

<b>07:30-17:00</b>	<b>Registration desk hours</b>
<b>10:00-19:00</b>	<b>Trade show hours</b>
<b>07:15 -08:00</b>	<b>Speakers' breakfast (Day 1 Speakers and Session Chairs only) - Regency B</b>
<b>08:30-09:00</b>	<b>Welcome and introductions</b>

**Plenary Session 1 | Chair: Patrick Corser, MWH, Canada**

<b>09:00-09:45</b>	<b>CONFERENCE KEYNOTE: System modelling and expansion of the scope of “environments”</b> <u>Chris Moran</u> , Sustainable Minerals Institute, The University of Queensland, Australia
<b>09:45-10:15</b>	<b>Plenary 1: Carbon sequestration and water conservation: competing priorities in extreme environments</b> <u>Greg Dipple</u> , Mineral Deposit Research Unit, Department of Earth, Ocean and Atmospheric Sciences, The University of British Columbia, Canada

**10:15-10:45 Coffee Break and Poster Session**

**Plenary Session 1 (cont'd) | Chair: Patrick Corser, MWH, Canada**

<b>10:45-11:15</b>	<b>Plenary 2: Climate change in Canada: observations and projected changes</b> <u>Emma Watson</u> , presenting on behalf of Climate Research Division, Environment Canada, Canada
<b>11:15-11:45</b>	<b>Plenary 3: The strategic advantages of mine water supplies from deep aquifers in the desert regions of the Middle East and North Africa</b> <u>Malcolm Anderson</u> , MWH, UK
<b>11:45-12:30</b>	<b>KEYNOTE 1: Managing groundwater under extreme conditions – an example from the Diavik Mine</b> <u>Richard LeBreton</u> , Diavik Diamond Mines, Canada

**12:30-13:30 Lunch Break - Sponsored by Tons Per Hour/Jingjin**

**Parallel Sessions**

**Session 1: Water Management in Extreme Environments and Water Balance | Chair: Ian Hutchison, SLR Consulting, USA**

**Session 2: Hydrogeology in Deep Mining Environments | Chair: Michael Royle, Schlumberger Water Services, Canada**

<b>13:30-13:55</b>	<b>Engineering judgement in design storm event selection for projects in extreme environments</b> <u>Clint Strachan</u> , MWH Americas, USA; <u>Mike Jacobs</u> , Goldcorp, Canada; <u>Carmen Bernedo-Sanchez</u> , MWH, USA	<b>Glass bead filter packs in water wells for higher efficiency and reduced operations and maintenance costs</b> <u>Reinhard Klaus</u> , Sigmund Lindner GmbH, Germany
<b>13:55-14:20</b>	<b>Use of water balance modeling in mine facility design</b> <u>Kenneth Myers</u> , The MINES Group, USA	<b>Hydraulic testing in geothermal waters and hydrogen sulfide gas at the Hycroft Mine, Nevada</b> Harmony Warren, Matt Banta and <u>Roger Howell</u> , SRK Consulting, USA
<b>14:20-14:45</b>	<b>Comparative review of mine water balance modelling approaches in British Columbia, Canada</b> <u>Ali Naghibi</u> , ERM Rescan, Canada	<b>Deep groundwater characterization at the Pebble Site, Alaska, USA</b> <u>H. R. (Rod) Smith</u> , Smith Water Management Services, Canada; Hugh McCreadie, Piteau Associates, Canada
<b>14:45-15:10</b>	<b>Developing mine water balance models for Extreme Environments</b> <u>David Hoekstra</u> , SRK Consulting, USA	<b>How good are results from small scale injection tests? A comparison of results from two testing methods in deep bedrock at a Canadian arctic site</b> Dan Mackie and <u>John Mayer</u> , SRK Consulting, Canada

**15:10-15:35** **Snow, rain and ice – mine water management at the KSM Project**

Graham Parkinson, Harvey McLeod, Garry Stevenson, Al Morrison and Arvind Dalpatram, Klohn Crippen Berger, Canada; Kelsey Norlund and Clem Pelletier, ERM Rescan, Canada; Peter Williams, Brent Murphy and Jim Smolik, Seabridge Gold, Canada

