1800 ppm (parts per million). Cobalt values exceed 250 ppm and iro values are in excess of 200 ppm in sampled areas. Water quality d indicate waste piles and mine portals are the major sources of poor quality water. Waste piles contribute most of the dissolved copper while mine portal drainage is responsible for nearly all of the disso ved iron. Cobalt appears to be ubiquitous to both areas. Ninety-fi percent of the 250 pounds of daily copper production from the distric during low flow is from waste piles. Portal drainage produces ninet eight percent of the total 21 pounds daily production of iron during l flow. The production of poor quality water in the underground worki is related to water recharged at sites of surface disturbance. Appro mately 16 acres of land surface have been disturbed by open pit mining operations and exploration trenches. Precipitation captured in these surface openings is believed to be recharged to the undergrou workings.

p29

GEOLOGIC SETTING OF THE RAFT RIVER GEOTHERMAL AREA, IDAHO

Williams, P. L., Pierce, K. L., McIntyre, D. H., Covington, H. R. and Schmidt, P. W., U.S. Geological Survey, Denver, Colorado 80225

The Raft River Known Geothermal Resource Area (KGRA) in southernmos central Idaho lies in the southern Raft River Valley, a late Cenozo structural downwarp bounded by faults on the W, S and E. The S end the valley is defined by the east-trending Raft River Range; 55 km the N the valley opens onto the Snake River Plain. The valley is underlain by (1) 5-70 m of Pleistocene and Holocene fan gravel and alluvium; (2) the Pleistocene Raft Formation, 0-200 m of silt and s and (3) the Pliocene Salt Lake Formation, up to 1,800 m thick, consisting of (a) lower tuffaceous sediments, (b) middle volcanics--fe lava flows, and ash flows--and (c) upper basin-fill tuffaceous sediments and conglomerate. Shallow, nearly contemporaneous felsic plu intrude the Salt Lake Formation. The Tertiary rocks rest on structu ally complex Paleozoic and Precambrian rocks.

Warm water is pumped from wells in several parts of the valley. but the most promising thermal anomaly is around two wells near Bri that flow boiling water. This anomaly is at the intersection of tw major structures: a NNE-trending normal fault set, down to the E, with movement probably as recent as late Pleistocene, and an ENE structural discontinuity, probably a right-lateral fault, that separates different styles of deformation at the S end of the Jim Sage Mountains W of the valley and that is one of several major lineament on space photographs.

Geologic and geophysical data suggest deep circulation and heat of ground water and upwelling of hot water along faults. The modera geothermal gradients common in the Basin and Range province or along the margins of the Snake River Plain are sufficient to represent the heat source.

POST-1882 EROSIONAL HISTORY OF DOUGLAS CREEK, COLORADO

Womack, W. Raymond, Department of Earth Resources, Colorado State University, Fort Collins, Colorado 80523

In the decade following 1882, Douglas Creek, a tributary of the Whit River in northwestern Colorado, incised into its relatively flat-floored valley to depths that in places exceed 50 feet.

This gullying correlates with the "epicycle" of erosion which has been recognized throughout the Southwest following 1880 and which ha