

BCAMD 3.31

REPORT 166004

PF 0926 NW003

EVALUATION OF ARD FROM BRITANNIA MINE
AND THE OPTIONS FOR LONG TERM REMEDIATION

OF THE IMPACT ON HOWE SOUND, BCAMD 3.31, MEMO CD-3,
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EXECUTIVE SUMMARY

The decommissioned Britannia Mine is located at Britannia Beach approximately 48 km north of the city of Vancouver, on the east shore of Howe Sound. The underground and open pit mine was operated by the Britannia Mining and Smelting Company Ltd. from 1905 to 1963 at which time it was purchased and operated by Anaconda Mining Company until shutdown in 1974. The area is currently owned by Copper Beach Estates. During operation, approximately 45 million tonnes of ore were processed for recovery of copper and lesser amounts of silver, zinc and gold. Tailings were deposited directly into Howe Sound through two intertidal outfalls located near the mouth of Britannia Creek.

Acid rock drainage containing elevated acidity and metal levels has issued from the Britannia Site since the operational period, discharging into Britannia Creek and Howe Sound. During mine operation, drainage waters from the 2200 and 4100 levels were directed through two copper precipitation plants containing scrap iron, before discharging into Britannia Creek. In 1972, in an attempt to improve drainage quality from the site, acidic mine water was diverted within the mine workings to the 4100' level for treatment in a copper cementation plant prior to discharge. Since 1978, mine water has been collected, treated and discharged at depth to Howe Sound. Subsequent investigations however have indicated that contaminated water is again draining from the 2200' level directly into Jane Creek and then into Britannia Creek and ultimately into Howe Sound.

Steffen, Robertson and Kirsten (B.C.) Inc. (SRK) in association with Gormely Process Engineering (GPE) were retained by the Ministry of Energy, Mines and Petroleum Resources to conduct the initial phase of this study. This phase comprised a review of the available information, assessment of acid generation and contaminant drainage from the site based on this data, identification of the major sources of contaminant loading, and a critical review of the present system of control, and to identify recommendations for possible long term solutions to reduce or eliminate acid drainage. This study is a preliminary review to identify the major contributing factors to contamination from acidic drainage to Britannia Creek and identify options for remediation. Further detailed investigation have been recommended where the available information is insufficient to define or evaluate an option with confidence.