INTRODUCTION

Kennecott Utah Copper owns and operates a metals concentrating facility near the Bingham Canyon Mine in southwest Salt Lake County. This is a permit renewal for the facility.

A. DESCRIPTION OF FACILITY

The Copperton Concentrator facilities are comprised of:

1) The coarse ore stockpile and grinding mill;
2) Copper-Molybdenite floatation, concentrate re-grind and concentrate thickening tanks;
3) Molybdenite recovery plant;
4) Copper concentrate and tailings thickening tanks;
5) Water supply reservoir; and
6) Pipelines.

The Copperton Concentrator was completed in 1988. Modernization and expansion of the facility was completed in 1992 and was designed to process a capacity of 142,000 tons of ore per day. Ore is transported from the Bingham Mine via a conveyor belt to the coarse ore stockpile. The ore is fed to Semi-Autogenous Grinding (SAG) mills which crush the ore for separation and floatation to concentrate metal recovery. Tailings are slurried via a 13 mile pipeline to the tailings impoundment adjacent to the Great Salt Lake.

Water used by the Copperton facilities is acquired from the Process Water Reservoir (PWR) and various storage tanks. The PWR is a two chamber lined reservoir with a 7.5 million gallon capacity. The sources of water for the PWR are reclaim water from the tailings pond, thickener overflow, molybdenite plant effluent, north end surface drainage and springs, existing deep wells and the Bingham Tunnel. The concentrator facilities require approximately 37,000 gpm for milling purposes.
B. SUBSURFACE CONDITIONS

The Copperton Concentrator facilities are located on the unconsolidated alluvium of the valley fill adjacent to the Oquirrh Mountains. There are no perennial streams near the concentrator and surface water runoff only exists during high intensity storms or snow melt. There are two aquifers in the vicinity of the Copperton concentrator, the bedrock and principal alluvial.

The bedrock aquifer is composed of Paleozoic sandstones and quartzite and Tertiary volcanic rocks. Flow within the bedrock aquifer is assumed to be primarily by fracture flow and provides recharge to the overlying principal aquifer. The hydraulic conductivity of bedrock is relatively low, typically less than 1 foot per day. The concentrator does have three wells used for culinary and fire use screened in the bedrock aquifer near the facility.

The principal aquifer is unconfined and composed of interbedded volcanic and quartzitic gravels, clays and cemented gravels. The principal aquifer extends eastward from the foot of the Oquirrh Mountains and is bounded at the base by the Jordan Narrows formation. Aquifer thickness increases to the east, thins to the north and remains fairly constant to the south. Near the concentrator the principal aquifer is approximately 150 feet thick. Two production wells, approximately one-half mile from the concentrator, are used as a source of drinking water for the town of Copperton. The wells are screened in volcanic gravels of the principal aquifer. The area around the Copperton concentrator provides recharge to the principal aquifer of the Jordan Valley; groundwater flow is primarily to the east.

C. BACKGROUND WATER QUALITY

The water quality in the bedrock aquifer beneath and immediately adjacent to the concentrator is generally a class II water with TDS values that range from 500 mg/L to 1,200 mg/L.

D. BASIS FOR PERMIT ISSUANCE

Kennecott has proposed a discharge minimization approach with a monitoring component to assess impacts to ground water quality from the operation of the Copperton Concentrator facilities. This is coupled with the use of appropriate containment technology for process waters associated with the operation of the facility. The BAT includes concrete process fluids basins, HDPE lined process water ponds and asphalt lined storage pads. Table 2 in the permit lists the BAT and performance criteria for each structure and facility. Kennecott has proposed an inspection program to insure the proper operation of all water holding structures.

E. GROUND WATER MONITORING

Ground water monitoring for permit compliance will occur quarterly for monitoring wells W31, COG1149A, and COG1149B. Background data have been obtained from all compliance wells to set the ground water protection levels and compliance limits listed in
Table 1 of the permit.