

the 25<sup>th</sup> Annual Short Course in:

## **CONTAMINATED SITE MANAGEMENT**

*Theory, Practice & Field Demonstrations  
Online and/or In-Person*

September 2022

12th-15th Online & 19th-21st Online & In-Person  
Toronto, Ontario, Canada

**GOwen Environmental presents Contaminated Site Management,** a comprehensive course that provides a solid theoretical and practical foundation in contaminated site management. The course has been developed especially for individuals who manage, regulate, investigate, remediate, or are impacted by contaminated sites. Managing these sites is a multidisciplinary task, therefore, integrating several disciplines is necessary to efficiently and economically manage or make decisions regarding site issues.

**THE ONLY CONTAMINATED SITES  
MANAGEMENT COURSE YOU WILL EVER**

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



## Registration Includes:

- 5 days of content spread across 7 days, where attendees can choose to take the entire course online or a hybrid of both online and in person session.
- Discussions by 10+ leading environmental, soil, sediment and groundwater experts representing academia, consulting, and government from across North America. These experts will provide a comprehensive overview of hydrogeology and geochemical principles, site assessment procedures, risk assessment and risk management tools, remediation technologies, and management issues relating to contaminated sites.
- 1,200 page notebook and downloadable online resource folder.
- 1 half-day of hands-on technical demonstrations on Site Characterization and Remediation Technologies.
- 4.7 Continuing Education Units (CEUs).

**COMPARE THE CONTENT to other Courses,  
COMPARE THE VALUE - No other Course  
of this kind gives a greater value for the  
registration fee.**

# INTRODUCTION

**OVER THE LAST 35 YEARS**, countries around the world have developed and implemented guidelines and standards for the investigation, mitigation, and remediation of contaminated properties. In all sectors of the economy, high profile contaminated sites, human health issues, litigation, and enormous cleanup costs have heightened the awareness of environmental issues relating to contaminated properties. Contaminated soil, sediment or groundwater in prime real estate and sensitive ecological locations has resulted in the loss of millions of dollars due to lack of development or ineffective management of these properties.



**GOwen Environmental** ([www.contaminatedsite.com](http://www.contaminatedsite.com)) was founded to provide specialized and leading-edge environmental training and networking through courses, conferences, and workshops. This course was developed to provide a medium for the transfer of unbiased information and technology to clean up contaminated properties. The course has evolved over the last eighteen years into an internationally recognized solution-based training program that brings together participants, regulators, consultants, and academics from across the globe.

**This course allows for a half-day of seminars to demonstrate the various site characterization and remediation technologies currently being used on sites across North America today.**



# INTRODUCTION

**The Course is firmly established as far as content and instruction.** The course is sponsored by one of the largest groundwater resource protection associations in the world and has received support and sponsorship from major environmental associations world-wide over the last twenty-four years. The instructors represent academia, government, and the private sector; all leaders in their respective fields. This framework provides for an unbiased transfer of information that provides individuals who own, regulate, investigate, remediate or are impacted by contaminated properties with a solid theoretical and practical foundation in contaminated site management. The management of these sites is a multi-disciplinary task. This course integrates all the disciplines necessary to successfully, efficiently and economically manage or make decisions regarding these sites.

**Course participants will receive theoretical and practical foundations,** as well as important information regarding regulatory compliance aspects of contaminated site management. This knowledge will be coupled with a hands-on approach to understanding the tools and techniques for managing contaminated sites. Some experience is helpful, but not necessary, as the Course teaches basic principles before addressing more advanced topics.

Regardless of your level of expertise, the combination of information presented during this course will not be found elsewhere and will provide you with knowledge and confidence to effectively manage contaminated sites. This course will provide participants with the competitive edge required in this rapidly evolving field.

