

# MINE WATER SOLUTIONS 2018

## LIST OF ACCEPTED ABSTRACTS (As of Jan 26, 2018)

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<b>Theme - Water Treatment</b>			
	<b>Abstract Name</b>	<b>Author(s)</b>	<b>Company/Affiliation</b>
1	Investigation of feed water treatment options in an arid area	<ul style="list-style-type: none"> <li>• Mohsen Barkh</li> </ul>	<ul style="list-style-type: none"> <li>• SGS Canada Inc.</li> </ul>
2	Removing Selenium form a very low concentration mine waters	<ul style="list-style-type: none"> <li>• Mohsen Barkh</li> </ul>	<ul style="list-style-type: none"> <li>• SGS Canada Inc.</li> </ul>
3	Treatment of a Coal Mine Acid Mine Drainage by Ozofractionative Catalysed Reagent Addition (OCRA)	<ul style="list-style-type: none"> <li>• David Hunter</li> <li>• Michael D. Dickson</li> <li>• Michelle L. Bush</li> <li>• Geoffrey M. Evans</li> <li>• Richard T. Bush</li> </ul>	<ul style="list-style-type: none"> <li>• Evocra Pty. Ltd., Newcastle Institute for Energy and Resources, Newcastle, Australia</li> <li>• University of Newcastle, Australia</li> </ul>
4	Synthetic water Calibration for Water Quality Parameters and Water Treatment Program Validation	<ul style="list-style-type: none"> <li>• Lynda Smithard</li> </ul>	<ul style="list-style-type: none"> <li>• McCue Engineering Contractors, Vancouver B.C.</li> </ul>
5	Changing Effluent Regulations in Canada, Helping Mine Sites to Reach New Limits	<ul style="list-style-type: none"> <li>• Sean Miller</li> <li>• Terry Obal</li> </ul>	<ul style="list-style-type: none"> <li>• Maxxam Analytics, Canada</li> </ul>
6	Water Use, Quality and treatment at Syncrude's Mineable Oilsands Operation in Northern Alberta	<ul style="list-style-type: none"> <li>• Warren Zubot</li> </ul>	<ul style="list-style-type: none"> <li>• Syncrude Canada</li> </ul>
7	Bioremediation-Based Water Treatment for Mine Closure: A Pilot-Scale Study	<ul style="list-style-type: none"> <li>• Leonard Santisteban</li> <li>• James Harrington</li> <li>• Iisu Lee</li> <li>• Shane Hansen</li> <li>• Erick Weiland</li> </ul>	<ul style="list-style-type: none"> <li>• Freeport-McMoRan Inc., USA</li> </ul>
8	Alkaline Flush Technology: an In Situ Treatment Method for Mining Impacted Alluvial Aquifers	<ul style="list-style-type: none"> <li>• Olufunsho Ogungbade</li> </ul>	<ul style="list-style-type: none"> <li>• Freeport-McMoRan Inc.</li> </ul>
9	The development of a new peat based weak anion exchange material that removes sulfate from acidic water	<ul style="list-style-type: none"> <li>• Liudmyla Kildyshova</li> <li>• Rami Hallak</li> <li>• Igor V. Kolomitsyn</li> </ul>	<ul style="list-style-type: none"> <li>• University of Minnesota Duluth American Peat Technology LLC, Aitkin, MN, USA</li> </ul>
10	Lime Treatment: Identifying When This Proven Technology Works and How it Fits with Water Treatment Innovations to Meet More Stringent Discharge Limits	<ul style="list-style-type: none"> <li>• Kristina Minchow</li> <li>• Bridgette Hendricks</li> <li>• Ryan Schipper</li> </ul>	<ul style="list-style-type: none"> <li>• Golder Associates Inc.</li> </ul>
11	Electrocoagulation (EC) for the Treatment of ARD Water and their RO Rejects	<ul style="list-style-type: none"> <li>• Zhong Xie</li> <li>• Saviz Mortazavi</li> <li>• Eben Dy</li> <li>• Marco Gomez Orzatti</li> </ul>	<ul style="list-style-type: none"> <li>• National Research Council of Canada</li> </ul>
