

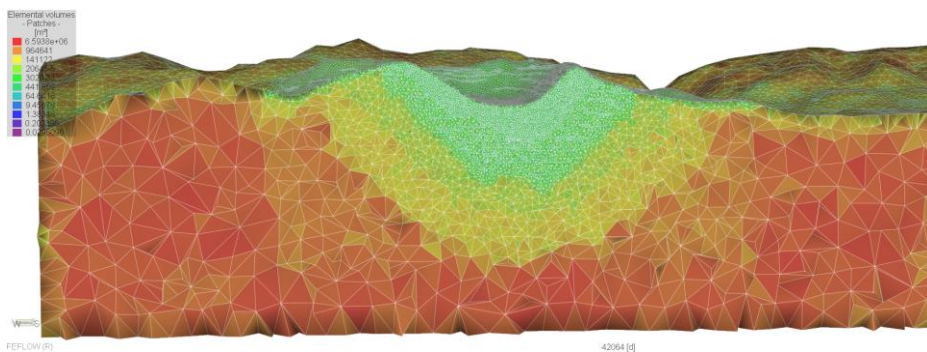


DHI PROJECT

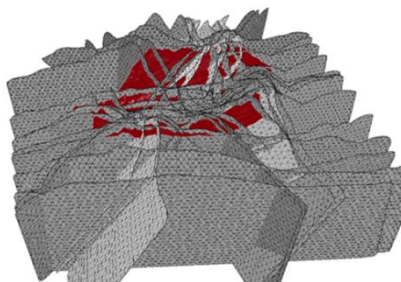
Mine Dewatering and Pore Pressure Modeling in a Complex Geologic System

LARGE OPEN PIT POLYMETALIC MINE, PERU

A state of the science groundwater flow model was developed in a complex hydrogeologic setting to improve pore pressure estimate reliability and optimize a dewatering system with respect to CAPEX and OPEX costs.



DHI developed a high-resolution 4D groundwater flow model for transient pit wall pore pressure and mine inflow estimates for a large open pit mine. The model capitalizes on FEFLOW advances, including the application of a fully unstructured mesh that honors the complex geologic model including the explicit incorporation of 56 faults in the pit area. The model, calibrated to historical flow and head measurements, was used to predict pit wall pore pressures through time and identify sectors that will require additional effort to depressurize.



The project included a dewatering system optimization based on thousands of model runs to evaluate potential dewatering well locations based on their ability to meet the dewatering objectives in the most cost-effective manner. The analysis considered both CAPEX and OPEX costs and resulted in a wellfield with significantly lower costs than the non-optimized version.

SUMMARY

CLIENT

- FloSolutions
- Mine operator

CONTACT

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OBJECTIVES

A hydrogeological model was developed to:

- Evaluate pit groundwater inflows and pit wall depressurization under various pit configurations.
- Numerically optimize a dewatering system using Monte Carlo methods
- Minimize CAPEX and OPEX costs for dewatering for the LOM
- Provide a range of probable pore pressure distributions for slope stability analyses

PROJECT PERIOD

2015 - 2017

COUNTRY

Perú