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STATE OF UTAH
NATURAL RESOURCES & ENERGY
Oil, Gas & Mining

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August 4, 1982

Mr. John Huefner, P. E.
Kaiser Steel Corporation
P. O. Box D
Sunnyside, Utah 84539

RE: Review Manshaft Mine Water
and Sedimentation Ponds
Sunnyside Mine
ACT/007/007
Carbon County, Utah

Dear John:

A review of the manshaft mine water and sedimentation ponds application has been completed. Kaiser Steel is reminded that design must be provided for the capacity of runoff resulting from the 10-year, 24-hour event (UMC 817.46[g]). The peak rate of discharge for the 10-year, 24-hour event is only of concern in designing for nonerosive inlet structures or detention time if a dewatering device is to be utilized. The peak rate of discharge is essential for calculating the appropriate size of the emergency spillway for the safe discharge of the peak from a 25-year, 24-hour event.

The following comments were made in regard to the design equations used for the 10-year, 24-hour event and meeting the design criteria of UMC 817.46.

1. Step 2 of the SCS-TP-149 equation (revised April 1973) is:

   $LAG(L) = 1 \cdot 8(S + 1) \cdot 7/1,900Y \cdot 5$ rather than $1 \cdot 8(S + 1)1.67/9,000Y \cdot 5$

   Please correct this in your calculations.

2. There are no calculations provided for the 25-year, 24-hour peak rate of discharge. The emergency spillway design is based on this factor and must be included in this application for both ponds (see comment 4).

Board/Charles R. Henderson, Chairman • John L. Bell • E. Steele McIntyre • Edward T. Beck
Robert R. Norman • Margaret R. Bird • Herm Olsen

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3. The equation for the Slope Gradient Factor (LS) in the USLE is:

$$(x/72.6)^m(430x^2 + 30x + 0.43/6.613)$$

Where x is slope length, X is sin O, O is slope angle and m is an exponent dependent upon slope given by: slope $\leq$ 3% m = .3
4% m = .4
$\geq$ 5% m = .5

4. It is not clear whether the mine water discharge pond spillway is designed as a continuous discharge structure. The emergency discharge from the sedimentation pond flows into the mine water pond. What capacity will be provided for this flow? If a "flow through" discharge is intended, then respective sizings for each spillway should reflect this.

5. A complete cross-section should be presented for each pond embankment to assure that the crest width of the embankment and minimum slope requirements of UMC 817.46(1)(m) are met.

6. Describe the use and sizing of the pipe which connects the sedimentation pond to the mine water discharge pond.

As indicated in our phone discussion on August 3, 1982, the designs submitted for the coarse refuse sedimentation pond may contain the same equation errors. Please re-evaluate the design for the three ponds with the enclosed revised edition of the SCS-TP-149 equations.

If you have further questions, please contact me.

Sincerely,

Sally Kefer

SALLY KEFER
RECLAMATION HYDROLOGIST

SK/btb

Enclosure

cc: Wayne Hedberg, DOGM