



Keystone Center Dialogue on the
Potential Development of the Pebble Mine

Independent Science Panel Bios
Geology/Geochemistry and Hydrology/Water Quality
October 2-4, 2012

Geology/Geochemistry Panel



Tom Al – University of New Brunswick

Tom Al is a professor in the Earth Sciences Department at the University of New Brunswick. His current research interests include understanding the nature of reactions that control the concentrations and transport of inorganic species in groundwater. This involves aqueous geochemistry, mineralogy and hydrogeology. Research in groundwater settings includes: geochemical and hydrological studies of mine tailings and waste rock; the release to groundwater and transport of inorganic species from weathered mineral deposits; and the fate of manganese and trace elements in DNAPL (dense nonaqueous-phase liquids) contaminated groundwater systems treated by in situ injection of potassium permanganate. Current interests also include understanding the effects of groundwater geochemistry and solute-transport on the integrity of deep geological repositories for long-term storage of radioactive waste.

Dr. Al holds BS and MS degrees in Earth Science for the Memorial University of Newfoundland and a PhD in Earth Sciences from the University of Waterloo.

A list of his publications may be found at:

<http://www.unb.ca/fredericton/science/geology/faculty/TAL.php>



Steve McNutt – University of South Florida

Steve McNutt is Professor of Geology at the University of South Florida. He was formerly a volcano seismologist for the Alaska Volcano Observatory's Geophysical Institute. Steve's research interests include studies of source and propagation effects for volcanic tremor, low-frequency events, and explosion earthquakes; volcanic hazards assessments in Alaska, California, and Central America; and the mechanical behavior of volcanoes, including periodicity of eruptions, and the effects of earth tides, sea level variations, tectonic stresses on triggering eruptive activity and volcanic lightning; and development of new air-deployable seismometers for use in otherwise inaccessible areas. Since July 1999 he has served as Secretary-General for the International Association of Volcanology and Chemistry of the Earth's Interior.

Dr. McNutt holds M.S. and Ph.D degrees from Columbia University. A complete list of his publications can be found at: <http://www.aeic.alaska.edu/Input/steve/publications.html>



Jeremy Richards University of Alberta

Jeremy Richards is a Professor of economic geology at the University of Alberta, Canada, and is a registered professional geologist in Alberta. Jeremy's research interests and activity have focused on the genesis of hydrothermal mineral deposits and sustainable development. Within this field his interests cover aspects as diverse as regional tectonic and magmatic controls on mineralization, volcanology, and detailed ore depositional mechanisms. His current research involves the study of regional controls on porphyry copper and polymetallic epithermal mineralization in northern Chile, Argentina, Iran, and Turkey. In parallel with these studies, Dr. Richards is pursuing research in sustainable development as applied to the minerals industry, and, with his students, has conducted case studies in Alberta, Vietnam, Romania, and Nunavut.

Dr. Richards has served on committees for the Society of Economic Geologists, the Geological Association of Canada, the Geological Society of the Canadian Institute of Mining and Metallurgy, the Geological Society of America, and the Mineral Deposits Studies Group (UK). He has served as editor for professional journals and is a recipient of the Geological Association of Canada's Hutchison Medal.

He received B.A. and M.A. degrees from Cambridge University, UK, a M.Sc. from the University of Toronto, and a Ph.D. from the Australian National University. A list of Dr. Richard's publications can be found at: <http://easweb.eas.ualberta.ca/page/directory/?person=Richi>



Chris Waythomas – Alaska Volcano Observatory

Chris Waythomas is a geologist with the US Geological Survey's Alaska Volcano Observatory. He is currently project chief for the USGS Water Resources Division program on Hydrologic Hazards and Processes. Areas of expertise are geomorphology, hydrology, and quaternary geology. Current investigations and research activities include hydrologic hazard assessments at Alaska volcanoes, volcano-glacier interactions and the generation of floods and lahars, and holocene geomorphic history of Alaska volcanoes. He is presently working at Aniakchak Caldera, Adak Island, Mt. Spurr, and Mt. Redoubt.

