

Case Study

Nacimiento Mine Sandoval County, New Mexico

2010

**Prepared by
The Interstate Technology & Regulatory Council
Mining Waste Team**

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NACIMIENTO MINE, SANDOVAL COUNTY, NEW MEXICO

1. SITE INFORMATION

1.1 Contacts

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1.2 Name, Location, and Description

The Nacimiento Copper Mine Site Operable Unit 2 is located in Sandoval County, 3.5 miles southeast of Cuba in northwest New Mexico on State Highway 126 (www.mindat.org/maps.php?id=7971). In the 1980s, over 250,000 gallons of sulfuric and ferric acid was injected into the Agua Zarca aquifer to extract copper in situ. The acid was left in place, resulting in the average pH of 3.59 and heavy metals above New Mexico State standards. This remedial action will pump contaminated groundwater from the aquifer, surface-treat it with an alcohol-enhanced bioreactor, and release it into an unnamed channel. Cowart and Milne (2004) provide a more detailed characterization of the site history and contaminants.

The contaminants of concern are acidity, aluminum, cadmium, copper, iron, lead, manganese, nickel, zinc, and sulfate. The site cleanup goals are based upon mitigation of human health risk and ecological risk.

2. REMEDIAL ACTION AND TECHNOLOGIES

A full-scale bioreactor is installed where contaminated water is pumped from the in situ copper operation to an alcohol-enhanced bioreactor for pH neutralization and metals removal. Operation and maintenance costs of this bioreactor system are elevated due to required well monitoring, sampling, and anticipated changes in water chemistry. The system will precipitate most of the metals previous to the bioreactor matrix while treating high metals concentration flows up to 200 gallons per minute. Operation began in spring 2009 and is expected to continue for four years or until well sampling indicates that treatment is no longer required.

3. PERFORMANCE

Startup is scheduled for spring 2009. The treatment is expected to last for a period of four years or until well sampling indicate that treatment is no longer required.

4. COSTS (PROJECTED)

Cost of activities at these site are reported as a total:

- Capital: \$1,000,000
- Operation and maintenance: <\$200,000 (see section 2)

5. REGULATORY CHALLENGES

There were no regulatory challenges associated with this application.

6. STAKEHOLDER CHALLENGES

No information available.

7. OTHER CHALLENGES AND LESSONS LEARNED

No information available.

8. REFERENCES

Cowart, J. B., and J. J. Milne. 2004. “Remediation of 25 Million Gallons of Acidic Groundwater, Nacimiento Copper Mine Site, Cuba, New Mexico,” in *Proceedings, Tailings and Mine Wastes '04*. London: Taylor and Francis.