

## DAY 1 – WET AND COLD

### 08:30 – Opening session and keynotes

10:30 Chair: Carlos Soldi, *SVS Ingenieros, Peru*

### 08:30 – Opening Address

09:15 Manuel Pulgar-Vidal, *Minister of Environment, Peru*  
David Evans, *Conference Chair, MWH, Peru*

### 09:15 – Keynote: Mine water challenges, technology and solutions

Andy Robertson, *InfoMine and Robertson GeoConsultants, Canada*

### 10:00 – Keynote WET: The Pebble Project: It's all about the water

Jaime Cathcart, *Knight Piésold, Canada*; Rod Smith, *Schlumberger Water Services, Canada*

10:30 – 11:10 | COFFEE BREAK

### PLENARY SESSION 1

Chair: Jose De Piérola, *Southern Peru Copper Corporation, Peru*  
SAN MARTIN BALLROOM (JOINT)

### 11:10 – Keynote COLD: Mine water issues in extremely cold climates

Jim Cassie, *BGC Engineering, Canada*

### 11:40 – Assessment of field-scale test piles as a means to predict solute loads from waste rock in permafrost terrain

Leslie Smith, *University of British Columbia, Canada*; David Blowes, *University of Waterloo, Canada*; David Segó, *University of Alberta, Canada*; Richard Amos, *University of Waterloo, Canada*; Lianna Smith, *Rio Tinto Diavik Mines, Canada*

### 12:10 – Membrane based water treatment technology provides alternative water source and discharge solutions

Tim Lilley, *Pall Corporation, UK*

12:40 – 14:00 | LUNCH



### SESSION 1 – WET

Chair: Tom Kerr, *Knight Piésold, USA*  
SAN MARTIN BALLROOM ABC

### 14:00 – Development and assessment of water technologies in high rainfall mine sites

14:20 Johann Poinapen, *MWH Global, Australia*

### 14:20 – Estimation of project design rainfall using a frequency-pairing approach

14:40 Robert Millar, *Golder Associates, Canada*

### 14:40 – Evaluation of the performance of frequency and chronological pairing techniques in synthesizing long-term streamflow

15:00 Cameron Butt, *Knight Piésold, Canada*; Robert Millar, *University of British Columbia, Canada*

### 15:00 – Large scale mine dewatering: A comparison of experiences from different parts of the world

15:20 Richard Dixon, *Xylem Water Solutions, Chile*

15:20 – 15:50 | COFFEE BREAK

### 15:50 – Biogeometallurgical characterization of ore deposits – a new approach to sustainability in mining

16:10 Bernhard Dold and Leyla Weibel, *Universidad de Chile*

### 16:10 – An assessment of the effects of scale and season on release rates from waste rock at the Antamina Mine site, Peru

16:30 Roger Beckie, *University of British Columbia, Canada*

### 16:30 – Successful application of geochemical management for waste segregation to construct the Antamina Tailings Dam

16:50 Bevin Harrison and Roberto Manrique, *Compañía Minera Antamina, Peru*

### 16:50 – Case history: The use of geomembrane and operational controls on the Antamina tailings dam

17:10 Roberto Manrique, *Compañía Minera Antamina, Peru*; Andy Haynes, *Golder Associates*

### 17:10 – How to complete a hydrogeological evaluation for a mining area characterized by the presence of karst

17:30 Cristian Bittencourt and John Pottie, *Compañía Minera Antamina, Peru*

### SESSION 2 – COLD

Chair: Jim Cassie, *BGC Engineering, Canada*  
SAN MARTIN BALLROOM DEF

### 14:00 – Hydrological contribution from degrading permafrost and rock glaciers in the Northern Argentinean Andes

14:20 Lukas Arenson, Matthias Jakob and Pablo Wainstein, *BGC Engineering, Canada*

### 14:20 – A method for deriving sub-permafrost groundwater salinity and total dissolved solids

14:40 Juliana Martin and Cameron Clayton, *Golder Associates, Canada*; Brent Murphy, *Seabridge Gold, Canada*

