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**REPORT REGARDING DEVELOPMENT OF STANDARDS FOR ANNUAL
VOLUME OF IRRIGATION REQUIREMENTS AT THE FIELD HEADGATE**

In Re SRBA
Twin Falls County Civil Case No. 39576
Sub-Case No.: 36-08649

Report to the SRBA District Court

Prepared by the Idaho Department of Water Resources
Karl J. Dreher, Director
David R. Tuthill Jr., Acting Adjudication Bureau Chief

August 1, 1996

REPORT REGARDING DEVELOPMENT OF STANDARDS FOR ANNUAL VOLUME OF IRRIGATION REQUIREMENTS AT THE FIELD HEADGATE

INTRODUCTION

The purpose of this report is to document the methodology used by the Idaho Department of Water Resources (IDWR) to develop standards for annual volume of irrigation requirements at the field headgate. The standards used by IDWR are based on the annual volume of consumptive use for the most water-consumptive crop grown in an area and an irrigation application efficiency which is considered achievable using the benefits of modern irrigation design and practices. In order to fully describe the field headgate requirement standard, this paper will first describe IDWR standards for the annual volume of consumptive use for irrigation. Development of these standards was first described in a December 18, 1991 memorandum which is attached to this report for reference (Attachment 1).

DEFINITION OF TERMS

Consumptive Use (CU): This term has both a technical definition and a statutory definition, as follows:

Technical Definition: The amount of water transpired by an actively growing or photosynthesizing plant plus water evaporated from soil and foliage in the area occupied by the growing plant. This term is synonymous with evapotranspiration (ET) (Allen and Brockway, 1983, p. 2).

Statutory Definition: Section 42-1401A(2) of the Idaho Code provides the following definition: "the amount of water that does not remain in the water system after use or is not returned to the water system through return flows or seepage ... for an irrigation water right [consumptive use] shall be based upon the most water consumptive crop that can be grown in the area during the period of the year when water is used for irrigation."

Units for consumptive use for irrigation are expressed in acre-feet per year per acre (AFY per acre) in this report.

Evapotranspiration (ET): See "Consumptive Use" (technical definition) defined above.

Consumptive Irrigation Requirement (CIR): The amount of water required for consumptive use that is artificially applied to the soil through irrigation (Sutter and Corey, 1970, p. 1). Units for CIR are expressed in units of AFY per acre in this report.

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Effective Precipitation (EP): The amount of water provided by precipitation which is capable of satisfying a part of the consumptive use (Sutter and Corey, 1970, p. 1).

Field Headgate Requirement (FHR): See "Irrigation Requirement" defined below.

Irrigation Requirement: The amount of water required to be delivered to the irrigation system to meet the consumptive irrigation requirement (Sutter and Corey, 1970, p. 1). This term is also called the field headgate requirement in this report and is expressed in units of AFY per acre.

Irrigation Efficiency (IE): The ratio of the average depth of irrigation water beneficially used to the average depth applied, expressed as a percentage (USDA, 1993, p. 2-164). This term is also called the irrigation application efficiency in this report.

DISCUSSION OF CONSUMPTIVE USE TERMS

Technical literature considers the consumptive use (CU) for irrigated cropland to be provided by two components, irrigation and precipitation (Sutter and Corey, 1970, p. 1). Measurements of quantities of water required for growing crops typically identify the total CU, without specifying whether this amount is provided by irrigation or by precipitation.¹

On the other hand, the CU for irrigation as defined by Idaho statute, and thus the CU reported by IDWR for the recommendations of water rights, is the crop water use amount that must be provided by the irrigation system. This amount is technically the consumptive irrigation requirement (CIR), which is computed by subtracting the effective precipitation (EP) from the evapotranspiration (ET). For clarity in this report, the two types of consumptive use will be assigned subscripts, as follows:

$$CU_T = \text{Technical Consumptive Use} = ET$$

$$CU_S = \text{Statutory Consumptive Use} = ET - EP = CIR$$

BACKGROUND

The computation of irrigation consumptive uses in Idaho has been refined through the decades. An initial basis for computation of consumptive water uses was provided in a 1970 publication prepared by Sutter and Corey entitled "Consumptive Irrigation

¹Based on communication with Dr. James L. Wright of the USDA Agricultural Research Service on June 27, 1996.

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Requirements for Crops in Idaho." This study applied the SCS-Modified Blaney-Criddle method to data obtained at 42 weather stations in or near Idaho to compute consumptive use (CU_T) and consumptive irrigation requirement (CIR) (equivalent to CU_S). These values were reported as functions of crops and months for various frequencies of occurrence.

