

**STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION**

IN THE MATTER OF:)
)
PROPOSED AMENDMENT TO)
PART 20.6.2 NMAC - COPPER RULE)
_____)

No. WQCC 12-01(R)

**AMIGOS BRAVOS' NOTICE OF INTENT
TO PRESENT REBUTTAL TECHNICAL TESTIMONY**

Amigos Bravos files this Notice of Intent to Present Rebuttal Technical Testimony pursuant to the Procedural Order issued November 26, 2012 in this matter.

1. Entity for Whom the witness will testify: Amigos Bravos, Inc., a New Mexico non-profit river conservation organization.

2. Technical Witness: Dr. Kathleen Garland may be called by Amigo Bravos as a rebuttal witness. Dr. Garland is rebutting the testimony of FMI witnesses Jim Finley, Michael Grass and James Scott on the use of liner technologies for heap leach operations and tailings ponds.

Dr. Garland is a professor in the Environmental Management Program at the University of Houston Clear Lake in Houston, Texas, where she teaches environmental impact assessment, environmental risk management, contaminated site management, and a number of other topics. Dr. Garland holds a PhD in Structural Geology from Penn State University. She worked at the New Mexico Environment Department in the Underground Storage Tank Bureau from 1992-1994 and was the Director of the Mining and Minerals Division of the Energy Minerals and Natural Resources Department from 1995-1998 under former Governor Gary Johnson. From 1999-2000, she consulted for Environet, Inc., a small firm in Phoenix, Arizona, on a number of permitting and water issues for various mining clients in Arizona, New Mexico, and Texas. In 2000, she started her own consulting practice in strategic management and technical

communications until she joined the faculty at University of Houston Clear Lake in 2005.

Curriculum Vitae for Dr. Garland is attached as AB Ex. 5.

3. Testimony: Rebuttal testimony of Dr. Garland is attached as AB Ex. 6.

4. Text for Recommended Modifications: None proposed in Rebuttal.

5. Exhibits: Amigos Bravos Exhibits 5-6 (“AB Ex. 5-6”) are attached.

Exhibit 5: Curriculum Vitae of Dr. Kathleen Garland

Exhibit 6: Direct Testimony of Dr. Kathleen Garland

6. Opposition of Proposed Changes:

a. NMED Amended Petition. Amigos Bravos opposes the proposed changes filed by the New Mexico Environment Department in its February 18, 2013 Amended Petition, because NMED did not support any of these changes in its testimony filed on February 22, 2013. NMED did not explain the need for or reasoning behind any of the changes.

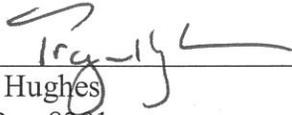
b. FMI Section 20.6.7.23.A(1)(c). Amigos Bravos opposes the proposed rule amendment to Section 20.6.7.23.A(1)(c) offered by Freeport McMoRan, Inc., because the amended language is vague and defeats the meaning in entire subsection. For example, it cannot be determined whether soil or groundwater contamination has or will occur even if the soil is “timely” removed.

c. FMI Section 20.6.7.33.B. Amigos Bravos opposes the proposed rule amendment to Section 20.6.7.33.B Alternative 1 and 2 offered by FMI, because the original language is important to ensure safety of slope stability for protection of water quality and undue risk to property.

7. Reservation of Rights: Amigos Bravos specifically reserves the right to call additional witnesses or introduce additional exhibits in response to the testimony and witnesses presented at hearing.

Respectfully submitted:

HIGH DESERT ENERGY + ENVIRONMENT LAW
PARTNERS, LLC

By: 
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Attorney for Amigos Bravos

CERTIFICATE OF SERVICE

I hereby certify that on March 15, 2013 I sent Amigos Bravos' Notice of Intent to Present Rebuttal Technical Testimony by email to the following:

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Tracy Hughes

KATHLEEN A. GARLAND

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EDUCATION

Penn State University
Ph.D. Geology 1989
The Origin, Emplacement, and Deformation of the Crete de la Taillante Oceanic Complex, Queyras, Western French Alps.