Dr. Waythomas has a Ph.D. from the University of Colorado and has worked for USGS for 24 years and has 34 years' experience in Alaska. A list of his publications may be found at: <http://www.avo.alaska.edu/about/staff.php?dirid=36#>

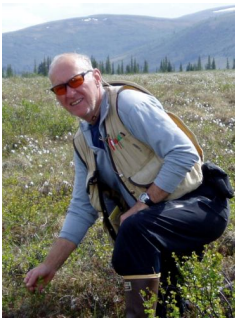
Hydrology and Water Quality Panel



Katie Walton-Day – US Geological Survey

Katie Walton-Day is a Research Hydrologist and Water Quality Specialist for the USGS Colorado Water Science Center, Denver, Colorado. Her primary research area has been hydrologic and geochemical processes affecting metal mobility in wetlands, streams, and groundwater affected by acid mine drainage. She has been actively involved with developing and applying models, isotopes, and organic matter reactions to the interpretation of metal mobility in the aquatic environment. She has co-authored 60 papers, organized several symposia, and is a member of the International Mine Water Association, the International Association of Geochemistry and Cosmochemistry, the Geological Society of America, and the American Geophysical Union. Katie has made presentations to U.S. Congressional Staffers on conditions at Superfund mine sites and to the Colorado Legislative Forum on Colorado water-quality issues.

Dr. Walton-Day has a B.A. in Geology from Smith College, a M.S. and Ph.D. from the Colorado School of Mines in Geology with a minor in Geochemistry. A list of Dr. Walton-Day's publications can be found at: <http://co.water.usgs.gov/cgi-bin/pubs?keyword=&author=walton-day&date=&date1=&date2=&series=All>



Larry Gough – US Geological Survey

Larry Gough is an emeritus Research Botanist with the U.S. Geological Survey in Reston, Virginia. His research includes scientific studies in the fields of plant ecology, biogeochemistry, soil geochemistry, mined-land reclamation, pre-mining geochemical baselines, and the relation between landscape geochemistry and human and animal health. He has worked and published in the arid desert, sub-tropics, savanna, Great Plains, mid- and high-latitude mountains, and the Arctic. Fields of specialization include regional biogeochemical studies of native, agricultural,

and disturbed lands including areas impacted by metal contamination, industrial emissions, and mining-related drainage.

Dr. Gough has worked and published in Alaska for over 30 years. He has collaborated with a number of foreign agencies including the Central Arid Zone Research Institute, India; the Geological Survey of Norway; the National Geological Survey of Germany; and the Institute of Soil Science and Plant Cultivation, Poland. He has a Ph.D. in terrestrial plant ecology from the University of Colorado.

A list of Dr. Gough's publications can be found at:

http://pubs.er.usgs.gov/#search:advance/page=1/page_size=100/auth_first=Larry/auth_last=Gough:0



Dr. Tom Myers – Consultant

Dr. Tom Myers is a researcher and consultant in hydrogeology and water resources. Tom specializes in groundwater modeling, hydrogeology, environmental forensics, regulatory compliance, water rights, NEPA analysis, and environmental and water policy. He focuses on mining and water resource development issues and on groundwater contamination.

With more than 24 years experience as a consultant, government planner, academic researcher, teacher and advocate for environmental responsibility and good science, Tom brings a strong technical, regulatory, and public relations background to his work. His work includes major hydrology studies for the federal government, expert reports for use in litigation and administrative hearings, expert witnessing for private industry and nonprofit groups, and testimony to Congress and National Academy of Science. Tom has testified as an expert before the Nevada State Engineer and State Environmental Commission. He has provided evidentiary testimony before federal court in Billings, Montana.

Dr. Myers has M.S. and Ph.D. degrees in hydrology/hydrogeology from the University of Nevada. A list of Dr. Myer's publications can be found at:

<http://water.nv.gov/hearings/past/dry/browseable/exhibits/ACE/Initial%20Evidentiary%20Exchange/Exhibit%201102.pdf>.