12	A New Zero Water Intake Technology for Chemical Treatment of Mining Tailings	<ul style="list-style-type: none"> <li>• Trong Dang-Vu</li> <li>• Morgan Tizzotti</li> <li>• Kirk Thomas</li> </ul>	<ul style="list-style-type: none"> <li>• SNF USA</li> <li>• SNF France</li> </ul>

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13	Transportable Water Treatment for Remote Mine Sites in Wet Northern Climates	<ul style="list-style-type: none"> <li>• Veneil Sundar</li> <li>• Brent Baker</li> <li>• Alain Consigny</li> </ul>	<ul style="list-style-type: none"> <li>• BQE Water, Canada</li> </ul>
14	Mixing Zone Assessment for Mine Effluent Discharges in Receiving Waters: Associated Challenges and Solution through the Best Practices	<ul style="list-style-type: none"> <li>• Mijanur R Chowdhury</li> <li>• Cheryl Wiramanaden</li> <li>• Pierre Stecko</li> <li>• Kevin Martens</li> <li>• Katharina Batchelar</li> </ul>	<ul style="list-style-type: none"> <li>• Minnow Environmental Inc.</li> </ul>
15	In-Situ Treatment of Arsenic in a Pit Lake – Case History	<ul style="list-style-type: none"> <li>• Adam Whitman</li> <li>• Tom Patterson</li> </ul>	<ul style="list-style-type: none"> <li>• Meridian Beartrack Company</li> </ul>
16	Biochemical cyanide treatment of gold mine tailings supernatant: Pilot and demonstration trials	<ul style="list-style-type: none"> <li>• James Harrington</li> <li>• Monique Simair</li> <li>• Justin Bourne</li> <li>• Ben Ferris</li> </ul>	<ul style="list-style-type: none"> <li>• Lorax Environmental Services</li> <li>• Contango Strategies Ltd., Canada</li> <li>• Kumtor Gold Company, Kyrgyz Republic</li> </ul>
<b>Theme - Characterization and Prediction</b>			
1	Characterising the Geochemistry of Soil and Water Using Drone based Hyperspectral Analysis.	<ul style="list-style-type: none"> <li>• Jamie Robinson</li> <li>• Peter Kinghan</li> </ul>	<ul style="list-style-type: none"> <li>• SLR Consulting Limited</li> </ul>
2	Approaches to Water Quality Modeling Using Geochemical/ARD Test Data in Conjunction with Field Analog Data	<ul style="list-style-type: none"> <li>• Madhumita Raghav</li> <li>• Erick Weiland</li> </ul>	<ul style="list-style-type: none"> <li>• Freeport-McMoRan, USA</li> </ul>
3	Use of Adaptive Management Planning in Support of Environmental Monitoring and Permitting Process	<ul style="list-style-type: none"> <li>• Sheldon Smith</li> <li>• Michelle Fraser</li> <li>• Wally Sencza</li> <li>• Stephen Lines</li> </ul>	<ul style="list-style-type: none"> <li>• Stantec Consulting Ltd</li> <li>• Newmont Mining Corporation of Canada</li> </ul>
4	Effective Water Management Considering Robustness, Resilience, Reliability and Hydrologic Uncertainty	<ul style="list-style-type: none"> <li>• Ian Hutchison</li> <li>• Jack Caldwell</li> </ul>	<ul style="list-style-type: none"> <li>• SLR International, Irvine</li> <li>• Robertson Geoconsultants</li> </ul>
5	Novel Use of the Westbay System for Characterization of Deep Hydrogeology for an Underground Coal Mine	<ul style="list-style-type: none"> <li>• Tyler Gale</li> <li>• Piotr Rzepecki</li> </ul>	<ul style="list-style-type: none"> <li>• ERM Consultants Canada Ltd.</li> </ul>
