Short Course

NAME OF SHORT COURSE:	**Cover System Design for Mine Closure**
DATE:	Sunday, September 18, 2011
TIME:	8:30 am – 4:30 pm
LOCATION:	**Fairmont Chateau Lake Louise - Beehive/Lakeshore Room**
REGISTRATION FEE:	$500 (CDN)
FACILITATED BY:	*Dr. G. Ward Wilson, Dr. Bjorn Weeks, Dr. Ben Wickland and Dr. Fernando Junquiera*
LANGUAGE:	English

SHORT COURSE DESCRIPTION:

A one-day workshop on cover design for mining waste, incorporating recent experience in the closure of hard rock mine sites as well as oil sands projects, and applications for both tailings and waste rock.

The workshop will provide an overview on the state of the art in cover design, including examples of long-term studies and lessons learned from existing studies, with a focus on the modes of failure (or performance changes) that can affect covers.

The course will also provide an overview of design protocols for covers, including how to establish realistic design goals. The course will also include modules on using numerical models as practical design tools, and on instrumentation and monitoring for laboratory tests and test plots. Throughout the course, the focus will be on practical applications, and incorporating the best available knowledge into cost-effective applications for industry.

Each module of the workshop will include an interactive question-and-answer session, providing an opportunity for the interchange of experience and information.

Module 1: State of the Art for Soil Cover Systems
Module 2: Theory of Soil Covers: Cover Types, Saturated and Unsaturated Fluxes
Module 3: From Theory to Design: Water Balance, Selecting Design Criteria, Cost Considerations
Module 4: Practical Design Tools: Making Numerical Models Reflect Reality
Module 5: Monitoring And Performance
Module 6: Failures and Faults: Learning from Experience

SHORT COURSE OBJECTIVES:

To provide a solid basis on the design of covers for mine closure, covering both theoretical and practical considerations.

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TARGET AUDIENCE: (IE. WHO SHOULD ATTEND)

Anyone with an interest in the design of covers, including industry professionals, consultants, and regulators.

ABOUT THE FACILITATORS:

DR. G. WARD WILSON, P.ENG, P.GEO

Dr. Wilson has just arrived at the University of Alberta from the University of British Columbia where he was Professor and Chair of Mining and the Environment. Professor Wilson brings over 25 years of industrial experience to his practice in advanced mine waste management. He has extensive work experience as a consulting engineer and has maintained a strong industrial focus through his research programs at the University. Dr. Wilson is involved in mine waste management systems for numerous sites world wide and serves as both a researcher and specialist consultant to several large international mining companies.

Dr. Wilson has developed extensive programs in soil cover systems for mine waste closure. He led the development of the comprehensive numerical model 'Soil Cover' (under the Canadian MEND program) for the prediction of soil cover performance. More recently, Dr. Wilson is involved in several new and innovative research programs. These include funded programs for the de-watering mine tailings to reduce long-term liabilities associated with fluid containment and to move mine waste management practices from wet tailings to dry landscapes.

DR. BJÖRN WEEKS, P.ENG

Dr. Weeks is the General Manager of the Engineering Group for Golder Santiago's office, and an Associate with Golder Associates. He is the Mine Closure professional practice group leader for Golder in South America, and has been the Project Manager for the development of conceptual and detailed closure plans for a number of major mine sites throughout the continent, including Cerro Colorado, Collahuasi, Cerro Vanguardia, Las Bambas, and Antapaccay, and has provided review and/or direction for closure planning at other sites such as Veladero, Alto Chicama, Lomos Bayas, and Pucamarca. He has been involved in the development of manuals used by Sernageomin (the national mining ministry in Chile) for the evaluation and remediation of closed and abandoned mine sites, and has led training courses on site remediation for mining ministry staff. Dr. Weeks completed his Ph.D. in Mining Engineering, with a focus on earth-atmosphere interactions for mine waste covers, and the impacts of slopes on cover performance.

DR. FERNANDO JUNQUIERA, P.ENG

Dr Junqueira is a senior engineer in the Mining Division of Golder Associates in Vancouver. He is directly involved in planning and execution phases of mining projects associated with mine closure and mine waste management in Canada, the US, Portugal, Brazil, Peru and Argentina. His experience was gained through works developed in several projects and institutions in the past 18 years. Before joining Golder in 2005, Dr. Junqueira worked as a Post Doctoral research fellow in the Department of Mining Engineering at the University of British Columbia, where he was involved in projects related with cover design, laboratory and field investigations, as well as development of advanced numerical models for cover system purposes.

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DR. BEN WICKLAND, P.ENG

Dr. Wickland is a civil/geotechnical engineer with a background in biology and a Ph.D. Thesis on mine waste disposal. Dr. Wickland has worked as a consultant in the mining industry for 12 years, during which time he co-authored "Prevention and Mitigation" Chapter 6, of the Global Acid Rock Drainage (GARD) Guide. His recent experience has included design of cover systems in Northern Canada and innovative concepts for mine waste disposal in Canada's oil sands as well as hard rock mine wastes in Europe and South America. Dr. Wickland currently consults with Golder Associates' Mine Waste Management Group, Burnaby, BC, Canada.

AGENDA		
TIME	**TOPIC**	**INSTRUCTOR**
08:30	Course Introduction	Dr. Weeks
09:15	**Module 1**: State of the Art for Soil Cover Systems	Dr. Wilson
10:15	**Module 2**: Theory of Soil Covers: Cover Types, Saturated and Unsaturated Fluxes	Dr. Wilson
11:00	**Module 3**: From Theory to Design: Water Balance, Selecting Design Criteria, Cost Considerations	Dr. Wickland
12:00	Lunch	
13:00	**Module 4**: Practical Design Tools: Making Numerical Models Reflect Reality	Dr. Junqueira
14:00	**Module 5**: Monitoring And Performance	Drs. Junquiera and Wickland
15:00	**Module 6**: Failures and Faults: Learning from Experience	Drs. Weeks and Wilson
16:30	Course Closure	Dr. Weeks

EQUIPMENT REQUIRED:

No special equipment needed

MATERIALS PROVIDED: (IE. COPIES OF PPT PRESENTATION, COURSE BINDER)

Each participant will be provided with a binder containing course materials and space for taking notes.