



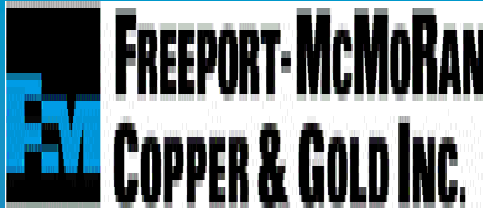
INAP UPDATES

Terrence Chatwin, INAP

21st BC/MEND ML/ARD Workshop
Vancouver, BC

December 3-4, 2014

INAP



The Global Alliance



Acid Drainage Technology Initiative

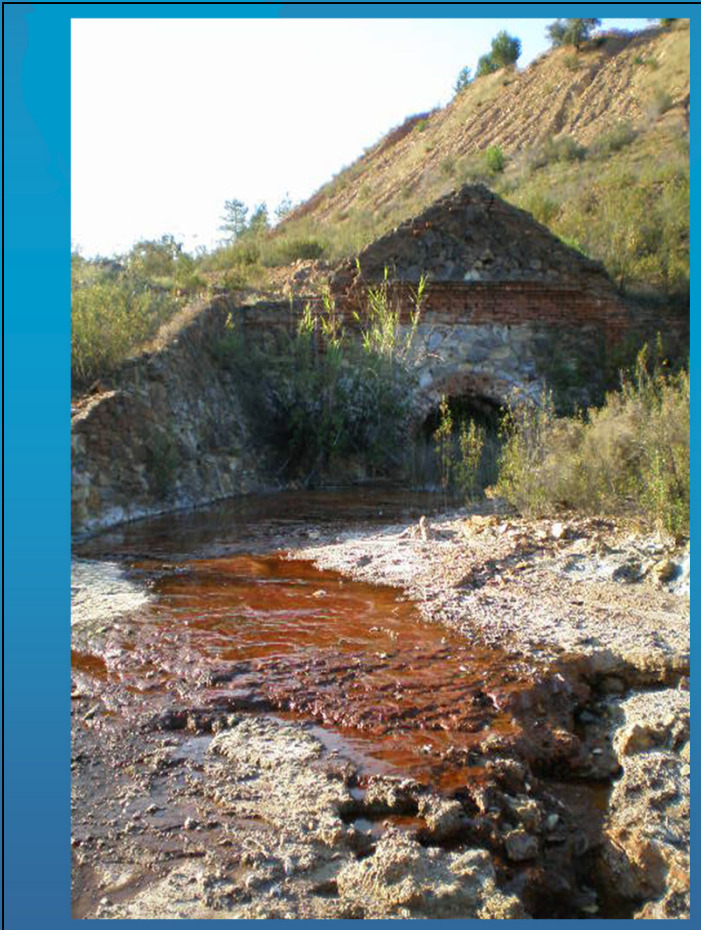


Water Research Commission



Global ARD Guide

www.GARDGuide.com



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

Gaining Value from the GARD Guide

INAP

- 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 stakeholders in the planning process – shared responsibility



GARD Guide Summary Appended to CAFTA Mining Review Guideline



Presented at the US EPA
CLU-IN webinar on mining
resources

Referenced in ITRC mining
waste treatment technology
selection

Volume I

EIA Technical Review Guideline: Non-Metal and Metal Mining

Regional Document prepared under CAFTA DR Environmental Cooperation
Program to Strengthen Environmental Impact Assessment (EIA) Review



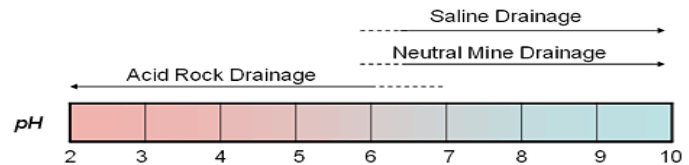
Prepared by CAFTA DR and US Country EIA and Mining Experts with support from:



Printable Version of GARD Guide



Typical relation to drainage pH:



Typical drainage characteristics:

