ADJUDICATION MEMO #42

To: Adjudication Staff

From: Jeff Peppersack

Date: May 5, 1995

Approved: NCY DBS

Re: Irrigation Diversion Rate Calculations - Peak Consumptive Use

This memo is notification of a change in our standard procedure to calculate irrigation diversion rates as described in the EVALUATION WORKBOOK FOR IRRIGATION DIVERSION RATES and GUIDELINES FOR THE EVALUATION OF IRRIGATION DIVERSION RATES by Hubble Engineering, Inc. and Associated Earth Sciences Inc. This change will affect the application of consumptive use values from the Allen and Brockway tables.

The design capacity of an irrigation system is generally based on the peak consumptive use of the expected cropping pattern for the period between irrigations. Since peak consumptive use data is not widely available for crops in Idaho, the Hubble workbook and guidelines direct you to use average monthly consumptive use values for the most water consumptive crop in the area or in the rotation. This method may underestimate diversion requirements, especially in cases where a single crop is grown.

A method of estimating peak consumptive use rates from monthly estimates is available from the ASAE publication entitled, DESIGN AND OPERATION OF FARM IRRIGATION SYSTEMS by Marvin Jensen, 1983. The table below was derived from Figure 6.6 (page 223) of that publication. These table values will be used in conjunction with the Allen and Brockway consumptive use tables.

Estimating Peak Consumptive Use From Monthly Estimates

Irrigation Application Depth	Ratio of Peak CU to Monthly CU
1	1.14
2	1.11
3	1.09
4	1.07
5	1.05
6	1.04
7	1.03

Irrigation application depth, the amount applied during an irrigation, is calculated for each crop using Table 4 in the Hubble workbook.

Table 1 in the Hubble workbook requires input of the crop's "AVE IR", for each month, from the Allen and Brockway tables. The "AVE IR 11 represents the average monthly consumptive irrigation requirement for each crop. The monthly values should be multiplied by the appropriate ratio from the table above. The results are estimates of the crop's peak consumptive irrigation requirement for each month. These values are entered into Table I of the Hubble workbook. This must be done for the most water-consumptive cropping pattern, or mix of crops in the crop rotation, instead of just the most water consumptive crop as was done in the past.

Example: A farmer in Aberdeen grows grain and alfalfa hay on a 100-acre farm. The crop rotation practiced never allows more than 75 acres of either crop in any given year. From Table 4 in the Hubble workbook you calculate a MAD (irrigation application depth) of 2.4 inches for the grain and 3.1 inches for the alfalfa. From the table above you choose a ratio of 1.11 for the grain and 1.09 for the alfalfa. The attached sheets show the calculations using the Allen and Brockway table for the Aberdeen station and the entries into Table 1 of the Hubble workbook.