### 14:40 – Frozen dams in permafrost regions

15:00 Megan Miller, John Kurylo and Maritz Rykaart, *SRK Consulting, Canada*

### 15:00 – Mine waste cover and water management upgrades in the Subarctic North

Dustin Rainey, *Yukon Government, Canada*; Jim Cassie, Gerry Ferris, Jeremy Valeriotte and June Pollard, *BGC Engineering, Canada*

### SESSION 3 – GEOCHEMISTRY AND ANTIMINA

Susan Knoerr, *Compañía Minera Antamina, Peru*  
SAN MARTIN BALLROOM (JOINT)

18:00 – 20:00 | WELCOME RECEPTION IN THE TRADE SHOW AREA

## DAY 2 – HYDROGEOLOGY AND DRY

08:30 – | **Opening session and keynotes**  
10:30

Chair: Andy Robertson, *InfoMine and Robertson GeoConsultants, Canada*

08:30 – | **OPENING ADDRESS – The challenge of water in Peru**  
09:30

Pedro Pablo Kuczynski, *Economist, former Minister of Energy and Mines, former Minister of Economy and former presidential candidate, Peru*

09:30 – | **KEYNOTE HYDROGEOLOGY 1 – Challenges of karst hydrogeology from around the world with focus on mining**  
10:00

Neven Kresic, *AMEC, USA*

10:00 – | **KEYNOTE HYDROGEOLOGY 2 – Hydrogeological evaluation of mine waste facilities in high-mountain karst terrain in Peru**  
10:30

David Evans, *MWH, Peru*

10:30 – 11:10 | **COFFEE BREAK**

### PLENARY SESSION 2

Chair: Michael Jacobs, *Goldcorp, Canada*  
SAN MARTIN BALLROOM (JOINT)

11:10 – | **KEYNOTE DRY – Freeport's water management program**  
11:40

Tamara Johndrow, *Freeport McMoran Mining Company, USA*

11:40 – | **Mine dewatering in karst formations**  
12:10

Geoff Beale and Shane O'Neil, *Schlumberger Water Services, UK*; Cristian Bittencourt, *Compañía Minera Antamina, Peru*; Jeremy Dowling, *Schlumberger Water Services, UK*. Presented by Mark Thomasson, *Schlumberger Water Services, USA*

12:10 – | **Enviably water recovery in a desert environment – a case study**  
12:40

James Obermeyer, *MWH Americas, USA*; Justo Enriquez, *Sociedad Minera Cerro Verde, Peru*; Tatyana Alexieva, *MWH Americas, USA*

12:40 – 14:00 | **LUNCH**



### SESSION 4 – HYDROGEOLOGY

Chair: Jerry Rowe, *Hatch, Canada*  
SAN MARTIN BALLROOM ABC

14:00 – | **Engineering in karst terrain**  
14:20

Petar Milanović, *International Association of Hydrogeologists (Serbian Chapter), Serbia*

14:20 – | **Design of a dewatering system for a geothermally-influenced underground gold mine**  
14:40

Roman Popielak, Joanna Moreno and Arlen Striegl, *Golder Associates, USA*

14:40 – | **Water balance in extreme conditions: Application to the Andean High Cordillera**  
15:00

Jordan Clark and Jordi Guimerà, *Amphos 21 Consulting, Chile*

15:00 – | **Joint use of natural and artificial tracers to determine infiltration process and the hydrogeological functioning of Villanueva del Rosario karst system (Southern Spain)**  
15:20

Matías Mudarra-Martínez and Bartolomé Andreo-Navarro, *University of Malaga, Spain*

15:20 – 15:50 | **COFFEE BREAK**

### SESSION 6 – HYDROGEOLOGY

Chair: Todd Keay, *Montgomery & Associates Consultores, Peru*  
SAN MARTIN BALLROOM ABC

15:50 – | **Hydraulic conductivity characterization of fractured rock at mine sites**  
16:10

James Kunkel, *Knight Piésold, USA*

16:10 – | **Simulation of open pit flooding by incorporating non-linear boundary conditions in 3D hydrogeological models**  
16:30

