

August 2005

QUEEN'S UNIVERSITY, KINGSTON  
DEPARTMENT OF CIVIL ENGINEERING  
**FULL – CURRICULUM VITAE**

**Ronald Kerry ROWE**, BSc, BE, PhD, D.Eng, FRSC, FCAE, FEIC, FIE(Aust), FCSCE, FASCE , P.Eng

DATE OF BIRTH

13 September 1951

CITIZENSHIP

Canadian

ACADEMIC RANK

Professor, Full-time

ADMINISTRATIVE POSITION

Vice Principal (Research)

DATE OF U.W.O. APPOINTMENT: 1 October 1978

DATE OF QUEEN'S APPOINTMENT: 1 September 2000

DEGREES HELD AND PRINCIPAL FIELD OF WORK

Degree	Field	University	Enrolled	Conferred
B.Sc.	Computer Science	University of Sydney	1970-72	1973
B.E. (Hons I)	Civil Engineering	University of Sydney	1970-71,73-74	1975
Ph.D.	Geotechnical Engineering	University of Sydney	1975-78	1979
D.Eng.	Geotechnical & Geoenvironmental Eng.	University of Sydney	-	1993

Specializing in Computational Geomechanics, Tunnelling, Geotechnical, Geosynthetic, Hydrogeologic, Landfill and related Environmental Engineering.

## OTHER RELATED EXPERIENCE

Academic Experience

1973-1975	Part-time <b>Tutor</b> in Computer Science & Mathematics at the University of Sydney
1975-1977	Part-time <b>Tutor</b> in Civil Engineering at the University of Sydney
1978	Part-time <b>Lecturer</b> in Computer Science at the University of Technology, Sydney
1978-1982	<b>Assistant Professor</b> , University of Western Ontario
1985-1986	Sabbatical Leave
1982-1986	<b>Associate Professor</b> , University of Western Ontario
1986-2000	<b>Full Professor</b> , University of Western Ontario
1988-1989	<b>Associate Dean</b> (Research & Graduate Affairs), Faculty of Engineering Science, University of Western Ontario
1989-1991	<b>NSERC Steacie Fellow</b>
1991-1992	Sabbatical Leave
1992-1997	<b>Chair</b> , Dept. of Civil and Environmental Engineering, University of Western Ontario
1997-1998	Study Leave
1998-2000	<b>Chair</b> , Dept. of Civil and Environmental Engineering, University of Western Ontario
2000-	<b>Professor and Vice-Principal (Research)</b> , Queen's University

Industrial Experience

1971-1974	Cadet Engineering with Australian Government Department of Construction.
1975-1977	Part-time professional work for: <ul style="list-style-type: none"> <li>- Australian Government, Dept. of Construction</li> <li>- Coffey and Partners, Consulting Engineers</li> <li>- Electricity Commission of New South Wales</li> </ul>
1978	Civil Engineer with Australian Government, Department of Construction.
1979-Present	Part-time professional work for or with: <ul style="list-style-type: none"> <li>- Golder Associates, Consulting Engineers, London, Toronto and Calgary Offices</li> </ul>

- Cumming and Cockburn and Associates, Consulting Engineers, Toronto
- Peto MacCallum, Consulting Engineers, Toronto
- Ontario Concrete Pipe Company, Toronto
- Geocon, Toronto
- Morrison Beatty Ltd., Toronto
- Innotech Corporation (U.S.A.)
- Enka b.v. (Holland)
- Reinforced Earth (Australia)
- Atomic Energy of Canada Ltd., A.E.C.L.
- Trow Associates, Toronto, London
- MacLaren Plansearch, Toronto
- MacLaren Engineers, Toronto, Waterloo
- STS Consultants (U.S.A.)
- Proctor and Redfern Ltd., Hamilton
- Tensar Earth Technologies, Inc., U.S.A.
- Lavalin Inc., Toronto
- Dames & Moore Canada, Mississauga
- Gartner Lee Ltd., Markham, Vancouver
- Dillon Engineers, Toronto, London
- Woodward Clyde Ltd., U.S.A.
- Environmental Protection Authority of Victoria, Australia
- Applied Groundwater Research
- David Charlesworth & Associates
- Regional Municipality of Halton
- Hatch Associates
- Fenco MacLaren Inc., Toronto
- Senes Consultants, Richmond Hill
- Gemtec Ltd., Fredericton, N.B.
- Burnside Environmental, Newmarket
- Various legal firms (Expert Witness/Review)
- Ontario Ministry of Environment
- GSI Environmental
- Tecslut
- Azimuth Environmental Consulting Inc.
- AMEC
- Meinhardt (Vic) Pty. Ltd.
- Environment Canada

**Advisor in areas relating to:**

- settlement and geotechnical stability
- pipelines and tunnels
- reinforced earth
- contaminant migration and hydrogeology
- Geosynthetics
- landfill design
- barrier systems

## AWARDS AND HONOURS

1975: Awarded the University Medal (University of Sydney)  
B.E. Degree awarded with 1<sup>st</sup> Class Honours

Award:

1975 The John Main Prize

1975 The Bradfield Memorial Prize

1975 The A.S. McDonald Prize of the Association of Consulting Structural Engineers of N.S.W.

1984: **Canadian Geotechnical Society Prize** for best paper in the *Canadian Geotechnical Journal* for 1983. Awarded for the two independent papers:

- "A Theoretical Examination of the Settlements Induced by Tunnelling: Four Case Histories" by R.K. Rowe and G.J. Kack, 20, No. 2.

- "A Method of Estimating Surface Settlement Above Tunnels Constructed in Soft Ground" by R.K. Rowe, K.Y. Lo and G.J. Kack, 20, No. 1.

1985: **American Society of Civil Engineers Collingwood Prize** for the paper:

- "Reinforced Embankments: Analysis and Design" by R.K. Rowe, *J. Geotechnical Engineering*, ASCE, 110, No. 2.

1985: **Canadian Geotechnical Society: Honourable Mention** (Runner up for best paper prize) for the two papers:

- "The Observed Behaviour of a Geotextile Reinforced Embankment on Peat" by R.K. Rowe, M.D. MacLean and A.K. Barsvary

- "Analysis of a Geotextile Reinforced Embankment Constructed on Peat" by R.K. Rowe, M.D. MacLean and K.L. Soderman

both published in the *Canadian Geotechnical Journal*, 21, 1984.

1986: **American Society for Testing and Materials Certificate** "For an Outstanding Technical and Scientific Contribution to the Control of Hazardous Waste" for the paper: "Leachate migration through clay below a domestic waste landfill, Sarnia, Ontario, Canada: Chemical interpretation and modelling philosophies," by R.M. Quigley and R.K. Rowe.

1986: **Distinguished Geotechnical Lecturer** for 1986 - Virginia State University and Polytechnique Institute (VPI).

1987: **Canadian Geotechnical Society Prize for best paper** in the *Canadian Geotechnical Journal* for

1986. Awarded for the paper:

- "Analysis of field performance - The Thunder Bay Tunnel," by M.C. Ng, K.Y. Lo and R.K. Rowe, *Canadian Geotechnical Journal*, 23, No. 1, pp. 30-50.

1987: Selected by the Associate Committee on Geotechnical Research of The National Research Council of Canada and the Canadian Geotechnical Society to present the "**Canadian Geotechnical Colloquium**" for 1987: "Contaminant migration in groundwater: The role of analysis in the design of barriers".

- 1989: Awarded **Steacie Fellowship** (1989-91) by the Natural Sciences and Engineering Research Council of Canada.
- 1990: **International Geotextile Society "Special Recognition"** for an outstanding contribution to the "fundamental understanding of the behaviour of geosynthetic reinforced embankments." This recognition was for the work published in the three papers:
- "Reinforcement of embankments on soils whose strength increases with depth" by R.K. Rowe and K.L. Soderman. Proceeding of Geosynthetics '87, New Orleans, 1987, pp. 266-277.
  - "Stabilization of very soft soils using high strength geosynthetics: The role of finite element analyses" by R.K. Rowe and K.L. Soderman. *Geotextiles and Geomembranes*, 1987 6,pp. 53-80.
  - "Some considerations in the design of geosynthetic reinforced embankments on clayey foundations" by B.L.J. Mylleville and R.K. Rowe. Proceedings of 3rd Canadian Symposium on Geotextiles, Kitchener, 1988, pp. 29-33.
- 1990: **Canadian Geotechnical Society: Honourable Mention** (Runner up for Best Paper prize) for the paper: "Effect of multiple contaminant migration on diffusion and adsorption of some domestic waste contaminants in a natural clayey soil" by F.S. Barone, E.Y. Yanful, R.M. Quigley and R.K. Rowe.
- 1991: **North American Geosynthetics Society Awards of Excellence, Grand Award** with B.L.J. Mylleville. Atlanta, Georgia, February.
- 1992: **Canadian Geotechnical Society: Honourable Mention** (Runner up for Best Paper prize) for the paper: "An analysis of three-dimensional ground movements: the Thunder Bay tunnel" by K.M. Lee and R.K. Rowe.
- 1992: **Shamsher Prakash Research Award.**
- 1993: **Finalist in North American Geosynthetic Society Award of Excellence** (with S.K. Ho), Vancouver, April.
- 1993: **Elected Fellow Engineering Institute of Canada.**
- 1993: Service Plaque of Canadian Geotechnical Society in recognition of contributions to the 3rd edition of the Canadian Foundation Engineering Manual.
- 1994: **Canadian Geotechnical Society: Honourable Mention** (Runner up for Best Paper prize) for the paper: "Evaluation of a compacted till liner test pad constructed over a granular subliner contingency layer" by R. Kerry Rowe, Chris J. Caers and Cliff Chan.
- 1996: **Edward G. Pleva Award for Excellence in Teaching**, University of Western Ontario.
- 1996: **International Geosynthetics Society Award and Gold Medal** for an Outstanding Contribution to the understanding of "Diffusive Behaviour Through Composite Liner Systems".

- 1996: **Canadian Geotechnical Society: Honourable Mention** (Runner up for R.M. Quigley Best Paper Award) for the paper: "Construction and performance of a full scale geotextile reinforced test embankment - Sackville, New Brunswick" by R. Kerry Rowe, C.J. Gnanendran, A. Landva and A. Valsangkar.
- 1997: **Professional Engineers Ontario Engineering Medal - Research and Development.**
- 1997: **Ontario Confederation of University Faculty Associations Excellence in Teaching Award.**
- 1997: **Canadian Geotechnical Society: Honourable Mention** (Runner up for R.M. Quigley Best Paper Award) for the paper: "A geogrid reinforced embankment on peat over organic silt: a case history" by R.K. Rowe and B.L.J. Mylleville.
- 1997: **Elected Fellow, Institution of Engineers, Australia.**
- 1998: **Elected Fellow, Canadian Society for Civil Engineering**
- 1998: **Elected Fellow, American Society of Civil Engineers**
- 1998: **Engineering Science Prize for Achievement in Research**
- 1999: **Canadian Society for Civil Engineering: Honourable mention for Keefer Medal** for the paper "Modelling impacts due to multiple landfill cells and clogging of leachate collection systems" by R. Kerry Rowe and John R. Booker.
- 1999: **A.G. Stermac Award**, Canadian Geotechnical Society.
- 1999: **Ontario Ministry of Environment Award of Excellence** for Research and Development as Principal Lead on a Multidisciplinary Research Project "Clogging of Leachate Collection Systems".
- 2000: **Canadian Society for Civil Engineering: Honourable Mention for Keefer Medal** for the paper "Field observations of clogging in a landfill leachate collection system," by " I. R. Fleming, R.Kerry Rowe and D.R. Cullimore.
- 2000: **Canadian Geotechnical Society: Honourable Mention** (Runner up for R.M. Quigley Best Paper Award) for the paper: "Field observations of clogging in a landfill leachate collection system," by " I. R. Fleming, R.Kerry Rowe and D.R. Cullimore.
- 2000: **Canadian Geotechnical Society Geosynthetics Division Award.**
- 2000: **Canadian Geotechnical Society Geoenvironmental Division Award.**

- 2001: **Elected Fellow, Royal Society of Canada**
- 2001: **Elected Fellow, Canadian Academy of Engineering**
- 2001: **Canadian Society for Civil Engineering: Thomas C. Keefer Medal** for the paper "Design and construction of the barrier system for the Halton Landfill" by R. Kerry Rowe, Chris J. Caers, Glenn Reynolds, & Cliff Chan
- 2001: **Canadian Geotechnical Society: Honourable Mention** (Runner up for R.M. Quigley Best Paper Award) for the paper: "Design and construction of the barrier system for the Halton Landfill" by R. Kerry Rowe, Chris J. Caers, Glenn Reynolds, & Cliff Chan.
- 2002: **22<sup>nd</sup> Dineen Memorial Lecturer**, University of New Brunswick
- 2002: **Canadian Society for Civil Engineering: Honourable Mention for Casimir Gzowski Medal** for the paper "The performance of a laboratory facility for evaluating the structural response of small-diameter buried pipes" by " R.W.I. Brachman, I.D. Moore and R.K. Rowe.
- 2002: **Giroud Lecturer** at the 7<sup>th</sup> International Conference on Geosynthetics, in Nice, September 2002 (awarded every four years)
- 2003: **North American Geosynthetics Society**, runner up in the best paper completion, October 2003.
- 2003: **K.Y. Lo Medal**, Engineering Institute of Canada
- 2003: **R.F. Legget Medal**, Canadian Geotechnical Society
- 2004: **International Geosynthetics Society Award and Gold Medal** for an Outstanding Contribution to the understanding of the "Combined use of geosynthetic reinforcement and prefabricated vertical drains (PVDs)"
- 2004: **Canadian Society for Civil Engineering: Honourable Mention for Thomas C. Keefer Medal** for the paper "Evaluation of an HDPE geomembrane after 14 years as a leachate lagoon liner" co-authored by R.K. Rowe, H.P. Sangam and C.B. Lake
- 2004: **Canadian Geotechnical Society: Honourable Mention** (Runner up for R.M. Quigley Best Paper Award) for the paper "Evaluation of an HDPE geomembrane after 14 years as a leachate lagoon liner" co-authored by R.K. Rowe, H.P. Sangam and C.B. Lake
- 2004: **Killam Prize for Engineering** Canada Council
- 2005: Selected to present the 45<sup>th</sup> **Rankine Lecture** in London (UK) March, 2005

## PROFESSIONAL REGISTRATION

Registered Engineer, Province of Ontario, Canada (P.Eng.)  
Chartered Engineer, Australia (CP.Eng.)