**This course provides an unparalleled synthesis of technical information and applied knowledge in contaminated and hazardous waste site management.**



## INSTRUCTORS

**Gareth Owen** is the President of GOWen Environmental Limited and has spent the last 27 years training other environmental professionals in the discipline of contaminated and hazardous waste site management. Mr. Owen has managed more than 600 contaminated sites and worked on over 3,700 sites worldwide including site and risk assessments, remedial plan development and expedited site closures for sites contaminated with hydrocarbons, chlorinated solvents, heavy metals, and radioactive waste. Mr. Owen's principal responsibilities have included providing support to government agencies and multinational corporations in managing large and complex environmental programs and projects. His principal experience relates to contaminated site project management and closure as well as environmental program management. His decision in 2001 to no longer participate in the investigation or the remediation of contaminated sites as a consultant or contractor ensures the provision of sound and unbiased technical and managerial support to all his clients. It also ensures no conflict of interest with any environmental consulting or contracting firm providing contaminated site management services.

**Logan Barrett** is the president of Antler Group, a Canadian based organization specializing in Chemical Response, Disaster Management, & Risk Reduction. Working across the Americas, Africa, Europe, and the Middle East. Logan has led countless successful deployments mitigating Chemical, Biological, and Explosive risks. He specializes in developing emergency response teams, de-escalating crisis, and transferring knowledge. Logan also sits on the ICRC Weapon Contamination Team as their "Hazardous Materials" specialist, and volunteers with other organizations promoting a culture of safety and philanthropy. Pulling from his speciality training involving high hazard chemicals, clandestine laboratories, train derailments, and chemical firefighting.

**Dr. Brewster Conant Jr., P. Geo.** (Ontario) is an Adjunct Professor in the Department of Earth and Environmental Sciences at the University of Waterloo and has over 25 years of experience in hydrogeology and environmental consulting. He received a B.Sc. in Geology-Physics/Mathematics from Brown University in 1984, and received a M.Sc. and Ph.D. in Earth Sciences at the University of Waterloo in 1991 and 2001, respectively. He has designed, managed, and conducted hydrogeological investigations for contaminated site assessments; water supply protection; landfill assessments; evaluating agricultural best management practices; remediation; litigation; regulatory negotiation; and modeling studies. General areas of research interest are in physical and contaminant hydrogeology and in field methods and instrumentation. His main area of expertise and interest is in interactions at the groundwater/surface water interface and the examination of flow, transport, and fate of contaminants passing through it. He has developed innovative field methods, instrumentation, and numerical techniques for assessing groundwater/surface-water interactions including the use of temperature as a tracer techniques, infrared thermography, direct-push methods, and diffusion samplers. He has been an invited speaker at international scientific meetings and co-taught several training courses for USEPA.

**George (Bud) Ivey** is the President and Senior Remediation Specialist with Ivey International Inc. with global headquarters in Vancouver, Canada. He has over twenty-five years of environmental site assessment and remediation experience. He has worked on more than 2500 major environmental projects, taking him to over 50 countries globally. His multi-disciplinary education includes: Synthetic Organic Chemistry, Geological Engineering, and a Master's Certification in Project Management.

## INSTRUCTORS

**Derek Peak** is a professor of Environmental Soil Chemistry at the University of Saskatchewan, where he uses a wide range of laboratory and molecular-scale techniques to probe soil chemical processes. Dr. Peak has been a synchrotron user for 20 years and has served as a member and chair of the Canadian Light Source Users Advisory Committee. His overall research program focuses on using synchrotron-based chemical speciation techniques to determine nutrient and contaminant fate in soils and sediments. Major research themes include understanding the fate and transport processes that control phosphate availability in soils, developing sustainable agricultural development in West Africa, and effectively managing metal and metalloid affected soils produced as a result of natural resource extraction.

