

## SUMMARY OF EXPERIENCE, RESEARCH AND INTERESTS

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My environmental consulting and research experience and interests cover a wide range of environmental sectors including:

- Environmental site assessment;
- Environmental effects monitoring;
- Soil and groundwater remediation;
- Landfill and compost facility monitoring;
- Environmental risk management and engineered controls;
- PAH fingerprint analysis;
- Marine environmental monitoring;
- Automated, remote and online monitoring equipment;
- Habitat restoration;
- Geothermal energy;
- Quality assurance and quality control; and
- Experience exchange, teaching and mentoring.

I have demonstrated ability to work on interdisciplinary projects with provincial and federal regulators, sub-contractors, other consultants and clients, to effectively execute assignments and achieve project goals. Project involvement at each level has allowed me to build relationships with a variety of stakeholders in the environmental and contracting industries. It is with this experience that I hope to facilitate relationships between the endeavours at Cape Breton University and the Verschuren Center, and industrial and government partners.

In addition to my engineering background, I have a CBU degree in Biology and I have had the opportunity to work on ecology based projects such as crab and bivalve monitoring in Sydney Harbour during the Tar Ponds Remediation. These projects have allowed me to work with the natural sciences while employing an engineering approach. I coordinated the Marine Monitoring portion of the Environmental Effects Monitoring program at the Sydney Tar Ponds Remediation Project and I have co-authored three articles on marine monitoring, published in peer-reviewed journals described below.

I have been attending Dalhousie University since 2011, taking a Master of Applied Science degree in Environmental Engineering. I am currently preparing my thesis entitled "*Source Apportionment using PAH Fingerprint Analysis – Sydney Tar Ponds and the Surrounding Area*". My thesis defence is scheduled for December 2013.

## EDUCATION

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- **Master of Applied Science – Environmental Engineering**

Dalhousie University, Civil and Resource Engineering, co-supervisors Dr. Lei Liu and Dr. Margaret Walsh.

Thesis: "*Source Apportionment using PAH Fingerprint Analysis – Sydney Tar Ponds and the Surrounding Area.*"

- Development of a representative data set including surface water, groundwater, soil, sediment, marine sediment, marine water, coal sediment and resource materials.
- Development of a representative means to include non-detect data in the review.
- Study and implementation of a series of PAH "fingerprint" assessments.
- Evaluation of the results.

- **Bachelor of Engineering – Biological Engineering, 2000**

Dalhousie University

Final Project: "*Environmental Impact Assessment at Department of Transportation Highway Yards*".

- **Bachelor of Science – Biology, 2000**

Cape Breton University

Ecology Study: “*Selective Foraging Techniques*”

- **Engineering Diploma – 1997**

Cape Breton University

## **EMPLOYMENT HISTORY**

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- 2013 – Present    Verschuren Centre at Cape Breton University, Sydney, Nova Scotia, Program Development Scientist
- 2005 – 2013      Dillon Consulting Limited, Sydney, NS, Environmental Engineer
- 2004 – 2005      EBA Engineering Consultants Ltd., Calgary, AB, Environmental Consultant
- 2001 - 2004      Jacques Whitford Environment Limited, Calgary, AB, Engineer-In-Training

## **PROFESSIONAL ACCREDITATIONS**

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Association of Professional Engineers of Nova Scotia

Association of Professional Engineers and Geoscientists of New Brunswick (inactive)

Association of Professional Engineers and Geoscientists of Alberta (inactive)

## **RELEVANT WORK EXPERIENCE**

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### **ENVIRONMENTAL EFFECTS MONITORING**

- Project Coordinator for the Environmental Effects and Surface Water Compliance Monitoring Program for the Sydney Tar Ponds Remediation Program. The program included baseline and remediation phase monitoring of groundwater, surface water and marine media including marine water, sediment, bivalve and crab monitoring (2009 - 2013). The project was designed to assess the effects of remediation construction on the local environment. The project included coordination of data collection teams and contractors, design, implementation and maintenance of automatic monitoring equipment with real-time online access, data management and reporting to multiple provincial and federal regulators.

### **ENVIRONMENTAL SITE ASSESSMENTS**

- Project Engineer for the design and implementation of landfill expansion cells at the Richmond County Construction and Demolition Waste Management Facility (2012-2013).
- Project Manager/Field Engineer for removal of petroleum related infrastructure, remediation of hydrocarbon impacted soils, soil vapour extraction and commissioning/monitoring of various soil and groundwater remediation systems at properties in British Columbia, Alberta, New Brunswick and Nova Scotia (2000 – 2013).
- Project Engineer for an ethylene release on CN property outside of Montreal, Quebec (2012).
- Project Manager for a low-flow groundwater monitoring program to assess the effectiveness of in-situ groundwater remediation technologies on reducing chlorinated solvent impacts at a former industrial facility outside Scarborough, Ontario (2012).
- Project Engineer for Sydney Harbour Water Quality Monitoring during the dredging of Sydney Harbour (2011) for Public Works and Government Services Canada.
- Project Engineer for due diligence screening for the GTA Reinforcement Pipeline (2010). Project was for Enbridge New Brunswick Inc. and included environmental screening of properties within and adjacent to, the proposed natural gas pipeline route.
- Field Engineer conducting baseline surface water assessment for an Ecological Risk Assessment associated with the proposed re-routing of Route 4 in Port Hawkesbury, Cape Breton (2009).
- Field Engineer for groundwater monitoring programs at sanitary sewer treatment lagoons in multiple locations in Cape Breton Regional Municipality (2008).
- Project engineer for a modified Phase I ESA for Chevron in Lagos, Nigeria (2007). The project included site reconnaissance, a review of available information and interviews regarding the construction of a proposed electrical generating facility.

