



State of Idaho
DEPARTMENT OF WATER RESOURCES

1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720-9000
Phone: (208) 327-7900 FAX: (208) 327-7866

May 24, 1994

Jack Eastman
Watermaster, Water District 47C
106 Doral Dr.
Jerome, ID 83338

RECEIVED
CECIL D. ANDRUS
GOVERNOR
R. KEITH HIGGINSON
DIRECTOR

MAY 26 1994

Department of Water Resources
Southern Region Office

Re: Devil Creek/Cross-Cut Canal Field Inspection Summary

Dear Jack:

This letter summarizes the measurements which were made by IDWR staff on May 13, 1994. IDWR staff included myself and Scott King. Also in attendance was Roland Patrick of Devil Creek Ranch, Inc. Measurements included weir measurements of Cedar Mesa Reservoir and Canal Co. weirs on the Cross-Cut Canal and current meter measurements of Devil Creek Ranch Inc.'s ditches between the two Cross-Cut Canal weirs. Estimates were made of Devil Creek Ranch Inc.'s ditch diversions located upstream of the confluence of Devil Creek and the Cross-Cut Canal (or upstream of the highway). The latter ditches were not measured because IDWR staff was short on time and had a scheduled commitment in Hagerman on the way back to Boise. Two of the three ditches were inspected and an attempt was made to measure these two ditches using a portable V-notch weir. Accurate measurements could not be made using the portable weir without making some ditch modifications.

IDWR staff also inspected the two Armco headgates and stilling wells owned by Devil Creek Ranch which are located downstream of the highway and confluence of Devil Creek and the Cross-Cut Canal. These headgates were inspected as to the suitability of their use as measuring devices. The first headgate and stilling wells downstream of the highway appeared to be functional and meet the criteria for use as a measuring device. However, we were not able to use this as a reliable measuring device because we could not find the correct zero opening point of the gate since there was too much water in the canal. The second gate and wells also meet the criteria for use as a measuring device but the zero opening point of the gate also needs to be determined. In addition, one of the stilling wells at this gate was dry, probably as a result of a clogged drain pipe. Both gates can be used in the future as measuring devices once the zero gate openings are determined and as long as the stilling well drain pipes are maintained. Instructions and information for these types of gates have already been provided to you. IDWR will send Mr. Patrick this same information. Mr. Patrick indicated that he would try to unplug the clogged drain pipe on the dry well at the second headgate.

A summary of the measurements made by IDWR on May 13 are provided on the following page.

Cross-Cut Canal Weir just above
confluence of Canal and Devil Creek 17.2 cfs

Cross-Cut Canal Weir near Landfill 16.0 cfs

Current Meter Measurements:

- Devil Ck. Ranch Head Gate & Ditch No. 1 3.4 cfs
(first ditch downstream of highway &
confluence of Canal and Devil CK.)

- Devil Ck. Ranch Head Gate & Ditch No. 2 2.8 cfs
(2nd ditch downstream of highway)

- Devil Ck. Ranch Head Gate & Ditch No. 3 1.9 cfs
(3rd ditch downstream of highway)

Estimate of Devil Ranch Ditch Diversions

south (or upstream) of highway and
confluence of Cross-Cut Canal & Devil Ck. 1.5 cfs

Between the current meter measurements and estimate of flows in the ditches upstream of the highway, the total diversion of water from Devil Creek by Devil Creek Ranch was about 9.6 cfs. Under its' water rights from Devil Creek, Devil Creek Ranch is limited to a total diversion of 6.72 cfs. On May 13 therefore, Devil Creek Ranch was diverting about 2.9 cfs above its' water rights from Devil Creek.

Following these measurements and estimates, IDWR staff instructed you and Mr. Patrick to reduce the total diversions from Devil Creek by Devil Creek Ranch to about 6.72 cfs. Mr. Patrick was advised that he should install measuring devices for all his diversions. Mr. Patrick was also advised to install permanent, lockable controlling gates on his Devil Creek diversions upstream of the highway. Temporary measuring devices may be installed in the two ditches downstream of the highway until the Armco gates can be used as measuring devices. Until measuring devices are installed, you may estimate the diversions and then adjust the headgates and ditch flows if necessary (i.e.; adjust flows downward on ditches with three controllable gates if total diversions from Devil Creek exceed 6.72 cfs).

For future use, you can determine the natural flow of Devil Creek using the following formula:

$$DC_NF = Q2 + \sum DC \text{ Diversions} - Q1$$

where DC_NF = Devil Creek Natural Flow

Q1 = Discharge at Cross-Cut Canal weir located
above confluence of canal and Devil Creek

Q2 = Discharge at Cross-Cut Canal weir located
near landfill

$\sum DC$ = Sum of all diversions from Devil Creek

Page 3

An example using this formula with data from May 13 is provided below:

$$DC_NF = Q2 + \sum DC \text{ Diversions} - Q1$$

$$DC_NF = 16.0 \text{ cfs} + 9.6 \text{ cfs} - 17.2 \text{ cfs}$$

$$DC_NF = 8.4 \text{ cfs}$$

Using this formula, you will see that the natural flow of Devil Creek is about 8.4 cfs, and that there is sufficient supply of water from Devil Creek to satisfy the 6.72 cfs water rights owned by Devil Creek Ranch. Note that this formula assumes that there are no losses or gains in the Devil Creek/Cross-Cut canal channel between the landfill weir and the confluence of Devil Creek and the Cross-Cut Canal.

If you have questions or concerns regarding this summary and any information therein please call me at this office. I also wish to inform you that the Department will be sending orders requiring installation of measuring devices and headgates on Deadwood, Devil and Cedar Creeks.

Sincerely,



Tim Luke

Water Allocations

cc: Jim Stanton, Southern Region
Devil Creek Ranch, Inc.
Cedar Mesa Reservoir & Canal Co.