0016

FILE COPY

April 21, 1986

TO: Technical File

FROM: Rick P. Summers, Reclamation Hydrologist RS

RE: Revision of Condition #1, Removal and Disposal of Sediments from Sedimentation Pond, Utah Fuel Co., Skyline Mine, ACT/007/005, Folder 3 and 4, Carbon, Co. Utah.

Summary

The Division approved the designs for diversion BC-12 with one condition in the letter to Glen Zumwalt dated January 15, 1986. This condition essentially requires 4 inch riprap to be placed in the diversion. Following discussions with Keith Zobel and Keith Welch at the Division offices on March 14, 1986, it was agreed that the railroad ballast material available at the site could be used for riprap of the channel. They informed me the material was 2 inch plus and I responded that I would complete the diversion design and revise the condition.

Recommendations

Analysis of the proposed 2 inch riprap indicate that the riprap is adequate for the expected flow velocities (4.01 fps) resulting from a 50 yr - 24 hr event. Since the regulations only require a 10 yr. -24 hr. design, the diversion is overdesigned and should be approved (see attached technical memo for calculations and rationale). I recommend that we revise the condition referenced above as follows:

> Condition #1 (revised). The applicant must commit to installation of a channel lining of two (2) inch material in diversion BC-12 prior to July 15, 1986. The diversion must be ripraped to provide for a depth of flow of 1.0 ft. for the entire reach.

cc: L. Braxton
S. Linner
D. Lof

6000R-2

Project: Skyline Mine, Diversion BC-12.

Date: April 18, 1986

Reviewer. Rick Summers, Hydrologist

The calculations of memo dated 12-23-85 need revision due to agreement by SM to riprap BC-12 with 2"-3" riprap (railroad ballast) (Powell & Welch agreement, DOGM offices, 3-14-86 p.m.).

Assumptions:

Area	2.7 ac.
Hyd. Length	1320'
Slope	5.68 %
CN	90
Tc (min)	11.7 min (.196 hrs)
10yr-24hr ppt.	2.4"
100yr-24hr ppt.	3.6"

Results

10yr-24hr peak	3.7 cfs
50yr-24hr peak	5.44 cfs
100yr-24hr peak	6.32 cfs.

Design

Design for 50yr. event (agreed by Powell + Welch 3-14-86).

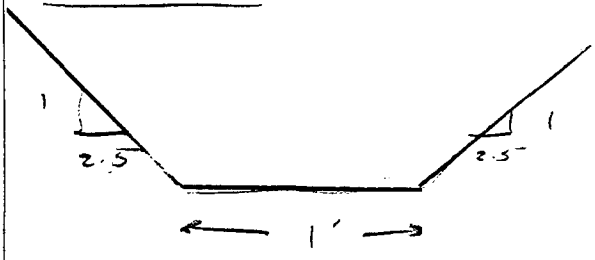
Assume:

1) Trapezoidal channel, 1 ft. bottom width, 2.5:1 sideslopes.

2) Two sections: 2.5% and 3.8% slope.

Results. next page.

Results:



Assume: $n = 0.035$
$Q = 5.44$ cfs.

For 2.5% section:

Depth = 0.62 ft.

Area = 1.58 ft^2

Wet Perimeter = 4.34 ft.

Velocity = 3.44 fps

For 3.5% section

Depth = 0.56 ft.

Area = 1.36 ft^2

Wet Perimeter = 4.03 ft.

