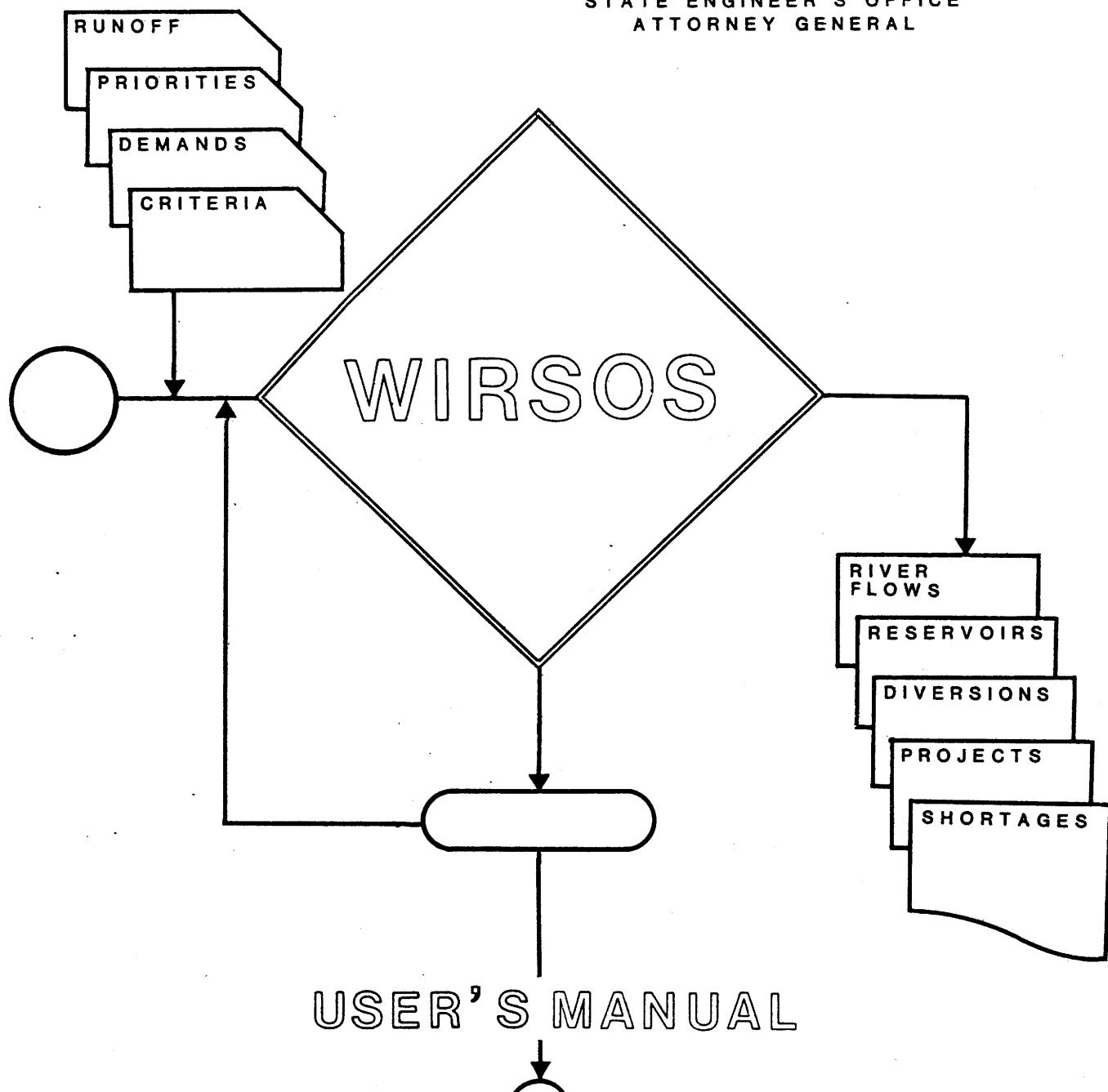


STATE OF WYOMING

WATER RESEARCH CENTER  
WATER DEVELOPMENT COMMISSION  
STATE ENGINEER'S OFFICE  
ATTORNEY GENERAL



WYOMING INTEGRATED RIVER SYSTEM  
OPERATION STUDY



Leonard Rice Consulting Water Engineers, Inc.