The Sutter and Corey study was used as the basis for IDWR irrigation standards for consumptive use (CU_S) and field headgate requirements (IDWR, 1982). IDWR developed a reference map for field headgate requirements based on the 80th percentile² values of CIR for alfalfa and an irrigation efficiency of 60%. The reference map presents field headgate requirements in 0.5 AFY per acre increments. This map is shown as "Irrigation Requirements at the Field Headgate" in Attachment 1 of this report.

In 1983, Allen and Brockway reported updated consumptive use estimates. In this study Allen and Brockway found that the FAO Blaney-Criddle method provided a more accurate prediction of the consumptive use of alfalfa hay, winter and spring grain and corn at Kimberly than had been achieved via the SCS-Modified Blaney-Criddle method. Thus the FAO Blaney-Criddle method was utilized to compute monthly values for CU_T and CIR for 12 crops at 98 stations across the state.³

Results of the Allen and Brockway study were adopted by IDWR as the basis for standards for consumptive use (IDWR, 1984). IDWR developed a reference map for consumptive use (CU_S) based on average annual CIR for alfalfa presented in 0.5 AFY per acre increments. This map is shown as "Annual Volume of Consumptive Use for Irrigation" in Attachment 1 of this report.

DEVELOPMENT OF NEW REFERENCE MAPS

Initiation of the Snake River Basin Adjudication prompted additional work in this arena. Two concerns were identified regarding the current standards at that time. The first concern was the use of different CIR estimates for the consumptive use (CU_S) and field headgate requirement (FHR) standards. At the time, the Allen and Brockway CIR

²The 80th percentile value represents the probability value which will not be exceeded 80 percent of the time.

³IDWR currently has a contract with the Idaho Water Resources Research Institute to update the Allen and Brockway ET estimates statewide. The update will incorporate climatic data available since the original report was completed. The contract is expected to be completed in early 1997. It is anticipated that the updated estimates will be utilized by IDWR, as necessary, to update standards for consumptive use and field headgate requirements.

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estimates were used for CU_s standards and the field headgate requirement standards were still based on CIR estimates from Sutter and Corey. In addition, the reference maps for CU_s and FHR did not use the same boundaries to outline the areas with similar values. Since CU_s and FHR both use CIR as the basis, the boundaries should be the same for each reference map. The fact that the CU_s map was based on more recent estimates of CIR resulted in inconsistent recommendations.

The second concern was the obscurity of the boundaries shown on the existing reference maps. Consistent recommendations were difficult without knowing the exact locations of the boundaries relative to the irrigated acreages.

A reference map should present data simply and accurately in order to ensure consistent use. Since the existing maps did not accomplish that, new reference maps were developed for CU_s and FHR based on CIR values from the Allen and Brockway study. Boundary lines were drawn along existing identifiable lines such as public land survey lines or county lines. IDWR's administrative boundaries also served as good boundaries for the reference maps especially where boundaries crossed irrigated areas.

To aid in the determination of boundaries between areas with different CIR values, IDWR developed a 1:1,000,000 scale map showing the irrigated areas within the state based on Landsat digital data.⁴ Weather station locations used in the Allen and Brockway study were plotted on the map to show the locations of CIR estimates in the state. This map was overlaid by a map showing IDWR's administrative boundaries and the public land survey lines. Other aids included climatic area maps from the Corey and Sutter report and the Soil Conservation Service (now known as the Natural Resources Conservation Service).

It should be noted that there are no true boundaries between climatic areas within the state. Most changes are gradual so the use of boundaries on a reference map is only necessary to provide consistency for the users. The use of boundaries requires some generalization and rounding of the data.

Consumptive Use

The revised CU_s reference map was based on the average annual consumptive irrigation requirement for the most water-consumptive crop in an area as required by statute. The table entitled "Consumptive Irrigation Requirement of the Most Water Consumptive Crop(s) for Weather Stations in Idaho" in Attachment 1 of this report

⁴Landsat digital data is remotely-sensed data from the earth's surface via satellite sensors commonly used for land use classification.

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lists the CIR values used to develop the revised CU_s reference map. The state was divided into several areas with similar CIR values. Boundary lines were drawn as described above. Each subdivision was assigned a CIR value which was generally rounded to the next highest 0.5 AFY per acre.