6	Groundwater Discharge Into Tailings Facility During Intense Precipitation Events, Nyrstar Myra Falls	<ul style="list-style-type: none"> <li>• Christoph Wels</li> <li>• Andy Thomas</li> <li>• Nicole Pesonen</li> </ul>	<ul style="list-style-type: none"> <li>• Robertson GeoConsultants Inc., Canada</li> <li>• Nyrstar Myra Falls</li> </ul>
7	Estimating Operational Groundwater Inflows to a Proposed Underground Coal Mine	<ul style="list-style-type: none"> <li>• Laura-Lee Findlater</li> <li>• Bruce Mattson</li> </ul>	<ul style="list-style-type: none"> <li>• Lorax Environmental Services</li> <li>• John Balfour, Enterprise Geosciences Ltd, Canada</li> </ul>
8	Extending of daily flow record with hidden Markov model	<ul style="list-style-type: none"> <li>• Victor Muñoz Saavedra</li> </ul>	<ul style="list-style-type: none"> <li>• SRK Consulting</li> </ul>
9	Seepage and ARD-Impacted Groundwater Interception Strategies at Nyrstar Myra Falls	<ul style="list-style-type: none"> <li>• Alex Trapp</li> <li>• Paul Ferguson</li> <li>• Christoph Wels</li> <li>• Nicole Pesonen</li> </ul>	<ul style="list-style-type: none"> <li>• Robertson GeoConsultants Inc., Canada</li> <li>• Nyrstar Myra Falls</li> </ul>

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10	A New Rapid Brine Release Extraction Method in Support of Lithium Brine Resource Estimation	<ul style="list-style-type: none"> <li>• Michael Milczarek</li> <li>• Tzung-mow Yao</li> <li>• Frits Reidel</li> <li>• Daniel Weber</li> <li>• Edward Peacock</li> <li>• Murray Brooker</li> </ul>	<ul style="list-style-type: none"> <li>• GeoSystems Analysis, Inc., USA</li> <li>• Flosolutions, Chile</li> <li>• P.G., Montgomery &amp; Associates, USA</li> <li>• Hydrominex Geoscience, Australia</li> </ul>
11	A comparison of predicted groundwater impacts to observed effects at the Victor Diamond Mine, 11 years after the start of dewatering	<ul style="list-style-type: none"> <li>• Simon Gautrey</li> </ul>	<ul style="list-style-type: none"> <li>• Amec Foster Wheeler (Wood), Canada</li> </ul>
12	Getting more from less: Hydrogeological test analysis using differential pressure recovery	<ul style="list-style-type: none"> <li>• Nick Gorski</li> <li>• Michal Dobr</li> </ul>	<ul style="list-style-type: none"> <li>• Golder Associates Ltd., Canada</li> </ul>
13	Analysis of the impact of the rehabilitation of abandoned coal mines on water quality in Northern KwaZulu-Natal historical coal mines, South Africa	<ul style="list-style-type: none"> <li>• Demlie Molla</li> </ul>	<ul style="list-style-type: none"> <li>• University of KwaZulu-Natal, Durban, South Africa</li> </ul>
14	Design and Performance of Hydraulic Barriers in Tailing Storage Facilities	<ul style="list-style-type: none"> <li>• Patrick Corser</li> <li>• Josh Rogers</li> <li>• Javier Gutierrez</li> </ul>	<ul style="list-style-type: none"> <li>• Stantec, Denver, CO USA</li> <li>• Gold Fields La Cima, Lima, Peru</li> </ul>
15	Cold Desert Evapotranspiration Cover System Design Evaluation	<ul style="list-style-type: none"> <li>• Jason Keller</li> <li>• Chris Jim</li> <li>• Monisha Banerjee</li> <li>• Michael Milczarek</li> <li>• Clay Self</li> </ul>	<ul style="list-style-type: none"> <li>• GeoSystems Analysis, Inc.</li> <li>• Round Mountain Gold Corp., USA</li> </ul>