L'Université de Bretagne Occidentale
Diplôme des Etudes Approfondies Océanologie et Géodynamique 1984
Preliminary Geological Map of the Crete de la Taillante, Queyras, Western French Alps
Mention: très bien

Penn State University
B.A. General Arts and Sciences/B.S. Earth Science, summa cum laude 1982
Bachelor's Thesis: The Origin of the Spring Line on Tussey Ridge, Centre County, PA

AWARDS

Two-time Graduate School Fellow, Bourse Chateaubriand (French Gov. Fellowship), and graduate teaching awards. 1982 – 1989
Phi Beta Kappa, Phi Kappa Phi, National Merit Scholarship, Gulf Scholarship, Penn State Alumni Memorial Scholarship 1977 – 1982

TEACHING EXPERIENCE

University of Houston-Clear Lake
Lecturer, Environmental Management Program, School of Business 2009-present
Courses taught include: environmental assessment, environmental risk management, managing contaminated sites, graduate seminar in environmental management practices, undergraduate foundations course, and pollution control technology for undergraduates. Service: Academic Honesty Council, Sustainability Club Sponsor, Faculty Representative to the Student Conference for Research and the Creative Arts

Participating Adjunct, Environmental Management Program, School of Business 2005-2009
Developed new syllabi and course materials, both face-to-face and online, for topics including: US and international environmental assessment statutes and processes, social and cultural issues in environmental management, risk assessment, case studies in large-scale environmental problems, analyzing and solving multidisciplinary environmental problems, quantitative methods in environmental management.

PROFESSIONAL EXPERIENCE

Syntactics
Sole proprietor 2000 – 2003
Established consulting practice in language arts, communication strategies, and special environmental projects. Projects include: litigation support and preparation of jury presentations; communications management for engineering firm; design of inventory control system for remedial equipment at State of NM; business development consulting and production of publications for small businesses; economic development assistance for City of Espanola; Storm Water compliance for smaller cities; environmental compliance for schools; and others

Environet, Inc.
Senior Environmental Project Manager 1998 – 2000
Permit team leader for several mining projects in Arizona, New Mexico, and Texas, working with NEPA, Endangered Species, NHPA, Clean Water Act, Clean Air Act, RCRA, CERCLA, and TNRCC regulations; project leader and report author for multi-contractor team on USAID project on mining in the Andes; regulatory liaison with TNRCC, USFS, BLM, USFW, and EPA; Acid Rock Drainage Specialist

NM Energy, Minerals and Nat. Resources Dept.
Director, Mining and Minerals Division 1995-1998
Led division of state government that regulates mining and mine reclamation. Oversaw four programs, 38 staff, \$3.7 million budget. Implemented newly developed state mining regulations; presiding officer at numerous evidentiary and public hearings on permit matters; department

lobbyist to State legislature on mining issues; trained as mediator for employee and community conflicts

NM Environment Department

Manager, UST Reimbursement Program

1993-1995

Created new program to manage and process reimbursement claims for remediation of contamination from leaking underground storage tanks. Hired and trained 7 staff. Reduced paperwork by 70%. Conducted internal audit of claims, resulting in \$80,000 in reclaimed costs.

Project Manager, UST Bureau

1992-1993

Case manager for 36 contamination sites regulated under state-delegated RCRA program. Provided technical and regulatory advice and assistance to landowners with contaminated sites. Reviewed and responded to consultant reports on investigation and remediation of sites. Advised legal and inspection sections on enforcement actions, site conditions, and preferred courses of action.

Chevron, USA

Development Geologist

1988-1992

Developed new prospects for increasing production in existing oil fields, including new wells and workovers of existing wells. Conducted offshore well logging oversight. Assisted with information gathering and organization for sale of fields. Conducted research into log responses in unusual sedimentation conditions.