## ACKNOWLEDGEMENTS

The technical material in this report was prepared by or under the supervision and direction of the undersigned whose seal as a professional engineer and certified consulting engineer are affixed below:

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This manual has been prepared to describe the content and operation of the WIRSOS Model developed by Leonard Rice Consulting Water Engineers, Inc., for the Wyoming Attorney General, in connection with the Bighorn River Adjudication. Changes made to the model logic or data base subsequent to the publication of these manuals is the responsibility of the user making the changes.

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Leonard Rice Consulting Water Engineers, Inc.

## WIRSOS USER'S MANUAL

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## I. INTRODUCTION

### A. SCOPE AND PURPOSE

The Wyoming Integrated River System Operation Study (WIRSOS) model was developed as a tool for the Bighorn River Adjudication in Wyoming. WIRSOS is an accounting model and was designed specifically to analyze Federal reserved water right claims and the impact of these claims on State-awarded water rights by simulating actual stream basin operations, including streamflows, water rights, diversion, storage and related activities. The WIRSOS Reference Manual describes the background of WIRSOS development and the logic and criteria used by the model in processing water rights. A program listing and accompanying flowcharts are included in the Reference Manual.

The WIRSOS User's Manual has been developed as a companion volume to the WIRSOS Reference Manual and specifically addresses the use of the WIRSOS model on the Boeing Computer Services CRAY and CDC Cyber operating systems. The User's Manual stands on its own for purposes of data setup, data checking, submittal of model for execution, and data output processing.

The User's Manual provides a description of data input in content and format (Chapter II) with sample input data in Appendix A. The programs and procedure files for checking data, processing data, and processing model output are discussed in Chapter III. The programs used to check and process data are listed in Appendices B, C and D. In addition, a thorough description of model output is included in Chapter IV with sample output data in Appendix E.



## **II. DATA BASE REQUIREMENTS**

### **A. INPUT FILES**

#### **1. User Input File**

##### **a. Description**

The user input file includes data read from the batch job stream (RNJOB) provided the program is being submitted in batch mode. If the program is run in time-sharing, the data are typed by the user on the terminal and read from the terminal by the computer.

The data include: (1) the title of the computer run, (2) the number of stations with inflow to be processed for each year, and, (3) a code indicating use of reservoirs in the model run. The title is printed on the output files. The number of stations with inflow is used to calculate the number of years of data the model needs to process, i.e., the total number of input records in the runoff file, divided by the number of stations with inflow, is equal to the number of years of runoff which the computer must process.

##### **b. Limits**

Three Input Variables in RNJOB (See Chapter III).

##### **c. Format and Variable Names**

<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
1-40	10A4	40CHAR	IHEAD	Heading for output files TAPE8, TAPE9, TAPE10, TAPE11.



<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
1-3	I3	1-999	NUMRUNS	Number of stations per year in the runoff file.
1-3	A3		IRESOPT	Reservoir Option.
		RES		RES = Reservoirs will be processed in model run.
		NOR		NOR = Reservoirs will <u>not</u> be processed in model run.

## 2. Station

### a. Description

The station data file (TAPE1) describes each accounting point in the basin network and is required for every model run. The station network is designed to utilize two numbering systems; station numbers and stream order numbers.

The station numbers are six digit numbers which are assigned in an increasing manner from upstream to downstream. The stations are assigned at points of inflows, diversions, return flows, and any other point where an accounting of the amount of water is desired. Generally, the first four numbers of the station are used to describe a stream reach and the last two numbers are used to identify the station or node on the stream reach. The last two numbers describing a station location within a stream reach should be numbered in such a manner (i.e. even numbers) to allow for the insertion of additional stations.