Field Headgate Requirement

The field headgate requirement (FHR), as defined earlier, is the amount of water required by the irrigation system (at the field headgate) to meet the consumptive irrigation requirement (CIR) of the crop(s). Due to the unavoidable losses of any irrigation system, the amount of water applied through an irrigation system must be greater than the consumptive irrigation requirement of the crop(s). The irrigation efficiency (IE) is the ratio of the amount of irrigation water used to satisfy the CIR for the crop to the amount of water applied through the irrigation system (FHR). This can be expressed by the relationship shown below:

$$IE = CIR/FHR$$

By rearranging the equation, FHR can be calculated as shown below:

$$FHR = CIR/IE$$

The revised FHR reference map was based on the CIR values from the CU_s subdivisions described above, divided by an irrigation efficiency of 70 to 75%. The efficiency range of 70 to 75% is considered to be an attainable efficiency for modern irrigation systems when properly designed and managed (Hagan, Haise, and Edminster, 1967, p. 1136). The FHR was calculated for each CU_s subdivision within the state and then rounded to the nearest 0.5 AFY per acre.

SUMMARY

Current IDWR standards for the annual volume of consumptive use (CU_s) for irrigation and the annual field headgate requirements (FHR) are based on consumptive irrigation requirement estimates from a study by Allen and Brockway. CU_s is based on the most water-consumptive crop in an area and generally rounded to the next highest 0.5 AFY per acre. FHR is based on the CU_s standards divided by an irrigation efficiency of 70 to 75% which is considered attainable for modern irrigation systems based on proper design and management. The results were rounded to the nearest 0.5 AFY per acre. The standards are presented in map form to ensure consistency in a simple format. This map, dated December, 1991, entitled "Consumptive Irrigation Requirement, Field Headgate Requirement and Season of Use" is included with this

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report for reference. The reference map was adopted as a standard by IDWR in 1992 (see Attachment 2 of this report).

REFERENCES

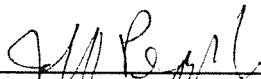
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- Idaho Department of Water Resources, 1991, Reference Maps for Consumptive Irrigation Requirement, Irrigation Field Headgate Requirement, and Irrigation Season of Use, Memorandum to File, IDWR.
- Idaho Department of Water Resources, 1992, Standards for Irrigation Consumptive Use Requirements, Irrigation Field Headgate Requirements, and Irrigation Season of Use, Administrator's Memorandum, IDWR.
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- U.S. Department of Agriculture, Soil Conservation Service, 1993, Irrigation Water Requirements, National Engineering Handbook, USDA.

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State of Idaho)
) ss.
County of Ada)

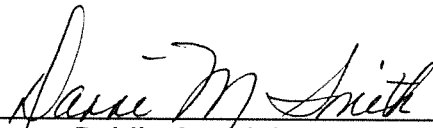
Jeff Peppersack, being first duly sworn, upon oath, deposes and says:

That I am an Engineer for the Adjudication Bureau of IDWR, that I have prepared the foregoing report, know its contents, and that the statements contained therein are true to the best of my knowledge and belief.



Jeff Peppersack

Subscribed and sworn to before me this 29th day of July, 1996.

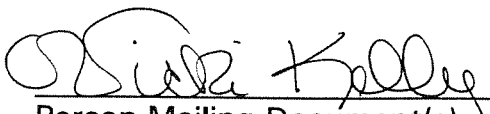


Notary Public for Idaho
Residing at: Boise ID
My commission expires: 12/5/2000

Certificate of Mailing

I certify that on the 1st day of August, 1996, I mailed copies of the foregoing document, including all attachments to the following:

Ray and Alice McCord
Route 1
Wendell, ID 83355



Person Mailing Document(s)



ATTACHMENT 1

MEMORANDUM

MEMORANDUM

December 18, 1991

To: File

From: Jeff Peppersack

Subject: Reference Maps for Consumptive Irrigation Requirement,
Irrigation Field Headgate Requirement, and Irrigation
Season of Use

In response to Regional Office concerns arising during the course of SRBA review I have been assigned the task of reviewing and possibly updating our reference maps on irrigation water use and season of use. The difficulties encountered by regional personnel are related to the origin of evapotranspiration data used to produce our current maps and the obscurity of the boundaries shown on each of these maps.

CURRENT REFERENCE MAPS

The Department currently uses three reference maps. The consumptive use map is based on the average annual consumptive irrigation requirements for alfalfa from the report ESTIMATING CONSUMPTIVE IRRIGATION REQUIREMENTS FOR CROPS IN IDAHO, by R.G. Allen and C.E. Brockway, August, 1983. Data from this report was put into map form by the Department using 0.5 acre-foot per acre increments (see Attachment 1).

The field headgate map is based on the 80th percentile consumptive irrigation requirements for alfalfa from the report CONSUMPTIVE IRRIGATION REQUIREMENTS FOR CROPS IN IDAHO, by R.J. Sutter and G.L. Corey, July, 1970. Data from this report was combined with an irrigation application efficiency of 60% and put into map form by the Department using 0.5 acre-foot per acre increments (see Attachment 2).

