Memo - Highland Ditch
Purgatory River near La Junta Colo.
Memo - Highland Ditch

Nov 9-1928

Ditch - Max 75 to 100 Sec. Ft
Min 6 to 8 ft

High banks - many places deep rock cuts

Company expects to raise dam at Dry Creek. With a discharge of 17 sec. ft. the crest of present dam was about 0.5 ft. above water surface. The deep rock cut between waste gate and pumping plant was filled with fine sand to a depth of about 2 ft.

Water depth at waste gate 6 to 1.5 ft

Possibility of installing headgates in ditch just downstream from waste gate. If these gates are installed the operation would be under pressure in some instances.

Most desirable point for flume would be downstream in rock section, from waste gate.
The sill of waste gate is about 5 ft. below water surface. 7/19/25 noon - discharge 17 sec. ft.
Discharge down dry creek tops crest of present dam, dam excess going down ditch. Waste gate intended to flush section between.

Recommendations

Raising crest of dam across dry creek with waste gates in dam to flush deposit back to river. Control gates in ditch at dam to prevent debris from washing down ditch. Headgates in ditch at waste gate. Locate Venturi flume downstream from waste gate far enough from to prevent excessive velocity due to operation of headgates at waste, under a large difference in head. For a discharge of 10 sec. ft. assume the headgates at waste gate, to be nearly closed and cause the water upstream to raise in stage to crest of dam across dry creek, this condition may make it possible to create very high exit velocity from these headgates. To overcome this possibility it will be necessary to raise the
crust of the Venturi at a maximum. Perhaps the present conditions of deposit in
the ditch section is approximately the reverse and on this assumption to measure
17 sec. ft through a 6-foot flume, with 70 percent
submergence

\[ Q = 17 \text{ sec. ft} \quad H_a = .80, \quad H_b = .56, \quad \kappa = 70\% \]

\[ Q = 78 \quad H_a = 2.10 \]

For 17 sec. ft, the loss of head to \( H_a \) gage is approx. 0.10 ft or total loss through
structure is roughly 0.4 ft.

The loss of head to the gage for 78 sec. ft
is estimated to be 0.4 ft or an increase
upstream depth of 1.6 ft. For this \( Q \)
the water surface would be about 1.6 ft
above the present crust of the Dry Creek
dam.

Raise Dry Creek dam 2 ft.

It is probable that if suitable waste way
could be provided, say near tunnel, to
relieve the upper section of ditch that the
Venturi could be set at a lower elevation
24 Top
64 Sides
20 Back
28 Front
13 Bottom - use scrap ends.
16 Post - inside well

165

Estimate of Cost
3 yds. of gravel @ $3.50 10.50
20 bags of cement @ $1.75 23.00
Timber 1000 BM @ $5.00 50.00
Hardware - estimate 6.00
Labor 50.00

$139.50
Materials

Concrete
Cut off Wall A 35 cu. ft. 75 cu. ft.
Wall B 12 " " 3 yds.
Wall C 28 " "

20 shos. of cement.

Lumber
60 Converging floor sills 3 - 4/6-10
72 Wall posts 3 - 4/6-12
54 Thrust floor & wall sills 1 - 6/6-18
72 2 - 4/6-12
20 Cut off A floor sill 1 - 4/6-10
20 " end posts 1 - 4/6-7
20 Cut off G floor sill 71 - 4/6-16
32 Cross ties - converging 6 - 2/6-10
32 Thrust 2 - 2/6-16
20 Long top brace 2 - 2/6-10
200 Floor Converging 10 - 2/12-10
160 Wall 8 - 2/12-10
28 Thrust - floor 1 - 2/12-14
20 Wall 2 - 2/12-10
Diverging - floor wall 2-2/12-14

Extra 4-1/2"-12 2-4/4-12

Hardware
25 lbs 20d common nails

Bolts - cut off wall A 14-1/2"-12 coax

wall B 6-1/2"-12

wall C 12-1/2"-12

Well inlet tubes 2-1 1/2"x12"
2-pair hinges - strap 8" inch
1 trap

Estimate of cost (see below)

Material for still well
Proposed 6-Foot Highland Venturi - Framed.