## SCIENTIFIC AND PROFESSIONAL SOCIETIES

Institution of Engineers (Australia)  
Association of Professional Engineers of Ontario  
The Canadian Geotechnical Society  
The Engineering Institute of Canada  
American Society of Civil Engineers  
International Society for Soil Mechanics and Foundation Engineering  
International Society for Rock Mechanics  
International Geosynthetics Society  
International Association for Computer Methods in Geomechanics  
North American Geosynthetics Society  
Canadian Rock Mechanics Association  
Canadian Tunnelling Association  
Canadian Society for Civil Engineering

## CONTRIBUTIONS TO THE PROFESSION

**Chairman**, Standards Council of Canada (SCC) International Subcommittee on *Geotextiles and Geomembranes* - 1989 to 2000  
**Vice President**, North American Geosynthetics Society, 1987 to 1991  
**Editor**, International Geosynthetics Society Newsletter - 1986 to 1990  
**President**, International Geosynthetics Society, 1990 to 1994  
**Immediate Past President**, International Geosynthetics Society, 1994-1998  
**Vice President - Technical**, Canadian Geotechnical Society, 1997 & 1998  
**Founding Chair**, London District Section of Canadian Society for Civil Engineering and Canadian Geotechnical Society, 1993-1996  
**Vice-Chair**, Ontario Regional Council, Canadian Society for Civil Engineering, 1996-1998  
Member, NSERC Civil Engineering Grant Selection Committee, 1996-1999  
**Chair**, NSERC Civil Engineering Grant Selection Committee, 1998-1999  
**Technical Chair**, 6<sup>th</sup> International Conference on Geosynthetics, Atlanta, March 1998  
**President Elect**, Canadian Geotechnical Society, 1999-2000  
**Co-Chair** of the Awards Committee of the International Association for Computer Methods and Advances in Geomechanics, 1999-Present  
**Technical Chair**, 6<sup>th</sup> Canadian Environmental Engineering Conference, London, June 2000  
**President**, Canadian Geotechnical Society, 2001-2002



Member, NSERC Steacie Fellow Selection Committee, 2000-2002

**Group Chair**, NSERC, 2003-

Member, International Waste Working Group (IWWG) Advisory Committee (2004- )

**Member:**

- Canadian Geotechnical Society Committee on Geotextiles, Geogrids and Geomembranes - 1982 to 1994
- Executive, Canadian Geotechnical Society – Southern Ontario Section – 1983 to 1985
- Canadian General Standards Board Committee on Geotextiles - 1982 to Present
- SCC International Subcommittee on *Geotextiles and Geomembranes* - 1984 to 2000
- International Standardization Organization Working Group on Physical Properties of Geotextiles - 1986 to Present
- International Geotextile Society Technical Committee on Publications and Education - 1984 to 1988
- Soil Properties Committee, American Society of Civil Engineers, 1986 to 1995
- Governing Council of the International Geotextile Society, 1988 to 1998
- Executive, Canadian Society for Civil Engineering and Canadian Geotechnical Society, London & District Section, 1993-1998
- Groundwater Quality Committee, American Society of Civil Engineers, 1994 to 1998
- Engineering Institute of Canada, Board Member, 1997 & 1998
- Engineering Institute of Canada, Continuing Education Committee, 1997 & 1998

**Editorial Board Membership:**

- International Journal for *Geotextiles & Geomembranes*, 1990 – present;  
**Editor:** 1997 - present.
- *Canadian Geotechnical Journal*, **Associate Editor** – 1983 – present.
- *Journal of Geotechnical Engineering*, American Society of Civil Engineers, 1986-95
- International Journal on *Computers and Geotechnics*, 1988 - present.
- *International Journal for Analytical and Numerical Methods in Geomechanics*, 1987 -  
**Associate Editor** – 1997 – present.
- *Geosynthetics International*, 1994 - present.
- *Soils & Foundations: Journal of Japanese Geotechnical Society*, 1997 - present.
- *Italian Geotechnical Journal*, 1997 - present.
- *Geotechnical Engineering* (Institution of Civil Engineers, U.K.), 1998 -2003
- *Lowland Technology International*, 1999 – present.
- *Geotechnique* (Institution of Civil Engineers, U.K.), 2000-2003
- *Transport in Porous Media*, 2000 - present.
- *International Journal of Geomechanics*, **Co-Editor**, 2001- present.
- *Journal of Environmental Engineering and Science*, 2001- present.
- *Waste Management*, 2002- present.

Reviewer of more than 380 papers for:

- *Canadian Geotechnical Journal*
- *Journal of Geotechnical and Geoenvironmental Engineering (ASCE)*
- *International Journal for Rock Mechanics and Mining Sciences*
- *International Journal for Computers and Geotechnics*
- *International Journal for Geotextiles and Geomembranes*
- Transportation Research Board (U.S.A.)
- *Geotechnique*
- *International Journal for Numerical and Analytical Methods in Geomechanics*
- *International Journal for Numerical Methods in Engineering*
- *Geotechnical Testing Journal*, American Society for Testing and Materials (ASTM)
- *Soils and Foundations*
- *Geotechnical Engineering (U.K.)*
- *Italian Geotechnical Journal*
- *Iranian Journal of Science and Technology*
- *Geosynthetics International*
- *Lowland Technology International*
- *Contaminant Hydrogeology*
- Numerous Conferences

**Chairman**, Organizing Committee for the Symposium "Recent Developments in Geotechnical Instrumentation and Monitoring" sponsored by the Canadian Geotechnical Society and the Tunnelling Association of Canada, March 1984

**Chairman**, Organizing Committee for the Symposium "Applications for Geotextiles, Geogrids and Geomembranes in Engineering Practice" sponsored by the Canadian Geotechnical Society, held November 1984

**Co-Chair**, Organizing Committee for U.S., Canadian and Mexican Workshop, "Environmental Quality, Innovative Technologies and Sustainable Economic Development: A NAFTA Perspective", February 1996, Mexico City.

**Chairman:**

- Session on Theoretical Soil Mechanics, 10<sup>th</sup> Canadian Congress of Applied Mechanics, June 1985
- Session on Application of Numerical Models to Practical Problems, 2<sup>nd</sup> Intern. Symposium on Numerical Models in Geomechanics, Ghent, 1986
- Session on Properties and Tests for Geotextiles at 3<sup>rd</sup> International Conference on Geotextiles, Vienna, 1986
- Session on Unpaved and Paved Roads, Geosynthetics '87, New Orleans, Feb. 1987
- Session on Earth Structures, Slopes, Dams and Embankments, International Conf. on Numerical Methods in Geomechanics, Innsbruck, April 11-15, 1988
- Session on Shallow and Deep Foundations, International Symposium on Earth Reinforcement, Fukuoka, Japan, 1988

- Session on Tunnels and Excavations, 3rd International Symposium on Numerical Models in Geomechanics, Niagara, 1989
- Keynote Session, 3rd International Symposium on Numerical Models in Geomechanics, Niagara, 1989
- Professional Development Symposium on Geosynthetics in Waste Containment, Toronto, May 1990
- Session on Reinforced Walls and Slopes, 4th International Conference on Geotextiles, Geomembranes and Related Products, The Hague, May 1990
- Geoenvironmental Engineering Sessions on Barriers, 45<sup>th</sup> Canadian Geotechnical Conference, October 1992
- Modelling of Contaminant Transport Session, Joint CSCE-ASCE National Conference on Environmental Engineering, Montreal, July 1993.
- Workshop of the construction of barrier systems - 4<sup>th</sup> International Landfill Symposium, Cagliari, Italy, October 1993.
- Session on Geosynthetics and Ground Improvements, 8<sup>th</sup> International Conference of the Association for Computer Methods and Advances in Geomechanics, Morgantown, May 1994
- First Giroud Lecture, 5<sup>th</sup> International Conference on *Geotextiles and Geomembranes*, Singapore, October 1994
- Session on Base Reinforcement, 5<sup>th</sup> International Conference on *Geotextiles and Geomembranes*, Singapore, October 1994
- Session on Ageing of Geotextiles and Geogrids, 5<sup>th</sup> International Conference on *Geotextiles and Geomembranes*, Singapore, October 1994
- Session on Novel Techniques for Groundwater Remediation, NATO Advanced Study Institute, Antalya, Turkey, 1995
- Session on Barrier Performance and Top Covers, 5<sup>th</sup> International Landfill Symposium, Cagliari, Sardinia, Italy, October 1995.
- Workshop on Geosynthetic Clay Liners, 5<sup>th</sup> International Landfill Symposium, Cagliari, Sardinia, Italy, October 1995.
- Session on Construction Waste Management Practices and Progress, Conference on Cost Effective Management of Construction Demolition Waste and Green Building Procurement, Toronto, November 1995.
- Session on Biological Processes and Groundwater Quality, North American Water and Environment Congress 96, American Society of Civil Engineers, June 1996.
- Keynote session on Liners, First European Conference on Geosynthetics, Maastricht, October 1996.
- Session on Waste Disposal and Containment, Second International Congress on Environmental Geotechnics, Osaka, November 1996.
- Summary Discussion Session on Testing and Materials, International Symposium on Earth Reinforcement, Kyushu, November 1996.
- Session on Lining on Slope and Top Cover Systems, 6<sup>th</sup> International Landfill Symposium, October 1997.
- Keynote Session on Geosynthetics in Landfill Liners and Covers, 1<sup>st</sup> European Geosynthetics Conference, October 1996

- Workshop on Landfill Top Cover Systems, 6<sup>th</sup> International Landfill Symposium, October 1997.
- Workshop on Landfill Drainage Systems, 6<sup>th</sup> International Landfill Symposium, October 1997.
- CGS Colloquium Session, 50<sup>th</sup> Canadian Geotechnical Conference, Ottawa, 1997.
- Sessions on Bottom Barriers, 7<sup>th</sup> International Waste Management and Landfill Symposium, October 1999.
- Workshop on Monitoring and Repairing of Liners, 7<sup>th</sup> International Waste Management and Landfill Symposium, October 1999.
- Keynote Session on Off-shore structures, 10<sup>th</sup> International Conference on Computer Methods and Advances in Geomechanics, Tucson, U.S.A., January, 2001.
- Workshop & discussion session on Geoenvironmental Engineering & Coupled Processes, 10<sup>th</sup> International Conference on Computer Methods and Advances in Geomechanics, Tucson, U.S.A., January, 2001.
- Session on Soil Microbiology and Organic Pollutants, 2<sup>nd</sup> Australian and New Zealand Conference on Environmental Geotechnics, Newcastle Australia, November 2001.
- Session on Performance and Desiccation, International Symposium on Clay Geosynthetic Barriers, Nürnberg, Germany, April 2002.

**Invited Canadian Delegate:**

- Canada-Japan Workshop on Development of Complementary Research Programs sponsored by Science Councils of Canada and Japan, Ottawa, February 1989
- NSF Workshop on Interactive Computer Graphics, Ithaca, June 1986
- NATO Advanced Research Workshop on Applications of Polymeric Reinforcement in Soil Retaining Structures and Chairman of the session on Analysis and Design of Reinforced Soil Walls, Kingston, Ont., June 7-12, 1987
- NSF-NSERC Workshop on Recent Advances and Future Trends in Geomechanics in the 21st Century, October 1992.
- NATO Advanced Study Institute; Recent Advances in Groundwater Pollution Control and Remediation, 1995.

**Principal Lecturer in the Following Professional Development Courses:**

- "Geotechnical Engineering for Waste-Disposal Projects", University of Texas, Austin, U.S.A., November 1986
- "Soil Reinforcement: Mechanics & Design", The University of Western Ontario, April 13-15, 1987
- "Soil Reinforcement: Mechanics and Design", University of Sydney, May 1987
- "Geotechnical Aspects of Waste Disposal", Canadian Geotechnical Society, Ottawa, May 1988
- "Geosynthetics", Canadian Geotechnical Society, Winnipeg, March 1988
- "Pollutant migration: Numerical modelling and "design", University of Sydney, Sydney, May, 1989
- "Clayey barriers for mitigation of contaminant impact" (with R.M. Quigley), University of Western Ontario, London, May and December 1990
- "Land Based Waste Disposal", University of Western Australia, Perth, Australia, April 1991.

- Short Course on "Application of Geosynthetics in Engineering Practice", organized by CGS Committee on Geosynthetics, Toronto, October 1992.
- "Applications for Geotextiles and Related Products in Roads, Highways, Slopes, Retaining Walls and Embankments" Kuala Lumpur, Malaysia, November 1992
- "Applications for Geotextiles and Related Products in Roads, Highways, Slopes, Retaining Walls and Embankments" Singapore, November 1992
- "Clayey barriers for mitigation of contaminant impact (with R.M. Quigley), U.W.O., London, December 1992.
- "Geosynthetics in Waste Containment Applications", organized by CGS Committee on Geosynthetics, Vancouver, April 1993.
- "Geosynthetics in Civil Engineering", Royal Military College of Canada, Kingston, June 1994.
- "Contaminant Hydrogeology and Waste Disposal Facility Design" (with E.K. Yanful and I.D. Moore), U.W.O., April 1995.
- "Geosynthetic Clay Liners", EPIC Short Course, University of Toronto, Toronto, June 1995.
- "Natural Hazards and Environmental *Geotechniques*", Short Course sponsored by Asian Institute of Technology and Southeast Asian Geotechnical Society, Bangkok, November 1995.
- "Landfill Design", Short Course sponsored by the Middle East Technical University, Ankara, Turkey, May 1996.
- "Management of Solid Waste", Modular M.Eng. Course - Module 1 (with E.K. Yanful), U.W.O., September 1996.
- "Landfill Design and Management for Long-Term Performance" EPIC Short Course, University of Toronto, Toronto, October 1996.
- "Load Transfer in Rock Sockets" Drilled Foundations Seminar, Canadian Geotechnical Society, Toronto, April 1997.
- "Diffusion Presents New Challenges in Landfill Design", Short Course on Advances in Geotechnics, A.L. Coimbra Institute for Graduate Studies and Research in Engineering, Federal University of Rio de Janeiro, Rio de Janeiro, June 1997.
- "Geosynthetics in Waste Disposal Applications", Geosynthetics Short Course, Canadian Geotechnical Society, Ottawa, October 1997.
- "Geosynthetics in Barrier Systems for Waste Disposal Facilities", Workshop on Waste Containment, Australian Geomechanics Society, Melbourne, November 1997.
- "Two Aspects of Leakage Through Composite Landfill Liners", One day seminar on "Geosynthetics for the Environment", North American Geosynthetics Society and Canadian Geotechnical Society, Toronto, May 1998.
- "Geosynthetics in Barrier Systems for Waste Disposal Facilities", Geosynthetics Short Course, Canadian Geotechnical Society, Edmonton, October, 1998.
- "Landfill Design and Management for Long-Term Performance", EPIC short course, Toronto, April 1999.
- "Barrier Systems", One day short course (sole lecturer) organized by the South African Institution of Civil Engineers, Kwa-Maritane, May 1999.
- "Geosynthetics in Barrier Systems for Waste Disposal Facilities", Geosynthetics Short Course, Canadian Geotechnical Society, Regina, October, 1999.
- "Geosynthetics in Barrier Systems for Waste Disposal Facilities", Geosynthetics Short Course, Canadian Geotechnical Society, Calgary, September, 2001.
- "Sanitary Landfill- Leachate and Gas Management", EPIC short course, Toronto, September 2001.

