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GEOLOGY

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HYDROLOGY

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 FILE #2

October 27, 1989

RECEIVED
 OCT 30 1989

Mr. Tom Munson
 Division of Oil, Gas and Mining
 3 Triad Center, Suite 350
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 DIVISION OF
 OIL, GAS & MINING

Dear Mr. Munson,

As you know, CalMat's reclaimed Hidden Valley Mine experienced another large flash flood event in August. High runoff caused some erosion problems at the site, especially at the A-seam fill. Repair work, to include gully repair, silt fence replacement, installation of erosion-control netting, and revegetation, will be accomplished in November. In addition, CalMat has decided to install a diversion across the top of the A-seam fill to further protect the vulnerable slope. I am sending you some information on this diversion for your files.

The diversion channel will be constructed along the existing bench at the top of the A-seam fill. The bench will be cleaned of talus materials deposited on it, and a berm will be constructed along the outer edge of the bench. The resultant channel bottom width will be approximately 1.5 feet wide; side slopes will be 2h:1v. The inner slope of the constructed berm will be lined with rock obtained from onsite to provide erosion protection. The attached sheets show the derivation of the design flow (1.83 cfs for the 100-year, 24-hour storm), and the parameters used in the channel design.

After flowing westward along the top of the fill slope, runoff will continue across the road in a channel constructed to the same dimensions as the above-mentioned diversion. This channel will be constructed immediately below the last water bar in the road. Riprap of a minimum d_{50} of 1 foot will be used to protect soils as the runoff leaves the road and enters the flat slope east of the main riprapped channel.

In this flat area, a series of approximately 4 retention berms will be constructed to impound and detain runoff. These berms will be approximately 2.5 feet high, with a two-foot top width and 2h:1v side slopes. They will be oriented parallel to each other, and with their lengths staggered, so that overflow from

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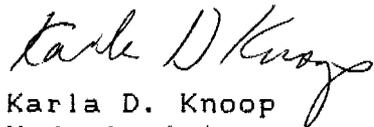
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the upper one will enter the next lowest one in a controlled manner, etc. until any runoff not infiltrated or impounded behind the four berms will pass through the silt fence before entering the main riprapped channel.

This diversion will minimize the runoff to the steep A-seam fill slope, and prevent erosion and subsequent gullyng of the fill materials. Please let me know if you have any questions.

Sincerely,



Karla D. Knoop
Hydrologist

Enclosures

Copy: John Rains, CalMat
Joe Jarvis, JBR

To prevent gullyng of A-seam fill, construct diversion at contact between diff face + fill slope along existing bench at grade. Divert across road ↓ to retention berms on flat area east of main, riprapped channel.

Drainage area above A-seam fill:

$$5.9 \text{ in}^2 = 1.35 \text{ ac} \quad (100' = 1' \text{ map scale})$$

$$\text{Curve Number} = 85^*$$

* Taken from info contained in Rec Plan

Time of Concentration:

$$T_c = C' \left(\frac{11.9 (L)}{H} \right)^{.385}$$

where $C' =$ based on CN, for CN=85, $C' = .8$
 $L =$ hydraulic length in miles
 $H =$ Elevation change of watershed in ft

$$T_c = 0.8 \left(\frac{11.9 (.095)}{260} \right)^{.385}$$

$$T_c = 0.016 \text{ hr}$$

Precipitation for 100-yr, 24-hr storm:

2.6 in (from Reclamation Plan)

Using Hawkins - SCS CN program for
Rainfall-RO - peak flow is:

$$1.83 \text{ cfs}$$

Slope of bench is 3.4 % (from Rec Plan)

$n = .022$ (for fine, graded soils)

bottom width 1.5'

bank slope 2:1

normal depth = .22 ft
velocity 4.2 fps ok

Slope from road to flat area is steeper,
use available rock as riprap lining (minimum
d 50 equal to 1')

Retention berms:

trapezoidal with 2' top width, 2:1 slopes,
2.5' high

OUTPUT FROM SCS STORM HYDROGRAPH PROGRAM

INPUT FOR: Above A seam - 100yr

STORM :	WATERSHED :
dist =SCS Type II - 24 Hr	area = 1.35 acres
depth = 2.60 inches	cn = 85.00
duration = 24.00 hrs	time conc = 0.016 hrs

OUTPUT SUMMARY

runoff depth	1.25862	inches
initial abstr	0.35294	inches
peak flow=	1.83	cfs (1.34149 iph)
at time	12.000	hrs
