

Thomas Robbins

Proposed mining project in Boise County, Idaho for the extraction of copper, molybdenum, silver and gold deposits required investigations into a possible tailings dam construction that will be built using the processed material from the mine. The mine is located southwest of Lowman Idaho, northeast of Pioneerville Idaho, and directly north of Jackson Peak Mountain. The total area for the proposed project is approximately 2,885 acres. Typical investigations into construction of a tailings dam, consist of identifying the types of ore contained within the mine that will use the tailings dam, identifying appropriate location for the dam based on the topography of the mine, analysis of the geotechnical aspects for constructing the dam, and environmental impacts that may occur due to the construction of the dam. In this project, construction of the tailings dam will effectively model a type of cut and fill operation where the excavated and processed material will go in to the construction of the tailings dam. The construction of the tailings dam will happen in stages with an initial starter dam followed by successive additions to the starter dam built to accommodate the need for reservoir capacity. To properly conduct an analysis of the tailings dam, several aspects need to be considered. The excavation depth, and volume of waste material must be determined, as well as the types of soil and rock excavated, and the ore processing methods. Other aspects include the slope stability of the tailings dam, and environmental impact due to the construction of the dam. Location of the dam must be determined off the volume of the reservoir, and the height of the dam, which will depend on the slope stability analysis. This paper discusses the geotechnical aspects of the tailings dam construction including the geotechnical properties of the materials being used for the dam and the stability of the dam under various hydrological conditions.