Evaluating Unexpected Piezometer Trends in a Tailings Dam: Insights from Dissipation Testing

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# ABSTRACT

The monitoring of deformation and pore water pressure within a tailings dam is crucial for ensuring structural integrity and operational safety. It is not uncommon for unexpected trends to be observed within monitoring instrumentation. The careful consideration of these trends is important as actions may vary between ‘do nothing’ to ‘evacuate’. This paper presents observed unexpected trends in Vibrating Wire Piezometer (VWP) readings within a heavily instrumented tailings dam during construction of a stabilization solution. Observation of these unexpected trends caused a stoppage of works and prompted a detailed investigation to evaluate the reliability of the VWP readings. The investigation included Cone Penetration testing, dissipation testing and installation of additional VWPs adjacent to the VWPs displaying unexpected trends. Testing methodologies included saturation of the CPT pore pressure disk with both silicone and then glycerine following observation of an atypical dissipation curve. The results at multiple locations varied with saturation fluid. Results using glycerine were generally consistent with additionally installed VWP. This paper highlights and discusses the potential impact of saturation fluids in dissipation tests and the importance of assessing pore water pressure trends and ensuring instrumentation accuracy for geotechnical monitoring.