- “Latest Developments in Landfill Design”, Short course, Newcastle, November 2001.
- “GCL Workshop for Engineers and Regulators”, Manchester, UK, April 2002.
- “Sanitary Landfill- Leachate and Gas Management”, EPIC short course, Toronto, October 2002.
- “Forum on Geosynthetics 2003”, Toronto, March 2003.
- "Geosynthetics in Barrier Systems for Waste Disposal Facilities", Geosynthetics Short Course, Canadian Geotechnical Society, Winnipeg, September, 2003.

**Keynote/Theme Speaker:**

1. ASCE Specialty Conference on Geotechnical Aspects of Waste Disposal, Ann Arbor, June 15-17, 1987
2. Japanese Society for Soil Mechanics and Foundation Engineering and Japanese Chapter of IGS Seminar on Geotextiles, Tokyo, 1988
3. 37th Geotechnical Conference, Minnesota Section ASCE, St. Paul, March, 1989
4. Third Italian Conference on Geosynthetics, Bologna, 1989.
5. Symposium on Ground Modification, University of Technology, Sydney, Melbourne, Brisbane, Australia, April/May, 1991.
6. 7th International Conference on Computer Methods and Advances in Geotechnics, May 1991.
7. 1st Canadian Conference on Environmental Geotechnics, Montreal, May 1991.
8. International Symposium on Piling and Soil Improvement, Nanjing, China, March 1992.
9. International Association of Hydrogeologists Conference on Recent Trends in Hydrogeology, Hamilton, May 1992.
10. International Conference on Filtration and Drainage, Cambridge, UK, September 1992.
11. 3rd Chinese Conference on Geosynthetics, Yizheng, China, November 1992.
12. International Symposium on Soil Reinforcement, Fukuoka, Japan, November 1992.
13. International Symposium on the Applications of Geosynthetic Technology, Jakarta, Indonesia, November 1992.
14. Japanese Society for Soil Mechanics and Foundation Engineering and Japanese Chapter of IGS Seminar on Geosynthetics, Tokyo, November 1992.
15. 7th Italian Conference on Geosynthetics, Bologna, Italy, October 1993.
16. Canadian Sedimentological Research Group Conference, Toronto, February 1994.
17. 8th International Conference on Computer Methods and Advances in Geomechanics, Morgantown, May 1994.
18. International Symposium on the Engineering Characteristics of Peat, Sapporo, Japan, March 1995.
19. NATO Advanced Study Institute on Groundwater Remediation, Antalya, Turkey, May 1995.
20. 5th International Symposium on Numerical Methods in Geomechanics (NUMOG 5), Davos, Switzerland, Sept. 1995.
21. International Symposium on Recent Developments in Soil and Pavement Mechanics, Rio de Janeiro, Brazil, June 1997.
22. 6<sup>th</sup> International Symposium on Numerical Methods in Geomechanics (NUMOG 6), Montreal, Canada, July 1997.
23. 9<sup>th</sup> International Conference of the Association for Computer Methods and Advances in Geomechanics, Wuhan, China, November 1997.

**Invited Keynote Speaker (cont):**

24. 1<sup>st</sup> Australian-New Zealand Conference on Environmental Geotechnics, Geoenvironment '97, Melbourne, Australia, November 1997.
25. 4<sup>th</sup> International Conference on Case Histories in Geotechnical Engineering, St. Louis, March 1998.
26. 6<sup>th</sup> International Conference on Geosynthetics, Atlanta, March, 1998.
27. 3<sup>rd</sup> International Workshop on Application of Computational Mechanics in Geotechnical Engineering, Porto, Portugal, September, 1998.
28. Brazilian Environmental Geotechnics Symposium, SIGA 98, Sao Paulo, Brazil, Sept. 1998.
29. 3<sup>rd</sup> South African Conference on Environmental Engineering, EEC3, Kwa-Maritane, South Africa, May 1999.
30. XI Pan American Conference on Soil Mechanics and Geotechnical Engineering, Foz do Iguassu, Brazil, August 1999.
31. International Symposium on Physical Modelling and Testing in Environmental Geotechnics, La Baule, France, May 2000.
32. Conference La notion d'équivalence en échantillonnage - drainage, Paris, France, May 2000
33. International Society for Soil mechanics and Geotechnical Engineering, International "Young Engineers Conference"; Southampton, U.K. September 2000
34. GeoEng2000 (Joint Conference of ISSMGE, ISRM, IGS etc), Melbourne, Australia, November 2000
35. International Symposium on Geosynthetics in Geotechnical and Geoenvironmental Engineering, Melbourne, Australia, November, 2000.
36. 10<sup>th</sup> International Conference on Computer Methods and Advances in Geomechanics, Tucson, U.S.A., January 2001
37. International Symposium on Soil Reinforcement, Fukuoka, Japan, November 2001
38. 2<sup>nd</sup> Australian-New Zealand Conference on Environmental Geotechnics, Newcastle, Australia, November 2001
39. 2<sup>nd</sup> Canadian Specialty Conference on Computing in Geotechnique, Winnipeg, Canada, April 2002
40. 4<sup>th</sup> International Conference on Environmental Geotechnics, Rio de Janeiro, Brazil, August, 2002.
41. Giroud Lecture, 7<sup>th</sup> International Conference on Geosynthetics, Nice, France, September, 2002.
42. IGS UK Chapter and British Geotechnical Association 3rd Invitational Lecture, London, U.K., October 2003.
43. Asian Regional Conference on Geosynthetics, Seoul, Korea, June 2004
44. International Conference on Geofilters, Cape Town, October 2004

**Member, International Advisory Board for:**

- International Symposium on Earth Reinforcement, Fukuoka, Japan, 1988
- 1st Indian Geotextile Conference, Bombay, India, 1988
- Geosynthetics '89 - Biannual Conference of the North American Geosynthetic Society
- 8th International Conference on Computer Methods and Advances in Geotechnics.
- International Symposium on Earth Reinforcements, Fukuoka, Japan 1992
- 5th International Landfill Symposium, Sardinia, Italy, 1995
- International Symposium on Recent Major Case Histories in Environmental Geotechnics, Paris, France, 1996
- International Symposium on Earth Reinforcement, Kyushu, Japan, 1996
- 9th International Conference on Computer Methods and Advances in Geomechanics, Wuhan, China,

1997

- 6th International Landfill Symposium, Sardinia, Italy, 1997.
- 6<sup>th</sup> International Conference on Geosynthetics, Atlanta, U.S.A., 1998.
- Civil & Environmental Engrg Conf.:New Frontiers & Challenges, Bangkok, Thailand,1999.
- 7<sup>th</sup> International Waste Management and Landfill Symposium, Sardinia, Italy, Oct. 1999.
- International Conference on Water, Environment, Ecology, Socio-economics and Health Engineering, Seoul, Korea, October 1999.
- 3<sup>rd</sup> International Conference on Advances of Computer Methods in Geotechnical and Geoenvironmental Engineering, Moscow, Russia, February 2000
- International Symposium on Physical Modelling and Testing in Environmental Geotechnics, La Baule, France, May 2000.
- 10<sup>th</sup> International Conference on Computer Methods and Advances in Geomechanics, Tucson, U.S.A., January 2001.
- 7<sup>th</sup> International Conference on Geosynthetics, Nice, France, 2002
- 2nd International Symposium on Contaminated Sediments, Quebec City, 2003.
- 9th International Landfill Symposium, Sardinia, Italy, 2003
- International Workshop on Geotechnical X-Ray CT, Kumamoto, Japan, November 2003
- International Conference on Geosynthetics and Geoenvironmental Engineering, Bombay, India, December 2004.
- Geofilters 2004, Cape Town, South Africa
- 11<sup>th</sup> International Conference on Computer Methods and Advances in Geomechanics, Torino, Italy., June 2005
- 8<sup>th</sup> International Conference on Geosynthetics, Yokohama, Japan, September 2006.
- 10<sup>th</sup> International Waste Management and Landfill Symposium , Sardinia, Italy, 2003



**TEACHING ASSIGNMENTS**

<u>Academic Year</u>	<u>Courses</u>	<u>Remarks</u>
1978-1979	ES 366b Soil Mechanics II (2,3)	60%
	ES 529b Foundation Engineering (2,0)	60%
1979-1980	ES 706a Analytical Methods in Geotechnical Engineering (2,0)	New course 100%
	ES 366b Soil Mechanics II (2,3)	100%
	ES 529b Foundation Engineering (2,0)	60%
1980-1981	ES 426a Geotechnical Engineering Design (2,3)	60%
	ES 706a Analytical Methods in Geotechnical Engineering (2,0)	100%
	ES 366b Soil Mechanics II (2,3)	100%
	ES 529b Foundation Engineering (2,0)	100%
1981-1982	ES 327a Soil Mechanics I (2,3)	60%
	ES 426a Geotechnical Engineering Design (2,3)	50%
	ES 706a Analytical Methods in Geotechnical Engineering (2,0)	100%
	ES 366b Soil Mechanics II (2,3)	100%
	ES 529b Foundation Engineering (2,0)	60%
1982-1983	ES 428a Advanced Computer Applications for Solving Engineering Problems (2,3)	New course 100%
	ES 706a Analytical Methods in Geotechnical Engineering (2,0)	100%
	ES 366b Soil Mechanics II (2,3)	100%
	ES 529b Foundation Engineering (2,0)	60%
	ES 622b Advanced Topics in Geotechnical Engineering (Reading Course)	100%
1983-1984	ES 428a Advanced Computer Applications for Solving Engineering Problems (2,3)	100%
	ES 706a Analytical Methods in Geotechnical Engineering (2,0)	100%
	ES 366b Soil Mechanics II (2,3)	100%
	ES 529b Foundation Engineering (2,0)	100%
1984-1985	ES 428a Advanced Computer Applications for Solving Engineering Problems (2,3)	100%
	ES 706a Analytical Methods in Geotechnical Engineering (2,0)	100%
1985-1986	ES 366b Soil Mechanics II (2,3)	100%
	ES 529b Foundation Engineering (2,0)	100%

## TEACHING ASSIGNMENTS (continued)

<u>Academic Year</u>	<u>Courses</u>	<u>Remarks</u>
1986-1987	ES 428a Advanced Computer Applications for Solving Engineering Problems (2,3)	100%
	ES 706a Analytical Methods in Geotechnical Engineering (2,0)	100%
	ES 366b Soil Mechanics II (2,3)	100%
	ES 529b Foundation Engineering (2,0)	100%
1987-1988	ES 366b Soil Mechanics II (2,3)	100%
	ES 440a Advanced Computer Applications for Solving Engineering Problems (2,3)	100%
	ES 529a Foundation Engineering (2,0)	100%
	ES 706b Analytical Methods in Geotechnical Engineering (2,0)	100%
1988-1989	ES 440a Advanced Computer Applications for Solving Engineering Problems (2,3)	100%
	ES 706a Analytical Methods in Geotechnical Engineering (2,0)	100%
	ES 589a Selected Topics in Hydraulic Engineering	100%
	ES 366b Soil Mechanics II (2,3)	100%
	ES 707b Designing with Geosynthetics [New Course]	100%
	ES 471b Civil Engineering Materials	15%
1992-1993	ES 327a Soil Mechanics I (2,3)	5%
	ES 707a Designing With Geosynthetics (2,0)	100%
	ES 366b Soil Mechanics II (2,3)	50%
	ES 465b Environmental Design for Disposal of Waste [New Course] (2,3)	100%
1993-1994	ES 326 Soil Mechanics and Hydrogeologic Engineering (2,3)	35%
	ES 649b Contaminant Hydrogeology and Landfill Design [New Course] (2,0)	100%
	ES 465b Environmental Design for Disposal of Waste (2,3)	100%
1994-1995	ES 326 Soil Mechanics and Hydrogeologic Engineering (2,3)	35%
	ES 465b Environmental Design for Disposal of Waste (2,3)	100%
	ES 707a Designing with Geosynthetics (2,0)	100%
1995-1996	ES 326 Soil Mechanics and Hydrogeologic Engineering (2,3)	35%
	ES 465a Environmental Design for Disposal of Waste (2,3)	100%
	ES 478b Case Studies (3,0)	8%
	ES 649b Contaminant Hydrogeology and Landfill Design (2,0)	100%

## TEACHING ASSIGNMENTS (continued)

<u>Academic Year</u>	<u>Courses</u>	<u>Remarks</u>
1996-1997	ES 326 Soil Mechanics and Hydrogeologic Engineering (2,3)	35%
	ES 465b Environmental Design for Disposal of Waste (2,3)	100%
	ES 478b Case Studies (3,0)	8%
	ES 649b Contaminant Hydrology and Landfill Design (2,0)	100%
	ES 707b Designing with Geosynthetics (2,0)	100%
	Env.Sc. 021a	8%
	Env.Sc. 350b	8%
1998-1999	ES 465a Environmental Design for Disposal of Waste (2,3)	100%
	ES 649b Contaminant Hydrology and Landfill Design (2,0)	100%
1999-2000	ES 465a Environmental Design for Disposal of Waste (2,3)	100%
	ES 326 Soil Mechanics and Hydrogeologic Engineering (2,3)	15%
	ES 707b Designing with Geosynthetics (2,0)	100%
2000-2001	CIVL 478 Case Studies (UWO)	12%
2001-2002	CIVL 340 Soil Mechanics	10%
	CIVL 478 Case Studies (UWO)	12%
	CIVL 443 Earth structures and the environment	8%
	CIVL 848 Landfill design	12%
2002-2003	CIVL 340 Soil Mechanics	10%
	CIVL 478 Case Studies (UWO)	12%
	CIVL 443 Earth structures and the environment	8%
	GENG 840 Geoengineering seminar	8%
2003-2004	CIVL 478 Case Studies (UWO)	12%
	CIVL 443 Earth structures and the environment	8%