Acid Rock Drainage: <ul style="list-style-type: none"> acidic pH moderate to elevated metals elevated sulphate treat for acid neutralization and metal and sulphate removal 	Neutral Mine Drainage: <ul style="list-style-type: none"> near neutral to alkaline pH low to moderate metals. May have elevated zinc, cadmium, manganese, antimony, arsenic or selenium. low to moderate sulphate treat for metal and sometimes sulphate removal 	Saline Drainage: <ul style="list-style-type: none"> neutral to alkaline pH low metals. May have moderate iron. moderate sulphate, magnesium and calcium treat for sulphate and sometimes metal removal
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PREDICTION
•
PREVENTION
•
MANAGEMENT

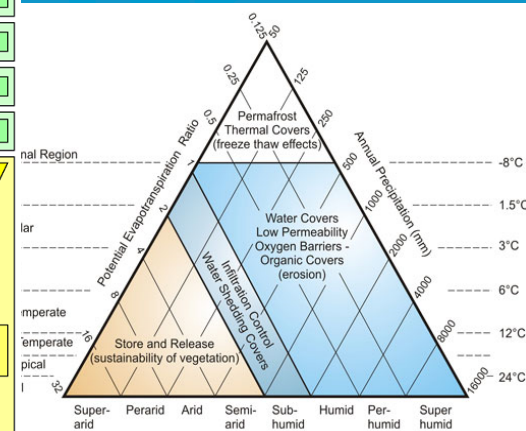
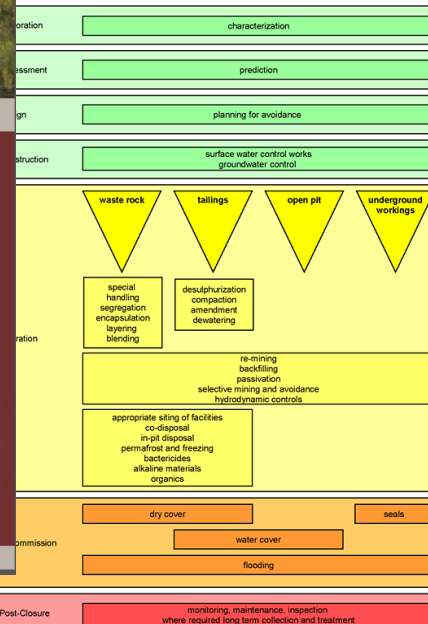
The International Network for Acid Prevention

Global Acid Rock Drainage Guide

June 12, 2014



Development of the Global Acid Rock Drainage (GARD) Guide was sponsored by INAP with the support of the Global Alliance



Sulfate Treatment Workshop



- 120 delegates from 5 countries
- 1 1/2-day program
- 22 presentations
- 5 breakout sessions
- Tour of Kennecott RO plant



Soil Cover Guidance Document



Context for Cover Design & Performance

Climate

Hydro-geological Setting

Materials

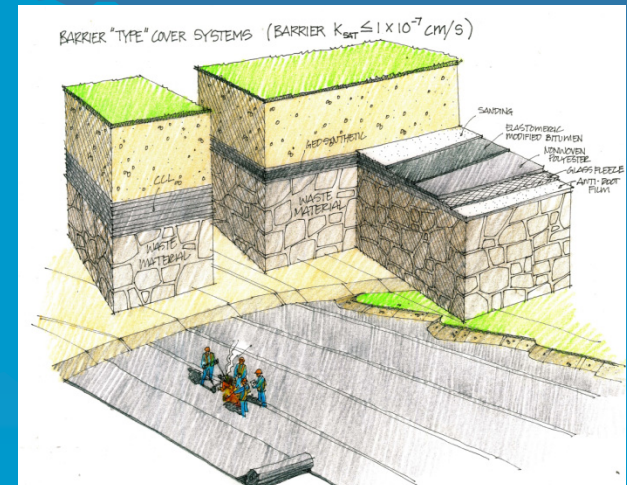
Vegetation

Design Methodology

Closure Objectives

Cover Systems

Water Management Systems



10th ICARD – Santiago



- April 20-25, 2015
- Short Courses – April 20-21
- Technical Meeting – April 22-24
- Field Trip – April 25
- <http://www.icard2015.com>



Case Study Recognition



- Sponsored by INAP and the Global Alliance
- Presented at the 10th ICARD as a Poster
- Reclamation, Treatment, Mitigation, Prevention
- Strong Learning Tool
- Identify Lessons Learned
- Illustrate Best Practice



Conclusions



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