This may prevent the reassignment of station numbers within a stream reach if new stations need to be added at a later time.

A stream order number is assigned to each stream. The mainstem has the lowest stream order of one. A primary tributary or a tributary to the mainstem, is assigned a stream order of two. A secondary tributary is assigned a three and so on. The stream network developed allows water to flow to an increasing station number and a decreasing stream order.

b. Limits

A maximum of 1,550 stations is allowed and more than one diversion can be located at each station within the program constraints for diversions.

c. Format and Variable Names

<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
1-3	3X	STA		Card identification, not read in WIRSOS.
4	1X	none		Blank space.
5-10	I6		ISTATA (-,1)*	Station number.
11-12	I2		ISTATA (-,2)*	Stream order number.
13-20	8X	none		Blank spaces.
21-60	10A4	40CHAR	ISTATA(-,3-12)*	Station name, used only in output messages to help identify the station in question.

\* The first number in this array represents the assigned location in sequence by the program. For example, ISTATA (1,1) is the station number of the first input record and



ISTATA (1,2) is the stream order number of the first input record. ISTATA (1,12) together represents the station name.

**FORMAT USED: (4X, I6, I2, 8X, 10A4)**

### 3. Runoff

#### a. Description

The runoff file (TAPE2) contains the stream inflow data for each of the years to be processed by the program. Each record contains, (1) the station where inflow enters the basin, and, (2) monthly runoff data (acre-feet) for one calendar year. Data in the file are grouped by years. The data for the first year (stations and amounts) are at the beginning of the file. Data for the second year are next and so on.

#### b. Limits

A maximum of 999 stations may receive runoff in the basin per year. The number of years to be modeled is dependent upon the number of years of input data.

#### c. Format and Variable Names

<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
1-3	3X	RUN		Card identification, not read in WIRSOS. Used in data checking programs.
4	1X	none		Blank space.
5-10	I6		ISTAT	Station number where the runoff is to be input.



<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
11-106	12F8.0		RUNOFF	Monthly runoff values (ACRE-FEET) beginning with January.

FORMAT USED: (4X, I6, 12F8.0)

#### 4. Instream Flows

##### a. Description

This file (TAPE3) contains all the instream flow water rights to be processed in the river basin. Each record contains information about one flow requirement at the specified station. If an instream flow requirement is desired for a stream reach, each station within that reach must have an instream flow record. The instream flow requirement is processed according to its priority date along with the other water rights.

##### b. Limits

A maximum of 500 instream flow requirements are allowed.

##### c. Format and Variable Names

<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
1-3	3X	FLO		Card identification, not read in WIRSOS. Used in data checking programs.
4	1X	none		Blank space.



<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
5-10	I6		IFRSTA	Station number where an instream flow requirement is desired.
11-17	A4,A3	7CHAR	IFRPMT	Permit number, which can consist of both numeric and alpha characters.
18-25	2I4	MMDDYYYY	IFDATE (I) I= 1 or 2	Priority date of water right. Read in two parts to facilitate prioritizing of rights.*
26-109	12F7.1		FLOWRQ	Twelve months (calendar year) of flow requirements (CUBIC FEET PER SECOND).

\* The computer will read in MMDDYYYY and will resort as YYYYMMDD for purposes of comparison.

**FORMAT USED: (4X, I6, A4, A3, 2I4, 12F7.1)**

## 5. Diversions

### a. Description

The diversion file (TAPE4) contains the data for normal diversions and senior and junior project rights (junior project rights are also included in the junior project rights file. See Section 6.). Each record contains information about one diversion. The records are required to be in 240 characters-per-line format. The main checking program reads this format and the procedure file to the WIRSOS program changes the format to two lines of 115 characters and 110 characters, respectively. The WIRSOS program actually reads the diversion in the two-line format.



