**Project Manager Qualifications and Organization Description**

Project Title: Precursors of Failure in Mine Tailings Dams

Project Manager Qualifications

Joseph F. Labuz

MSES/Miles Kersten Professor, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota (UMN), Minneapolis, MN. Labuz has been at Minnesota since 1987, and he is a world leader in experimental investigation of strength and deformation of fluid-saturated materials.

1985 Ph.D. Civil Engineering, Northwestern University, Evanston, IL

1981 M.S. Civil Engineering, Northwestern University, Evanston, IL

1979 B.S. Civil Engineering (with honors), Illinois Institute of Technology, Chicago, IL

Bojan G. Guzina

Shimizu Professor, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota, Minneapolis, MN. Guzina has been at Minnesota since 1998, and he is leading expert in seismic imaging and machine learning.

1996 Ph.D. Geotechnical Engineering, University of Colorado, Boulder, CO

1992 M.S. Geotechnical Engineering, University of Colorado, Boulder, CO

1989 Dipl. Inz., Civil Engineering, University of Belgrade, Yugoslavia

Organization Description

The University of Minnesota (UMN) has world-class programs in civil, environmental, and geo- engineering, with over 50 years of initiating and promoting research and applications in characterizing material behavior. Several significant contributions to the geoengineering field were devised or refined at UMN. These include the displacement discontinuity method for predicting the stability of underground excavations, the distinct element method for modeling the behavior of blocky rock masses, and the constitutive response of fluid-saturated materials for determining solid-fluid coupling and flow characteristics.

The geomechanics laboratories at UMN are well equipped for determining strength and seismic properties of tailings, including triaxial compression testing. Basic instrumentation associated with an experimental mechanics laboratory is also available. Maintenance of hydraulic systems is performed annually by a certified technician. Supporting equipment to monitor seismic velocities include a high speed data acquisition system.

Barr Engineering is a national leader in tailings dams design and monitoring. They have performed annual dam safety inspections on large embankment tailings dams and modeling for dam seepage, stability, and deformation analysis. They have installed a variety of geotechnical instrumentation that includes vibrating wire piezometers, open-pipe piezometers, inclinometers, Shape Accel Array (SAA) inclinometers, and relief wells.