**Project Title:** Biosulphide Copper and Zinc Recovery and Water Treatment  
**Location:** Silver Bow County  
**Period of Project:** 1999–2000  
**Project Leader:** James Madison  
**Project Staff:** Brian Beam, Victor Eleeas  
**Funding Source:** Biomet Mining Corporation  

**Problem**

The Berkeley Pit Lake contains about 30-billion gallons of acidic, metal-laden water containing about 40-million pounds of dissolved copper and 150-million pounds of dissolved zinc. Recovering the copper and zinc could offset the costs associated with EPA mandated water treatment in the future.

**Objectives**

Provide assistance to Biomet Mining Corporation in the development of project work plans, pilot-plant operation, and maintenance. Assist with the collection of solid and water samples from process stages for chemical analyses.

**Approach**

Construct a pilot plant—using off-the-shelf components—that consist of a bioreactor capable of providing hydrogen sulfide gas to a five-gpm chemical circuit where dissolved copper and zinc in Berkeley Pit Lake water are precipitated as sulfides and selectively recovered. Insure that critical measurements such as chemical addition rates, and flow rates are measured accurately to provide good numbers for engineering scale-up analysis.

**Progress during the 1999–2001 Biennium**

The bioreactor and chemical circuit were operated, and produced several hundred pounds of copper sulfide and zinc sulfide. Data were collected for the engineering scale-up analysis.

**Information Products**

A final report addressing the various subtasks will be submitted to Biomet Mining Corporation.