16	Alternative methods for instrumentation of deep small-diameter boreholes for collection of groundwater data and long-term monitoring	<ul style="list-style-type: none"> <li>• Denis Vachon</li> <li>• Michal Dobr</li> </ul>	<ul style="list-style-type: none"> <li>• Golder Associates Ltd.</li> </ul>
17	Base Mine Lake: The first End-Pit Lake for the Alberta Oil Sands	<ul style="list-style-type: none"> <li>• Dallas Heisler</li> <li>• Carla Wytrykush</li> </ul>	<ul style="list-style-type: none"> <li>• Syncrude Canada</li> </ul>
18	Meteorological time series and natural runoff model in a cold climate environment	<ul style="list-style-type: none"> <li>• Joel W Trubilowicz</li> <li>• Victor Muñoz Saavedra</li> </ul>	<ul style="list-style-type: none"> <li>• Northwest Hydraulic Consultants, Ltd., Canada</li> <li>• SRK Consulting, Inc., Canada</li> </ul>
19	Stochastic Groundwater Model Calibration Using Markov Chains	<ul style="list-style-type: none"> <li>• John Mayer</li> </ul>	<ul style="list-style-type: none"> <li>• SRK Consulting Inc., Canada</li> </ul>
<b>Theme - Operational Water Management</b>			
1	Challenges in containing geochemical risk at the Faro Mine Complex, Yukon	<ul style="list-style-type: none"> <li>• Dustin K Rainey</li> </ul>	
2	Estimating the Wetting Time for Mine Waste Rock Piles	<ul style="list-style-type: none"> <li>• Mark Steinepreis</li> </ul>	<ul style="list-style-type: none"> <li>• Stantec, Waterloo ON</li> </ul>
3	3D Deposition and water balance modelling with Muk3D and GoldSim	<ul style="list-style-type: none"> <li>• Carlo Cooper</li> <li>• Jaco Grobler</li> <li>• Miguel Palape Reyes</li> </ul>	<ul style="list-style-type: none"> <li>• MineBridge Software Inc, Canada and Chile</li> </ul>

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4	Integrating Tailings Deposition and Water Balance Modeling for TSF Mine Water Management	<ul style="list-style-type: none"> <li>Michelle Liew</li> <li>Kate Patterson</li> <li>Jaclyn Bowman</li> </ul>	<ul style="list-style-type: none"> <li>Klohn Crippen Berger, Vancouver BC</li> </ul>
5	Sea water intrusion at abandoned coal mines in the Labin region – Croatia	<ul style="list-style-type: none"> <li>Mladen Kuhta</li> </ul>	<ul style="list-style-type: none"> <li>Institute of Geology, Zagreb, Croatia</li> </ul>
6	The True Value of a Detailed Water Balance Model – A Case Study	<ul style="list-style-type: none"> <li>Zygi Zurakowski</li> <li>Brant Whiting</li> </ul>	<ul style="list-style-type: none"> <li>Stantec Consulting Services, United States</li> <li>Freeport-McMoRan, United States</li> </ul>
7	Is water the best option? How to evaluate which fugitive-dust management practice is right for your site.	<ul style="list-style-type: none"> <li>Jeff Ladderud</li> </ul>	<ul style="list-style-type: none"> <li>Freeport-McMoran Environmental Technology</li> </ul>
8	Novel Chemistry to Improve Performance with Drag Reducing Additives (DRAs) for Water Pipeline Transportation	<ul style="list-style-type: none"> <li>Marc G Mogul</li> <li>Morgan Tizzotti</li> <li>Trong Dang-Vu</li> </ul>	<ul style="list-style-type: none"> <li>SNF, Canada</li> <li>SNF Floerger, France</li> </ul>
9	Dust Mitigation using a Water Conservation Program	<ul style="list-style-type: none"> <li>Steve Clark</li> </ul>	<ul style="list-style-type: none"> <li>Enviro Tech Services</li> </ul>