- Project Coordinator for construction of land treatment cells at Smokey River Coal surface mine in Grande Cache, Alberta (2004). The project included the construction of large HDPE lined land treatment cells for diesel-impacted soils at the mine site.
- Project manager of numerous domestic fuel oil spill assessment and remediation programs, completed on behalf of various insurance companies. Projects have involved assessment of site conditions; development of remedial programs; prevention of impact to environmental receptors; installation of engineering controls; indoor air quality monitoring; hydrogeological assessments; restoration of site conditions; reporting and liaison with regulatory agencies to obtain site closure.
- Sub-slab soil vapor and indoor air quality monitoring for petroleum hydrocarbon impacts associated with residential fuel oil spills (2007), commercial retailers (2008) and industrial solvent releases (2004).
- Field engineer for numerous Phase II/III ESAs at small craft harbours across Nova Scotia (2007). From Bay St. Lawrence to Clarke's Harbour, 17 small craft harbours were assessed for petroleum hydrocarbon impacts due to on site petroleum storage tanks.
- Field engineer for groundwater and soil monitoring at two Sunpine wood preservation facilities in central Alberta (2003-2004). Semi-annual monitoring programs included groundwater and soil monitoring programs for wood preservation compounds (copper, chromium and arsenic).
- Project engineer for a variety of chlorinated solvent impact assessment projects, including operating and closed dry cleaner businesses. Activities included utility clearance, sub-slab indoor drilling and identification and delineation of dense non-aqueous phase liquid (DNAPL) impacts.
- Field engineer for a soil and groundwater monitoring program at a McCain's potato processing facility in Coaldale, Alberta. The project involved the irrigation of treated process water in fields surrounding the facility (2003). The program included semi-annual groundwater sampling, soil sampling and reporting.
- Field engineer for hazardous materials surveys at various commercial and industrial facilities throughout Alberta. Sites included active schools and commercial properties as well as closed hospitals and industrial facilities.

#### **SITE REMEDIATION/GROUNDWATER CONTAMINATION STUDIES**

- Project Manager for a Surface Water Impacts Mitigation Program at a former Canadian Pacific bulk storage facility impacted with residual coal and ore (2013).
- Project engineer for groundwater remediation systems implementation and maintenance at various commercial and industrial facilities (2000-2013). Activities include pilot testing, drilling of recovery / extraction wells, installation of vacuum lines and headers, system commissioning, surfactant injections, development of operations manuals and long term monitoring and maintenance.
- Design and operation of a subsurface lube oil LNAPL collection system in fractured bedrock. Third party property impact management and a human health risk assessment including sub-slab soil vapour monitoring in a commercial building (2007-2013).
- Research Engineer for remediation options to reduce low level chlorinated solvent impacts migrating from the closed Harper Road Landfill outside of Ottawa, Ontario (2012).
- Project engineer for evaluation of remediation technology alternatives for chlorinated solvent impacts in groundwater off site of the former Nepean Landfill outside of Ottawa, Ontario (2012).
- Design of stockpile assessment programs for multi-source impacted material storage at a rail yard, CP Chapleau (2011).
- Project Manager for an Odour Reduction Strategy at the Cape Breton Regional Municipality Compost Facility. Project included a review of the facility operations and evaluation of options to reduce public complaints (2011).
- Project Engineer at multiple former Cape Breton Development Corporation coal mines for the review of remediation and reclamation reports and the development of site closure applications for regulatory site closure (2011).
- Project Engineer for the review of an LNAPL collection system at a former military base in Labrador (2010). Public Works and Government Services Canada project.
- Project Manager for a hazardous material building assessment, lead abatement and site decommissioning at the Cape Breton Regional Municipality former New Waterford water treatment plant (2010).
- Field engineer for chemical oxidant injection soil and groundwater remediation programs at chlorinated solvent impacted sites in Calgary (2003-2004). Projects included baseline and post-injection monitoring and evaluation of program effectiveness.

