

ROYAL OAK MINES INC.

COLOMAC OPERATION

FRESHWATER CONSUMPTION

NEPTUNE RESOURCES CORPORATION
FRESHWATER CONSUMPTION
LAST 5 MONTHS OF OPERATION - 1991

<u>DATE</u>	<u>PROCESS WATER</u> <u>CONSUMPTION m³</u>
JANUARY	96,128
FEBRUARY	83,305
MARCH	119, 271
APRIL	118,038
MAY	114,119
<hr/> AVERAGE	<hr/> 106,172

***** Note - licence limit/month was**

65,000

ROYAL OAK MINES INC
FRESHWATER CONSUMPTION - 1995

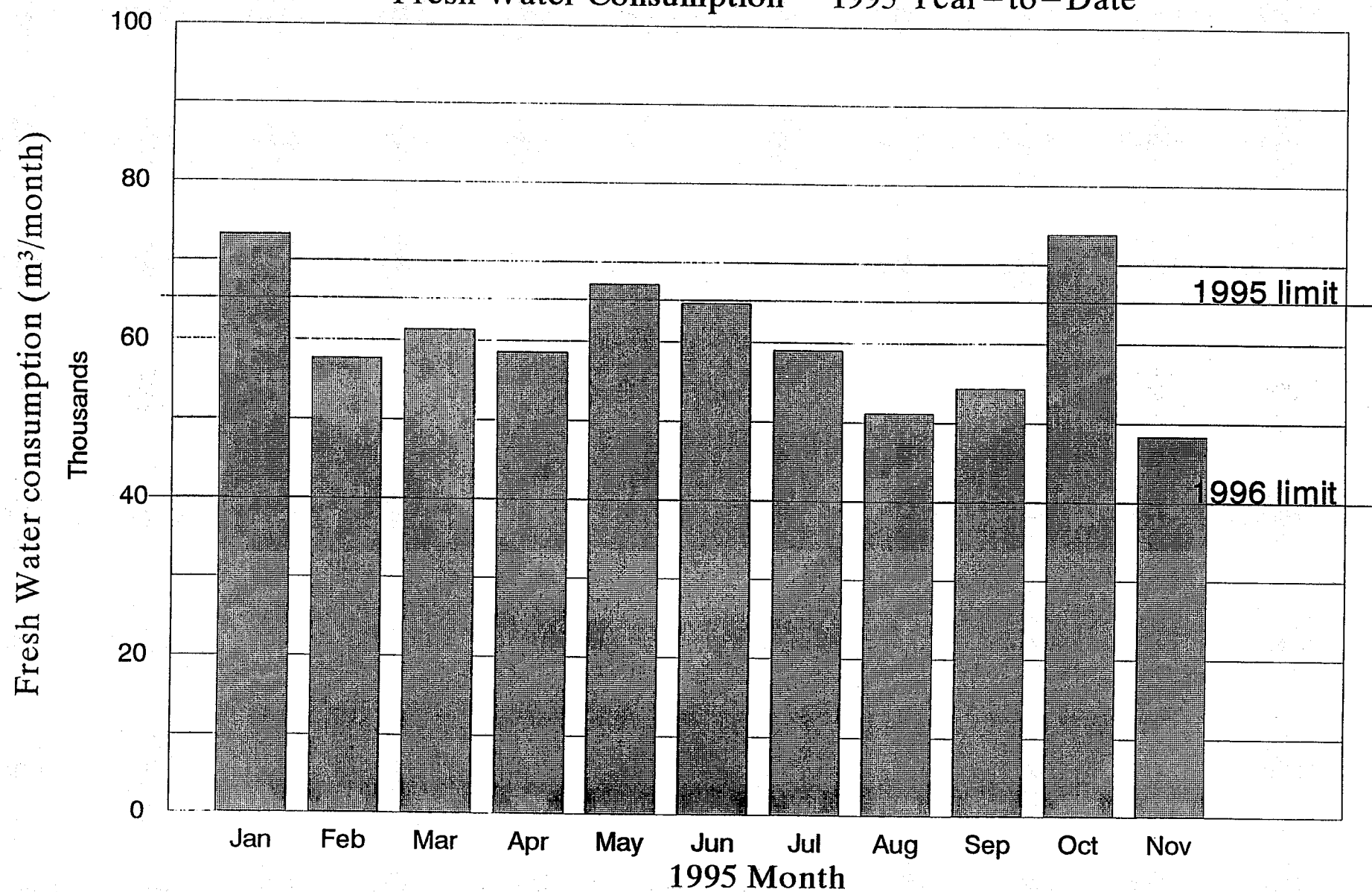
<u>DATE</u>	<u>PROCESS WATER CONSUMPTION m³</u>
JANUARY	71,814
FEBRUARY	56,207
MARCH	59,782
APRIL	57,221
MAY	65,781
JUNE	63,432
JULY	57,650
AUGUST	49,853
SEPTEMBER	52,911
OCTOBER	72,433
NOVEMBER	46,941
<u>AVERAGE</u>	<u>59,457</u>