The season of use map is reportedly based on a 50% probability of a 28 degree frost occurring after a specified date in the spring and before a specified date in the fall. The source of data is the report SPRING AND FALL FREEZING TEMPERATURES IN IDAHO, by D.J. Stevlingson and D.O. Everson, 1968. Data from this report was put into map form by the Department (see Attachment 3). A review of this data found very little correlation between the

data and the map presently used.

DEVELOPMENT OF NEW REFERENCE MAPS

The purpose of a reference map is to provide a simple and consistent way to present data. Our current maps do not meet these requirements. First of all, consumptive irrigation requirements and field headgate requirements should be based on the same evapotranspiration data. Also, the boundaries used to separate different climatic areas within the state should be the same for consumptive irrigation requirements and field headgate requirements. The season of use map could also use the same set of boundaries since the parameters affecting season of use are closely related to the parameters affecting evapotranspiration (temperature, elevation, etc.). Lastly, a larger scale map with definite boundaries is required to provide the consistency desired.

It should be noted that there are no true boundaries between climatic areas within the state. Most changes are gradual and boundaries are only necessary to provide consistency for the users. The use of boundaries requires some generalization and rounding of the data.

Boundaries should be drawn along existing identifiable lines such as public land survey lines or county lines. IDWR's administrative basin boundaries serve as good boundary lines especially where it is necessary to divide irrigated areas. Several aids were used to develop these boundaries. A 1:1,000,000 scale map was produced by the Department's Technical Services Bureau to show the irrigated areas within the state based on Landsat data. This map also shows the locations of each of the weather stations used to report evapotranspiration data. This map was overlaid with a map showing the Department's administrative boundaries. Other aids included climatic area maps from the Corey and Sutter report and the Soil Conservation Service irrigation guide.

The most recent study of consumptive irrigation requirements for Idaho crops is the Allen and Brockway report which was completed in 1983. The purpose of this study was to evaluate existing methods and choose the best method for application to weather stations in Idaho. The Allen and Brockway report estimates consumptive use based on the FAO-modified Blaney-Criddle (FAO-BC) method. This method has a primary data requirement of air temperature only but can use measured values of wind, humidity, and solar radiation when available. In the report, the FAO-BC estimates were adjusted for elevation. Data from this report will be used as the basis for our updated consumptive irrigation requirement and field headgate requirement reference maps.

CONSUMPTIVE IRRIGATION REQUIREMENT MAP

The revised consumptive irrigation requirement map is based on the average annual consumptive irrigation requirement for the most water-consumptive crop in a particular area as required by statute (see Attachment 4). The state was divided into several areas with similar climatic conditions; each subdivision was assigned a consumptive irrigation requirement value generally rounded to the next highest 0.5 acre-foot per acre.

FIELD HEADGATE REQUIREMENT MAP

The revised field headgate requirement map is based on the average annual consumptive irrigation requirement, from above, divided by an irrigation application efficiency of 70 to 75%. The efficiency range of 70 to 75% is considered to be a reasonable design efficiency for modern irrigation systems. This was done for each subdivision within the state and then rounded to the nearest 0.5 acre-foot per acre.

IRRIGATION SEASON OF USE MAP

The revised irrigation season of use map is based on the growing season of grass pasture. In the report entitled "WATER USE BY NATIVE GRASSES IN HIGH ALTITUDE COLORADO MEADOWS" by E.G. Kruse and H.R. Haise, February, 1974, the growing season for grass pasture is reported to occur when the minimum temperature is above 24 degrees Fahrenheit. This same report also uses a growing season based on accumulated degree-days above a mean temperature of 40 degrees Fahrenheit. In the report entitled "SPRING AND FALL FREEZING TEMPERATURES AND GROWING SEASONS IN IDAHO", by D.O. Everson, M. Faubion, and D.E. Amos, January, 1978; the lower temperature threshold for all plants is 24 degrees Fahrenheit. In the report entitled "IRRIGATION WATER REQUIREMENTS", by the Soil Conservation Service, April, 1967; the growing season for grass pasture is reported to begin at the first occurrence of a 45 degree Fahrenheit mean temperature and end at the last occurrence of a 45 degree Fahrenheit mean temperature.