**GRADUATE STUDENT SUPERVISION**

<u>Name</u>	<u>Period of Enrolment</u>	<u>Degree Registrn.</u>	<u>Thesis Topic</u>	<u>Degree Awarded</u>
1.G.J. Kack	1979-81	M.E.Sc.	Prediction of subsidence above shallow tunnels in soft soil	1981
2.D.G. Fisher	1979-82	M.E.Sc.	The behaviour of foundations on non-homogeneous soils	1982
3.S.K. Ho	1982-84	M.E.Sc.	The engineering properties of geotextiles relevant to their use as soil reinforcement	1984
4.H.H. Armitage	1982-85	M.E.Sc.	Some aspects of the design of rock socketed pile foundations	1985
5.C.J. Caers	1983-85	M.E.Sc.	Some theoretical and experimental aspects of pollutant migration	1985
6.K.L. Soderman	1982-87	Ph.D.	The behaviour of geotextile reinforced embankments	1987
7.K.M.A. Lee	1982-89	Ph.D.	The analysis and design of tunnels in soft ground	1989
8.AM.. Hammoud	1986-89	M.E.Sc.	A theoretical examination of contaminant transport in a regularly fractured media	1989
9.F.S. Barone	1984-90	Ph.D.	Determination of diffusion and adsorption coefficients for some contaminants in clayey soil and rock: Laboratory determination and field evaluation (cosupervised with R.M. Quigley; R.K.R. senior supervisor)	1990
10.J. Mucklow	1986-90	M.E.Sc.	Phenol migration from landfills by diffusion in natural clayey soils (cosupervised with R.M. Quigley)	1990
11.B.J.L. Mylleville	1985-91	Ph.D.	Behaviour of heavily reinforced embankments on soft foundations	1991
12.K.W.E. San	1988-1991	M.E.Sc.	Stochastic considerations in contaminant migration studies	1991
13.S.K. Ho	1987-1993	Ph.D.	A numerical investigation into the behaviour of reinforced soil walls	1993
14.C.T. Gnanendran	1988-1993	Ph.D.	Observed and calculated behaviour of a geotextile reinforced embankment on a soft compressible soil	1993

## GRADUATE STUDENT SUPERVISION (continued)

<u>Name</u>	<u>Period of Enrolment</u>	<u>Degree Registn.</u>	<u>Thesis Topic</u>	<u>Degree Awarded</u>
15.J.M. Markle	1990-1993	M.Eng.	Hydraulic response of fractured systems	1993
16.P. Nadarajah	1990-1994	Ph.D.	Applications for modelling in landfill design	1994
17.L. Hrapovic	1990-1994	M.E.Sc.	Diffusion of DCM & chloride through an HDPE	1994
18.M.J. Fraser	1992-1994	M.E.Sc.	Modelling the impact resulting from failure of engineered systems in landfills	1994
19.K. Badv	1991-1995	Ph.D.	Diffusive and advective transport in saturated and unsaturated soils	1995
20.O.J. Steele	1990-1995	M.E.Sc.	Effects of potassium fixation in vermiculitic compacted clay (supervised latter stage of thesis; prior supervisor R.M. Quigley 1990-1994)	1995
21.R.J. Petrov	1992-1995	M.E.Sc.	Swelling and compatibility characteristics of a geosynthetic clay liner (Co-supervised with R.M. Quigley)	1995
22.S.D. Hinchberger	1990-1996	Ph.D.	The behaviour of reinforced and unreinforced embankments on rate sensitive clayey foundations	1996
23.A.J. Cooke	1994-1997	M.E.Sc.	Modelling of clogging in columns permeated by synthetic leachate	1997
24.P.C. MacKay	1995-1998	M.E.Sc.	Oxygen diffusion through clay covers (Co-supervised with E.K. Yanful)	1998
25.I.R. Fleming	1992-1999	Ph.D.	Biogeochemical processes and clogging of landfill leachate collection systems	1999
26.R.W.I. Brachman	1993-1999	Ph.D.	Mechanical performance of landfill collection pipes (Co-supervised with I.D. Moore)	1999
27.J.P. Dittrich	1994-2000	Ph.D.	Slope behaviour during excavation of the Sarnia approach to the St. clair tunnel (Co-supervised with K.Y. Lo)	2000

## GRADUATE STUDENT SUPERVISION (continued)

<u>Name</u>	<u>Period of Enrolment</u>	<u>Degree Registrn.</u>	<u>Thesis Topic</u>	<u>Degree Awarded</u>
28. L. Hrapovic	1994-2001	Ph.D.	Laboratory Study of Intrinsic Biodegradation of Organic Pollutants in Compacted Clayey Soil	2001
29. M.D. Armstrong	1995-1998	M.E.Sc.	Laboratory program to study clogging in a leachate collection system	1998
30. C.B. Lake	1995-2000	Ph.D.	Contaminant transport through geosynthetic clay liners and a composite liner system	2000
31. A.L. Li	1995-2000	Ph.D.	The time dependent behaviour of reinforced embankments on soft foundations	2000
32. P.J. Bennett	1996-1998	M.Sc.	The stable isotope characterization of carbon and water cycling in municipal solid waste landfills (co-supervised with F. Longstaffe)	1998
33. A.R.M. Tognon	1996-1999	M.E.Sc.	Laboratory testing of geosynthetics used in landfill barrier systems (co-supervised with I.D. Moore)	1999
34. H. P. Sangam	1996-2001	Ph.D.	Performance of HDPE Geomembrane Liners in Landfill Applications	2001
35. S.C. Millward	1997-2000	M.E.Sc.	Diffusion through composite liners and underlying unsaturated soil.	2000
36. J.W. Sholte	1997-1999	M.E.Sc.	The complex permittivity of compacted Halton Till (co-supervised with J.Q. Shang)	1999
37. Y. Xie	1997-1999	M.E.Sc.	Complex permittivity of contaminated clays (co-supervised with J.Q. Shang)	1999
38. M. Krol	1997-1999	M.E.Sc.	Trichloroethylene Diffusion in Soil-Bentonite Slurry Walls	2000
39. A. Sloma	1997-2000	M.E.Sc.	Complex dielectric permittivity of water, inorganic and organic solutions (co-supervised with J.Q. Shang)	2000
40. G. Skinner	1997-2002	Ph.D.	Reinforced walls on yielding foundations	2002
41. T. Iryo	1997-2003	Ph.D.	Hydraulic performance of geosynthetics in soil structures	2003
42. A.J. Cooke	1997-	Ph.D.	Modelling of landfill leachate collection system clogging	

## GRADUATE STUDENT SUPERVISION (continued)

<u>Name</u>	<u>Period of Enrolment</u>	<u>Degree Registn.</u>	<u>Thesis Topic</u>	<u>Degree Awarded</u>
43. R. McIsaac	1997-	Ph.D.	Biologically induced clogging in an unsaturated leachate collection layer	
44. C. Orsini	1998-2001	M.E.Sc.	Selected Factors Affecting the Performance of Bentonite Liners and clogging in	2001
45. J. VanGulck	1998-	Ph.D.	Biodegradation and clogging in gravel size material	2003
46. J. Southen	1998-	Ph.D.	Desiccation of liners below geomembranes due to thermal gradients	
47. L. Josic	1999-2001	M.E.Sc.	Complex permittivity of water and soil contaminated by heavy metals and organic compounds	2001
48. M. Abdel Meguid	1999-2002	PhD	(Co-supervised with J.Q. Shang) Selected 3-D Aspects of Tunnelling	2002
49. L. Goveas	2002-	PhD(PT)	(Co-supervised with K.Y. Lo) Role of dissolved gas on performance of excavations	
50. S. Rimal	2002-	MSc	Ageing of geosynthetic liners	
51. H. Lindsay	2002-	MSc	Diffusion of hydrocarbons through composite liners	
52. D. Babcock	2002-	MSc	Modelling clogging of tire shreds	
53. P. Hurst	2003-	MSc	Permeation behaviour of frozen GCLs	
54. K. Lange	2003-	PhD	An examination of GCLs as a potential barrier to the migration of metals leaching from mine tailings and municipal solid waste	
55. Z. Islam	2003-	PhD	(Co-supervised with H. Jamieson) Implications of environmental effects on the service life of geomembranes	
56. K. Abdel-Atty	2003-	PhD	Factors affecting the performance of geocomposite liners	
57. K. Pavdyn	2003-	MSc	Controlling TPH impacts in arctic environments	
58. I. Kalinovich	2003-	MSc	(Co-supervised with J. Poland) Controlling PCB impacts in arctic environments	
59. A. Mabrouk	2004-	PhD	(Co-supervised with J. Poland) Long term performance of liner systems	
59. S. Hansen	2004-	MSc	Basal stability of a deep 3D excavation	
60. R. Waters	2004-	MSc	Diffusion of landfill gases through barrier systems	

**COLLABORATING GRADUATE STUDENTS** (papers published with all)

Nathalie Touze-Foltz	“Modeling of advective transfers in landfill bottom liners” Universite de Mine, Paris, France	PhD	2001
Ebru Demirekler	“Development of modeling approaches for landfill leachate management”, Middle East Technical University, Ankara, Turkey	PhD	2001
Adilson Leite	"Migration of inorganic ions on some tropical soils, with emphasis on the processes of sorption and diffusion". University of Sao Paulo, Brazil	PhD	2001
Mohamed Darwish	“Transport of polymer in soils and solute in gels for contaminant remediation and containment” University of Technology, Netherlands	PhD	2004

**OTHER VISITING GRADUATE STUDENTS** 1998-

Madalen Barroso	Universite Joseph Fourier, Grenoble, France	July	2003
Francois Cartaud	Universite de Mine, Paris	July	2003

**POSTDOCTORAL FELLOWS**

F.S. Barone	1990-1991
X. Yi	1991-1993
C.T. Gnanendran	1993-1994
P. Nadarajah	1994-1995
K. Badv	1994-1995
F. Guan	1995
Y. Zhou	1998-1999
A.L. Li	2000-2002
H.M. Li	2001-2002
L. Hrapovic	2001
H. Sangam	2001-2002
Y. Yoshida	2001-2002
T. Mukunoki	2001-
M.A. Meguid	2002-2003
T. Iryo	2004

**VISITING SCIENTISTS** 1998-

Dr. H.S. Yu	University of Newcastle, Australia	Dec. 1997-Feb. 1998
Dr. J. Otani	Kumamoto University, Japan	April-May 1998
Dr. D. Smith	University of Newcastle, Australia	August-Sept. 1998
Dr. D. Smith	University of Newcastle, Australia	October 2000
Dr. A. Cabral	University of Sherbrooke, Canada	October 2000
Dr. K. Badv	Iran	June-August 2001
Dr. A. Bouazza	Monash University, Australia	February 2002
Dr. A. Bouazza	Monash University, Australia	June 2002
Dr. J. Otani	Kumamoto University, Japan	July 2002
Dr. H. Ochiai	Kyushu University, Japan	July 2002
Dr. N. Touze-Foltz	Cemagref, Paris, France	July 2003



**NUMBER OF UNDERGRADUATE FINAL YEAR THESES SUPERVISED**

1979-80	6	1992-93	3
1980-81	5	1993-94	1
1981-82	8	1994-95	2
1982-83	7	1995-96	1
1983-84	6	1996-97	1
1984-86	Sabbatical	1997-98	2
1987-88	2	1998-99	3
1988-89	2	1999-00	1
1989-90	1	2001-02	3
		2002-03	1

Total Final Year Theses Supervised 55

Total M.Eng. Projects Supervised 2

Served as External Ph.D. Examiner for:

University of Toronto (Canada) - Dept. of Civil Engineering  
 University of Alberta (Canada) - Dept. of Civil Engineering  
 University of Saskatchewan (Canada) - Dept. of Civil Engineering  
 University of Waterloo (Canada) - Dept. of Civil Engineering  
 University of Sydney (Australia) - Dept. of Civil Engineering  
 University of Waterloo (Canada) - Dept. of Earth Sciences  
 University of Newcastle (Australia) Fitus- Dept. of Civil, Surveying and Environmental Engineering  
 Asian Institute of Technology (Thailand) - Dept. of Civil Engineering  
 Indian Institute of Technology (India) - Dept. of Civil Engineering  
 University of Melbourne (Australia) - Dept. of Civil Engineering  
 University of Newcastle (Australia) Peters- Dept. of Civil, Surveying and Environmental Engineering  
 Delft University – Dept of Chemical Engineering

Served as External D.Sc. or D.Eng. (Higher Doctorate) Examiner for:

University of Newcastle (Australia)  
 University of the Witwatersrand (South Africa)

**BOARDS OF DIRECTORS**

Interuniversity Super Computer Advisory Board	1986-1989
Interuniversity Super Computer Advisory Board ( <b>Chair</b> )	1989
Management Board OCLSC - University of Toronto	1989
Canadian Geotechnical Society	1997-1998
Centre for Research in Earth and Space Technology (CRESTech)	2000-2002
• Member, Executive Committee	2001-2002
• Member, Audit Committee	2001-2002
• Member, Environmental Advisory Committee	2001-2002
• Member, Selection Committee for CEO	2001- 2002
High Performance Computing Virtual Laboratory (HPVCL)( <b>Chair</b> )	2000- 2002
High Performance Computing Virtual Laboratory (HPVCL)	2000-
Canadian Microelectronics Corporation (CMC)	2000-
PARTEQ Research and Development Innovations Inc. ( <b>Chair</b> )	2000-
• Chair, Human Resources Committee	2001-
• Chair, Audit Committee	2001-
Canadian Geotechnical Society ( <b>President, 2001 &amp; 2002</b> )	2000-2003
Ontario Health Research Alliance	2002-
• Member, Executive Committee	2002-
Southern Africa Research Centre	2001-
Centre for Knowledge Based Enterprises	2003-
CANARIE Board of Directors	2003-
• Member, Executive Committee	2003-
• Chair, Research Committee	2003
Sudbury Neutrino Observatory Institute	2003-
<b>MANAGEMENT (Queen's related Trusts)</b>	
PARTEQ Equity Trustco Inc. ( <b>President</b> )	2002-
PARTEQ Incentive Trustco Inc. ( <b>President</b> )	2002-