10	Time-Lapse Dam Seepage Investigation and Conceptual-Level Mitigation Design	<ul style="list-style-type: none"> <li>Tomas C. Goode</li> </ul>	<ul style="list-style-type: none"> <li>Rachael Peavler, Stantec, Utah, USA</li> <li>Hhan Olsen, Stantec, Utah, USA</li> </ul>
11	Novel Chemistry to Improve Performance with Drag Reducing Additives (DRAs) for Water Pipeline Transportation	<ul style="list-style-type: none"> <li>Marc Mogul</li> <li>Morgan Tizzotti</li> <li>Trong Dang-Vu</li> <li>Rafat Jami</li> <li>Sadek Shaban</li> <li>Sina Ghaemi</li> </ul>	<ul style="list-style-type: none"> <li>SNF Holding Inc., USA</li> <li>SNF Floerger, France</li> <li>SNF Inc., Canada</li> <li>University of Alberta, Canada</li> </ul>
<b>Theme - Water as a Valued Asset</b>			
	<b>Abstract Name</b>	<b>Author(s)</b>	<b>Company/Affiliation</b>
1	New tailings encapsulation methods could “pave” the way toward safe long-term stacking of filtered tailings	<ul style="list-style-type: none"> <li>Donald J Lake</li> <li>Dr. Lee Groat</li> </ul>	<ul style="list-style-type: none"> <li>Terra CO2 Technologies Ltd.</li> <li>The University of British Columbia</li> </ul>
2	Follow The Money (And The Water) – The Goldcorp Water Valuation Toolbox	<ul style="list-style-type: none"> <li>Brendan O’Brien</li> </ul>	<ul style="list-style-type: none"> <li>Goldcorp Inc.</li> </ul>
3	A New Approach to Mitigation Banking	<ul style="list-style-type: none"> <li>Eric McCleary</li> </ul>	<ul style="list-style-type: none"> <li>Stantec Consulting Services Inc.</li> </ul>
4	Mine Water: A resource for the circular economy in South African Mining communities	<ul style="list-style-type: none"> <li>Dheepak Maharajh</li> <li>Tamsyn Grewar</li> <li>John Nealy</li> <li>Michelle van Rooyen</li> </ul>	<ul style="list-style-type: none"> <li>Mintek, South Africa</li> </ul>
5	Don't make waves: desalinated water and the social licence to operate in the Atacama Region, Chile	<ul style="list-style-type: none"> <li>Cecilia Compero</li> </ul>	<ul style="list-style-type: none"> <li>Liu Institute for Global Issues, University of British Columbia</li> </ul>

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6	The socio-economic and environmental perspectives of mine water use and their implications for sustainable mining: A case study of Newmont gold mine at new Abirem in the eastern region of Ghana	<ul style="list-style-type: none"> <li>• Ameyaw Kwakye</li> <li>• Samuel K. Nsiah</li> <li>• Edmund Asare</li> </ul>	<ul style="list-style-type: none"> <li>• Forestry Commission, Accra, GHANA</li> <li>• Ontario Ministry of Natural Resources and Forestry</li> <li>• University of Auburn, Washington DC, USA,</li> <li>• Department of Forest Sciences, University of Helsinki, Finland</li> </ul>
7	The Zafranal Copper Project: Green Water Supply Solutions in Peru's Driest Desert	<ul style="list-style-type: none"> <li>• David Evans</li> </ul>	<ul style="list-style-type: none"> <li>• FloSolutions, Peru</li> </ul>
8	Total Water Management: Canada's contribution to sustainable mine development	<ul style="list-style-type: none"> <li>• Jon Fennell</li> </ul>	<ul style="list-style-type: none"> <li>• Integrated Sustainability Consultants Ltd., Canada</li> </ul>
9	The Economic Value of Water Resources and Its Impact on Valuation of Mining Projects	<ul style="list-style-type: none"> <li>• Michal Kozikowski</li> </ul>	<ul style="list-style-type: none"> <li>• Minerals Australia, BHP</li> </ul>