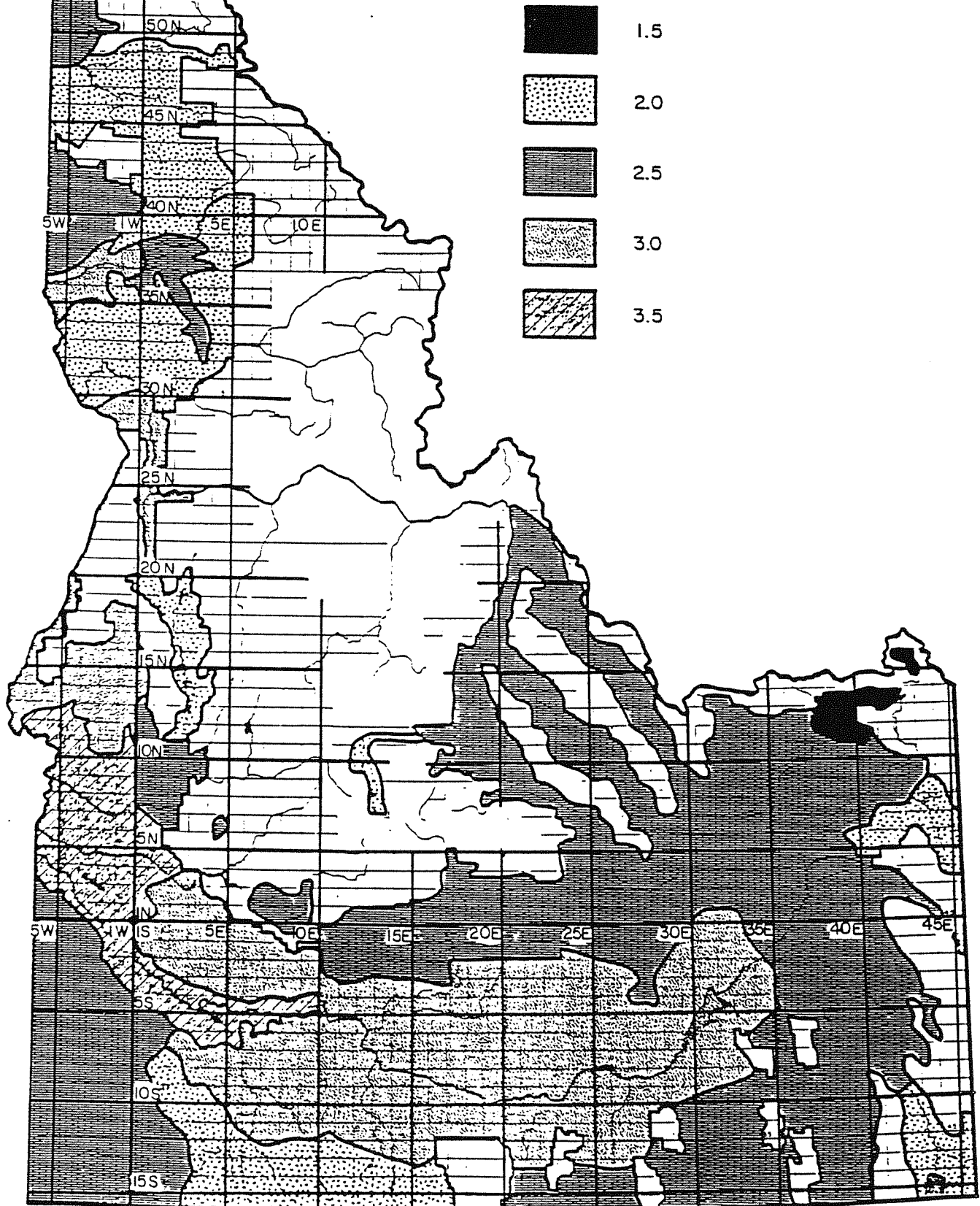
Data from several weather stations in Idaho were checked to see how well the 45 degree Fahrenheit mean temperature correlated with the 24 degree Fahrenheit occurrence. The growing season based on the 45 degree mean temperature was much longer than the growing season based on a 24 degree occurrence (see Attachment 5). It should be noted that actual start and end dates using either method would be highly variable from year to year. A good

estimate is probably somewhere between the two methods because short-term weather changes would have less effect. An average of the two methods is shown in the attachment. This average compares fairly well with the data for a 75% chance of a 24 degree F. from the report SPRING AND FALL FREEZING TEMPERATURES AND GROWING SEASONS IN IDAHO, referenced above. This data will be used as the basis for the season of use map.

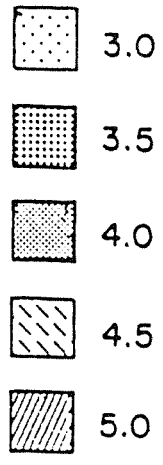
Growing seasons were broken down into five categories statewide. These seasons are May 1 through September 30, April 15 through October 15, April 1 through October 31, March 15 through November 15, and March 1 through November 30. One of the five categories was assigned to each subdivision within the state.