SELECTED SPECIALIZED TRAINING

Basic Conflict Resolution (40-hr): NM Energy and Minerals, 1996
 Advanced Mediation (40-hr): NM Energy and Minerals, 1997
 Family Mediation (20-hr): Center for Dispute Resolution, Santa Fe, NM, 1997
 Language of Mediation (8-hr): Bernalillo Co. Metro Court, 1998
 Reconciliation and Peacemaking (8-hr): Bernalillo Co. Metro Court, 1998
 EPA Storm Water Compliance for Small Communities (20hr), New Orleans, 1999
 Professional Geologist Nonresident License, British Columbia, 1999-2001
 Coastal Community Resilience Index Facilitator Certification Training, Biloxi, MS, Feb. 2011
 Introduction to Green Engineering for NASA (20-hr); Stennis Space Center, MS, January 2012

RESEARCH GRANTS

2012 Faculty Research Support Award for continued resilience research on the Upper Texas Coast. Grant supported one RA.
2011 Faculty Support Research Award for continued resilience research on the Upper Texas Coast. Grant supported one RA.
2010-11 Co-PI on research grant from Environmental Institute of Houston (EIH) to create a Community Resilience Handbook for the Upper TX Gulf Coast. Grant supported one RA.
2007-8 Co-PI on research grant from Environmental Institute of Houston (EIH) to research and review TX and US certification structures for professional geologists. Grant supported one RA.
2005-6 Co-PI on grant from EIH to conducted research in the area of public participation in the NEPA process in Southeast Texas. Grant supported one RA.

PUBLICATIONS

Schmidt, Deanna, and Garland, K.A. "Bone Dry in Texas: Resilience to Drought on the Upper Texas Gulf Coast." Journal of Planning Literature, 2012 27(4), p. 434-435.

THESES COMMITTEES

Henry Busch Hodde, III: The Damage Assessment Process: Evaluating Coastal Damage Assessments in Texas after Hurricane Ike. Submitted December, 2012. K. Garland, Chair.

PRESENTATIONS

Garland, Kathleen A., Schmidt, D., and Hodde, H. B. "The Rapid Damage Assessment Process: Putting Together the Numbers after a Coastal Storm." Bays and Bayous Symposium 2012, Biloxi, MS, Nov. 14-16, 2012.*

Garland, Kathleen A., Schmidt, D., and Hodde, H. B. "The Social and Natural Sciences: Necessary Partners for Creating Resilient Coastal Communities." Western Social Sciences Assoc. 54th Annual Conference, Houston, TX, April 11-14, 2012.*

Schmidt*, Deanna, and Garland, K. A. "Resilience on the Upper Texas Gulf Coast: Coping with Insecure Water Supplies." Western Social Sciences Assoc. 54th Annual Conference, Houston, TX, April 11-14, 2012.

Hodde*, Henry B., Garland, K. A., and Schmidt, D. "Creating Resilient Coastal Communities." Western Social Sciences Assoc. 54th Annual Conference, Houston, TX, April 11-14, 2012.

Resilience Issues on the Upper Texas Coast. Panel Discussion, CZ 2011, Chicago, IL, July 2011. Convener: K. Garland

Garland, K. A., Gossett*, L. B. "Professional Geoscientist and Environmental Professional Licensing: Professionalism or Opportunism?" In Proceedings of the 2008 Annual NAEP/AEP Conference, San Diego, CA, March 2008.