***** Note - licence limit/month is**

65,000

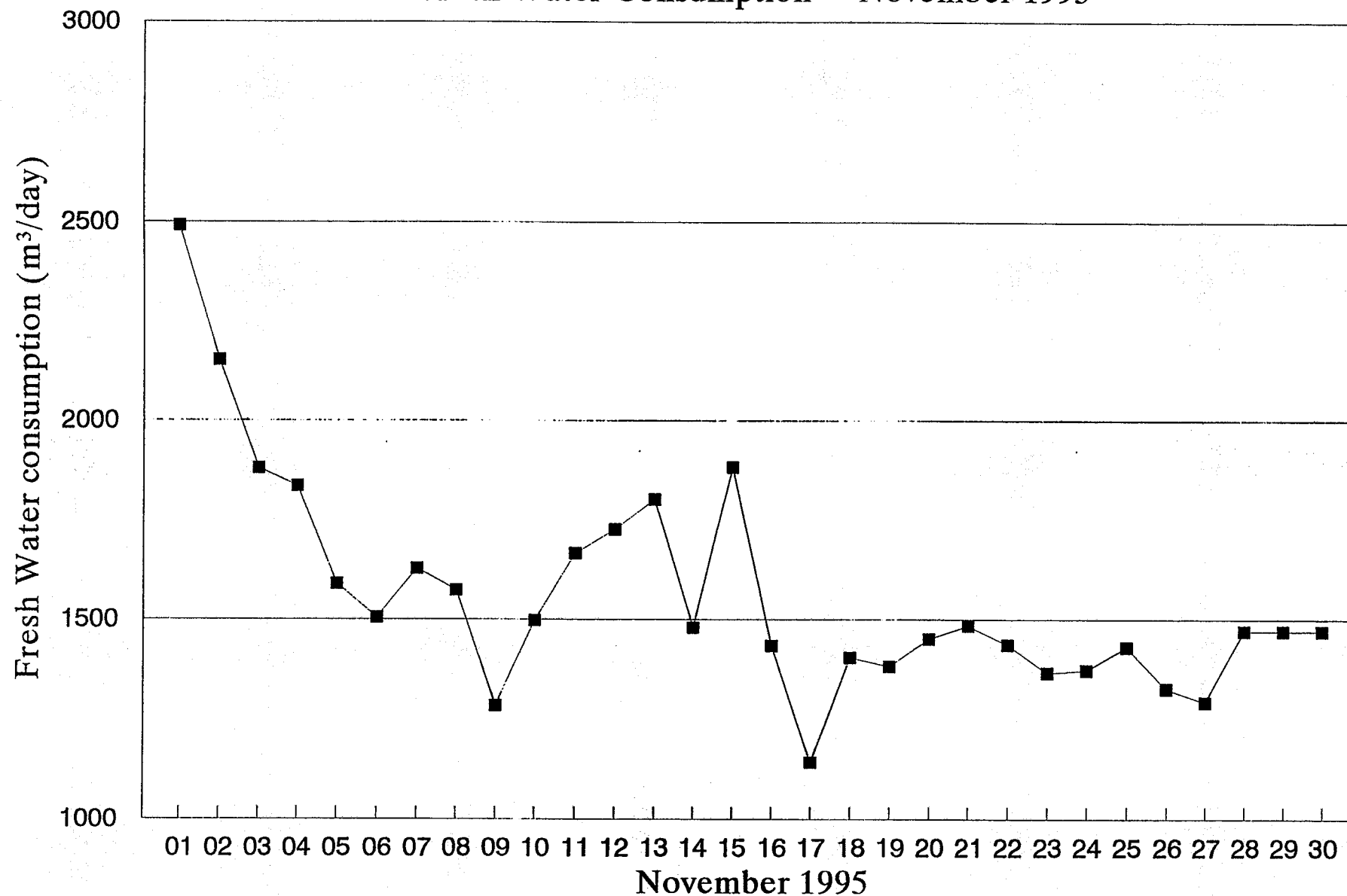
Royal Oak Mines Inc. – Colomac Mine

Fresh Water Consumption – 1995 Year-to-Date



Royal Oak Mines Inc. – Colomac Mine

Fresh Water Consumption – November 1995



FURTHER ACTION PLANS IN ORDER TO MEET MONTHLY LIMIT

- **Convert thickener underflow and overflow pumps gland water system from fresh to reclaim.
Potential savings in freshwater could be about 100 m³/day.**
- **Convert tailings pump's gland water system from fresh to reclaim.
Potential savings in freshwater could be as high as 450 m³/day**
- **The Pebble Crusher cooling system will be converted from freshwater to reclaim.
Potential savings in freshwater could be as high as 100 m³/day.**

- In total, a savings of $650 \text{ m}^3/\text{day}$ is expected before yearend.

- Therefore, at an average rate of $1600 \text{ m}^3/\text{day}$ in November 1995 less this $650 \text{ m}^3/\text{day}$ savings the potential freshwater usage in 1996 could be in the range of $950 \text{ m}^3/\text{day}$.

- At this consumption rate, the average consumption would be approximately around $29,000 - 30,000 \text{ m}^3/\text{month}$.

- This would leave a buffer of approximately $10,000 \text{ m}^3/\text{month}$ below the licence limit of $40,000 \text{ m}^3$.

POTENTIAL FOR NON-COMPLIANCE

- **Royal Oak Mines Inc will strive to meet this monthly freshwater limit.**
- **However, no forgiveness with this mill if operators are forced for a period of hours to switch to freshwater.**
- **Problems due occur as with any mill, which may force operators to switch to freshwater (ie. problem with reclaim pumps/lines)**