**Some important considerations in acquiring and modeling water chemistry data from extreme environments**

Jeffrey A. Winick, Schlumberger Water Services, USA; Angela D. Beeson, Schlumberger Reservoir Laboratory, USA; Michael Royle, Schlumberger Water Services, Canada; T. Martin Williams, Schlumberger Water Services, South Africa

**15:35-15:55** **Coffee Break and Poster Session**

Parallel Sessions

**Session 3: Water Management in Extremely Wet and Dry Areas | Chair: Chris Moran, The University of Queensland, Australia**

**Session 4: Water Treatment 1 | Chair: Dan Ramey, Freeport-McMoRan, USA**

**15:55-16:20** **A new methodology for obtaining alternative hydrological data in remote regions**  
Jordi Guimerà, Daniel Montaner and Pilar Enguita, Amphos 21 Consulting Chile Ltda., Chile; Miquel Picanyol and Oriol Palom, MeteoSim, SL, Spain; Gladys Lorca, Manuel Bucci and Pau Balart, Codelco, Chile

**Commercial scale novel approaches to water treatment at remote sites in extreme cold climates**  
Alain Consigny, David Kratochvil and Jean-Claude Côté, BioteQ Environmental Technologies, Canada

**16:20-16:45** **Applying frequency analyses to estimate location-specific precipitation record with limited data**  
Victor Lishnevsky, Kerry Lahti and Bryan Fahl, Knight Piésold and Co., USA

**Metallic aluminum as a source for ettringite precipitation**  
Brian Elson and Michael Fallbach, The Water Company, USA; Charles Bryce and Brett Waterman, Freeport-McMoRan, USA

**16:45-17:10** **Stream relocation and geomorphic design to improve sustainability**  
Kenneth Myers, The MINES Group, USA

**Innovative mined zeolites for industrial reuse in an arid environment**  
Ivan A. Cooper, Civil & Environmental Consultants, Inc., USA

**17:10-17:35** **Extending water supply by reducing reservoir evaporation: a case study from Wichita Falls, Texas**  
David Verlee, Flexible Solution International Ltd., Canada; David Zetland, Leiden University College, The Netherlands

**A phosphate mine water model utilizing the goldsim modeling tool**  
R. Jeffrey Davis, Cardno, USA; Glen Oswald, The Mosaic Company, USA

**17:35-19:00** **Welcome Reception (trade show area)**

**19:00** **Close day 01**

**07:30-17:00 Registration desk hours**

**09:00-17:30 Trade show hours**

**07:30-08:15 Speakers' breakfast (Day 2 Speakers and Session Chairs only)**

**Keynote Session 2 | Chair: Jaime Cathcart, Knight Piésold, Canada**

**09:00-09:45 KEYNOTE 2: Goldcorp's water stewardship strategy**  
Lisa Wade, Goldcorp, USA

**09:45-10:30 KEYNOTE 3: Are we demanding too much of hydrogeologic simulation models when they are applied in extreme environments?**  
Leslie Smith, Department of Earth, Ocean and Atmospheric Sciences, University of British Columbia, Canada

**10:30-11:00 Coffee Break and Poster Session**

**Plenary Session 2 | Chair: Jaime Cathcart, Knight Piésold, Canada**

**11:00-11:30 Plenary 4: Pit lakes from open pit precious metals mines: evolving thoughts on productive post mining uses**  
Glenn Miller, University of Nevada, Reno, USA

**11:30-12:00 Plenary 5: Factors affecting fall turnover in brackish pit lakes**  
Davood Hasanloo, Roger Pieters, and Gregory A. Lawrence, University of British Columbia, Canada

**12:00-12:30 Plenary 6: Predicting the effects of climate change on natural and mine affected water systems in humid climate**  
Nestor Godinez, SLR International, USA; Leslie Gomm, SLR Consulting Ltd., Canada; Ian P. G. Hutchison, SLR International, USA; Michelle Tanguay, Prodigy Gold Inc., Canada

