Case Study 7

Cowboy Gilsonite Mine -- A Mine Closure Site, Utah

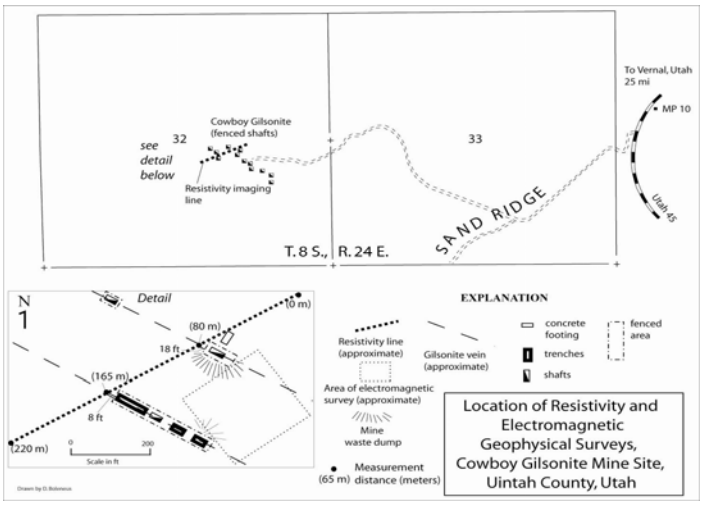
Two parallel veins developed in gilsonite, a substance consisting of hard, black coal-like bitumen, are developed at several locations along a 1,000-ft long trend from mines that operated early in the 1900s. The vertical veins measure 12 inches and 16 inches in width and separated by about 270 feet where surveyed.

The objective of the investigation was to determine the depth, extent, and volume of the subsurface mine openings, including any hidden openings, for calculation of the cost and effort for filling, closure, and reclamation of the abandoned mines and open trenches.

Strategy

We anticipated that the open, mined-out spaces at this underground mine would exhibit very high resistivity values compared to the unmined shale wall rock. Resistivity imaging can determine the extent of the void space of the old mines, and therefore the quantity of concrete and fill required for closure of these old shafts and trenches.

The ERI results (profile, below) clearly show the mine openings as the higher values of resistivity (yellow-orange colors) and unmined vertical gilsonite veins that extend to greater depth beyond the openings by their lower resistivity values (blue to green). Station spacing = 2 meters



Earth Resistivity Imaging Profile

Horizontal distance in meters