10	RS and GIS based Hydrogeological Investigations in Parts of North India	<ul style="list-style-type: none"> <li>• B.S. Chaudhry</li> </ul>	<ul style="list-style-type: none"> <li>• Ch. Bansi Lal University, Bhiwani, India</li> </ul>
<b>Theme - Water Management in Extreme Climates</b>			
1	Application of SAGR Bioreactors for Ammonia Treatment in Mining Effluents	<ul style="list-style-type: none"> <li>• Mike Bratty</li> </ul>	<ul style="list-style-type: none"> <li>• Golder Associates Ltd.</li> </ul>
2	Incorporating Climate Variability into Water Balance Modelling to Help Inform Water Management Design: The Pebble Project	<ul style="list-style-type: none"> <li>• Alana Shewan</li> <li>• Les Galbraith</li> <li>• Jaime Cathcart</li> <li>• Bruce Jenkins</li> <li>• Stephen Hodgson</li> </ul>	<ul style="list-style-type: none"> <li>• Knight Piésold Ltd., Canada</li> <li>• Hunter Dickinson Inc., Canada</li> </ul>
3	A Real Challenge in Mine Water Management in High Precipitation Area, Grasberg Mine	<ul style="list-style-type: none"> <li>• Vladimir Ugorets</li> <li>• Nanda Rinaldi</li> <li>• Iwan Setiawan</li> <li>• Goktug Evin</li> </ul>	<ul style="list-style-type: none"> <li>• SRK Consulting, USA</li> <li>• PTFI, Indonesia</li> </ul>
4	Predicting Dewatering Impacts from 30+ Open Pits in an Extensive Arid Gold-Mining Operation	<ul style="list-style-type: none"> <li>• Milo Simonic</li> <li>• David Van Brocklin</li> </ul>	<ul style="list-style-type: none"> <li>• Stantec, Perth, Australia</li> </ul>
5	Numerical Groundwater Flow and Thermal Transport Modeling in Cold Regions	<ul style="list-style-type: none"> <li>• Mundzir Basri</li> <li>• Niloo Firoozy</li> <li>• Sitotaw Yirdaw</li> </ul>	<ul style="list-style-type: none"> <li>• Stantec, Winnipeg, MB</li> </ul>
6	Enhanced Reclamation of the Giant Nickel Tailings Storage Facilities in British Columbia, Canada	<ul style="list-style-type: none"> <li>• Allison Brown</li> <li>• Les Galbraith</li> <li>• Jessica Guselle</li> <li>• Mihajlo Samoukovic</li> <li>• Michael Shelbourn</li> </ul>	<ul style="list-style-type: none"> <li>• Barrick Gold Inc., Canada</li> <li>• Drummond P Earley III, D3 Geochemistry LLC, USA</li> <li>• Knight Piesold Ltd.</li> </ul>

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7	Implementing a Long-Term Water Management Strategy for Mine Closure in Northwest British Columbia	<ul style="list-style-type: none"> <li>• Michael Dabiri</li> <li>• Charles Masala</li> </ul>	<ul style="list-style-type: none"> <li>• Klohn Crippen Berger, Canada</li> </ul>
8	Effect of Variability of Design Storms on the Galore Creek Project	<ul style="list-style-type: none"> <li>• Charles Masala</li> <li>• Andrew Thrift</li> <li>• Yapo Alle-Ando</li> </ul>	<ul style="list-style-type: none"> <li>• Klohn Crippen Berger</li> <li>• Teck, Canada</li> </ul>
9	Hydrogeology of the Coffee Gold Project: groundwater interactions in an area of discontinuous permafrost	<ul style="list-style-type: none"> <li>• Laura-Lee Findlater</li> <li>• Jordi Helsen</li> <li>• Jean Cho</li> <li>• James Scott</li> <li>• Jennie Gjertsen</li> </ul>	<ul style="list-style-type: none"> <li>• Lorax Environmental Services, Canada</li> <li>• Goldcorp, Canada</li> </ul>
