

# BULLETIN

News from *SubTerra, Inc.*<sup>®</sup>

## *Analysis of Collapse Potential for the Mary Polk Copper Complex Ducktown, Tennessee*

*SubTerra, Inc.* was retained by SAIC to evaluate potential subsidence hazards above mine workings in the Polk County orebody located in the historic Ducktown Mining District near Ducktown, Tennessee. This work was conducted as a precursor to extensive clean up of the site and was necessary to ensure worker safety.

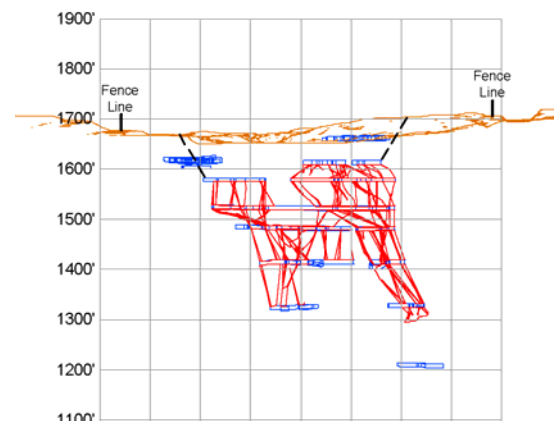
The historic Ducktown mining district is located in the Copper Basin of Polk County, southeastern Tennessee. The Basin comprises an area of approximately 50 square miles located adjacent to lands controlled by the Cherokee National Forest. The Basin, situated within the Blue Ridge physiographic province, is a feature of relatively low-relief that is surrounded on three sides by mountainous terrain and on the fourth extends a few miles southwest of the Ocoee River.



The plate above shows the plan layout of the underground copper mine.

A 3D model of the Polk County orebody was prepared by *SubTerra* to document the historic workings in the Polk County and Calloway orebodies. This work

initially involved reviewing over 3,000 drawings located in the Ducktown museum. Approximately 240 drawings were selected from this archive representing the historic mine workings in the Mary, Polk County and Calloway mines. One hundred twenty seven (127) plans and forty six (46) sections were digitized for the Mary/Polk County mines. These digitized plans and sections were used to build 3D models of the mines, which were subsequently used in this study to generate plans and sections for use in the stability evaluation. One of these sections is shown below.



Areas where sinkholes were probable were characterized by: depth to opening of 100-ft or less (Crown Pillar thickness of 100-ft or less); orebody width of 100-ft or more; and Stopes that were vertically extensive. Potentially sinkhole areas were identified on a surface plan and fenced by the Cleanup Contractor.