Annual Volume Of
Consumptive Use For Irrigation

(Acre Ft./ Acre/ Season)

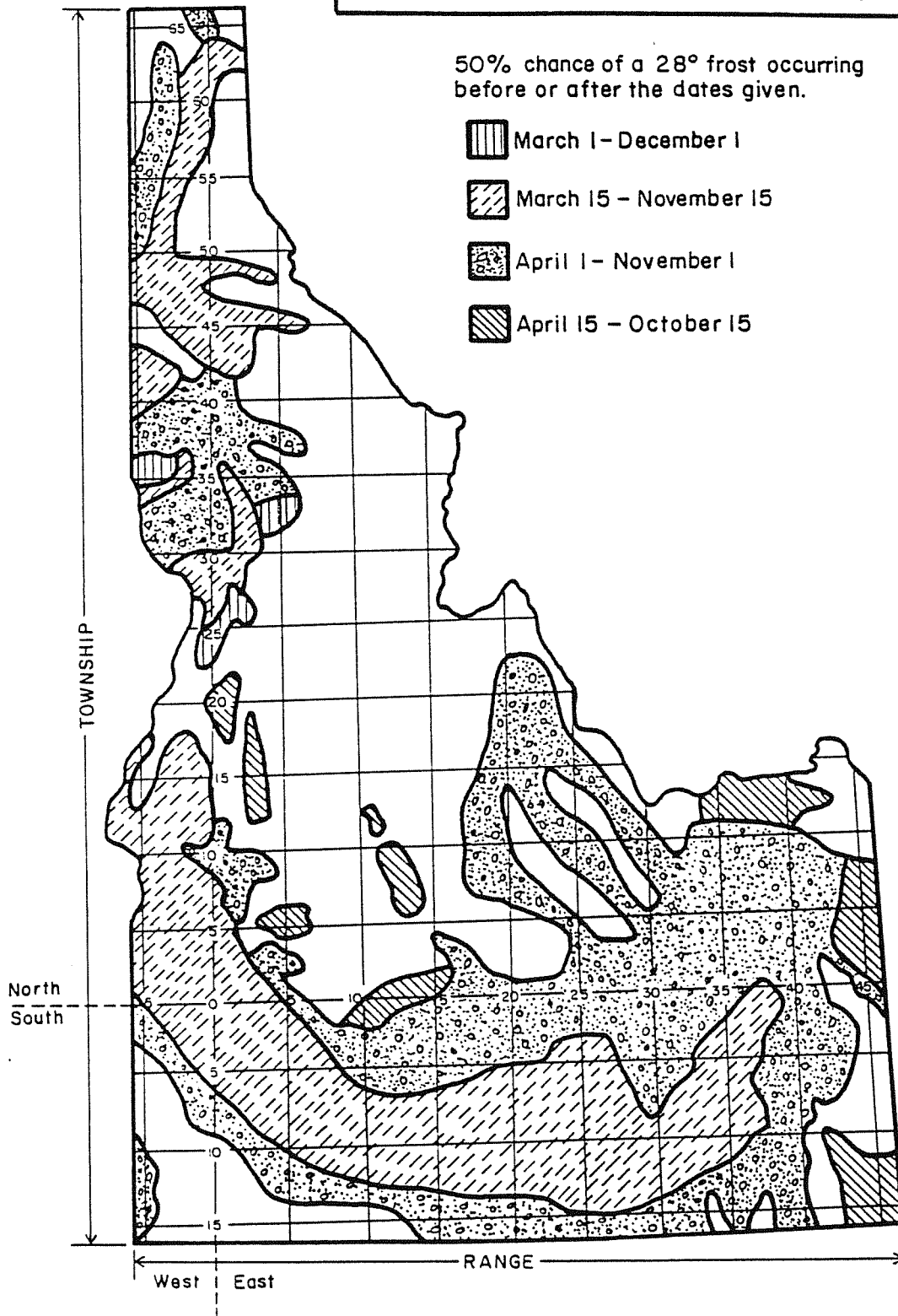


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APPENDIX II

SUGGESTED IRRIGATION SEASONS



ATTACHMENT 4

CONSUMPTIVE IRRIGATION REQUIREMENT OF THE MOST WATER CONSUMPTIVE CROP(S) FOR WEATHER STATIONS IN IDAHO (ALLEN AND BROCKWAY, 1983)

