

# The University Consortium for Field-Focused Groundwater Research (est. 1987)

**Our Mission:** The University Consortium conducts world-class credible research to serve the needs of both society and industry, while contributing to the advancement of groundwater contamination science, with emphasis on real-world problems at contaminated sites.

The University Consortium for Field-Focused Groundwater Research (the “Consortium”) was established in 1987, with the first annual Consortium Meeting taking place in 1988.

**Our Members:** 3 distinguished directors and 24 principal investigators, from 4 Canadian, 1 Swiss and 6 American universities. Associate Directors Dr. Parker and Dr. Sale conducted Consortium sponsored research as PhD students; Beth Parker with John Cherry and Bob Gillham at University of Waterloo, and Tom Sale with Dave McWhorter at Colorado State University.



**Dr. John Cherry**  
University Consortium  
Director  
SOE Adjunct Professor,  
University of Guelph and  
Distinguished Professor  
Emeritus, University of  
Waterloo



**Dr. Beth Parker**  
University Consortium  
Associate Director  
G<sup>360</sup> Institute for  
Groundwater Research,  
NSERC Senior Industrial  
Research Chair  
Professor, SOE,  
University of Guelph



**Dr. Tom Sale**  
University Consortium  
Associate Director  
Professor in Civil  
Engineering  
Colorado State University

**Our Approach:** The consortium emphasizes field research conducted at actual sites, many of which are contaminated and represent the full range of hydrogeologic conditions. These field studies are supported by field and laboratory experiments and mathematical modeling. The Consortium emphasizes development and use of multiple methods and tools to demonstrate ways to improve site characterization, monitoring and improve conceptual site modeling with the intent to inform remediation and mitigation for improved decision-making. Consortium research focuses on three major types of contaminants: chlorinated solvents, petroleum hydrocarbons and emerging contaminants to groundwater and surface water with broad relevance to industry and society-at-large. The Consortium is unique in its successful combination of a strong field focus, intensive collaborations between the principal universities, and frequent interactions with the corporate sponsors and a strong network of collaborations with researchers and practitioners around the globe.

Each Consortium Sponsor provides a cash contribution of \$200K per year within the Consortium Research Program. Consortium principal investigators leverage these contributions through additional private and public grants at an average ratio of 50:1. This approach to funding, where sponsors provide arms-length donations, ensures the research remains unbiased. These combined funds are used to advance the specific and multiple research goals that constitute the Consortium Research Program. As a result, the corporate sponsors gain access to the results of a research program wherein the various principal investigators are supported from many different funding sources for a combined value of more than \$10 million per year. Collectively, Consortium research members graduate 15-20 M.Sc.’s and 1-3 Ph.D.’s, publish between 40 to 60 journal articles each year based on Consortium-sponsored research.

The Consortium hosts two annual meetings: a 3-day “progress reporting meeting” at the University of Guelph in June and a special topic “focus meeting” in Denver in October. The Consortium also communicates with its corporate sponsors, the regulatory community, and the groundwater professional community through other meetings, symposia, conferences, and short courses.

**Our Success:** The continuity and growth of the Consortium over its 30-year history is testimony to its success in conducting research important to the industrial sponsors and achieving major advances at the frontiers of science with acceptance of these advances by the global scientific community. There has been a continuous common thread of PI’s completed by other expertise connecting to the program for specific projects or themes, creating a dynamic evolution in important directions with the goal of maximizing the quality of the results in a timely manner. Students who have gained experience in the research regularly move onto positions with corporate sponsors or their consultants following graduation.

## Consortium sponsors recognize the following benefits:

### Technical Expertise:

Access to Consortium principal investigators' for consulting at sponsor sites.

Opportunity for research-related field work at reduced rates.

Access to the Consortium's network of experts.

**Information Dissemination:** Access to cutting-edge research often before it is even published.

**Education:** Opportunities to learn from world-class educators, either by having them come to sponsor sites or by teaching workshops.

**Networking:** Other industrial consortium sponsors often have lessons learned from implementing remediation strategies or technologies at their site.

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## The University Consortium pursues the development of better methods and science most relevant for:

1. Site and Contaminant Characterization
2. Impacts of Contaminants on Off-Site Liability
3. Remediation Technologies
4. Knowledge Translation and Transfer
5. Methodologies for Improved Data Acquisition, Storage, and Modeling
6. Site Conceptual Model Guidance
7. Multi-level Monitoring System Guidance
8. Emerging Contaminants and Different Hydrogeologic Environments (e.g. Basalts, Metamorphic Rocks)
9. Groundwater vulnerability monitoring (Shale Gas, Source Protection)
10. Temporal Characteristics of Sites - Site Conceptual Model Validation (i.e., re-evaluation of processes, rates, and outcomes)
11. Life-cycle cost and benefit analysis of source, plume management strategies

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### Principal Investigators

Andre Unger	Kirk Hatfield
Andrew Binns	Mike Annable
Colby Steelman	Orfan Shouakar-Stash
Daniel Hunkeler	Peeter Pehme
Doug Mackay	Ramon Aravena
Emmanuelle Arnaud	Rick Devlin
Erica Pensini	Rick Johnson
James Longstaffe	Shaily Mahendra
Jana Levison	Susan De Long
Jay Ham	Tadeusz Gorecki
Jens Blotevogel	Tom Al
Jessica Meyer	Ulrich Mayer
Kari Dunfield	

### Principal Universities

#### Canada

University of Guelph  
University of British Columbia  
University of Ottawa  
University of Waterloo

#### USA

Colorado State University  
University of Florida  
University of Iowa  
UC Davis, UC Los Angeles  
University of Kansas  
Oregon Health & Science University

#### Switzerland

University of Neuchâtel

### Corporate Sponsors

Dow Chemical (>1988)  
Boeing (>1993)  
Dupont (1999)  
Chevron (>2001)  
Hydrite Chemical (>2003)  
BP (>2006)  
Lockheed Martin (>2009)  
ExxonMobil (>2010)  
Shell (>2010)  
Nestlé Waters (>2015)  
Vulcan (>2016)  
Chemours (>2017)

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## Collaborating Organizations

### Academic

Lund University  
McMaster University  
Missouri Institute of Sci & Tech  
Rutgers University, Newark  
Stanford University  
SUSTech (China)  
UC Santa Cruz  
University of Barcelona  
University of Bologna  
University of Calgary  
University of Hong Kong  
University of Lausanne  
University of Rome  
Universite Laval  
USP, Sao Paulo

### Government

City of Guelph  
City of Ottawa  
Geological Survey of Canada (GSC)  
Geological Survey of Sweden (SGU)  
Minnesota Geological Survey  
NSERC  
Ontario Ministry of Research and Innovation  
USGS  
U.S. DOE

### Private Sector Partners

ALT Brown and Caldwell  
Dillon Jacobs CH2M  
Geofirma FLUTE  
Golder Geosyntec  
Haley & Aldrich GSI  
Heron Instruments  
Matrix Solutions  
ProHydro (QED)  
Sanborn Head & Associates  
Silixa  
Trihydro  
Westbay  
WSP Sweden