**UNIVERSITY COMMITTEE MEMBERSHIP****UWO**

Faculty Council	1979-2000
Executive Committee	1980-1982
Faculty of Engineering Science Advisory Council (FESAC)	1981-1984
Statistics, Engineering & Applied Maths Computing Committee	1981-1984
Statistics, Engineering & Applied Maths Computing Committee ( <b>Chair</b> )	1982-1984
Engineering Computing Committee	1982-1984
Task Force on the Use of Computers in Teaching	1982
Selection Committee for Associate Dean, FES	1984
Computer Council Ad Hoc Subcommittee on Presidents Advisory Committee on Information Technology Services Report	1986
FES Ad Hoc Committee on PACITS Report	1986
Engineering Science Advisory Council Task Force on Computers in Teaching	1986
Engineering Computing Committee	1986-1989

University Computer Users Committee	1986-1989
University Computer Users Committee ( <b>Chair</b> )	1986-1988
University Computer Council (A Subcommittee of Senate)	1986-1989
Mainframe Planning Committee	1986-1988
Engineering Decanal Selection Committee	1986
Computer Council Subcommittee on Computer Related Applications to ADF	1986-1988
Departmental Promotion and Tenure Committee	1987-1989
Departmental Curriculum Review Committee	1987-1989
Senate Subcommittee on Information Services	1987-1989
Undergraduate Curriculum Committee	1987-1989
Graduate Affairs Committee ( <b>Chair</b> )	1988-1989
Deans Council	1988-1989
Engineering Science Advisory Council (ESAC)	1988-1989
Faculty of Graduate Studies Scholarship Committee	1988-1989
Executive Committee	1988-1989
Departmental Promotion & Tenure Committee	1992-1997
Departmental Curriculum Review Committee	1992-1997
Faculty Undergraduate Affairs Committee	1992-1997
Dean's Council	1992-1997
University Computer Council ( <b>Vice Chair</b> )	1992-1993
Engineering Science Advisory Council (ESAC)	1992-1997
University Research Board	1993-1997
Senate Committee on Information Technology ( <b>Vice Chair</b> )	1994-1995
Senate Committee on Information Technology (SCITS) ( <b>Chair</b> )	1995-1997
Vice-President & Provost Selection Committee	1994-1995
SCITS/SUPAD - Sub-committee on Computer Related Applications to ADF	1995-1997
SCITS - Ad-Hoc Committee on High Performance Computing	1995-1996
SCITS - Ad-Hoc Committee on ATM Backbone ( <b>Chair</b> )	1994-1997
SCITS - Ad-Hoc Committee on Mainframe Upgrade	1994-1996
SCUP - Senate Committee on University Planning	1995-1997
SUPAD - Senate Committee on Academic Development	1995-1997
SUCNS - Senate Sub-Committee on Computers and Networking Services	1995-1997
SUCA - Senate Sub-Committee on Capital Allocations	1995-1997
SUWWW - Sub-Committee on the World Wide Web	1996-1997
SCITS - Sub-Committee on Campus Computer Security	1996-1997
SCITS - Sub-Committee on Student Computing	1995-1996
SCITS - Sub-Committee on Planning and Priorities	1996-1997
SCITS - Sub-Committee on Research	1996-1997
Vice President (Academic) & Provost Selection Committee	1998-1999
Engineering Science Advisory Council (ESAC)	1998-2000
Senate (representative of Faculty of Graduate Studies)	1998-2000
University Research Board	1998-2000
Departmental Appointments Committee ( <b>Chair</b> )	1998-2000
Department Promotion and Tenure Committee ( <b>Chair</b> )	1998-2000
Department Graduate Affairs Committee	1998-2000

Department Curriculum Committee	1998-2000
Faculty Undergraduate Affairs Committee	1998-2000
Dean's Council	1998-2000
Faculty of Graduate Studies - Policy Committee	1999-2000
SCUP - Senate Committee on University Planning	1999-2000
Department Outreach Committee	1999-2000
Vice-President (Research) Selection Committee	1999-2000

**QUEEN'S**

Senate	2000-
Advisory Research Committee (Chair)	2000-
Advisory Committee - Dean of Applied Science	2000-2001
Committee on Corporate Involvement:	2001
Advisory Committee - Dean of Queen's School of Business	2002-2003
Vice-Principal (Advancement) Selection Committee	2003

**EXTERNAL**

G10 VP(Research)	2000-
OCUR	2000-
<ul style="list-style-type: none"> <li>• Member, OCUR subcommittee on Postdoctoral Fellowships</li> <li>• Member, subcommittee on International Relations</li> <li>• Ad-doc committee on ORDCE</li> <li>• Vice-Chair</li> <li>• Chair</li> <li>• Member, subcommittee on Health Research Council</li> </ul>	2000-2001 2000-2001 2001-2002 2001-2002 2002-2003 2002-
Working Group on University Research (WGUR)	2001-2003
Review Panel for Graduate Studies and Research at Adelaide University	2001
External advisor to Gifu University, Japan, on University-Industry Collaboration	2002
Royal Society of Canada, ASE Fellowship Selection Committee	2002-
Chair, Authors Panel, HPC Long Range Plan	2002-
External review of research and graduate studies at Trent University	2004
NSERC Group Chair and member of Committee on research Grants	2003-
Member, International Review of UK Engineering Research	2004

## NSERC RESEARCH GRANTS

<u>Years</u>	<u>Sponsor</u>	<u>Amount</u>	<u>Title</u>
1979-80	NSERC	\$ 8,000	Research/Operating Grant
1980-81	NSERC	\$ 8,784	"
1981-82	NSERC	\$ 9,662	"
1982-83	NSERC	\$ 18,000	"
1983-84	NSERC	\$ 19,080	"
1984-85	NSERC	\$ 32,000	"
1985-86	NSERC	\$ 32,000	"
1986-87	NSERC	\$ 30,720**	"
1987-88	NSERC	\$ 43,720	"
1988-89	NSERC	\$ 43,720	"
1989-90	NSERC	\$ 98,122*	"
1990-91	NSERC	\$ 98,122*	"
1991-92	NSERC	\$ 85,000	"
1992-93	NSERC	\$ 85,000	"
1993-94	NSERC	\$ 71,700**	"
1994-95	NSERC	\$ 71,700	"
1995-96	NSERC	\$ 71,700	"
1996-97	NSERC	\$ 71,700	"
1997-98	NSERC	\$ 71,700	"
1998-99	NSERC	\$ 78,870***	"
1999-2000	NSERC	\$ 82,814***	"
2000-2001	NSERC	\$ 85,000****	"
2001-2002	NSERC	\$ 85,000****	"
2002-2003	NSERC	\$ 85,000****	"
2003-2004	NSERC	\$ 85,000****	"
2004-2005	NSERC	\$ 85,000****	"

\*includes supplement as Steacie Fellow 1989-91.

\*\*across-the-board cutbacks to all Civil Engineering Grants (Committee 06).

\*\*\*across-the-board increases to all Civil Engineering Grants (Committee 06).

\*\*\*\* largest Discovery grant awarded by Civil Engineering Grants (Committee 06).

## SPECIAL GRANTS

1987-88	NSERC	\$ 14,755	Equipment Grant
1982-85	NSERC	\$115,400	Toxic Leachate Migration Through Clays: A Field Research Study" (R.M. Quigley, R.K. Rowe, J.L. Sullivan, A. Margaritis)
1982-83	BILD (Ontario)	\$ 45,200	Servo Mechanism for Stress Path Testing of Soils and Weak Rock (K.Y. Lo, R.K. Rowe, R.M. Quigley, M. Novak)
1986-87	UWO Foundation	\$ 5,000	
1986-87	Provincial Excellence Fund	\$60,000	Equipment (J.M. Floryan, R.K. Rowe & W.H. El Maraghy)
1987-89	NSERC	\$ 70,080	Organics, Metallics and Bacteria at a Clay/Waste Interface (R.M. Quigley, R.K. Rowe & A. Margaritis)
1987-88	NSERC	30 hrs	Supercomputer Time
1988-89	U.W.O. Internal NSERC General Grant Award	\$ 5,000	Analysis of Tunnelling
1988-89	NSERC	45 hrs	Supercomputer Time
1987-89	NSERC	\$172,369	Progressive Failure in Soft Soils (A. Landva, R.K. Rowe, A. Valsangkan, T. Law)
1989-90	NSERC	\$ 34,000	Atomic Absorption Spectro-photometer
1993-94	NSERC	\$ 55,731	Computer Workstations for Geotechnical Modelling
1994-99	NSERC	\$522,300	Collaborative Grant: Biologically Induced Clogging of Leachate Collection Systems for Solid Waste Landfills (R.K. Rowe et al.)
1994-97	NSERC	\$230,916	Strategic Grant: Influence of Desiccation and Freeze-Thaw on Mine Waste Cover Properties (E.K. Yanful, R.K. Rowe, S.L. Barbour & M.D. Haug)
1995-96	ADF	\$ 15,000	Pressure Cell System for Measuring Unsaturated Soil Properties (E.K. Yanful & R.K. Rowe)
1995-96	NSERC	\$ 14,000	High Pressure Test Cell for Buried Pipes (I.D. Moore & R.K. Rowe)
1996-2001	NSERC	\$155,420	A Monitoring Technique for Identifying Soil and Ground Water Contaminants (J.Q. Shang & R.K. Rowe)
1997-1998	NSERC	\$ 32,572	Zeta Potential Analyzer (J.Q. Shang & R.K. Rowe)
1997-1998	NSERC	\$ 24,150	Ion Chromatograph (E.K. Yanful, R.K. Rowe & J.Q. Shang)

1998-1999	NSERC	\$ 92,813	GS/MS for Research Into Contaminant Movement Through Landfill Barriers (R.K. Rowe, E.K. Yanful & J.Q. Shang)
1999-2000	NSERC	\$ 67,506	Aging of Geomembrane Liners Used in Landfills
1999-2000	NSERC	\$ 24,218	Computers for Geotechnical Analysis (I.D. Moore and R.K. Rowe)
2000-2001	CFI	\$920,000	Centre for Analytical and Theoretical Studies of Surfaces, Boundaries and Interfaces (H.W. Nesbitt, R.K. Rowe and others)
	OIT	\$920,000	
2000-2001	CFI	\$547,557	Stable-Isotope Science Western: A University Centre for Continuous-Flow, Stable-Isotope Mass-Spectrometry (F.L Longstaffe, R.K. Rowe and others)
	OIT	\$547,557	
2000-2001	CFI	\$565,345	Facility for innovative large-scale geotechnical testing of new and exiting infrastructure products, geotechnical designs and construction procedures (I.D. Moore, R.K. Rowe and others)
	OIT	\$565,345	
2001-2002	NSERC	\$36,013	Aging of HDPE Geomembranes
2002-2003	CFI	\$1,271,832	Isotope Research Facility at Queen's University (K. Kyser, and others including R.K. Rowe)
	OIT	\$1,271,832	
2002-2003	NSERC	\$53,913	Hydraulic performance of clay liners under severe environmental exposure (R.K. Rowe, R. Bathurst, R. Brachman, H. Jamieson, B. Kueper)
2003-2004	NSERC	\$150,000	Thermal testing facility for polymer research (M. Green, R.K. Rowe and I.D. Moore)
2004-2005	CFI	\$660,048	Ensuring Performance of Geosynthetics Under Extreme Environmental Conditions (R.K. Rowe I.D. Moore, R. Bathurst, R.Brachman)
	OIT	\$660,048	
2004-2005	NSERC	\$65,438	Long term implications of the stress-strain behaviour of geosynthetics (R.K. Rowe I.D. Moore, R. Bathurst, R.Brachman)

Total Grants Excluding CFI/OIT to Date: \$3,618,908

Total Grants Including CFI/OIT to Date: \$11,548,472

**RESEARCH CONTRACTS**

<u>Years</u>	<u>Sponsor</u>	<u>Amount</u>
1981-1982	M.T.C. "An Examination of the Role of Geotextiles as Reinforcement for Embankments on Soft Foundations"	\$20,682
1980-1982	D.S.S. "Prediction of Ground Subsidence Due to Tunnelling in Clays" (K.Y. Lo and R.K. Rowe)	\$55,127
1982-1984	M.T.C. "A Design Method for the Use of Geotextiles"	\$48,699
1983-1985	DSS/NRC "Development of a Design Method for Piles Socketed into Weak Rock"	\$38,648
1984	Enka Crporation "Effect of High Modulus Reinforcing Mats on the Stability of Embankments"	\$ 7,000
1984	Morrison Beatty "Analysis of Pollutant Migration Through a Clay Barrier"	\$ 5,000
1986	Geosyntec Inc. (U.S.A.) "Development of Testing Devices for High Modulus Geotextiles"	\$ 2,960
1986-1987	University of Sydney & Reinforced Earth Company "Development of a Design Method for Reinforced Earth Embankments"	\$33,100
1986-1988	Town of Milton "Evaluation of Two Proposed Sites for the Region of Halton Landfill"	\$40,000
1987	Trow Geotechnical Limited "Settlement Analysis - Bankers Hall"	\$ 2,600
1987-88	K.Y. Lo (Inc.) & Hatch Associates "Analysis of Effects of Construction over York Mills Tunnel"	\$ 5,450
1987-88	K.Y. Lo (Inc.) "Analysis of the Effects of Construction over Detroit-Windsor Tunnel"	\$ 2,900
1988	Region of Waterloo - Cambridge Landfill "Evaluation of Contaminant Transport from an Existing Landfill"	\$ 4,000
1988	STS Consultants (U.S.A.) "Contaminant Migration Predictions Using POLLUTE - Gallatin National Balefill"	\$ 700
1988	McKinney, Stringer & Webster PC (U.S.A.) "U.S.A. vs Hardage et al."	\$18,375
1988	MacLaren Plansearch "Peel Landfill Diffusion Test and Contaminant Migration Analyses"	\$ 4,000
1989	Terraprobe "Strength and Consolidation Properties of Peat"	\$ 8,345
1989	Township of Tiny "Hydraulic Conductivity of Till"	\$ 2,910
1989	Trow Geotechnical Ltd. "Considerations in the Design of Geosynthetic Drains Behind Retaining Walls"	\$ 2,000



