



HARDROCK MINING WITHIN A SUSTAINABLE DEVELOPMENT CONTEXT

Terrence Chatwin, INAP

Rens Verburg, Golder Associates

Carol Russell, US EPA

**U.S. EPA Hardrock Mining Conference 2012:
Advancing Solutions for a New Legacy**

*April 3 - 5, 2012
Denver, CO*

Summary

- Who is INAP and what we are doing
- What is the GARD Guide
- Using the GARD Guide
- GARD Guide Example – Communication and Consultation
- INAP believes ARD Management is Improving

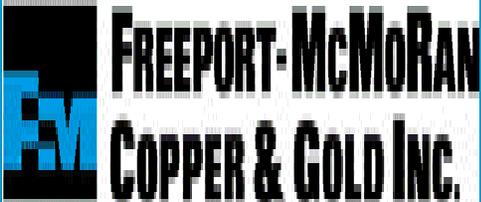




ARD Issues Recognized by INAP

- International Network for Acid Prevention (www.inap.com.au)
- Consortium of mining companies that “...exists to fill the need for an international body which mobilizes acid drainage information and experience.”
 - Networking and information-sharing
 - Technology transfer
 - Gap-driven research
- Recognized the need for global approach to ARD management

INAP



Rio Tinto



With Support from the Global Alliance

The Global Alliance



Acid Drainage Technology Initiative

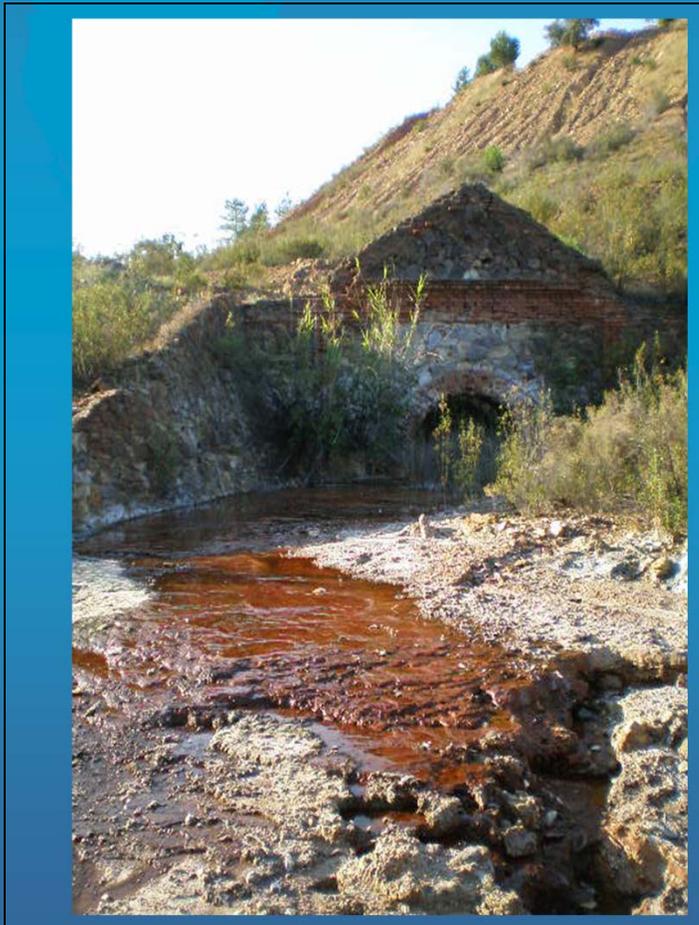


Water Research Commission



Global ARD Guide

www.GARDGuide.com



“An international guide for facilitating world-wide best practice in prediction, control, and mitigation of acid rock drainage.”

“The guide will become a reference document for all stakeholders involved in ARD and waste management issues.”



GARD Guide Characteristics

- Flexible to accommodate site-specific issues
- Founded on a risk-based approach
- Encourage reduction and control at the source
- A “how to” guide and not a regulatory tool or a design manual
- Based on proven, field-tested technologies
- Avoids duplication and builds on existing guidelines and compendia
- Web-based – navigate via links, linked to references, ease of up-dates