Salvador Jordana, Albert Nardi and Jorge Molinero, *Amphos 21 Consulting, Spain*

16:30 – | **Development and transient calibration of a numerical model for an open pit mine located in a geologically complex fractured rock setting**  
16:50

Mark Thomasson, *Schlumberger Water Services, USA*; Lyle Davis, *Montgomery & Associates, USA*

16:50 – | **Installation of infiltration gallery at Greens Creek Mine – Juneau, Alaska**  
17:10

Thomas Hanna, *Johnson Screens, USA*; Eric Sundberg and Gabriel Hayden, *Greens Creek Mine, USA*

### SESSION 5 – DRY

Chair: James Obermeyer, *MWH, USA*  
SAN MARTIN BALLROOM DEF

14:00 – | **Addressing complexity in water resources modeling for mining water supply in extremely dry areas**  
14:20

Enrique Triana and Edwin "Chip" Paulson, *MWH Americas, USA*

14:20 – | **Dust mitigation – challenges, technology and solutions**  
14:40

Jennifer Brown, *GE Power & Water, USA*; Lisandro Palma, *GE Power & Water, Chile*

14:40 – | **Sewage water reuse: A contribution to water consumption on sites with extreme thermal conditions**  
15:00

Raúl Marino, Roberto Caso, Oscar Sagardía and Osvaldo Falcon, *Minera Argentina Gold, Barrick Veladero, Argentina*

15:00 – | **Defining the financial value of mine water security decisions in an arid multi-user basin**  
15:20

Edwin G. (Chip) Paulson, Enrique Triana, John Chahbandour and Pranay Sanadhya, *MWH Americas, USA*

### SESSION 7 – DRY

Chair: Jacques Wiertz, *Universidad de Chile*  
SAN MARTIN BALLROOM DEF

15:50 – | **Challenges in tailings water balance analysis – make-up water, seepage and consolidation**  
16:10

Christoph Wels and Jack Caldwell, *Robertson GeoConsultants, Canada*

16:10 – | **Laboratory assessment of water losses from drying and re-saturation of tailings deposits for mines in arid climates**  
16:30

Eduardo Salfate, *Golder Associates, Canada*; Marcos Pinto, *Golder Associates, Chile*

16:30 – | **Mine water management at Southern Peru Copper: A case study in an extremely arid environment**  
16:50

Jose De Piérola, *Southern Peru Copper Corporation, Peru*

16:50 – | **Research on a polymer enhanced mineral liner – a special focus on desiccation behaviour**  
17:10

Mike Naismith, *Trisoplast® Mineral Liners, The Netherlands*; Wolfgang Behrens and Jan Schröder, *G quadrat Geokunststoffgesellschaft mbH, Germany*. Presented by Eugene Timmermans, *Trisoplast® Mineral Liners, The Netherlands*

17:10 – | **IDE expertise on economical and environmentally friendly desalination solutions for SWRO projects**  
17:30

Orlando Carreño, *IDE Technologies, USA*

19:30 – 22:30 | **GALA DINNER AT HUACA PUCLLANA**

# DAY 3 – GEOCHEMISTRY AND MIXED

## KEYNOTE AND PLENARY SESSION

Chair: Cynthia Parnow, *Newmont, Peru*  
SAN MARTIN BALLROOM (JOINT)

- 09:00 – 09:30** | Keynote MIXED. Climate change: Insights to extremes in precipitation for mining activities  
Edward McBean, *University of Guelph, Canada*
- 09:30 – 10:00** | Acid drainage in Antarctica  
Bernhard Dold, *Sustainable Mining Research & Consult EIRL (SUMIRCO EIRL), Chile*
- 10:00 – 10:30** | The geochemical field barrel program developed to support waste planning, engineering and permitting needs at the Cerro Corona Mine, Peru  
Shannon Shaw, *pHase Geochemistry, Canada*; Julian Misiewicz, *Gold Fields, UK*; Laura Gutierrez and Luis Alberto Sanchez, *Gold Fields La Cima, Peru*