**Dr. Paul Sibley** is a Professor in the School of Environmental Sciences at the University of Guelph who specialises in the assessment of potentially contaminated environmental media (water, soils, and sediments). His current fields of research include sediment toxicology and risk assessment, invertebrate toxicology focusing on benthic invertebrate community assessments in streams and lakes, disturbance ecology and impacts of land use practices on aquatic-terrestrial interactions. In the field of sediment characterization, his relevant research experience includes: collecting and processing site-specific water, sediment and soil samples for physical, chemical, and biological characterisation; analysis and interpretation of water, sediment, and soil quality data from field surveys and risk assessments; and development of provincial and federal water and soil quality guidelines and objectives. He has worked with metals, petroleum hydrocarbons, pesticides, polyfluorinated compounds, pharmaceuticals and personal care products, and other priority substances. Dr. Sibley has extensive knowledge of the fate and effects of contaminants in both aquatic and terrestrial environments.

**Dr. David Reisman** is currently a Senior Consultant and Technical Advisor and the previous Director, Engineering Technical Support Center, National Risk Management Research Laboratory, U. S. Environmental Protection Agency. Mr. Reisman worked for the U. S. Government from 1976-2012 with the National Park Service (Park Ranger), the National Institute for Occupational Safety and Health (Information Specialist), and in many positions with the Environmental Protection Agency (EPA). He served for several years as a Temporary Advisor to the World Health Organization (WHO) in Geneva, Switzerland, authored many environmental health criteria documents for both EPA and WHO, and published over 50 peer-reviewed journal articles, many in the area of remediation and mining influenced water treatment. David holds a Masters Degree in interdisciplinary environmental sciences from Miami University, and has completed additional graduate work in engineering at the University of Cincinnati. For over 15 years, David assisted in the development of risk assessment guidance for the EPA Office of Research & Development in the waste, ambient and drinking water and hazardous air pollutants areas. As Director of the EPA's Engineering Technical Support Center for almost 15 years, David worked on several hundred hazardous waste sites, conducted treatability and pilot technology studies, and assisted EPA regional personnel and contractors in site characterization, soil remediation, technology selection and treatability study design. David is the recipient of many Government awards and has received several medals for his outstanding work in supporting EPA's regional personnel.



**The instructors represent academia, government, and the private sector; all leaders in their respective fields.**

## INSTRUCTORS

**Jacquelyn Stevens, B.Sc., M.Sc., M.S.E.L., LL.B.**, is a partner in Willms & Shier and is certified specialist in environmental law with significant expertise representing a wide range of clients in civil and regulatory litigation. She is called to the bars of Ontario and Alberta. Jacquelyn prosecutes and defends environmental lawsuits. She advises on cross-boundary migration of contamination and remediation options during civil litigation. Jacquelyn also has significant expertise litigating contamination issues at dry cleaning operations and gas stations.

**Alessia Petricone-Westwood, J.D., M.A., B.A.**, is a Senior Associate at Willms & Shier. Alessia practices in the areas of environmental law and environmental litigation. Alessia has extensive experience with all aspects of civil litigation including the defence of professional negligence claims. Prior to joining our firm, Alessia litigated a wide range of civil litigation matters at a leading law firm in Ottawa. Alessia has appeared before administrative tribunals and the Ontario Superior Court of Justice. Alessia is called to the Bar of Ontario.

**These experts will provide a comprehensive overview of contaminated sites.**

**Matthew Schroeder, B.S., M.S., P.E.**, is a senior engineer at Dragun. Matt frequently writes and speaks on a variety of environmental assessment and remediation issues. His expertise ranges from environmental remediation to environmental compliance. Matt's thoughtful, scientific approach to environmental issues has earned the trust of many long-term clients. Matt has successfully managed environmental remediation projects from a home heating-oil tank to an 8,000- acre former military base. Matt has also provided litigation support on a number of projects in the United States and Canada. In addition to addressing "traditional" contaminants in soil and groundwater such as chlorinated hydrocarbons, PCBs, and metals, Matt has been closely involved in assessment and remediation of PFAS. Matt is involved in PFAS work groups and authored/co-authored articles related to assessment and remediation of PFAS.