GARD Guide Structure and Authors



- 1. GARD Guide - INAP**
- 2. ARD Process – Dr. Rens Verburg**
- 3. Corporate, Regulatory and Community Framework**
 - Mr. John Wates (Fraser Alexander, Jo'burg)
- 4. Defining the Problem – Characterization**
 - Dr. Devin Castendyk (SUNY Oneonta)
 - Ms. Cheryl Ross (Golder, Redmond)
- 5. Prediction**
 - Dr. Kirk Nordstrom (USGS Denver)
 - Dr. Rens Verburg
- 6. Prevention and Mitigation**
 - Dr. Ward Wilson (UBC, Vancouver),
 - Dr. Ben Wickland (Golder, Vancouver)

GARD Guide Structure and Authors



7. Treatment

- Dr. Andre van Niekerk (Golder, Jo'burg)



- [Name] (Golder, Vancouver),
- Ross

ment and nce Assessment



11. ARD Management in the Future

- Keith Ferguson (Sustainability Engineering)

How to Get Value from the GARD Guide



- Prevent ARD rather than treat it
 - Minimize and characterize disturbed material
 - Plan and design for closure from the start
 - Integrate the GARD into operations
 - Update closure costs regularly
- Engage all stakeholders in the process – shared responsibility



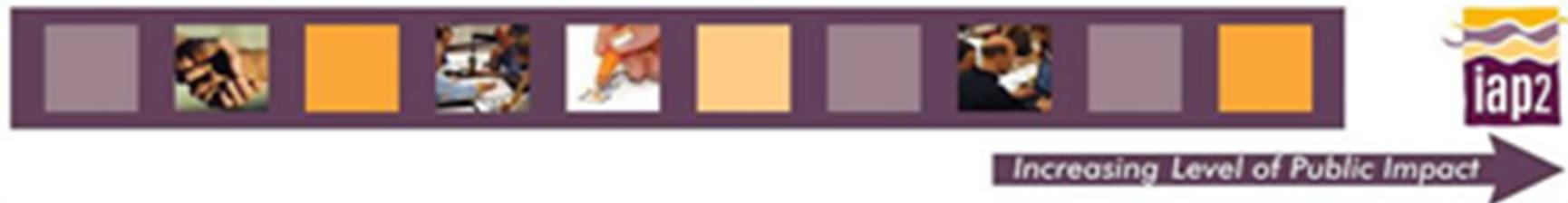
GARD Guide Example Communication and Consultation

- Engagement of Stakeholders needs to start early in mine life
- All Stakeholders have a role to play – shared responsibility
- Stakeholder engagement levels the playing field
- The ARD Management Plan identifies the issues and concerns and helps develop solutions



IAP2's public participation spectrum

IAP2's Public Participation Spectrum



Inform

Public participation goal

To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.

Consult

To obtain public feedback on analysis, alternatives and/or decisions.

Involve

To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.

Collaborate

To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.

Empower

To place final decision-making in the hands of the public.

Promise to the public

We will keep you informed.

We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.

We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.

We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.

We will implement what you decide.

Example techniques

- Fact sheets
- Web sites
- Open houses

- Public comment
- Focus groups
- Surveys
- Public meetings

- Workshops
- Deliberative polling

- Citizen advisory Committees
- Consensus-building
- Participatory decision-making

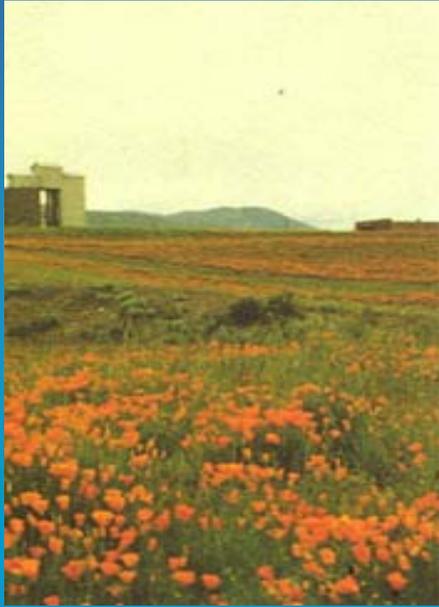
- Citizen juries
- Ballots
- Delegated decision

Where Do We Go From Here

- INAP is focusing on capacity building in developing mining regions
- Enhancing capacity of all stakeholders
- What needs to be done?
- How should we proceed?
- With whom should we partner?



Conclusions



- ARD management is critical to the success and reputation of the mining industry
- Measurement and ongoing improvement of the ARD MP are necessary throughout the life of mine
- Successful implementation of an ARD MP relies on commitment from company management and the systematic use of ARD management tools including engaging all stakeholders
- ARD Management is improving due to the efforts of all stakeholders including the environmental community