WEATHER STATION	MOST WATER CONSUMPTIVE CROP(S)	CIR
ABERDEEN EXP. STATION	PASTURE, ALFALFA	2.8*
AMERICAN FALLS 1 SW	PASTURE, ALFALFA	2.8
ANDERSON DAM	PASTURE, WINTER GRAIN	2.7
ARBON 2 NW	PASTURE	2.5
ARCO 3 SW	WINTER GRAIN, PASTURE	2.5
ASHTON	PASTURE	2.3
BAYVIEW MODEL BASIN	ALFALFA, PASTURE	1.8
BLACKFOOT 2 SSW	PASTURE	2.8
BLISS	PASTURE, ALFALFA	3.2
BOISE WSO AP	ALFALFA, PASTURE, HOPS	2.9
BONNERS FERRY 1 SW	ALFALFA, PASTURE	2.0
BRUNEAU	PASTURE, ORCHARD	3.1
BURLEY FAA AP	PASTURE, ORCHARD	2.8
CABINET GORGE	ALFALFA, PASTURE	1.8
CALDWELL	ALFALFA, HOPS, PASTURE	3.1
CAMBRIDGE	PASTURE, ALFALFA, ORCHARD	2.7
CASCADE 1 NW	WINTER GRAIN, PASTURE	2.1
CASTLEFORD 2 N	ALFALFA, PASTURE, ORCHARD	3.0
CHALLIS	PASTURE, ALFALFA	2.6
CHILLY BARTON FLAT	PASTURE	2.2
COEUR D'ALENE 1 E	ALFALFA	2.1
COTTONWOOD	ALFALFA, PASTURE	1.8
COUNCIL	PASTURE	2.6
DEER FLAT DAM	HOPS, ALFALFA, PASTURE	3.1
DRIGGS	WINTER GRAIN	2.2
DUBOIS EXP. STATION	WINTER GRAIN, PASTURE	2.3
EMMETT 2 E	HOPS, ALFALFA, PASTURE	3.1
FAIRFIELD RANGER STATION	PASTURE, WINTER GRAIN	2.6
FORT HALL INDIAN AGENCY	PASTURE	2.9
GARDEN VALLEY RS	PASTURE	2.5
GLENN'S FERRY	PASTURE, ORCHARD, ALFALFA	3.0
GRACE	PASTURE, ORCHARD, WINTER GRAIN	2.4
GRAND VIEW 2 W	ORCHARD, PASTURE	3.2
GRANGEVILLE	ALFALFA, PASTURE	1.7
HAILEY RANGER STATION	PASTURE, WINTER GRAIN	2.5
HAMER 4 NW	PASTURE, ALFALFA	2.5
HAZELTON	ALFALFA, PASTURE, ORCHARD	2.9
HILL CITY	WINTER GRAIN, PASTURE	2.5
HOLLISTER	PASTURE	2.7
HOWE	PASTURE, ALFALFA	2.5
IDAHO CITY	PASTURE, WINTER GRAIN	2.3
IDAHO FALLS 2 ESE	PASTURE	2.7
IDAHO FALLS 16 SE	PASTURE	2.3
IDAHO FALLS FAA AP	PASTURE, ALFALFA	2.6
IDAHO FALLS 46 W	PASTURE, ALFALFA	2.4
ISLAND PARK DAM	PASTURE	1.6
JEROME	ALFALFA, PASTURE	3.0
KELLOGG	ALFALFA	1.9
KILGORE	PASTURE	1.6
KOOSKIA	ALFALFA, PASTURE	1.9
KUNA 2 NNE	ALFALFA, PASTURE	3.1
LEWISTON WSO AP	ALFALFA	2.6
LIFTON PUMPING STATION	WINTER GRAIN	2.3

