a citation for a disciplinary hearing before a panel
- Can result in fines, remedial education, suspensions, cancellations or limits or conditions on a persons' registration.
- Goal is to address competency and conduct issues in registrants to protect the public interest

# *Future of RTS groups/RULTs*

- ASTTBC conducted a review in 2021 and 2022 of the RTS groups
- Conclusion was that certain groups should not continue under the PGA if there was insufficient public safety risk, they were already regulated in another manner or required dual registration (e.g. registration as a AScT/CTech)
- Based on feedback from stakeholders and the current work on a reserved practice for AScTs and Ctechs, ASTTBC is not going to make a final determination until we can determine if any RTS groups may fall within a reserved scope of practice and then look at how to accommodate these groups, such as through a limited licensing program

*Questions or comments?*

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