**Dr. Fatemeh Vakili, M.Sc., Ph.D., P.Geo.**, is a hydrogeologist at Dragun. Dr. Vakili's academic research and expertise is in using Compound Specific Isotope Analysis (CSIA). Her expertise in CSIA is used to understand the source(s) and fate and transport of chemicals in the subsurface. Dr. Vakili works with other senior scientists at Dragun on projects involving site assessments, vapour intrusion, fate and transport of contaminants, litigation support, and more. These projects focus on "water-related issues" (quality and quantity) where Dr. Vakili uses her advanced knowledge of isotopes to find practical answers to what are often complex questions. In addition to her hands-on project experience, Dr. Vakili has presented at the prestigious Battelle Conference, written for publications as varied as Environmental Science and Engineering, Chemical Engineering Process (CEP), and the Journal of Nutrient Management.


## INSTRUCTORS

**Elliot Sigal, B.Sc., QP<sub>RA</sub>**, is a Vice President and Senior Toxicologist for Intrinsik Corp. Mr. Sigal graduated with an Honours B.Sc. in Toxicology from the University of Toronto in 1988 and has over 25 years of experience in toxicology, human health and ecological risk assessment, and risk communication. Mr. Sigal has been responsible for leading risk assessment teams in determination of potential for exposure of and risk to receptors associated with complex contaminated sites, mining/smelting facilities, military base closures, underground storage tanks, incinerator/WTE emissions, landfill sites, consumer products and industrial processes. He has overseen and contributed to hundreds of risk assessments, including many successfully completed in compliance with federal and provincial regulations in Canada.

**Ben Galbraith** has over 14 years of experience in the field of groundwater and soil remediation. Ben has designed, managed, and conducted hundreds of in-situ remedial programs within North America and internationally with a variety of remedial techniques including, in-situ chemical oxidation and reduction, adsorption, pump & treat systems, soil vapour extraction, air sparging, permeable reactive barriers, and enhanced bioremediation of chlorinated and petroleum hydrocarbons, pesticides, dissolved metals and PFAS compounds. Ben has applied these technologies in multiple geologic settings, including challenging formations such as glacial tills, fractured rock, tidal influenced and saline aquifers.

**Jeff Daniel, P. Eng, P.E.** is a Senior Principal with Geosyntec. Mr. Daniel has over 28 years of experience in the surface water and environmental fields. During his career, Mr. Daniel has focused on the investigation and cost-effective remediation of sediment projects of varying sizes, including a project in the central US where over 2 million tonnes of material has been removed and over 5 miles of waterway restored; the Willow Run Creek Site in Michigan which involved the removal of approximately 370,000 cubic yards of contaminated sediments and surrounding impacted soil, and a sediment dredging design project on the Ottawa River which included dredging of over 225,000 CY of impacted sediment and dewatering using geotextile tubes. Mr. Daniel managed a recently completed sediment assessment and remediation project in West Virginia where a monitored natural recovery remedy with limited capping was implemented which reduced the overall cost for the project by over 90% compared to the initially anticipated cost. Mr. Daniel has presented courses on sediment management and naturalized restoration in the United States and Canada. Mr. Daniel will lecture on Sediment Remediation Technologies and Restoration Approaches.





Days 1 to 4 are online only and lectures start at 1 p.m. EDT and generally finish at 5 p.m. EDT.

## COURSE TOPICS ONLINE

### Day 1

Monday

September 12, 2022

Overview of Contaminated Site Management  
| **Gareth Owen**

Environmental Law Applicable to  
Contaminated Sites | **Jacquelyn Stevens &  
Alessia Petricone-Westwood**

Health and Safety at Contaminated Waste  
Sites | **Logan Barrett**

### Day 3

Wednesday

September 14, 2022

Soil Chemistry of Hazardous  
Materials | **Dr. Derek Peak**

Soil and Groundwater Characterization  
Tools and Techniques  
| **Dr. Brewster Conant Jr.**

### Day 2

Tuesday

September 13, 2022

Environmental Chemistry Made Easy for Site  
Investigation | **Bud Ivey**

Principles of Contaminant  
Hydrogeology | **Dr. Brewster Conant Jr.**

### Day 4

Thursday

September 15, 2022

Sediment Characterization Tools  
and Techniques | **Dr. Paul Sibley**

Overview of Human and Ecological Risk  
Assessment | **Elliot Sigal**

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### Course Materials

Students will receive over 1,200 pages of notes in an attractive binder and access to the online resource folder. In addition, they will receive a certificate of completion. It is recommended that course participants bring a knapsack or a carry-on bag to transport course materials.

