State of Idaho
DEPARTMENT OF WATER RESOURCES
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January 30, 1996

PHILIP E. BATT
GOVERNOR

KARL J. DREHER
DIRECTOR

JAY HULET
HC 79 BOX 2020
MURPHY ID 83650

RE: Measuring Devices for Hulet Reservoir

Dear Jay:

In response to inquiries in your January 1, 1996 letter:

You asked how much the weir at the head of Murphy Mutual Canal must be raised in order to accurately measure flows of 70 cfs without submergence. This is not a figure which IDWR can calculate for you. You should consult with a professional engineer regarding this proposed modification.

Because the existing configuration of the MMC measurement structure is not standard, changes to the weir crest elevation may not have the expected results. I have enclosed a portion of Larsen's Water Measurement handbook which discusses weir installation. According to this publication, certain criteria must be applied in order for a weir to perform properly. The weir at the head of MMC violates several standard construction criteria, most significantly, those providing proper contraction and straight-line flow approach conditions. To compensate for non-standard conditions, a calibrated staff gauge adjustment has been used over the past several years. If the weir is modified, re-calibration of the gauge would be mandatory. A satisfactory adjustment factor may not be possible at increased head.

The effects of weir modification on weir pool elevation within the control box must also be considered. A major elevation gain would cause the weir pool to overtop the wooden gate which controls flows to Sinker Creek. If overtopping occurs, the wooden control gate will become ineffective and likely inoperable, and the weir modification would not be acceptable unless you are also willing to replace or modify the wooden gate.

You should not overlook alternatives with respect to the placement of the MMC weir. It has been suggested to you that the weir be moved about one hundred feet downstream in the canal. At this location, a permanent weir in cement footings could be constructed to standard specifications. A full range of flows could then be accurately measured without a correction factor or without problems of submergence.

IDWR is not requiring relocation of the MMC weir at this time, but may in the future if modifications to the existing weir are not successful or if deliveries continue to be unsatisfactory. If you choose to leave the weir as is for the 1996 season, it will need to be re-sealed at the sidewalls. You may then take deliveries up to the present weir capacity of approximately 35 cfs.

You also made reference in your letter to the inlet weir above Hulet Reservoir. Pending the condition of the channel after high flows have receded, the inlet weir should be able to be re-set at approximately the same site. Measurements conducted above and below this point during 1995 indicate it is a satisfactory site for inflow measurements. Before you re-set the weir, please review the weir installation criteria regarding construction of the weir pool. Historically, flow contraction above the inlet weir has been somewhat insufficient.

Third, you were concerned about a reported discrepancy in the reservoir measurement pole readings. Since the installation of inlet and outlet weirs to regulate natural flows through Hulet Reservoir, IDWR has not used the measurement poles in the reservoir for formal measurements. The poles are used as necessary to monitor relative changes in reservoir level. The accuracy of the pole settings is not an issue with respect to the operation of the Water District.

Please call if you need more information.

Sincerely,

Cindy Hodges

Cindy Hodges
Sr. Water Resource Agent

Enclosures