1989	Morrison-Beatty Pty. Ltd.	\$ 7,230
	"Hydraulic Conductivity and Diffusion Tests and Contaminant Modelling" Various Projects	
1989	Environmental Protection Authority of Victoria	\$ 1,360
	"Review of South East Region Refuse Report"	
1989	Ontario Hydro	\$99,840
	"Dam-Foundation Interaction and Use of Factors of Safety in Stability Analysis" (K. Y. Lo & R.K. Rowe)	
1990	Morrison Beatty	\$64,390
	"Hydraulic Conductivity and Diffusion Testing and Contaminant Transport Modelling" Various Projects	
1990	Various Projects (Diffusion Testing and Modelling)	\$34,214
1990	Program POLLUTE and MIGRATE support	\$15,000
1991	Morrison Beatty - Various Landfills	\$69,589
1991	Proctor & Redfern - Halton Landfill	\$ 80,244
1991	Other Consultants	\$ 22,699
1991	Computer Programs POLLUTE/MIGRATE Support	\$ 14,989
1991	IGS	\$ 9,552
1992	Dames & Moore - Various Landfills	\$ 17,794
1992	Proctor & Redfern - Halton Landfill	\$ 32,611
1992	STS Consultants	\$ 369
1992	Computer Programs POLLUTE/MIGRATE Support	\$ 14,939
1992	International Geotextile Society	\$ 13,416
1993	Interim Waste Authority	\$202,082
1993	Dames & Moore - Various Landfill Projects	\$ 16,403
1993	Proctor & Redfern - Halton Landfill	\$ 8,198
1993	Computer Programs POLLUTE/MIGRATE	\$ 26,843
1993	International Geotextile Society	\$ 5,417
1993	Other	\$ 3,306
1994	Interim Waste Authority	\$ 63,852
1995	Halton Landfill	\$ 18,000
1996	Terrafix GCL Diffusion Study	\$ 26,000
1996	Fenco MacLaren - Kenora Landfill	\$ 8,000
1997	Fibre Environmental & Ecology Ltd.	\$ 19,917
1997	Terrafix GCL Diffusion Study & Modelling	\$ 41,000
1999	Terrafix GCL Piping Study	\$ 31,500
1999	Pipesak Durability of Geotextile Bags	\$ 20,500
1999	GSI Soil Bentonite Barrier Study	\$ 21,700
2000	Terrafix GCL Temperature Study	\$ 31,500
2000	CRESTech Business Development	\$ 27,820
	Minimizing impact of landfills on land use by improving liner systems	
2000-2001	CRESTech Core Research	\$ 25,000
2000	Saftey Kleen Hazardous Waste Site Study: Phase I	\$ 11,040
2000	Saftey Kleen Hazardous Waste Site Study: Phase II	\$40,410

2000	Saftey Kleen Hazardous Waste Site Study: Phase III	\$ 6,232
2000-2001	MoE Landfill Site Design	\$24,186
2000	City of London W12A landfill Study	\$10,000
2000-2002	Lafleche landfill - Clogging of Tire shreds	\$55,245
2001-2002	CRESTech Core Research	\$ 23,500
2001	Dept. of Defence	\$53,500
2002	Dept. of Defence	\$40,000
2003-2004	CRESTech Core Research	\$39,000
2003-2004	Terrafix – Performance of GCL in novel applications	\$36,800
2003	Dept. of Defence	\$50,000
2004	Dept. of Defence	\$40,000
2004-2005	CRESTech Core Research	\$27,000
2004-2005	Terrafix – Performance of GCL in novel applications	\$27,600

Research Contracts to Date \$1,882,283

#### TEACHING

1981-1982	Academic Development Fund	\$47,000
	Coinvestigator and project coordinator for the Project "Analysis and Design Computer Graphics for Teaching Purposes in Engineering" (Project Director: Prof. M.P. Poucher)	
1990-91	Academic Development Fund	\$40,000
	Principal Investigator - Project Director Advanced Computer Graphics and Engineering Workstation for Teaching Purposes	

Total Funding \$13,517,755

## PUBLICATIONS

Refereed Journals - Full Papers

1. **Rowe, R.K., Booker, J.R. and Balaam, N.P.** (1978). "Application of the initial stress method to soil structure interaction," *International Journal of Numerical Methods in Engineering*, **12**(5): 873-880.
2. **Rowe, R.K. and Booker, J.R.** (1979). "A method of analysis of horizontally embedded anchors in an elastic soil," *International Journal for Numerical and Analytical Methods in Geomechanics*, **3**(2): 187-203.
3. **Rowe, R.K. and Booker, J.R.** (1980). "The elastic response of multiple underream anchors," *International Journal for Numerical and Analytical Methods in Geomechanics*, **4**(4): 313-332.
4. **Rowe, R.K. and Booker, J.R.** (1981). "The elastic displacements of single and multiple underream anchors in a Gibson soil," *Geotechnique*, **31**(1): 125-142.
5. **Rowe, R.K. and Booker, J.R.** (1981). "The behaviour of footings on a non-homogeneous soil mass with a crust - Part I - strip footings," *Canadian Geotechnical Journal*, **18**(2): 250-264.
6. **Rowe, R.K. and Booker, J.R.** (1981). "The behaviour of footings on a non-homogeneous soil mass with a crust - Part II - circular footings," *Canadian Geotechnical Journal*, **18**(2): 265-279.
7. **Rowe, R.K. and Booker, J.R.** (1982). "Finite layer analysis of non-homogeneous soils," *Journal of the Engineering Mechanics*, ASCE, **108**, (1): 115-132.
8. **Rowe, R.K.** (1982). "The determination of rock mass modulus variation with depth for weathered or jointed rock," *Canadian Geotechnical Journal*, **19**(1): 29-43.
9. **Rowe, R.K. and Davis, E.H.** (1982). "The behaviour of anchor plates in clay," *Geotechnique*, **32**(1): 9-23.
10. **Rowe, R.K. and Davis, E.H.** (1982). "The behaviour of anchor plates in sand," *Geotechnique*, **32**(1): 25-41.
11. **Wai, R.S.C., Lo, K.Y. and Rowe, R.K.** (1982). "Thermal stress analysis in rocks with non-linear properties," *International Journal for Rock Mechanics and Mineral Sciences*, **19**(5): 211-220.
12. **Rowe, R.K., Lo, K.Y. and Kack, G.J.** (1983). "A method of estimating surface settlement above tunnels constructed in soft ground," *Canadian Geotechnical Journal*, **20**(1): 11-22. [**Awarded Canadian Geotechnical Society Prize, 1984**]
13. **Rowe, R.K. and Kack, G.J.** (1983). "A theoretical examination of the settlements induced by tunnelling: Four case histories," *Canadian Geotechnical Journal*, **20**(2): 299-314. [**Awarded Canadian Geotechnical Society Prize, 1984**]
14. **Quigley, R.M., Gwyn, Q.H.J., White, O.L., Rowe, R.K., Haynes, J.E. and Bohdanowicz, A.** (1983). "Leda clay from deep boreholes at Hawkesbury, Ontario. Part I. Geology and Geotechnique," *Canadian Geotechnical Journal*, **20**(2): 288-298.
15. **Booker, J.R. and Rowe, R.K.** (1983). "1-D consolidation of periodically layered soil," *Journal of Engineering Mechanics*, ASCE, **109**(6): 1319-1333.
16. **Rowe, R.K. and Booker, J.R.** (1984). "Deformation analysis for periodically layered soil," *Journal of Geotechnical Engineering*, ASCE, **110**(2): 217-230.

17. **Rowe, R.K.** (1984). "Reinforced embankments: analysis and design," *Journal of Geotechnical Engineering*, ASCE, **110**(2): 231-246. [**Awarded American Society of Civil Engineers Collingwood Prize**]
18. **Rowe, R.K.**, MacLean, M.D. and Barsvary, A.K. (1984). "The observed behaviour of a geotextile reinforced embankment constructed on peat," *Canadian Geotechnical Journal*, **21**(2): 289-304. [**Canadian Geotechnical Society: Honourable Mention 1985**]
19. **Rowe, R.K.**, MacLean, M.D. and Soderman, K.L. (1984). "Analysis of a geotextile reinforced embankment constructed on peat," *Canadian Geotechnical Journal*, **21**(3): 563-576. [**Canadian Geotechnical Society: Honourable Mention 1985**]
20. **Rowe, R.K.** and Soderman, K.L. (1984). "Comparison of predicted and observed behaviour of two test embankments," *International Journal of Geotextiles and Geomembranes*, **1**(2): 143-160.
21. **Rowe, R.K.** and Booker, J.R. (1984). "The analysis of pollutant migration in a non-homogeneous soil," *Geotechnique*, **34**(4): 601-612.
22. **Rowe, R.K.** and Booker, J.R. (1985). "1-D pollutant migration in soils of finite depth," *Journal of Geotechnical Engineering*, ASCE, **111**(4): 479-499.
23. Inculet, I.I. and **Rowe, R.K.** (1985). "Generation of curvilinear electrostatic fields from parallel and inclined electrodes," *IEEE Transactions on Industry Applications*, **21**(2): 511-513.
24. **Rowe, R.K.** and Soderman, K.L. (1985). "An approximate method for estimating the stability of geotextile reinforced embankments," *Canadian Geotechnical Journal*, **22**(3): 392-398.
25. **Rowe, R.K.** and Soderman, K.L. (1985). "Geotextile reinforcement of embankments on peat," *International Journal for Geotextiles and Geomembranes*, **2**(4): 277-298.
26. **Rowe, R.K.** and Booker, J.R. (1985). "2D pollutant migration in soils of finite depth," *Canadian Geotechnical Journal*, **22**(4): 429-436.
27. Ng, M.C., Lo, K.Y. and **Rowe, R.K.** (1986). "Analysis of field performance - The Thunder Bay Tunnel," *Canadian Geotechnical Journal*, **23**(1): 30-50. . [**Awarded Canadian Geotechnical Society Prize, 1987**]
28. **Rowe, R.K.** and Booker, J.R. (1986). "A finite layer technique for calculating three-dimensional pollutant migration in soil," *Geotechnique*, **36**(2): 205-214.
29. **Rowe, R.K.** (1986). "The prediction of deformations caused by soft ground tunnelling - Recent trends," *Canadian Tunnelling*" 91-108.
30. **Rowe, R.K.** and Soderman, K.L. (1986). "Reinforced embankments on very poor foundations," *International Journal of Geotextiles and Geomembranes*, **4**(1): 65-81.
31. Quigley, R.M. and **Rowe, R.K.** (1986). "Leachate migration through clay below a domestic waste landfill, Sarnia, Ontario, Canada: chemical interpretation and modelling philosophies," *Hazardous and Industrial Solid Waste Testing and Disposal: Sixth Volume, ASTM STP 933*: 93-103.
32. **Rowe, R.K.** and Armitage, H.H. (1987). "Theoretical solutions for axial deformation of drilled shafts in rock," *Canadian Geotechnical Journal*, **24**(1): 114-125.
33. **Rowe, R.K.** and Armitage, H.H. (1987). "A design method for drilled piers in soft rock," *Canadian Geotechnical Journal*, **24**(1): 126-142.

34. Booker, J.R. and **Rowe, R.K.** (1987). "One dimensional advective- dispersive transport into a deep layer having a variable surface concentration," *International Journal for Numerical and Analytical Methods in Geomechanics*, **11**(2): 131-142.
35. **Rowe, R.K.** and Soderman, K.L. (1987). "Very soft soil stabilization using high strength geotextiles: The role of finite element analysis," *International Journal of Geotextiles and Geomembranes*, **6**(1): 53-81. [**International Geotextile Society "Special Recognition"**]
36. **Rowe, R.K.**, Caers, C.J. and Barone, F. (1988). "Laboratory determination of diffusion and distribution coefficients of contaminants using undisturbed clayey soil," *Canadian Geotechnical Journal*, **25**(1): 108-118.
37. Quigley, R.M., Fernandez, F. and **Rowe, R.K.** (1988). "Clayey barrier assessment for impoundment of domestic waste leachate (southern Ontario) including clay-leachate compatibility by hydraulic conductivity testing," *Canadian Geotechnical Journal*, **25**(3): 574-581.
38. **Rowe, R.K.** (1988). "Contaminant migration through groundwater: The role of modelling in the design of barriers," *Canadian Geotechnical Journal*, **25**(4): 778-798. [**Canadian Geotechnical Colloquium for 1987**]
39. Moore, I.D. and **Rowe, R.K.** (1988). "Numerical models for evaluating progressive failure in earth structures - A review," *Computers and Geotechnics*, **6**(2): 217-239.
40. Lee, K.M. and **Rowe, R.K.** (1989). "Deformations caused by surface loading and tunnelling: The role of elastic anisotropy," *Geotechnique*, **39**(1): 125-140.
41. Barone, F.S., Yanful, E.K., Quigley, R.M. and **Rowe, R.K.** (1989). "Effect of multiple contaminant migration on diffusion and adsorption of some domestic waste contaminants in a natural clayey soil," *Canadian Geotechnical Journal*, **26**(2): 189-198. [**Canadian Geotechnical Society: Honourable Mention 1990**]
42. Lee, K.M. and **Rowe, R.K.** (1989). "Effects of undrained strength anisotropy on surface subsidence induced by the construction of shallow tunnels," *Canadian Geotechnical Journal*, **26**(2): 279-291.
43. **Rowe, R.K.** and Booker, J.R. (1989). "A semi-analytic model for contaminant migration in a regular two or three dimensional fracture network: Conservative contaminants," *International Journal for Numerical and Analytical Methods in Geomechanics*, **13**: 531-550.
44. **Rowe, R.K.** and Booker, J.R. (1990). "Contaminant migration in a regular two or three dimensional fracture network: Reactive contaminants," *International Journal for Numerical and Analytical Methods in Geomechanics*, **14**: 401-425.
45. **Rowe, R.K.** and Booker, J.R. (1990). "Contaminant migration through fractured till into an underlying aquifer," *Canadian Geotechnical Journal*, **27**(4): 484-495.
46. Barone, F.S., **Rowe, R.K.** and Quigley, R.M. (1990). "Laboratory determination of chloride diffusion coefficients in an intact shale." *Canadian Geotechnical Journal*, **27**(2): 177-184.
47. Lee, K.M. and **Rowe, R.K.** (1990). "Finite Element modelling of the three dimensional ground deformations due to tunnelling in soft cohesive soils: Part I - Method of analysis," *Computers and Geotechnics*, **10**(2): 87-109.