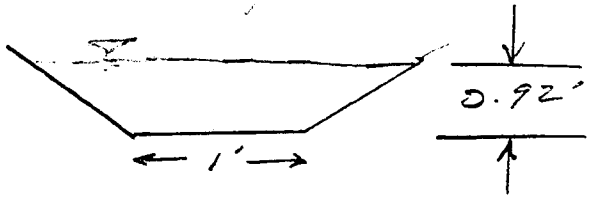
Velocity = 4.01 fps

Riprap sizing:

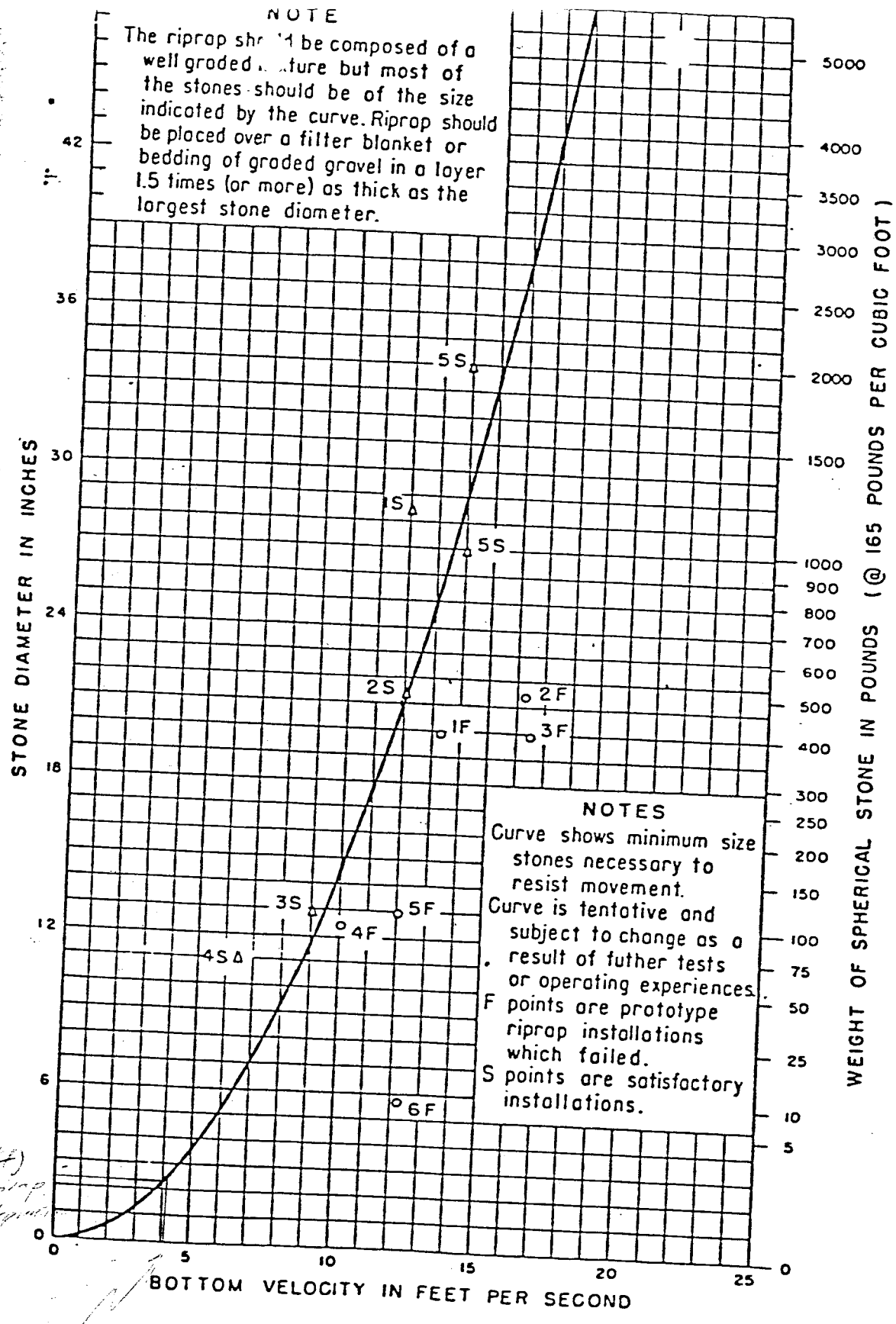
see attached chart.

2" riprap adequate.

Final sizing:



say, 1 ft. (w/freeboard)



Curve to determine maximum stone size in riprap mixture

Kylene Mine
4-21-86