- **A few hours here and there or even one day on freshwater creates the potential for non-compliance with the monthly limit.**
- **Royal Oak is confident that the daily usage of 1290 m³/day can be met on 80 - 90 % of the days each month.**

**ROYAL OAK MINES INC
COLOMAC OPERATION**

**INVESTIGATING THE POTENTIAL
FOR WASTEWATER TREATMENT**

- **There is a good potential that two other properties - Kim/Cass and Goldcrest, both in the vicinity of the Colomac property may be brought into production over the next few years.**
- **Thus increasing the life expectancy of the Colomac mill and increasing the amount of tailings/effluent being produced.**
- **Royal Oak Mines has commissioned Golder Associates to evaluate the potential for a controlled discharge at Colomac vs the present "total containment" scenario.**
- **A controlled discharge has the potential for savings to both the cost of operating as well as to the environment. These will be presented in this feasibility that Golder is conducting.**

POTENTIAL WATER TREATMENT TECHNOLOGIES BEING EVALUATED

- **Conventional Treatment (Hydrogen Peroxide/Ferric Sulphate)**
- **Inco/SO₂ Treatment**
- **HW - FLX Technology**
- **CT - X Technology**

PLANS FOR 1996

- **Royal Oak Mines Inc will continue to pursue the various treatment technologies available, as well as conducting Pilot Test work on site.**
- **Company is quite aware that any change to the “total containment” scenario, as stated in the water licence, will require opening the licence to an amendment.**
- **In the meantime, the “total containment” scenario will be followed.**
- **Is there any comments from the TAC Committee on this approach?**