## LANDFILL INVESTIGATIONS

- Project manager for the program to assess current site conditions at six retired Cape Breton Regional Municipality landfill sites including health and safety concerns, landfill cap deficiencies, potential leachate seeps/springs and groundwater monitoring infrastructure (2008). Recommendations for each site were provided, including landfill cap upgrades and groundwater and surface water monitoring programs to meet the regulatory guidelines.
- Field engineer for a site suitability study for the placement of a new municipal solid waste landfill east of Calgary (2005). The project included the drilling of observation wells and the confirmation of soil and bedrock conditions in the area.
- Landfill gas emissions monitoring research program at the closed City of Calgary construction and demolition landfill facility (2005). In partnership with the University of Alberta, field monitoring equipment was developed and field tested to assess methane emissions through the landfill cap. Cap amendments were also field tested to assess effectiveness in reducing methane gas generation.
- Project Coordinator for the Environmental Remediation and Management Plan for landfill and coal wastes in the Hamlet of Nordegg, Alberta (2004). Supervised operations at the site which included the installation of a landfill cap, reclamation of former landfill areas and coal dumps, confirmatory sampling and coordination of subcontractors.

## OIL AND GAS

- Project Coordinator for testing and decommissioning of historic oil and gas production wells in Hillsborough, New Brunswick. Project included site assessment activities and coordination with regulators (2006 – 2009). Field supervision included oil and gas well testing, well decommissioning and well site reclamation activities at historic oil and gas well sites. Worked closely with the NB Department of Natural Resources and Department of Environment for permitting. The program also included supervision of Phase II and III ESAs at decommissioned well sites and remedial excavations as required; handling of impacted materials; development of site specific guidelines for crude oil impacts in soil; a private water supply survey in the area of the well field; and coordination of various subcontractors required for the operations.

## PRESENTATIONS/ASSOCIATIONS

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- Presented at the 37<sup>th</sup> National Canadian Land Reclamation Conference, Sydney, Nova Scotia, September 2012
- Sydney Tar Ponds Remediation Environmental Effects Monitoring and Surface Water Compliance project presentations to the Sydney Tar Ponds Environmental Monitoring Committee (PWGSC, NSE, DFO, EC, HC, NSTIR) (2009-2012).
- Graduate Seminar Presentation. *Forensic PAH Assessment of the Sydney Tar Ponds and Surrounding Area Using PAH Fingerprint Techniques. May 1, 2013.*
- Nova Scotia Council Member, Ducks Unlimited Canada
- National Groundwater Association
- American Water Works Association

## TECHICAL PUBLICATIONS

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- **Walker**, T.R., **MacAskill**, **D.** (submitted) Land-based remediation can improve conditions in adjacent marine environments: A case study of contaminants in rock crabs in Sydney Harbour, Canada. Environmental Monitoring and Assessment.
- **Walker**, T.R., **MacAskill**, **D.**, Weaver, P. (accepted 18 June 2013) Blue mussels (*Mytilus edulis*) as bioindicators of stable and improving water quality in Sydney Harbour during remediation of the Sydney Tar Ponds, Nova Scotia, Canada. Water Quality Research Journal of Canada. DOI: 10.2166/wqjrc.2013.014.
- **Walker**, T.R., **MacAskill**, **D.**, Weaver, P. (accepted 8 June 2013) Environmental Recovery in Sydney Harbour, Nova Scotia: Evidence of Natural and Anthropogenic Sediment Capping. Marine Pollution Bulletin. DOI: 10.1016/j.marpolbul.2013.06.013.
- **Walker**, T.R., **MacAskill**, **D.**, Rushton, T., Thalheimer, A.H., Weaver, P. (accepted 28 February 2013) Monitoring effects of remediation on natural sediment recovery in Sydney Harbour, Nova Scotia. Environmental Monitoring and Assessment. DOI: 10.1007/s10661-013-3157-8.

## PROFESSIONAL DEVELOPMENT

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- Standard First Aid – Level C, 2012
- Supervisor Health and Safety Awareness Training, 2011
- International Mine Water Association Symposium, Sydney, NS, 2010
- International Solidification / Stabilization Technology Forum. Dalhousie University / Cape Breton University, Sydney, NS., 2010
- Geothermal Systems Design and Installation, Nova Scotia Community College, 2010
- Soil Vapour Assessment and PQRA Spreadsheet Training, Health Canada, Halifax, NS, 2009
- Project Management 201, 2008
- Well Service Blowout Prevention, ENFORM, Calgary, AB, 2007
- 360 Solutions Career Builder, 2005
- BC First Aid, Occupational Health and Safety for the Asbestos Worker , 2003
- Ground Disturbance Level II, 2002

## **LANGUAGES**

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- English
- French

## **COMMUNITY ACTIVITY**

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- Judge at the annual Cape Breton Regional Science Fair
- Southside Community Center Community Garden
- Cape Breton Dragonboat Festival
- Volunteer at Baille Ard and Coxheath Hills Trail Associations

## **REFERENCES**

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- John Appleby  
Public Works and Government Services Canada  
Sydney Tar Ponds and Coke Ovens Remediation Project  
(902) 496-5144  
(902)440-0434
- Peter Weaver, P.Eng. – Contract Manager  
Sydney Tar Ponds Agency  
(902) 564-2101
- Dr. Tony Walker – Marine Biologist  
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