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KAISER STEEL

KAISER STEEL CORPORATION
WESTERN COAL OPERATIONS
SUNNYSIDE, UTAH 84539
TELEPHONE 801-888-4421

RECEIVED
JUL 25 1979
DIVISION
GAS, & MINING

~~Tom?~~
To Mike

Dept. of Natural Resources
Div. of Oil, Gas & Mining
1588 W. North Temple
Salt Lake City, Utah, 84116

July 24, 1979

re: Sunnyside Mines
ACT/007/007
MC-717.17 Violations

Gentlemen,

in response to the visit by Mike Thompson and Tom Suchoski on 7-19-79 relative to your letter of 4-13-79, we hereby submit the runoff computation sheets for the 100-year storm at the main complex area. The 1.20 "/hr factor was secured from the State Climatologist, Arlo Richardson, at USU, for our locale. You will note that there is adequate capacity in the pond as now constructed and we ask that it be accepted as it now exists.

The pond has been in useage approx. 6 years with the fines sealing the embankment and preventing any lateral leaching, and also reducing the rate of percolation. The outslope is 1:2.5 and the inside is 1:1.5 slope. The embankments are monitored weekly for stability.

Sincerely,

John S. Huefner, PE.

Enclosures

cc: Joe Taylor
Lloyd Heath
Lynn Huntsman

MAIN COMPLEX
SEDIMENTATION POND

The proposed sedimentation pond for the main complex area lies in the N½NE¼ of Section 7, T15S, R14E, SLM; and has approx. 5.8 to 6 acres surface area with about 18' high embankments.

The computed runoff from the 100-year storm is:

upper area - 23.7 cfs
lower area - 21.4 cfs

Total - 45.1 cfs

45.1cfs x 3600sph x 24hpd ÷ 43,560sf/af = 89.5af/d
say 90 af/d ÷ 5.8 acres = 15.5' depth
required and have available 18'.

(present capacity is 2/3 that of max computed runoff of 86cfs, but have 3 other ponds in the immediate vicinity that can serve as emergency collecting ponds.)

REGISTERED PROFESSIONAL ENGINEER
No. 3250
JOHN S.
HUEFNER
STATE OF UTAH

7-23-79

STORM DRAINAGE DESIGN

Time of Concentration
Computation Sheet

RATIONAL METHOD

Project DOGM

DRAINAGE STUDY

INITIAL AREA MAIN COMPLEX (upper area)

A (Acres) = 40.3 | C = .87 (prkg lot) | H_1 6800

CA = 35.1 | R_1 (2/hr) = 1.20 (100yr/24hr) | H_2 6680

CAR_1 (cfs) = 42.1 | L (') = 2000' | H 120

$S = \frac{H}{L} \times 10^{-3} = .06$

$\frac{L}{W} = \frac{L^2}{43560A} = 2.28$

$\frac{L}{W} = 2.3$

P = .45

F = 4.0 (overland)

e = 0.655

1/e = 1.525

$W = \frac{43560A}{L}$

$\frac{P}{L} = 2.25 \times 10^{-4}$

$B = \sqrt{\frac{P}{L}} = \sqrt{\frac{.45}{2000}} = .015$

$Q = 15(CAR_1\ FB)^{1.143}\ S^{0.2143}$

$(CAR_1\ FB)^{1.143} = (2.52)^{1.143} = 2.88$

$S^{0.2143} = (.06)^{0.2143} = .55$

$Q = (15)(2.88)(.55) = 23.7$ cfs

$i_c = \frac{Q}{CAR_1} = \frac{23.7}{42.1} = .56$ 2/hr

$t_c = \frac{60}{i_c^{1/e}} \quad \frac{60}{(.56)^{1.525}} = \frac{60}{(.42)} \quad 143$ min.

~~From Graphs~~ i = _____ 2/hr

$(Q = CAi = (.87 \times 40.3 \times 1.2) = 42$ max. cfs$)$

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based on: GREGORY-ARNOLD METHOD.

STORM DRAINAGE DESIGN

Time of Concentration
Computation Sheet

RATIONAL METHOD

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DRAINAGE STUDY

INITIAL AREA MAIN COMPLEX (lower area)

A (Acres) = 121.0

CA = 36.3

CAR_1 (cfs) = 43.6

C = .30 (undev.)

R_1 (%/hr) = 1.20 (100yr/24hr)

L (') = 6500'

H_1 6680

H_2 6570

H 110

$S = \frac{H}{L} \times 10^{-3} = .017$

$\frac{L}{W} = \frac{L^2}{43560 A} = 8.02$

$\frac{L}{W} = 8.0$

$\frac{P}{L} = 8.3 \times 10^{-5}$

P = .54

F = 4.0 (overland)

e = 0.655

1/e = 1.525

$W = \frac{4.3560A}{L}$

$B = \sqrt{\frac{P}{L}} = \sqrt{\frac{.54}{6500}} = .009$

$Q = 15(CAR_1\ FB)^{1.143}\ S^{0.2143}$

$(CAR_1\ FB)^{1.143} = (1.59)^{1.143} = 1.70$

$S^{0.2143} = (.017)^{0.2143} = .84$

$Q = (15)(1.70)(.84) = 21.4$ cfs

$i_c = \frac{Q}{CAR_1} = \frac{21.4}{43.6} = .49$ %/hr

$t_c = \frac{60}{i_c^{1/e}} \quad \frac{60}{(.49)^{1.525}} = \frac{60}{(.34)} \quad 176$ min.

~~From Graph:~~ i = _____ %/hr

(Q = CAi = (.3×121.×1.2) = 44 max. cfs)

based on: GREGORY-ARNOLD METHOD.

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7-23-79