

Faro Pit Abandonment Plan: Zone 2 Alternatives August 27, 1987

Short Term:

1. Interceptor ditch at elevation 4030. Water re-routed back into zone one sump and then pumped through mill to tailings area.
2. Faro diversion ditch: Line ditch with plastic liner. (approx. \$10,000). Concerns as to whether such a liner will stay in place during spring freshet.
3. Faro diversion ditch: Line ditch with geotextile fabric. (\$40,000 - \$50,000). High cost; however, will significantly reduce groundwater flow to zone 2. (Price is guesstimate only: if considered, should be priced properly.) *Too low / probably 100,000*
4. Sump in zone 2. Permanent placement. Provides contingency if water infiltration rates are not reduced as expected by interceptor ditches and Faro diversion liner. Without sump, possible that high flows of contaminated water will seep through waste rock and will be difficult to intercept for treatment. Expected that high flows will not exist - interceptor ditches and Faro Creek diversion liner should keep seepage to minimum. In the fall and winter, seepage should be minimum as indicated by zone 2 water levels and pump data.
5. In conjunction with above, zone 2 will be pumped dry this fall (November), and lined with phyllite. Compaction by mine equipment - haul trucks/cats. Concerns as to whether liner will be functional, given that a significant portion of water inflow into zone 2 is via interflow seepage. If seepage is reduced, this plan together with sump should be sufficient in short term. *200 down to 40-80 gal./min*

Long term:

1. Upon completion of Faro pit mining (inclusive of underground phase), pit will be available for tailings dumping, followed by phyllite sealing or just phyllite sealing. (option of tailings deposition should be investigated as pit will eventually be under water, and this is ideal for tailings abandonment. Require projected dates of pit abandonment. *not lined*)
2. After phyllite sealing, Faro Creek will be re-routed into pit and diversion ditch abandoned.
 - Require flows and 50 year flood of Faro Creek.
 - Require expected water elevation that will be maintained by pit geometry.
 - Require rock types and associated exposed areas above expected water line. Should extend such mapping to a depth of 20 feet below expected water line. Include structural information.
 - Require outflow elevation. (Canyon area is calculated low point.)
 - Decide whether Canyon outflow should be lined. (Recommended as will insure that seepage is not available to be re-directed through old creek channel which penetrates zone 2.) Need physical info. as well as cost estimates.
3. At this time, with closure of Faro Creek diversion channel, majority of seepage presently going into zone 2 should effectively be stopped,

and total water flow will only be for sub-drainage basin of old creek channel. Surface and groundwater flow should be calculatable from rainfall data and sub-watershed area. Contaminated seepage should be small, and main flow of Faro creek should be sufficient to dilute this water to within water quality standards. Faro creek through the canyon will converge with North Rose Creek to the north of the rock causeway. Details of emergency spillway(s) on causeway should be included as well as estimate of ponding expected behind causeway.

Other general info required.

1. Rock waste outlines and final toe elevation of dumps.
2. Address any problems such as slope slumping that has occurred and justify why this won't happen everywhere. Also, address our plan to go with slopes of ~~31-33~~ degrees as opposed to government request of 2:1 slopes. 35-36
3. Require records of volumes, types of waste rock; and how/where deposited. Our records and any CAMC records.
4. No revegetation in any of our abandonment plans.
5. No possibility of digging out zone 2. (The sooner we can get the government officials off this, the better off we will be at getting through more practical solutions for zone 2.

Summary of Discussions/options

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R M Lenehan

R Bowke

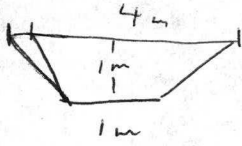
J Bowers

J Eamer.

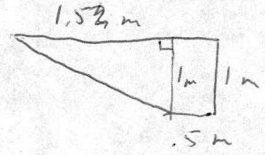
6. Address rock slope stability in area of ponded water. (behind causeway).

from Folder 79:

- for

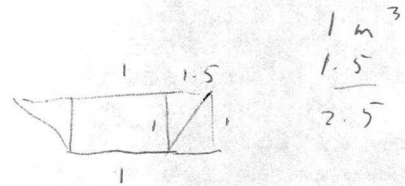


cross section 2.5 m^2
~~capex~~



for 0.5% slope, for 2.5 km^2 area.

- ~~Don't do~~ ~~Grass ditch~~ - 2.2 km^2
 VG about 1.0 km^2



$$\frac{1 \text{ m}^3}{1.5} = 2.5$$

ditch capacity: 2.5 m^2 cross section.
 at velocity of 1.55 m/s $3.875 \text{ m}^3/\text{s}$

design depth - 1.7 m .

side slopes $1.5 = 1$

channel slope $.25\%$

Manning's "n" value $.035$

$$\text{discharge} = \frac{1.49 \text{ Area Depth}^{\frac{2}{3}} \text{ slope}^{\frac{1}{2}}}{n}$$

$$14.5 = \frac{1.49 \text{ Area Depth}^{\frac{2}{3}} \cdot .0025^{\frac{1}{2}}}{.035}$$

$$= 42.57$$

$\frac{\text{m}^3}{\text{s}}$

$$1.64 \text{ m}^2/\text{s}$$

$$\text{m}^3/\text{s} = 2.5 \text{ m}^2$$