

# FILE COPY

May 5, 1987

TO: Technical File

FROM: Rick P. Summers, Reclamation Hydrologist *RS*

RE: BC-12 Diversion Modification (March 31, 1987), Utah Fuel Company, Skyline Mine, ACT/007/005, Carbon County, Utah

## Summary

On March 31, 1987, Utah Fuel Co. submitted a proposal to reroute the drainage reporting to diversion BC-12 located at the loadout facility area. The drainage will be mixed with wash down water from the conveyor gallery routed and to an existing 18 inch CMP which directs the drainage to the existing sedimentation pond system. An analysis of the expected peak runoff from the 10-yr, 24-hr and 50-yr, 24-hr peak flow events was conducted utilizing Plates submitted on 11/18/85 for assumption information. The applicant submitted peak flows based upon the Rationale Method. Based upon this analysis, it was concluded that the existing culvert is over designed with respect to capacity to handle the expected peak flow event from a 10-yr, 24-hr precipitation event. This proposal is approveable at this time.

## Body

The expected peak flow for the drainage from the area reporting to diversion BC-12 was analyzed and found to be 3.7 cfs for the 10-yr, 24-hr event and 5.44 cfs for the 50-yr, 24-hr event. Applicant values differ from the Division's calculations due to methodology and assumption differences, but the existing 18 inch CMP was shown to have a capacity that exceeded the peak for the 50-yr, 24-hr event (capacity is at least 5.5 cfs). Wash down water is expected to be less than 50 gpm (0.111 cfs). Attached to this memo are the peak flow assumptions and calculations and the nomograph depicting the culvert capacity.

rps

cc: Wayne Hedberg  
Sue Linner  
Holland Shephard

6000R-27

4. HYDRAULICS

HYDRAULICS OF CULVERTS

5/4/87

Skylar Murre, P.E.

Division BC-12

atisfactory for the full 100-year  
dewater is too high, a larger size  
imum permissible headwater.  
ows.

r inlet control enter Fig. 4-22,  
depth in outlet control. If the  
ol, the culvert is assumed to be

n the flow charts. For other  
L', calculated by the formula  
..... (14)

chart.  
adjust the result for the Man-

the entrance condition desired.  
age 156.

ndwater exceeds the allowable,  
acceptable headwater depth.  
onsidered for corrugated steel  
ee Table 4-10. A smaller size  
ry.

ed. It may be economical to  
size difference results. Check

g's n for Structural Plate Pipe  
ments reported in Table 4-1f  
4-25 together with the corre-  
a was not a part of the Fed-  
re published in 1963.

0-year flood discharge. Ob-  
portance which do not war-  
discharges for less critical  
floods. This is a matter of  
of this chapter. But, whatever  
arge, the rationale presented  
balanced by requiring no static  
discharge than the design dis-

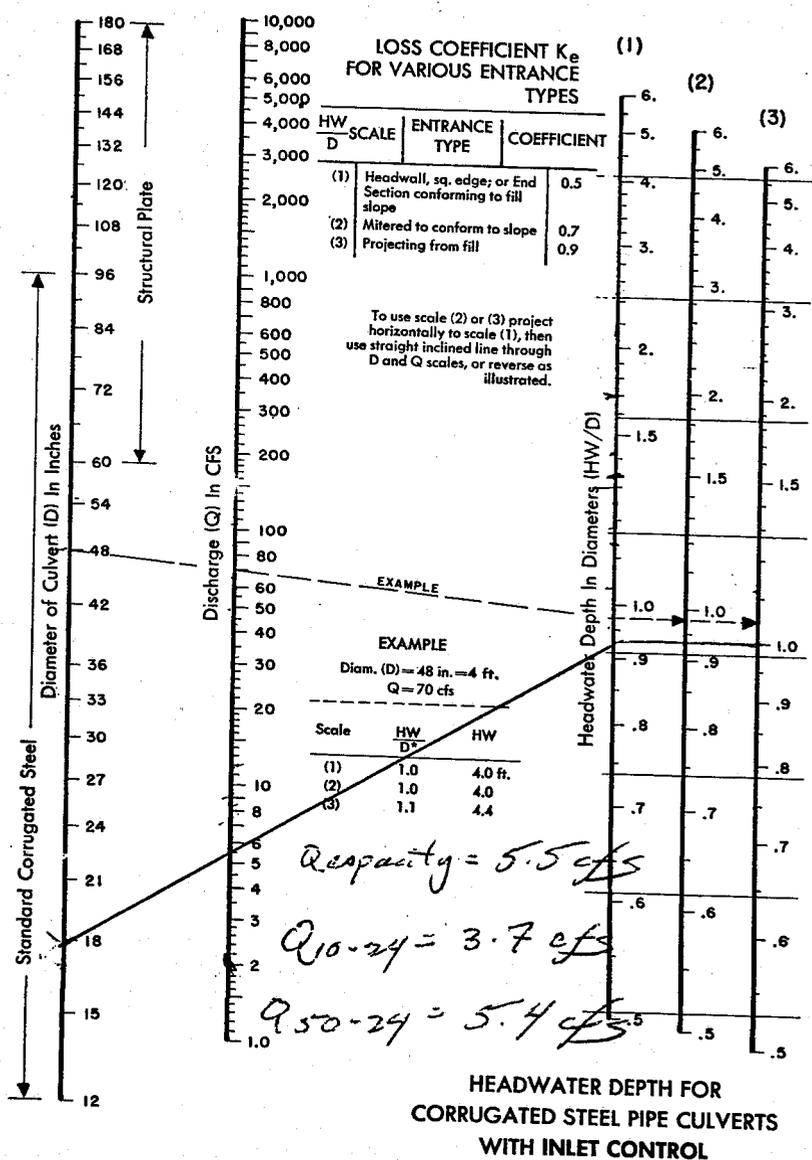


Fig. 4-18. Inlet control nomograph for corrugated steel pipe culverts. The manufacturers recommend keeping HW/D to a maximum of 1.5 and preferably to no more than 1.0.

Project: Skyline mine, Designs for Diversion BC-12  
 Date: 12-18-85

Reviewed: Rick Summers, Reclamation Hydrologist

I. PEAK FLOW VALUE ASSUMPTIONS

	<u>Skyline</u>	<u>DOGMA</u>	<u>Comments</u>
Area (Ac)	2.0	2.7	Reference: sheets 2 and 3 (maps)
Hydraulic Length	$TIA^2$	1,320'	
Slope	TIA	5.68%	1) Not applicable: applicant submitted Rational Method
CN	TIA	90	
Time Conc	6.3 min	.196 hrs. (11.7 min.)	
241-246 ppt.	Discrepancy in	2.4 <sup>3)</sup>	2) Clear Creek Station Records.
504-246 ppt.	MRP	3.2	
1004-246 ppt.	3.6	3.6	

II. PEAK FLOW RESULTS

	<u>Skyline</u>	<u>DOGMA</u>
Q <sub>10-24</sub>	Not Calc.	3.7 cfs.
Q <sub>50-24</sub>	Not Calc.	5.44 cfs.
Q <sub>100-24</sub>	5.8 cfs	6.32 cfs.