**12:30-13:30 Lunch Break**

**13:30-15:00 PANEL: Bridge over Troubled Waters: Interactive Panel Dialogue - Insights and Solutions to Bridge the Technical / Community Information Divide**

**15:00-15:20 Coffee Break and Poster Session**

**Parallel Sessions**

**Session 5: Regulatory and Social Challenges | Chair: Leslie Smith, Department of Earth, Ocean and Atmospheric Sciences, University of British Columbia, Canada**

**Session 6: Chemistry and Treatment | Chair: Shannon Shaw, pHase Geochemistry, Canada**

**15:20-15:45 Building a multi-stakeholder process to identify and address water issues**  
Rebecca Darling, On Common Ground Consultants, USA; Susan Joyce and Ann Pacey, On Common Ground Consultants, Canada

**Physical-chemical treatment with Geotube® filtration applied to underground gold mine dewatering in winter**  
Jocelyn Douh ret and Marc Turcotte, ASDR Environnement, Canada; Andy Lister, TenCate, Canada

**15:45-16:10 Understanding groundwater: a key component of the solution of social conflicts in mining projects**  
Alfredo Huamani, MWH, Australia / Peru

**An innovative, economical, and efficient method of metal removal from mine wastewater**  
Judd Sundine, Sundine Enterprises, Inc., USA; Scott Powell, Powell Water Systems, Inc., USA

<b>16:10-16:35</b>	<b>Making the business case for sustainable water management in the mining sector using true cost of water methodology</b> Edwin Pinero, Veolia North America, USA – Presented by <u>Johann Clere</u> , Veolia North America, USA	<b>Treating high flow discharges with a modular peat-based sorption media system</b>  Paul Eger, Global Minerals Engineering, USA; Peggy Jones and <u>Doug Green</u> , American Peat Technology, USA
<b>16:35-17:00</b>	<b>Best available technologies economically achievable (BATEA) to manage effluent from mines in Canada</b> Kristin Pouw, Kathryn Campbell and <u>Lisa Babel</u> , Hatch, Canada	<b>Mine water treatment by high recovery advanced electro dialysis: pilot results and economics</b>  Zhongyuan Zhou, <u>Ben Sparrow</u> , Malcolm Man and Mitchell Frank, Saltworks Technologies, Canada
<b>17:00-17:25</b>	<b>Long-term availability of water for solution potash mining in Saskatchewan</b> <u>Iuliia Andreichuk</u> , Dena McMartin and David Sauchyn, University of Regina, Canada	<b>San Luis project: process optimization</b>  <u>Stephen E. Rogers</u> and Jason Kerstiens, ARCADIS, USA; William Lyle, Newmont Mining Corporation, USA
<b>17:25</b>	<b>Close day 02</b>	
<b>19:00-22:00</b>	<b>Conference Dinner - Top of Vancouver Revolving Restaurant, 555 West Hastings Street, Vancouver</b>	

**08:00-16:00 Registration desk hours**

**09:00-16:00 Trade show hours**

**07:30-08:15 Speakers' breakfast (Day 3 Speakers and Session Chairs only) - Regency B**

### Keynote Session 3 | Chair: Lisa Wade, Goldcorp, USA

**09:00-09:45 KEYNOTE 4: Mine water management in extreme environments**  
Geoff Beale, Schlumberger, USA

**09:45-10:30 KEYNOTE 5: Giant Mine remediation project – stabilizing arsenic mine waste using freeze technology**  
Michael Nahir, Aboriginal Affairs and Northern Development Canada, Government of Canada

**10:30-11:00 Coffee Break and Poster Session**

### Plenary Session 3 | Chair: Lisa Wade, Goldcorp, USA

**11:00-11:30 Plenary 7: Groundwater management in the Pilbara region of Western Australia: many new challenges**  
Todd Hamilton, SRK Consulting, Canada

**11:30-12:00 Plenary 8: Coordinating seasonal dewatering and treatment of two open pits at an abandoned lead-zinc mine in Yukon, Canada**  
Dustin K. Rainey, Yukon Government - Department of Energy, Mines and Resources, Canada

**12:00-12:30 Plenary 9: Climate change predictions: a discussion of models, tools and applications for industry**  
Martin Lacroix, MWH Canada, Canada

