

**ROYAL OAK MINES INC.
NWT Division - Giant Mines**

TO: John Stard
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FROM: Mary Goldman

DATE: June 10, 1996

SUBJECT: Wet Scrubbing - Operating Costs

The report "Arsenic Emission Control from Pyrometallurgical Operations" (February 1996) submitted to Environment Canada by W.R. Hatch Engineering Ltd. contains capital and operating costs for a Wet Scrubber provided by Turbotak Inc., of Waterloo, Ontario. An additional **\$30,000** should be allocated to the capital costs to provide for a pump, pumpbox and piping to dispose the scrubber discharge water into the final tails pumpbox.

The operating costs provided by Turbotak do not take into account reagent consumption to treat the water discharged by scrubber to the tailings pond. This cost is estimated at **\$92,478** per year. A breakdown of treatment costs is provided below.

Cost of lime required to treat SO₂ collected by Scrubber

\$ 55,944

- Collection efficiency is not available. A 5% collection efficiency was assumed.
- 11278.5 tonnes of SO₂ per year are released in baghouse exhaust gas.
- Lime consumption @ 1.25 stoichiometry and 90% purity: 686 tonnes/ year = 756 tons/ year @ \$0.037/ lb.

Reagent cost for treating scrubber discharge water at the Effluent Treatment Plant

\$ 36,534

Assuming the same level of contamination of Northwest pond water

- Water discharged by Scrubber to tailings pond
38 USGPM == > 19,972,800 gallons / year
- Reagent cost for water treatment at Giant in 1995
\$ 1.1365 / 1000 gallons

Cost = \$22698