### Continuing Education Units (CEUs)

The allocation is 3 CEUs for the first session, 2.7 CEUs for the second and 4.7 CEUs for the entire course. The CEUs are accredited by the International Association for Continuing Education and Training (IACET).



## COURSE TOPICS IN-PERSON AND ONLINE

Day 5 and 6 are offered in-person and online, and lectures start at 8:30 a.m. EDT and end at 5 p.m. EDT. Breaks are 15 minutes throughout the day with a lunch break at noon for 1 hour. For in-person attendance, Day 5 starts with a check-in period at 8 a.m. EDT. Day 7 will begin at 10 a.m. EDT and end at 3 p.m. EDT.

### Day 5

Monday

September 19, 2022

Site Characterization and Conceptual Model Development | **Gareth Owen**

Sediment Remediation Techniques and Technologies | **Jeff Daniel**

Groundwater Remediation Techniques and Technologies - Insitu | **Rick McGregor**

Groundwater Remediation Techniques and Technologies - Exsitu | **Matt Schroeder & Dr. Fatemeh Vakili**

### Day 7

Wednesday

September 21, 2022

Demonstrations of site characterization and remediation technologies, including soil and groundwater remediation technologies, geophysical, and sampling and analysis equipment demonstrations.

Registration for only attending Day 7 (Demonstrations) is also available.


### Day 6

Tuesday

September 20, 2022

Soil Remediation Techniques and Technologies | **Dr. David Reisman**

Contaminated Site Project Management | **Gareth Owen**



Soil and groundwater remediation technologies, geophysical, and sampling and analysis equipment will be demonstrated.

# REGISTRATION AND COURSE FEE

<b>Online</b>	Monday, September 12 to Thursday, September 15 (Day 1 to 4)
<b>In-person and Online*</b>	Monday, September 19 to Wednesday, September 21 (Day 5 to 7)
<b>On-Site Check In</b>	Monday, September 19 at 08:00 (In-person Participants)

## **Advanced registration is strongly advised.**

Due to the hands-on nature of this Course (demonstrations and lectures), enrollment is limited and applications will be accepted on a first come first served basis. The Course has been filled to capacity the past twenty five years.

Please register on-line through the Course Registration webpage or mail the application form with a cheque or training authorization by **September 2, 2022**.

For those requiring time to obtain authorization, we suggest submitting the application form on the next page with payment to follow or registering online with a payment to follow option. Registered participants will receive confirmation of registration and an information package.

<b>Early Registration (payment received by July 1, 2022)</b>	\$1,795 + \$233.35 (HST)
Regular Registration (July 2 - September 2, 2022)	\$1,995 + \$259.35 (HST)
Previous Course Attendees (5 spaces available)	\$995 + \$129.35 (HST)
Demonstrations Only	\$495 + \$64.35 (HST)

All Prices in Canadian Dollars

The full fee is due **July 1, 2022** for early registration and **September 2, 2022** for all other registration.

Cancellation for fees received before August 19, 2022 will be fully refunded. Cancellation for fees received after August 19, 2022 will have 50% of the registration fee refunded. No refund will be provided for cancellation after September 2, 2022. Substitutions of course participants or deferred course attendance may be arranged.

The registration fee for the seven days covers all course materials, breaks, one networking lunch (if attending in-person) and the demonstrations.