Garland, K. A., Gossett, L. B., Hazur*, H. "Public Participation in the NEPA Process in Southeast Texas." In Proceedings of the 31st Annual Conference of the National Assoc. of Environmental Professionals, Albuquerque, NM, April 2006

*indicates presenter

LANGUAGES

English – Native language

French – Native speaker fluency

SELECTED MEMBERSHIPS AND LEADERSHIP POSITIONS

Texas Association of Environmental Professionals, Houston, TX (Board Member, 2007-2009)

Board Member, Northern New Mexico Citizens Advisory Board (CAB) to Los Alamos Nat'l Lab, Los Alamos, NM 2001-2002

State-wide Camp Director, Rotary Youth Leadership Award Program (Girls), New Mexico, 2000-2001

**STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION**

In the Matter of:

**PROPOSED AMENDMENT TO
PART 20.6.2 NMAC (Copper Rule)**

No. WQCC 12-01(R)

WRITTEN REBUTTAL TESTIMONY OF KATHLEEN A. GARLAND, PhD

My name is Kathleen A. Garland. I would like to thank the members of the New Mexico Water Quality Control Commission for giving me this opportunity to provide some clarifying testimony concerning the proposed Copper Mine Rule which is currently before you.

I am currently on the faculty at the University of Houston Clear Lake (“UHCL”), where I have been since 2005. My position is in the Environmental Management Program, an unusual degree program housed in the School of Business. Our program focuses on how we manage the interactions between human and natural systems. I teach environmental impact assessment, environmental risk management, contaminated site management, and a number of other topics. I hold a PhD in Structural Geology from Penn State University. After starting my career in oil and gas, I moved to Santa Fe in 1992 and joined the New Mexico Environment Department in the Underground Storage Tank Bureau where I worked until the end of 1994. From 1995-1998, I was the Director of the Mining and Minerals Division of the Energy Minerals and Natural Resources Department. From 1999-2000, I consulted for a small firm in Phoenix, Arizona on a number of permitting and water issues for various mining clients in Arizona, New Mexico, and Texas. In 2000, I started my own consulting practice in strategic management and technical communications, and I continued that until I joined the UHCL faculty in 2005.

My testimony for this Commission relates to a project I did in 1998-1999 for the US Agency for International Development (“USAID”). USAID was concerned at that time about the

role of international funding entities and their influence on environmental compliance at mining operations in South America. They commissioned a project which included reviewing the mining regulations for Bolivia, Chile, and Peru and interviewing industry representatives, government officials, and nongovernmental organizations (“NGOs”) about how those regulations were actually being implemented. I participated in 35 interviews which took place during the project, reviewed the country regulations, and drafted the final report for the USAID team.

Coming into that project from my work in NM and AZ, I was surprised to learn that not only were the regulations in the countries we studied more stringent than those in the US, but that some mining practices were among the most progressive in the world. In particular, the large copper mines in Chile, including Chuquicamata, Candelaria, Collahuasi, and others were using liner technologies for their heap leach operations and their tailings ponds at a time when this technology was uncommon in US copper operations. I was accustomed to dealing with groundwater water quality issues resulting from infiltration of acid mine drainage from waste rock dumps and metals contamination beneath tailings facilities and heap leaches. But these mines are located 4,000 plus meters (13,000 plus feet) above sea level in the Atacama Desert of northern Chile, one of the driest places on earth.

During interviews with Codelco (Chilean national copper company) officials, I asked why a mine in the driest region of the world would be implementing such advanced methods for preventing groundwater contamination. The answer, of course, is that they were concerned about water quantity. These operations, then and now, continue as pioneers in the area of water management at mine sites because they have no local water sources. The Chuquicamata mine pumps and pipes water 400 kilometers from the other side of the Andes in order to operate. Given the tremendous cost of installation, maintenance, and energy required to keep the water flowing, these operations cannot afford to lose a single drop.