### 10:30 – 11:10 | COFFEE BREAK

## SESSION 8 – MIXED

Chair: Mario Villavisencio, *Knight Piésold, Peru*  
SAN MARTIN BALLROOM ABC

- 11:10 – 11:30** | Water supply in Peru and Chile -- the challenges and the solutions  
Doris Hiam-Galvez, *Hatch, Canada*

- 11:30 – 11:50** | Extreme events in non-stationary climatic conditions  
Carmen Bernedo, *MWH Americas, USA*; Jose Salas, *Colorado State University, USA*

- 11:50 – 12:10** | Geotest®: Field geochemical cells for on-site acid mine drainage monitoring  
M. Carolina Soto, *May-Lin Almendras and Natalia Farfán, Fundación Chile, Chile*; Alberto Acuña, *Compañía Minera Doña Inés de Collahuasi, Chile*

- 12:10 – 12:30** | Effluent treatment of flotation plants for water reuse  
Luiz Teixeira, *PUC-Rio and Peróxidos do Brasil, Brazil*; Cristian Marquez S., *Quimtia, Peru*

## SESSION 9 – GEOCHEMISTRY

Chair: Javier Torrealva, *Golder Associates, Peru*  
SAN MARTIN BALLROOM DEF

- 11:10 – 11:30** | Water management at the Navachab Gold Mine, Namibia, in the period 2000-2012 with a focus on groundwater chemistry  
Nick Steven, *Rockwater Consulting, South Africa*; Marietjie Bell and Uwe Rentel, *Navachab Gold Mine, Namibia*; Bruce Eglington, *University of Saskatchewan, Canada*; Jodie Miller, *University of Stellenbosch, South Africa*

- 11:30 – 11:50** | Wastewater treatment of high total dissolved solids and acidity at the Cerro de Pasco mine site  
Tom Rutkowski, *Melissa Rhodes, Jessa Smith and Kevin Conroy, Golder Associates, USA*; Mike Bratty, *Golder Associates, Canada*; Miguel Cortes, *Golder Associates, Peru*

- 11:50 – 12:10** | Long-term impact of acid mine drainage at the Smolnik pyrite mine on surface water chemistry  
Peter Bajtoš, *Peter Malík and Jaromír Švasta, Slovak Geological Survey, Slovakia*

- 12:10 – 12:30** | Application of membrane distillation and solvent extraction for water and acid recovery from waste solution  
Uchenna Kesieme, *Victoria University and CSIRO Minerals Down Under National Flagship, Australia*; Mikel Duke, *Nicholas Milne and Hal Aral, Victoria University, Australia*; Chu Yong Cheng, *CSIRO Minerals Down Under National Flagship, Australia*

### 12:30 – 14:00 | LUNCH

## SESSION 10 – MIXED

Chair: Miguel Wong, *Barr Engineering, USA*  
SAN MARTIN BALLROOM ABC

- 14:00 – 14:20** | General guidelines for designing stormwater retention ponds in the mining industry  
José Adriasola V., *Bechtel Chile*; Jorge Gironás, *P. Universidad Católica de Chile*

- 14:20 – 14:40** | Modeling coupled hydro-geomechanical-geochemical behaviour of leaching pads  
Mayu Tincopa, *Albert Nardi, Gabriela Roman-Ross, Jorge Molinero and David Arcos, Ampos 21 Consulting, Spain*; Eduardo Ruiz, *Amphos 21 Consulting, Peru*; Denys Parra, *Anddes Asociados, Peru*

- 14:40 – 15:00** | Thermal performance of a lined tailings dam keyed into a permafrost foundation  
Peter Mikes, *SRK Consulting, Canada*; Jack Seto, *BGC Engineering, Canada*; Don Hayley, *EBA, a Tetra Tech Company, Canada*; Cam Scott, *SRK Consulting, Canada*

- 15:00 – 15:20** | Geodynamic phenomena induced by mining in gypsum karst area near Spišská Nová Ves, Slovakia  
Peter Bajtoš, *Peter Malík and Radovan Černák, Slovak Geological Survey, Slovakia*