Eligible Canadian registrants can apply to the **Canada Ontario Job Grant** to fund their attendance. Visit <https://www.canada.ca/en/employment-social-development/programs/job-grant.html>.

For more information, please visit [contaminatedsite.com](https://contaminatedsite.com)

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Last First Initial

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Job Title

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Company/Organisation Name

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Business Address

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City Province/State/Country Postal or Zip Code

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Telephone Email

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Demonstrations Only	<input type="checkbox"/> \$495 + \$64.35 (HST)

All Prices in Canadian Dollars

**Attendance Type**     Online Only     Hybrid (Online and In-Person)

- Payment**
- Secured Online Registration Form** at contaminatedsite.com under Registration or Call in Credit Card
  - Cheque to follow**  
(please make cheques payable to GOWen Environmental Limited)
  - E-Transfer to follow**  
(please email gowen@contaminatedsite.com)
  - Purchase Order/Training Authorization to follow**  
(P.O. # \_\_\_\_\_ must be submitted with this form)

**How did you hear about this course?**

- Colleague recommendation
- Newsletter
- Internet search engine
- Other : \_\_\_\_\_

**Fill out and email to [gowen@contaminatedsite.com](mailto:gowen@contaminatedsite.com)**

The full fee is due July 1, 2022 for Early Registration and September 2, 2022 for all others, unless prior arrangements for invoicing have been made. Substitutions of course participant may be arranged.

## Cleaning Up the Mess (Excerpt from ECO Canada - Newsletter)

"The Canadian contaminated sites sector has grown quickly over the past few years, driven by a combination of regulatory and economic pressures. In 2008, ECO Canada's Contaminated Sites Report - When Supply Does Not Meet Demand - affirmed that between 2004 and 2019, the federal government would commit up to \$4 billion to clean up properties that it owns or that fall under federal responsibility. This includes more than 4,400 federal contaminated sites as well as 28,000 non-federal properties.

In conjunction with high profile cases such as the BP oil spill, these industry-wide changes have led to heightened awareness on issues relating to contaminated sites, encouraging countries around the world to develop and implement stricter guidelines and standards for the investigation, mitigation and remediation of contaminated sites. However, like most environmental work, the skills needed to clean up these sites are multidisciplinary and require a unique set of cross-sectoral competencies from employees.

There are a number of environmental training facilities currently operating in Canada, but GOwen ENVIRONMENTAL is the only facility in the world that offers a one week indoor-outdoor course covering all issues related to managing subsurface contamination, from theory to practice. The fifteen instructors leading the course come from all across North America with backgrounds in academia, private industry and government, and are recognized as leading experts and educators in their respective fields.

The course is a joint project between GOwen ENVIRONMENTAL, the Association for Environmental Health and Sciences and the International Association of Hydrogeologists and was founded to provide leading-edge environmental training and networking through courses, conferences and workshops. This year will mark the 16th anniversary of its annual Contaminated and Hazardous Waste Site Management Course, a comprehensive course that provides a solid theoretical and practical foundation in contaminated site management. The course integrates several different disciplines and has been developed specifically for individuals who manage, regulate, investigate, remediate or are impacted by contaminated sites."

**Below is one of the many comments we have received about the course.**

### **Subject: Great Course in Toronto !!**

"Please go to [www.contaminatedsite.com](http://www.contaminatedsite.com) to check-out the course coming-up in Toronto. This is truly a worldclass course .... and this year it is held right in Canada! Perry Sarvas and Kip Hawley both attended and it was the best training they have ever had. This year looks even better! Feel free to call Perry or Kip if you want a participants perspective. I strongly recommend this course, especially for those who want some in-depth contaminated or hazardous waste site management training, contaminated site program or project management or risk-assessment. If you having been waiting a long time for training, I think you will be very pleased with this course.... fill-out your 15-11 form today since there is relatively little time to process your request!"

**Jim Gehrels**  
Groundwater Group Leader  
Northern Region  
Ministry of Environment & Energy