Freeport McMoran, Inc.'s 2012 CDP Water Information Disclosure Request, http://www.fcx.com/envir/pdf/2012/ProgrammeResponseCDP_Water_Disclosure_2012.pdf, provides details on their latest water supply investments at Candelaria, an operation they acquired when they purchased Phelps Dodge. They have recently completed a desalinization plant on the Pacific Ocean which will pump water 80 kilometers to the existing site, and will replace some of the water currently pumped up from the Copiapò River Aquifer, a vital source of water for agricultural and municipal users. The extent of this investment, and the company's emphasis of it in terms of long term operational sustainability, illustrates the importance major mining companies like FMI place on guaranteeing for themselves a long-term, stable and reliable supply of water. FMI notes in the same document that most of their operations take place in water-scarce environments where competition for water among various users poses a threat to their operations. FMI has a published commitment to reducing their overall consumption of water at their operations worldwide.

According to the USDA's latest drought monitor, 99% of New Mexico suffers from some level of drought, with most of the state, including Grant County, falling into either the severe drought or extreme drought category. While New Mexico is not the Atacama Desert, it is certainly a region where water is currently in short supply, and will become even more scarce, and thus valuable, in the future. Competition for water supply among various users including farmers and ranchers, industry, and municipalities, will get worse. New Mexico's water resources deserve to be treated as having equal value with those of the Atacama Desert.

In the context of current best practices in water management at copper mines, the proposed Copper Mine Rule looks like something out of the 1980s. It focuses in great detail on the elements of groundwater protection, and appropriately so. But, it considers evaporation as a viable mechanism for storm water management; it makes no mention of requiring operations to

install the latest in tailings dewatering technology so that water is not being put *into* tailings dams where it can be lost to evaporation and seepage; it does not require existing heap leach operations to at least begin to control their water losses by adding liners; it does not require seepage prevention and leak detection technology for new tailings ponds; it fails to mention the issue of water recycling and reuse anywhere in the document; and it does not require a water management and conservation plan.

The original Water Quality Act was drafted at a time when water quantity and water quality issues were treated separately, and New Mexico's administrative structure continues that segregation by placing water quality issues under NMED and water quantity issues in the Office of the State Engineer. The makeup of this Commission, however, demonstrates that the drafters of the Act recognized the interconnected nature of water issues, and their relevance to all aspects of state operations. All of us who work in this area know that water quantity and water quality issues are inseparable. The proposed Copper Rule as written, however, continues the arcane practice of partitioning conservation and contamination when they can and must be treated as one issue—that of preserving and protecting all viable sources of freshwater for all users into the foreseeable future by reducing water consumption and preserving water quality.

A great deal of my work these days focuses on teaching students to look differently at traditional concepts of pollution prevention and control. Water as a resource is heavily subsidized through public investment in infrastructure, and therefore the price of water to the public does not reflect the actual costs of development, supply, and treatment. Mining companies generally do not enjoy these subsidies; they must develop and transport water at their own cost. Even so, companies cannot develop and transport water unless there is a natural supply to tap into. Pumping water from deeper sources and transporting it longer distances equates to a greater investment of energy, which in turn produces its own set of pollutants to be dealt with and its

own set of costs. Ever increasing demands on limited surface and groundwater sources means that companies may eventually run out of new water.

In recent years, hydrologists have also come to recognize that it is possible to contaminate water beyond what can feasibly be treated; we can literally pollute water permanently, making it unfit even for industrial use. In a state where the water supply is known to be limited, the actions this Commission takes now to protect New Mexico's water may be those which allow its industries to continue their economic contributions in the future. Although the growth in water demand cannot be reversed, it can be slowed significantly through water conservation measures that keep the existing water from infiltrating into the subsurface, or evaporating into the air, and instead redirect it back into the operation. It is much easier to collect and treat water BEFORE it infiltrates into the subsurface. I urge the Commission to take a hard look at the language of the rule as proposed, and consider remanding it to the agency for reconsideration. This document does not reflect the state of the art in water management in the copper mining industry, and it does not require or even encourage the sort of technical sophistication demonstrated in other places in the world by the actual companies it will regulate here in New Mexico.

Thank you again for the opportunity to provide you some additional information. This concludes my rebuttal testimony.