48. Lee, K.M. and **Rowe**, R.K. (1990). "Finite Element modelling of the three dimensional ground deformations due to tunnelling in soft cohesive soils: Part 2 - Results," *Computers and Geotechnics*, **10**(2): 111-138.
49. Sekiguchi, K., **Rowe**, R.K., Lo, K.Y. and Ogawa, T. (1990). "Time step selection for 6-node non-linear joint elements in elasto-viscoplastic analyses," *Computers and Geotechnics*, **10**(1): 33-58.
50. **Rowe**, R.K. (1991). "Contaminant impact assessment and the contaminant lifespan of landfills." *Canadian Journal of Civil Engineering*, **18**(2): 244-253.
51. **Rowe**, R.K. and Booker, J.R. (1991). "Modelling of 2D contaminant migration in a layered and fractured zone beneath landfills." *Canadian Geotechnical Journal*, **28**(3): 338-352.
52. Lee, K.M. and **Rowe**, R.K. (1991). "An analysis of 3-dimensional ground movements: The Thunder Bay Tunnel." *Canadian Geotechnical Journal*, **28**(1): 25-45. [**Canadian Geotechnical Society: Honourable Mention 1992**]
53. **Rowe**, R.K. and Booker, J.R. (1991). "Pollutant migration through a liner underlain by fractured soil," *Journal of Geotechnical Engineering*, ASCE, **117**(12 ): 1902-1919.
54. Barone, F.S., **Rowe**, R.K. and Quigley, R.M. (1992). "Estimation of chloride diffusion coefficient and tortuosity factor for mudstone." *Journal of Geotechnical Engineering*, ASCE, **118**(7): 1031-1046.
55. **Rowe**, R.K. and Lee, K.M. (1992). "An evaluation of simplified techniques for estimating 3-dimensional undrained ground movements due to tunnelling in soft soils," *Canadian Geotechnical Journal*, **29**(1): 39-52.
56. Sekiguchi, K., **Rowe**, R.K., Lo, K.Y. and Ogawa, T. (1992). "Hoop tension analysis of a steel cell using an optimization method for imaginary viscoplastic parameters," *Soils and Foundations*, **32**(3): 1-14.
57. Barone, F.S., **Rowe**, R.K. and Quigley, R.M. (1992). "A laboratory estimation of diffusion and adsorption coefficients for several volatile organics in a natural clayey soil," *Journal for Contaminant Hydrogeology*, **10**: 225-250.
58. **Rowe**, R.K. and Lee, K.M. (1992). "Subsidence due to tunnelling: Evaluation of a prediction technique." *Canadian Geotechnical Journal*, **29**(6): 941-954.
59. Lee, K.M., **Rowe**, R.K. and Lo, K.Y. (1992). "Subsidence due to tunnelling: Estimating the gap parameter". *Canadian Geotechnical Journal*, **29**(6): 929-940.
60. Yi, X., **Rowe**, R.K. and Lee, K.M. (1993). "Deformations induced by an earth pressure balance shield," *Canadian Geotechnical Journal*, **30**(3): 476-490.
61. **Rowe**, R.K., Caers, C.J. and Chan, C. (1993). "Evaluation of a compacted till liner test pad constructed over a granular subliner contingency layer," *Canadian Geotechnical Journal*, **30**(4): 667-689. [**Canadian Geotechnical Society: Honourable Mention 1994**]
62. San, K.W.E. and **Rowe**, R.K. (1993). "Effect of sand lenses on groundwater flow and contaminant migration," *International Journal for Analytical and Numerical Methods in Geomechanics*, **17**(4): 217-242.
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  105. "Short course on geotextile design applications for roads, highways, embankments and slopes," one day of lectures presented to Malaysian Institution of Engineers, **Kuala Lumpur**, November 1992.
  106. "Short course on geotextile design applications for roads, highways, embankments and slopes," one day of lectures presented to National University of Singapore, **Singapore**, November 1992.
  107. "Environmentally friendly landfill design," Civil Seminar, University of Western Ontario, **London**, Canada, January, 1993.
  108. "Recent advances in landfill design," Special Lecture, University of Sydney, **Sydney**, Australia, March, 1993.
  109. "Hydrogeology and engineering - the need for interaction in geo-environmental engineering," Special Lecture to Newcastle Section of Australian Geomechanics Society, **Newcastle**, Australia, March, 1993.
  110. "Finite element analysis of geosynthetics - reinforced soil walls," Geosynthetics '93, **Vancouver**, Canada, March, 1993.
  111. "Short course on geosynthetics in waste containment application," **Vancouver**, Canada, April, 1993.
  112. "Service-life of barrier systems in the assessment of contaminant impact," ASCE-CSCE National Conference on Environmental Engineering, **Montreal**, Canada, July, 1993.
  113. "Long-term behaviour of engineered barrier systems," 4th International Landfill Symposium, **Cagliari**,

- Italy, October 1993.
114. "Geosynthetic reinforced walls: The role of finite element analysis in understanding their behaviour," **Bologna**, Italy, October 1993.
  115. "The design of fully-engineered landfills," Canadian Sedimentological Research Group Conference, **Toronto**, Canada, February, 1994.
  116. "Hydrogeology, modelling and landfill design," Geological Association of Canada Conference, **Waterloo**, Canada, May 1994.
  117. "Modelling in the design of landfills," Lead Lecture, 8th Inter-national Conference of the International Association for Computer Methods and Advances in Geomechanics, **Morgantown**, U.S.A., May 1994.
  118. "Analysis of a reinforced embankment on soft compressible organic clayey silt," 8th International Conference of the International Association for Computer Methods and Advances in Geomechanics, **Morgantown**, U.S.A., May 1994.
  119. "Geosynthetics in environmental applications," at the Course "Geosynthetics and Civil Engineering", Royal Military College of Canada, **Kingston**, Canada, June 1994.
  120. "Geosynthetics and waste contaminant structures," at the Course "Geosynthetics and Civil Engineering", Royal Military College of Canada, **Kingston**, Canada, June 1994.
  121. "Behaviour of a reinforced and unreinforced test embankment: A comparison", 5th International Conference on Geotextiles, Geomembranes and Related Products, **Singapore**, September 1994.
  122. "The design and construction of the Halton Landfill", Civil Seminar, University of Western Ontario, **London**, Canada, January 1995.
  123. "Siting, hydrogeology and design considerations for modern landfills: some reflections", U.W.O. Geography Speaker Series, **London**, Canada, February 1995.
  124. "Effect of uncertainty in the assessment of the potential impact of waste disposal facilities", American Society of Civil Engineers Specialty Conference, Geoenvironment 2000, **New Orleans**, U.S.A. February 1995.
  125. "Behaviour of reinforced embankments on peat", International Workshop on Engineering Characteristics of Peat, **Sapporo**, Japan, March 1995.
  126. "The role of diffusion and the modelling of its impact on groundwater quality", NATO Advanced Study Institute on Groundwater Remediation, **Antalya**, Turkey, May 1995.
  127. "The effectiveness of geosynthetic and natural barrier systems in minimizing groundwater contamination", Bogazici University, **Istanbul**, Turkey, May 1995.
  128. "Landfill liners and covers", EPIC Short Course on Geosynthetic Clay Liners for Waste Containment and Pollution Prevention, **Toronto**, Canada, June 1995.
  129. "Hydraulic performance of barrier systems", EPIC Short Course on Geosynthetic Clay Liners for Waste Containment and Pollution Prevention, **Toronto**, Canada , June 1995.
  130. "Geosynthetics in waste containment", EPIC Short Course on Geosynthetic Clay Liners for Waste Containment and Pollution Prevention, **Toronto**, Canada ,June 1995.
  131. "Some design considerations relating to landfills", Seminar to Saskatoon Geotechnical Group, **Saskatoon**, Canada , June 1995.

132. "Techniques for contaminant transport validation", ASTM Symposium on Subsurface Fluid Flow (Groundwater) Modelling, **Denver**, U.S.A., June 1995.
133. "Transport modelling under transient flow conditions", 5th International Symposium on Numerical Methods in Geomechanics (NUMOG5), **Davos**, Switzerland, September 1995.
134. "Considerations in the design of hydraulic control layers", 5th International Landfill Symposium, **Cagliari**, Sardinia, Italy, October 1995.
135. "Leachate characteristics for MSW landfills", 5th International Landfill Symposium, **Cagliari**, Sardinia, Italy, October 1995.
136. "Design of barrier systems for waste disposal facilities - basic concepts", Short Course on Natural Hazards and Environmental *Geotechnique*, **Bangkok**, Thailand, November 1995.
137. "Design considerations for waste disposal facilities", Short Course on Natural Hazards and Environmental *Geotechnique*, **Bangkok**, Thailand, November 1995.
138. "Geotechnical considerations for the design of waste disposal facilities", Short Course on Natural Hazards and Environmental *Geotechnique*, **Bangkok**, Thailand, November 1995.
139. "Design and construction of compacted clay liners", Short Course on Natural Hazards and Environmental *Geotechnique*, **Bangkok**, Thailand, November 1995.
140. "Contaminant transport modelling", Short Course on Natural Hazards and Environmental *Geotechnique*, **Bangkok**, Thailand, November 1995.
141. "Determination of diffusion and distribution coefficients", Short Course on Natural Hazards and Environmental *Geotechnique*, **Bangkok**, Thailand, November 1995.
142. "Evaluation of the hydraulic characteristics of aquitards and aquifers", Short Course on Natural Hazards and Environmental *Geotechnique*, **Bangkok**, Thailand, November 1995.
143. "Integration of hydrogeology and engineering in the design of barrier systems", Short Course on Natural Hazards and Environmental *Geotechnique*, **Bangkok**, Thailand, November 1995.
144. "Field studies of diffusion and hydraulic conductivity", Short Course on Natural Hazards and Environmental *Geotechnique*, **Bangkok**, Thailand, November 1995.
145. "Geosynthetics in waste containment applications", Graduate Seminar, Asian Institute of Technology, **Bangkok**, Thailand, November 1995.
146. "Contaminant production, service life of engineered systems, attenuation and modelling of contaminating lifespan", Presented to the Environmental Assessment Board Learning Seminar, **Toronto**, Canada, December 1995.
147. "The working relationship between an expert witness and the lawyer for the same party", Presented to Environmental Assessment Board Workshop on Expert Witnesses, **Toronto**, Canada, February 1996.
148. "Recent advances in landfill design", Seminar presented to the Department of Civil Engineering, University of Sydney, **Sydney**, Australia, March 1996.
149. "Clogging of leachate collection systems - present understanding", Lecture to the Australian Geomechanics Society, **Newcastle**, Australia, March 1996.
150. "The design of leachate collection systems", Special lecture organized by D.J. Douglas & Partners, **Sydney**, Australia, March 1996.

151. "Landfill design - A 5 day short course", Middle East Technical University (METU), **Ankara**, Turkey, May 1996.
152. "The design and operation of a state-of-the-art landfill facility", at the 4th Canadian Society for Civil Engineering Environmental Engineering Specialty Conference, **Edmonton**, Canada, May 1996.
153. "Management of solid waste" - a 4 day Module, Modular M.Eng., University of Western Ontario, **London**, Canada, September 1996.
154. "The laboratory performance of a GCL permeated with varying concentrations of NaCl solutions", at the 49th Canadian Geotechnical Conference, **St. Johns**, Canada, September 1996.
155. "HDPE geomembranes and diffusion", at the 49th Canadian Geotechnical Conference, **St. Johns**, Canada, September 1996.
156. "Diffusion of organic pollutants through HDPE geomembrane and composite liners and its influence on groundwater quality", at 1st European Conference on Geosynthetics, **Maastricht**, Netherlands, October 1996.
157. "Geosynthetics", Civil Seminar, University of Western Ontario, **London**, Canada, October 1996.
158. "Design for the long term", EPIC Short Course on Landfill Design and Management, **Toronto**, Canada, October 1996.
159. "Effect of temporal fluctuation of leachate concentration in landfills", at 2nd International Congress on Environmental Geotechnics, **Osaka**, Japan, November 1996.
160. "The behaviour of reinforced soil walls based on finite element analysis and implications with respect to design", Symposium on Recent Case Histories and Development in the Design of Geosynthetic-Reinforced Soil Retaining Walls, **Tokyo**, Japan, November 1996.
161. "Some insights into reinforced wall behaviour based on finite element analysis", International Symposium on Earth Reinforcement, **Fukuoka**, Japan, November 1996.
162. "Design of reinforced embankments on soft ground", Institute for Lowlands Technology Seminar on Soft Ground Engineering, **Saga**, Japan, November 1996.
163. "Load transfer in rock sockets", Drilled Foundation Seminar, **Toronto**, Canada, April 1997.
164. "Diffusion presents new challenges in landfill design", Short Course on Advances in Geotechnics, A.L. Coimbra Institute for Graduate Studies and Research in Engineering, Federal University of Rio de Janeiro, **Rio de Janeiro**, Brazil, June 1997.
165. "Reinforced embankment behaviour: Lessons from a number of case histories", Keynote Lecture, International Symposium on Recent Developments in Soil and Pavement Mechanics, **Rio de Janeiro**, Brazil, June 1997.
166. "Some considerations in numerical modelling of leachate collection system clogging", Lead Lecture, 6<sup>th</sup> International Symposium on Numerical Models in Geomechanics, **Montreal**, Canada, July, 1997.
167. "Barrier walls for containment of contaminated sites: The often neglected importance of diffusion", XIV International Conference on Soil Mechanics and Foundation Engineering, **Hamburg**, Germany, September 1997.
168. "Contaminant transport through engineered unsaturated granular soil", British Geotechnical Society Conference on Contaminated Ground: Fate of Pollutants and Remediation, **Cardiff**, U.K., September