10	Dependence of Predicted Dewatering on Size of Hydraulic Stress Used for Groundwater Model Calibration	<ul style="list-style-type: none"> <li>• Vladimir Ugorets</li> <li>• Cristian Pereira</li> </ul>	<ul style="list-style-type: none"> <li>• SRK Consulting, Denver, USA</li> </ul>
11	Digitally Mapping the Hydro-Topographical Context for Community Planning: A Case Study for the Upper Choapa River Watershed in Chile	<ul style="list-style-type: none"> <li>• Gustavo I Moran</li> <li>• Pedro Paolini Cuadra</li> <li>• Valenty Gonzalez</li> <li>• John-Paul Arp</li> <li>• Paul A. Arp</li> </ul>	<ul style="list-style-type: none"> <li>• Forest Watershed Research Center, University of New Brunswick, Canada</li> <li>• LP Consultores Ltd., Chile</li> <li>• Creativa-Consultores Ltd., Panama</li> </ul>
12	Current PMP Estimation Practices and Meteorological Parameter Development for Mining Facilities in Data Limited Regions	<ul style="list-style-type: none"> <li>• Bill Kappel</li> </ul>	<ul style="list-style-type: none"> <li>• Applied Weather Associates, Monument, Colorado</li> </ul>
13	Hurricane Harvey Rainfall, Did It Exceed PMP and What are the Implications	<ul style="list-style-type: none"> <li>• Bill Kappel</li> <li>• Doug Hultstrand</li> <li>• Geoff Muhlestein</li> </ul>	<ul style="list-style-type: none"> <li>• Applied Weather Associates, Monument, Colorado</li> </ul>
14	Richmond Hill Mine Heap Leach Pad Soil Cover System Evaluation	<ul style="list-style-type: none"> <li>• Johnny Zhan</li> <li>• Daniel Lattin</li> <li>• Jason Keller</li> <li>• Mike Milczarek</li> </ul>	<ul style="list-style-type: none"> <li>• Barrick Gold North America</li> <li>• GeoSystems Analysis, Inc., Hood River, Oregon, USA</li> <li>• GeoSystems Analysis, Inc., Tucson, Arizona, USA</li> </ul>
15	Summary of Field Methods and Tools for Characterizing Deep Groundwater Systems in Continuous Permafrost Environments	<ul style="list-style-type: none"> <li>• Michael Royle</li> <li>• Gregory Fagerlund</li> <li>• Dan Mackie</li> <li>• Christopher Stevens</li> </ul>	<ul style="list-style-type: none"> <li>• SRK Consulting, Canada</li> <li>• SRK Consulting, USA</li> </ul>
<b>Theme - Regulatory and Social Challenges</b>			
1	Performance Review of a Passive Treatment System for Fe, As, Mn at the Empire Mine State Historic Park	<ul style="list-style-type: none"> <li>• Neal Gallagher</li> <li>• Daniel Millsap</li> <li>• Steve Lofholm</li> <li>• Tom Rutkowski</li> </ul>	<ul style="list-style-type: none"> <li>• Golder Associates Inc. USA</li> <li>• California Department of Parks and Recreation, USA</li> </ul>

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2	Regulatory challenges and water quality monitoring as part of the construction phase of the Woodsmith Mine underground Polyhalite Project, UK	<ul style="list-style-type: none"><li>• Jenny Ellerton</li><li>• Matt Goode</li><li>• Robert Staniland</li><li>• Amy Watkin</li></ul>	<ul style="list-style-type: none"><li>• SLR Consulting Limited, UK</li><li>• Sirius Minerals</li><li>• AMC UK</li></ul>
3	Regulatory, social and cultural challenges for mine water management in Greco-Roman jurisdictions	<ul style="list-style-type: none"><li>• Matt Goode</li></ul>	<ul style="list-style-type: none"><li>• SLR Consulting Limited, UK</li></ul>