

HYDROGRAPHIC SURVEY OF MINE WASTE WATER DISCHARGE INTO BAKER CREEK AND YELLOWKNIFE RIVER

General

The purpose of this survey is to determine the exact discharge of waste water into Baker Creek and Yellowknife River.

Method

Due to the lack of a current meter and the unfavorable characteristics inherent to Baker Creek (such as an excessive amount of flood-plains as well as back water). Flow and discharge measurements were taken only at orifices such as culverts, and narrow channels of uniform depth, to ensure an accurate and balanced survey.

The rate of flow was obtained by inserting a wood chip in mid-channel, taking the time it took to float over a premeasured course. This procedure was repeated 6 times, the average of these readings being accepted as correct. X-Sections were then taken and the algebraic sum of discharge "Q" factors were balanced against initial intake and final discharge.

Section I - Q

This section is located on Baker Creek, CA. 1,600 ft. upstream of the nearest waste water discharge point. Therefore the quantity obtained has to be accepted as the initial intake, undiluted by mine waste water.

Area: 9.30 Sq. Ft.
Flow: 4.31 Ft./Sec.
Ft.³/Sec: 36.35
Water Sample No: 1

Section J - X

This section is a 78" ϕ culvert located on Baker Creek, CA 4,500 ft. downstream of nearest mine discharge point. This section is the final discharge in Yellowknife Bay near the camp.

Area: 14.2 Ft.²
Flow: 2.66 Ft./Sec.
Ft.³/Sec: 37.80
Water Sample No: 6

Section N

This section is a 36" ϕ culvert draining mill waste water from tailings pond near E3 fill raise into Baker Creek.

Flow: 1.61 Ft./Sec.
Ft.³/Sec: 0.665
Water Sample No: 2

Overflow Weir (W)

Located at extreme north end of tailings pond. This overflow water discharges into the Yellowknife River.

Area: 1.01 Ft.²
Flow: 1.09 Ft./Sec.
Ft.³/Sec: 1.100
Water Sample No: 9

Dam Leak (D.L.)

This leak is located CA. 600' west of Overflow Weir, and discharges into Yellowknife River (measured with pail).

Ft.³/Sec: 0.035
Water Sample No: 8

Section L

Mill discharge pipe, discharging into Baker Creek (measured with pail).

Ft.³/Sec: 0.465
Water Sample No: 4

Section A - L

Mine discharge water into Baker Creek, discharge quantity supplied by Mining Department.

Ft.³/Sec: 0.555
Water Sample No: 7

Mill Tailings Pipe Line (MTP)

Discharge quantity supplied by mill. Water sampled by mill.

Ft. ³/Sec: 1.90

Circuit Balance (Cu. Ft./Sec)

Mill:

$$W + DL + N \pm \text{Error} = \text{MTP}$$

$$1.100 + 0.035 + 0.660 + 0.100 = 1.900 \text{ Cu. Ft./Sec.}$$

Baker Creek:

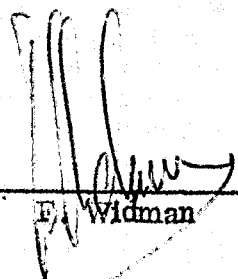
$$P - Q + N + L + A - L \pm \text{Error} = J - K$$

$$36,250 + 0.665 + 0.465 + 0.555 - 0.235 = 37.800$$

The error in Mill Circuit = 0.100 Cu. Ft./Sec. = 0.624 Gal/Sec.

The error in Baker Creek Circuit = 0.235 Cu. Ft./Sec = 1.466 Gal/Sec.

FW/nh
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