- 1997.
169. "Groundwater contamination and landfills", Lecture to Learning Unlimited (Oxford), **Woodstock**, Canada, October 1997.
  170. "Recent advances in understanding the clogging of leachate collection systems" at the 6<sup>th</sup> International Landfill Symposium, **Cagliari**, Sardinia, Italy, October 1997.
  171. "Compatibility testing and diffusion through geosynthetic clay liners", at the 6<sup>th</sup> International Landfill Symposium, **Cagliari**, Sardinia, Italy, October 1997.
  172. "Clogging of leachate collection systems – some preliminary experimental findings", at the 50<sup>th</sup> Canadian Geotechnical Conference, **Ottawa**, Canada, October 1997.
  173. "The alleged failure of a geotextile filter: lesson learned", at the 50<sup>th</sup> Canadian Geotechnical Conference, **Ottawa**, Canada, October 1997.
  174. "Geosynthetics in waste disposal applications", Geosynthetics Short Course, Canadian Geotechnical Society, **Ottawa**, Canada, October, 1997.
  175. "Recent advances in modelling contaminant impact due to clogging", Keynote paper, 9<sup>th</sup> International Conference of the Association for Computer Methods and Advances in Geomechanics, **Wuhan**, China, November 1997.
  176. "Implications of diffusion of chloride through geosynthetic clay liners", Geoenvironment '97, **Melbourne**, Australia, November 1997.
  177. "Contaminant transport in groundwater", Keynote paper, Proceedings of the First Australian-New Zealand Conference on Environmental Geotechnics, **Melbourne**, Australia, November 1997.
  178. "Geosynthetics in barrier systems for waste disposal facilities", Workshop on Waste Containment, Australian Geomechanics Society, **Melbourne**, Australia, November 1997.
  179. "Recent experimental and theoretical advances at the prediction of clogging in landfill leachate collection systems", Lecture to the Australian Geomechanics Society at the University of Newcastle, **Newcastle**, Australia, November 1997.
  180. "From the past to the future of landfill engineering through case histories", Keynote Lecture, Fourth International Conference on Case Histories in Geotechnical Engineering, **St. Louis**, U.S.A., March 1998.
  181. "Geosynthetics and the minimization of contaminant migration through barrier systems beneath solid waste", Keynote Lecture, Sixth International Conference on Geosynthetics, **Atlanta**, U.S.A., March 1998.
  182. "Evaluation of a composite (geomembrane/clay) liner for a lagoon after 14 years of use", Sixth International Conference on Geosynthetics, **Atlanta**, U.S.A., March 1998.
  183. "Laboratory investigation of the effect of coarse stone backfill on the performance of leachate collection pipe", Sixth International Conference on Geosynthetics, **Atlanta**, U.S.A., March 1998.
  184. "Geosynthetics and the minimization of contaminant migration through barrier systems beneath solid waste", Lecture presented to the Canadian Geotechnical Society, Moncton Group, **Moncton**, N.B., Canada, March 1998.
  185. "Geosynthetics and the minimization of contaminant migration through barrier systems beneath solid waste", Lecture presented to the Canadian Geotechnical Society, Fredericton Group, **Fredericton**, N.B., Canada, April 1998.

186. "Geosynthetics and the minimization of contaminant migration through barrier systems beneath solid waste", Seminar presented to the Dept. of Civil and Environmental Engineering, University of Western Ontario, **London**, Canada, April 1998.
187. "Two aspects of leakage through composite landfill liners", IGS/NAGS/CGS seminar on "Geosynthetics for the Environment", **Toronto**, Canada, May 1998.
188. "Some insights into landfill engineering based on case histories and recent studies", Lecture presented to South East England Section of the British Geotechnical Society and Southampton University, **Southampton**, U.K., May 1998.
189. "Recent advances in the understanding and modelling of clogging in landfill leachate collection systems", Seminar presented to faculty and researchers of Southampton University and London University (Queen Mary and Westfield College), **Southampton**, U.K., May 1998.
190. "Some insights into landfill engineering based on case histories and recent studies", Seminar presented to Dept. of Civil Engineering, Bristol University, **Bristol**, U.K., May 1998.
191. "Geosynthetics and the minimization of contaminant migration through barrier systems beneath solid waste", Seminar presented to Department of Engineering Science, Oxford University, **Oxford**, U.K., May 1998.
192. "Some insights into landfill engineering based on case histories and recent studies", Seminar presented to Dept. of Civil Engineering, City University, **London**, U.K., May 1998.
193. "Some insights into landfill engineering based on case histories and recent studies", Seminar presented to Dept. of Civil Engineering, Cambridge University, **Cambridge**, U.K., May 1998.
194. "Some insights into landfill engineering based on case histories and recent studies", Seminar presented to Dept. of Civil Engineering, Imperial College of Science, Technology & Management, University of London, **London**, U.K., May 1998.
195. "Modelling of reinforced embankments on soft ground", Keynote Lecture, 3<sup>rd</sup> International Workshop on Applications of Computational Mechanics in Geotechnical Engineering, **Porto**, Portugal, September 1998.
196. "Estimating the time for clogging of leachate collection systems", 3<sup>rd</sup> International Congress of Environmental Geotechnics, **Lisbon**, Portugal, September 1998.
197. "Landfills for solid wastes - some remaining questions", 3<sup>rd</sup> International Congress of Environmental Geotechnics, **Lisbon**, Portugal, September 1998.
198. "Contaminant transport modelling - Chapter 2 of TC5 report", 3<sup>rd</sup> International Congress of Environmental Geotechnics, **Lisbon**, Portugal, September 1998.
199. "Preventing unacceptable environmental impacts due to landfills: modelling and parameters", Brazilian Environmental Geotechnics Symposium, SIGA 98, **Sao Paulo**, Brazil, September 1998.
200. "Leachate control and collection", EPIC Short Course on Landfill Design and Management for Long Term Performance, **Toronto**, Canada, April 1999.
201. "Site assessment and computer modelling", EPIC Short Course on Landfill Design and Management for Long Term Performance, **Toronto**, Canada, April 1999.
202. "Barrier systems", Six hour short course for South African Institute of Civil Engineers, **Kwa-Maritane**,

- South Africa, May 1999.
203. "Implications of molecular diffusion with respect to potential geo-environmental impact", Proceedings, Third South African Conference on Environmental Engineering, **Kwa-Maritane**, South Africa, May 1999.
  204. "Landfill design - legal liabilities arising from geotechnical and hydrogeological issues", Proceedings Third South African Conference on Environmental Engineering, **Kwa-Maritane**, South Africa, May 1999
  205. "Solid waste disposal facilities for urban environments", Proceedings XI Pan American Conference on Soil Mechanics and Geotechnical Engineering, **Foz do Iguassu**, Brazil, August, 1999.
  206. "Insights gained from physical modelling of the clogging of municipal solid waste landfill leachate collection systems and implications with respect to the containment of contaminants in modern landfills"; International Symposium on Physical Modelling and Testing in Environmental Geotechnics, **La Baule**, France, May 2000.
  207. "Equivalence in drainage and lining systems", Conference La notion d'équivalence en Stanchéité - drainage, **Paris**, France, May 2000
  208. "Landfills still represent both a geotechnical and geoenvironmental challenge". Keynote Lecture, International Society for Soil mechanics and Geotechnical Engineering, International "Young Engineers Conference", **Southampton**, U.K. September 2000
  209. "Effectiveness of HDPE Geomembranes as Barrier to Diffusive Migration of Organic Contaminants", 53rd Canadian Geotechnical Conference, **Montreal**, October 2000.
  210. "Geosynthetics in Landfills and Leakage through Composite Liners" International Symposium on Geosynthetics in Geotechnical And Geoenvironmental Engineering, Invited Lecture, **Melbourne**, November, 2000.
  211. "Geosynthetics: Innovative Materials and Rational Design" The International Conference on Geotechnical and Geological Engineering, Keynote Lecture, GeoEng. 2000, **Melbourne**, November 2000.
  212. "Theoretical solutions for calculating leakage through composite liner systems", in Developments in Theoretical Geomechanics – The John Booker memorial Symposium, **Sydney**, November 2000
  213. "Modelling of Biologically Induced Clogging of Granular Material" 10<sup>th</sup> International Conference on Computer Methods and Advances in Geomechanics, Theme Lecture, **Tucson**, U.S.A., January 2001.
  214. "Landfills: some geotechnical and geoenvironmental challenges", Civil Engineering Forum: Robert and Joyce Jones Speaker Series, Queen's University, **Kingston**, January 2001.
  215. "Landfills: some geotechnical and geoenvironmental challenges", Civil Engineering Seminar Series, University of Western Ontario, **London**, January 2001.
  216. "Geotechnical and Geoenvironmental Challenges of Landfills", University of Calgary, **Calgary**, September 2001.
  217. "Geosynthetics in Barrier Systems for Waste Disposal Facilities", Geosynthetics Short Course, Canadian Geotechnical Society, **Calgary**, September 2001.
  218. "Leachate control and collection", Short Course on Sanitary Landfill- Leachate and Gas management,

- Toronto**, Canada, September 2001.
219. "Site assessment and computer modelling", Short Course on Sanitary Landfill- Leachate and Gas management, **Toronto**, Canada, September 2001.
  220. "Insights from case histories: Reinforced embankments and retaining walls", Keynote Lecture, International Symposium on Earth Reinforcement, **Fukuoka**, Japan, November 2001.
  221. "Liners in Barrier Systems" Short course on Latest Developments in Landfill Design , **Newcastle**, Australia, November 2001.
  222. "Composite Liners and Leakage" Short course on Latest Developments in Landfill Design , **Newcastle**, Australia, November 2001.
  223. "Leachate Collection and Removal Systems" Short course on Latest Developments in Landfill Design , **Newcastle**, Australia , November 2001.
  224. "Contaminant Transport Modelling" Short course on Latest Developments in Landfill Design , **Newcastle**, Australia, November 2001.
  225. "Clogging of leachate collection systems: From laboratory and field study to modelling and prediction", Keynote Lecture, 2<sup>nd</sup> Australian-New Zealand Conference on Environmental Geotechnics, **Newcastle**, Australia, November 2001.
  226. "Geotechnical and Geoenvironmental Challenges of Landfills", Ottawa Section, Canadian Geotechnical Society, **Ottawa**, December 2001.
  227. "Barrier Systems, Site Assessment and Modelling", CRESTech-Terrafix project Talk, **Toronto**, December 2001.
  228. "Landfills: the Good, the Bad, and the Ugly - an exploration of evolving waste disposal practice and its environmental implication past, present and future", 22<sup>nd</sup> Dineen Memorial Lecture, University of New Brunswick – **St. John**, April 2002.
  229. "Some remaining Geotechnical and Geoenvironmental Challenges of Waste Disposal", University of New Brunswick – **Fredericton**, April 2002.
  230. "Landfills: the Good, the Bad, and the Ugly - an exploration of evolving waste disposal practice and its environmental implication past, present and future", 22<sup>nd</sup> Dineen Memorial Lecture, University of New Brunswick – **Fredericton**, April 2002.
  231. "Internal erosion of GCLs placed directly over fine gravel" International Symposium on Geosynthetic Clay Barriers, **Nuremberg**, Germany, April, 2002.
  232. "Considerations related to the use of GCLs in base liners", GCL Workshop for Engineers and Regulators, **Manchester**, U.K., April 2002.
  233. "Design of barrier systems" GCL Workshop for Engineers and Regulators, **Manchester**, U.K., April 2002.
  234. "Effects of boundary location on the finite element predictions for large openings in rock" 2<sup>nd</sup> Canadian Specialty Conference on Computing in Geotechnique, **Winnipeg**, April 2002.
  235. Latest advances in the modelling of clogging of leachate collection systems", Keynote Lecture, 2<sup>nd</sup> Canadian Specialty Conference on Computing in Geotechnique, **Winnipeg**, April 2002.
  236. "Risk assessment: some new challenges associated with PCBs, Arsenic, and VOCs", Keynote Lecture, 4<sup>th</sup> International Conference on Environmental Geotechnics, **Rio de Janeiro**, Brazil, August, 2002.



237. “Geosynthetic-reinforced embankments over soft foundations”, Giroud Lecture, 7<sup>th</sup> International Conference on Geosynthetics, **Nice**, France, September, 2002.
238. “Permeation Of Organic Pollutants Through A 14 Year Old Field-Exhumed HDPE Geomembrane”, 7<sup>th</sup> International Conference on Geosynthetics, **Nice**, France, September, 2002 .
239. “Thermally-induced moisture movement beneath geosynthetic clay liners” 7<sup>th</sup> International Conference on Geosynthetics, **Nice**, France, September, 2002.
240. “An examination of the potential for internal erosion of GCLs placed directly over a geonet”, 7<sup>th</sup> International Conference on Geosynthetics, **Nice**, France, September, 2002.
241. "Leachate control and collection", Short Course on Sanitary Landfill- Leachate and Gas management, **Toronto**, Canada, October 2002.
242. "Site assessment and computer modelling", Short Course on Sanitary Landfill- Leachate and Gas management, **Toronto**, Canada, October 2002.
243. “Geosynthetic-reinforced embankments over soft foundations”, GeoEngineering Centre Seminar, **Kingston**, October, 2002.
244. “Some remaining Geotechnical and Geoenvironmental Challenges of Waste Disposal”, Gifu University, **Gifu**, Japan, November 2002.
245. “Regulations and design approaches in Canada”, Forum on Geosynthetics, **Toronto**, March, 2003.
246. “Investigation of the behavior of geosynthetic clay liners subjected to thermal gradients in basal liner applications,” Advances in Geosynthetic Clay Liner Technology: 2nd ASTM Symposium, **Denver**, USA, June, 2003.
247. “Hydraulic conductivity and diffusion characterization of GCLs”, 56<sup>th</sup>Canadian Geotechnical Conference, **Winnipeg**, September, 2003.
248. “Detecting heavy metal contamination in soil using complex permittivity and artificial neural networks”, 56<sup>th</sup>Canadian Geotechnical Conference, **Winnipeg**, September, 2003.
249. "Geosynthetics in Barrier Systems for Waste Disposal Facilities", Geosynthetics Short Course, Canadian Geotechnical Society, **Winnipeg**, September 2003.
250. “Geosynthetic-reinforced embankments over soft foundations”, Lecture presented to University of Southampton, **Southampton**, U.K., October, 2003.
251. “Geosynthetic-reinforced embankments over soft foundations”, 3<sup>rd</sup> Annual Joint IGS(UK)/British Geotechnical Association International Lecture, **London**, U.K., October, 2003.
252. “Geosynthetic-reinforced embankments over soft foundations”, Lecture presented to University of Nottingham, **Nottingham**, U.K., March, 2004.
253. “Resolving outstanding issues in landfill barrier design”, Lecture presented to Technical University of Delft, **Delft**, Netherlands, June, 2004.
254. “Geosynthetic-reinforced embankments over soft foundations”, Lecture presented to Technical University of Delft, **Delft**, Netherlands, June, 2004.
255. “Resolving outstanding issues in landfill barrier design”, Keynote Lecture GeoAsia 2004, Asian Regional Conference on Geosynthetics, **Seoul**, Korea, June, 2004.