MACKAY RANGER STATION	PASTURE	2.5
MALAD	ALFALFA, PASTURE	2.4
MALAD CITY	ALFALFA, PASTURE	2.4
MALTA 2 E	PASTURE	2.7
MAY	PASTURE	2.4
MC CALL	WINTER GRAIN, PASTURE	1.9
MINIDOKA DAM	ALFALFA, PASTURE	2.9
MONTPELIER RANGER STATION	WINTER GRAIN	2.2
MOSCOW-UNIV. OF IDAHO	ALFALFA	2.1
MOUNTAIN HOME	PASTURE, ORCHARD, ALFALFA	2.9
NEW MEADOWS RANGER STATION	WINTER GRAIN	2.1
NEZPERCE	ALFALFA	1.8
OAKLEY	PASTURE	2.7
OLA 4 S	PASTURE, ALFALFA, ORCHARD	2.6
OROFINO	ALFALFA	2.3
PALISADES DAM	PASTURE, WINTER GRAIN	2.2
PARMA EXP. STATION	HOPS, ALFALFA	3.1
PAUL 1 ENE	ALFALFA, PASTURE, ORCHARD	2.8
PAYETTE	HOPS, ALFALFA, PASTURE	3.1
PICABO	WINTER GRAIN, PASTURE	2.6
POCATELLO WSO AP	PASTURE, ALFALFA	2.7
PORTHILL	ALFALFA, PASTURE	1.9
POTLATCH 3 NNE	ALFALFA, PASTURE	1.9
PRESTON SUGAR FACTORY	PASTURE, ALFALFA	2.3
REYNOLDS	PASTURE	2.4
RICHFIELD	PASTURE, ALFALFA	2.8
RIGGINS	ALFALFA	2.5
RUPERT	ALFALFA, PASTURE	3.0
ST ANTHONY 1 WNW	ORCHARD, PASTURE	2.4
SAINT MARIES	ALFALFA, PASTURE	1.9
SALMON	PASTURE, WINTER GRAIN, ALFALFA	2.3
SALMON 1 N	PASTURE	2.4
SANDPOINT EXP. STATION	ALFALFA	1.7
SHOSHONE 1 WNW	PASTURE, ALFALFA	3.0
STANLEY	PASTURE	1.6
STREVELL	PASTURE	2.5
SWAN FALLS POWER HOUSE	PASTURE	3.3
SWAN VALLEY	WINTER GRAIN, PASTURE	2.1
TENSED	ALFALFA	1.9
TETONIA EXP. STATION	WINTER GRAIN	2.2
THREE CREEK	WINTER GRAIN, PASTURE	2.1
TWIN FALLS 2 NNE	ALFALFA, PASTURE	3.0
TWIN FALLS 3 SE	ALFALFA, PASTURE	3.0
TWIN FALLS WSO	ALFALFA, PASTURE, ORCHARD	2.8
WEISER 2 SE	HOPS	3.1

*NOTE: CIR REPORTED IN ACRE-FEET PER SEASON

ATTACHMENT 5

WEATHER DATA

Weather Station	45 Deg Mean	24 Deg	Average	75% 24 Deg
Aberdeen	3/17-11/11	4/29-10/8	4/8 -10/25	4/20-10/16
Caldwell	2/6 -12/1	4/3 -10/26	3/6 -11/13	3/23-11/3
Coeur d'Alene RS	3/1 -11/19	4/11-11/3	3/22-11/11	3/27-11/17
Coeur d'Alene AP	2/27-10/31			
Dubois	4/4 -11/1	4/25-10/12	4/15-10/22	4/14-10/22
Idaho Falls	3/19-11/3	4/17-10/15	4/3 -10/25	4/7 -10/24
Lewiston	1/21-12/14	3/7 -11/23	2/13-12/4	2/20-12/10
Montpelier	4/8 -11/1	5/9 -9/24	4/24-10/13	4/24-10/9
Salmon	3/16-11/4	4/28-10/6	4/7 -10/21	4/20-10/14
Salmon KSRA	3/10-11/7			
Twin Falls WSO	2/24-11/28	4/13-10/12	3/20-11/5	4/3 -10/19

45 Deg Mean = the average occurrence of the first and last 45 degree F. mean temperature in the spring and fall (from Dr. Myron Molnau, State Climatologist, University of Idaho, November, 1991)

24 Deg = the average occurrence of the first and last 24 degree F. minimum temperature in the spring and fall (from Spring and Fall Freezing Temperatures and Growing Seasons in Idaho, Everson, Faubion, and Amos, 1978)

Average = average of the 45 Deg Mean and 24 Deg dates

75% 24 Deg = 75% chance of a 24 degree F. or lower temperature occurring on or after the indicated date in the spring and on or before the indicated date in the fall (from Spring and Fall Freezing Temperatures and Growing Seasons in Idaho, Everson, Faubion, and Amos, 1978)



ATTACHMENT 2

ADMINISTRATOR'S MEMORANDUM

To: Water Management Division
Adjudication Bureau

Application Processing Memo #52
Licensing Memo #9
Transfer Processing Memo #16
Adjudication Memo #39

From: Norman C. Young *NCK*

Re: STANDARDS FOR IRRIGATION CONSUMPTIVE USE REQUIREMENTS,
IRRIGATION FIELD HEADGATE REQUIREMENTS, AND IRRIGATION SEASON OF
USE

Date: April 27, 1992

A 1:1,000,000 scale map of the state of Idaho dated December 1991 and entitled "Consumptive Irrigation Requirement, Field Headgate Requirement and Season of Use" is the official map for use in water right adjudications and for water right licenses, permits, and transfers. A reduced reproduction of the map is attached to this memo; the reduced reproduction is for illustrative purposes only. The official copy of the map is filed in the SRBA map files; copies are available from Jeff Peppersack.

The purpose of the map is to provide consistent standards in a simple format. Further information as to the basis for these standards is available from Jeff Peppersack.

CONSUMPTIVE IRRIGATION REQUIREMENT, FIELD HEADGATE REQUIREMENT AND SEASON OF USE