**12:30-13:30 Lunch Break**

#### Parallel Sessions

**Session 7: Groundwater Over Time | Chair: Dirk van Zyl, University of British Columbia, Canada**

**Session 8: Construction Materials and Design | Chair: Jim Obermeyer, MWH, USA**

**13:30-13:55 Successful dewatering of a large debris-flow orebody in northern Peru**  
Geoff Beale, Schlumberger, USA; David Rios, Minera Yanacocha SA, Peru; Victor Perez, Pueblo Viejo Dominicana Corporation, Dominican Republic; Franz Soto, Minera Yanacocha SA, Peru

**Selection of materials in a sensitive environment**  
Mary Jane Piggott and Rick Friedel, Klohn Crippen Berger, Canada

**13:55-14:20 Providing realistic recharge distributions in arid zones**  
Saul Montoya, Gidahatari, Peru; Todd Hamilton, SRK Consulting, Canada

**LDPE lined high velocity channel design and construction**  
Rich Rodman, Rodman Hydrotechnical, Canada; David Meikle, Quantum Murray, Canada

**14:20-14:45 Bench-scale evaluation and feasibility study results for TDS and sulfate reduction technologies in the Desert Southwest**  
Ken Martins, Mary McCloud and Christina Joiner, CH2M HILL, USA

**Water infrastructure design and recent extreme rainfall experiences**  
Carmen Bernedo-Sanchez, MWH, USA

**14:45-15:10 The Influence of Explosive Use on Nitrogen Loading and Speciation in an Underground Mine in British Columbia**  
Patrick Mueller, Justin Stockwell, and A.J. Martin, Lorax Environmental Services, Canada

**Optimization of pond design and operation using an integrated modeling approach**  
Jianping Zhang, Tom Plikas, Stephen Daughney and Angelo Stamatiou, Hatch, Canada

**15:10-15:40 Coffee Break and Poster Session**

Parallel Sessions

**Session 9: Water Management in Extremely Cold Areas | Chair: Lukas U. Arenson, BGC Engineering, Canada**

**Session 10: Water Treatment 2 | Chair: Dan Ramey, Freeport-McMoRan, USA**

**15:40-16:05** **Metal uptake in northern laboratory-scale wetlands treating synthetic mine drainage**  
  
Amelie Janin, Katherine Stewart and Michel Duteau, Yukon Research Centre, Yukon College, Canada; André Sobolewski, Clear Coast Consulting, Canada; Mary Mioska, Casino Mining Corporation, Canada

**Start-up and commissioning of a full-scale selenium treatment facility for mine water treatment**  
Rangesh Srinivasan, Kar Munirathinam and Phil Facer, CH2M HILL, USA

**16:05-16:30** **Performance of lab-scale anaerobic bioreactors at low temperature using Yukon native microorganisms**  
Amelie Janin, Yukon Research Centre, Yukon College, Canada; Jim Harrington, Alexco Environmental Group, USA

**Membrane based water and wastewater treatment solutions**  
  
Joseph Swiezbin and Paul Clayton, Pall Corporation, USA

**16:30-16:55** **Water management challenges associated with mining projects in Greenland**  
Lukas U. Arenson, BGC Engineering, Canada; William Colgan, Geological Survey of Denmark and Greenland, Denmark

**Removing salt from coal mine wastewater in a remote, wet area: full scale experience**  
Srikanth Muddasani, Veolia Water Technologies, USA

**16:55-17:20** **Predicting dewatering requirements of an open pit within a subpermafrost groundwater system with highly variable recharge through taliks**  
Vladimir Ugorets, SRK Consulting, USA; Lenar Sultanov and Konstantin Markevich, SRK Consulting, Russia

**Wastewater treatment using MBBR in cold climates**  
  
Caroline Dale, Veolia Water Technologies, USA; Marc Laliberté and David Oliphant, Veolia Water Technologies, Canada; Maria Ekenberg, Veolia Water Technologies, Sweden

**17:20-17:30** **Closing remarks**

**17:30** **Close day 03, end of conference**