### 15:20 – 15:50 | COFFEE BREAK

## SESSION 12 – MIXED

Chair: Raúl Ortiz, *MWH, Peru*  
SAN MARTIN BALLROOM ABC

- 15:50 – 16:10** | Hydraulic impacts on the performance of permeable reactive barrier. Aznalcollar case, Spain  
Jose Bolzicco, *MWH, Peru*; Carlos Ayora and Tobias Rötting, *Institute of Earth Sciences Jaume Almera, Spain*; Jesús Carrera, *Technical University of Catalonia, Spain*

- 16:10 – 16:30** | Cleaning regime for reverse osmosis membranes for feed water with high silica concentration  
Christian Dube, *Hatch Water Services, Australia*

- 16:30 – 16:50** | Mine water management strategies in dry areas of Chile  
Mohammed Abdul Samad and Sumeet Singh, *Beroe Inc, India*

- 16:50 – 17:10** | Remediation of environmental impact of acidic dams of mines through membrane process  
Renato G. Ramos and Omar Cunha, *Dow Brasil, Brazil*; Fabio W. Rodrigues, *W.S. Filho and M.D.A. Ribeiro, INB, Brazil*

## SESSION 11 – GEOCHEMISTRY

Chair: John Pottie, *Compañía Minera Antamina, Peru*  
SAN MARTIN BALLROOM DEF

- 14:00 – 14:20** | Extremely arsenic-rich, pH-neutral waters from the Giant Mine, Canada  
Heather Jamieson and Mackenzie Bromstad, *Queen's University, Canada*; D. Kirk Nordstrom, *United States Geological Survey, USA*. Presented by Shannon Shaw, *pHase Geochemistry, Canada*

- 14:20 – 14:40** | Breach and decant of an acid mine lake by a eutrophic river: River water quality and limitations of use  
Clint D. McCullough, *Golder Associates and Mine Water & Environment Research Centre, Edith Cowan University, Australia*; Elmién Ballot and Digby Short, *Premier Coal, Australia*

- 14:40 – 15:00** | Denitrification in a sawdust – sewage sludge barrier system in northern Sweden for mine water treatment  
Roger Herbert, *Uppsala University, Sweden*; Harry Winbjörk, *LKAB, Sweden*

- 15:00 – 15:20** | Passive treatment of mining wastewater with a biochemical reactor at the standard mine superfund site, Crested Butte, CO, USA  
Neal Gallagher, *Eric Blumenstein and Thomas Rutkowski, Golder Associates, USA*

## SESSION 13 – GEOCHEMISTRY

Chair: Fabiola Sifuentes, *Compañía Minera Antamina, Peru*  
SAN MARTIN BALLROOM DEF

- 15:50 – 16:10** | Acid mine drainage from Pan de Azúcar Mine (Pb-Ag-Zn) and a possible arsenic input, Northwest Argentina  
Jessica Murray and Alicia Kirschbaum, *Instituto de Bio y Geo Ciencias del Noa (Conicet-UNSa), Museo de Ciencias Naturales, Argentina*; Bernhard Dold, *Universidad de Chile*

- 16:10 – 16:30** | Mine rock drainage: From characterization to assessment of prevention alternatives  
David Arcos, *Amphos 21 Consulting, Spain*; Eduardo Ruiz, *Amphos 21 Consulting, Peru*; Wolf von Igel, *Amphos 21 Consulting, Chile*; Jorge Molinero, *Amphos 21 Consulting, Spain*; Jordi Guimerà, *Amphos 21 Consulting, Chile*

- 16:30 – 16:50** | Development of a hydrogeochemical model to support closure of tailings facilities at hyperarid mine sites  
Ryan Jakubowski, *MWH, Peru*; Cary Foulk, *MWH, USA*

- 16:50 – 17:10** | DAZA: Chilean National Program for the Integrated Management of Acid Rock Drainage in arid and semiarid zones  
M. Carolina Soto, *Angela Oblasser, May-Lin Almendras and Natalia Farfán, Fundación Chile, Chile*