For initial data setup, a two-line format is recommended. The format listed with each record in this section reflects the format required by the diversion checking procedure, RNDIV (see Chapter III). The format at the end of the section reflects that which is required to process diversions in the final checking procedure and in the procedure files which access WIRSOS. The single-line (240 characters) format is required for the sorting procedures to operate properly.

Direct flow water rights are processed in priority at the station identified for the right. The monthly diversion amount is the amount coded on the record limited by the amount available from the river. The diverted amount is then reduced by an efficiency. The amount remaining is returned to the stream at the coded return flow stations. At each return flow station, a percent of the total returned amount to that station is recorded as well as the type of return flow delay pattern to be used for that right.

Senior project rights are processed the same as direct flow water rights except during water short times. A reservoir number is coded on the senior project right record which ties that right to a specified reservoir. In times of river shortages, the upstream junior reservoir will be called to release water to the senior project right.

Junior project rights are coded in the same manner as the senior project rights in that the rights are linked to an upstream reservoir. In addition, the junior project rights need to be recorded in a separate junior project rights data file. The junior project rights are processed at the reservoir's priority date when the reservoir is not spilling rather than at the priority



date of the diversion right. When the reservoir is spilling then the junior project right is processed in the same manner as senior project rights. Senior project rights divert water from the river first and, if the water availability is insufficient, the right calls for water from the reservoir to satisfy the remaining amount.

b. Limits

A maximum of 4,500 diversions are allowed. Ten return flows per diversion are allowed. Each senior and junior project right can be tied to one reservoir only.

c. Format and Variable Names

FIRST RECORD

<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
1-2	A2	"D_"	DVTYP2	Identifies diversion type. "D1" indicates a JPR processed as a SPR. Variable not read otherwise. This was an addition after initial program development.
3	I1	1-9	IDUM1	Not read by WIRSOS. Defines distribution curve type in DATACK1.
4-9	I6		DIVSTA	Station number of where the diversion is to be modeled.
10-11	I2	01	DIVTYP	Reservoir code for a "normal" direct flow water right.



<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
		>01	DIVTYP	Reservoir code for a junior or senior project right.
12-14	F3.0	0-100	DIVEFF	Diversion efficiency, the percentage of the diverted amount consumed.
15-21	A4,A3	7CHAR	DIVPMT	Water right permit number which can consist of both alpha and numeric characters.
22-29	2I4	MMDDYYYY	IDDATE	Priority date of water right. Read in two parts to facilitate prioritizing*
30-31	I2	1-10	NRET	Number of return flowstations.
32-115	12F7.0		DIVER	Twelve months (calendar year) of diversion amounts (CUBIC FEET PER SECOND). For diversion distribution by program DATACKS, input one amount in first field.

**SETUP FORMAT USED: [A2, I1, I6, I2, F3.0, A4, A3, 2I4, I2, 12F7.0]**

#### SECOND RECORD

The following three fields repeat up to ten times, once for each return flow (NRET).

116-121	I6	RETSTA	Return flow station number.
---------	----	--------	-----------------------------



<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
122-124	F3.0	0-100	PCTTOT	Percent of return flow to be returned to the above return flow station.
125-126	I2	1-99	RETDLY	Return flow delay pattern code to be used from delay table file.

\* The computer will read MMDDYYYY and will resort as YYYYMMDD for purposes of comparison.

**SETUP FORMAT USED:** 10(I6, F3.0, I2)]

**PROGRAM FORMAT:** [A2, 1X, I6, I2, F3.0, A4, A3, 2I4, I2, 12F7.0, / 10(I6, F3.0, I2)]

## 6. Junior Project Rights

### a. Description

This file contains the junior project rights (JPR) to be processed against the reservoirs. Each two records contain information about one project right and duplicates the data from the diversion file. The format is the same as the format for the diversion file. The file is sorted by priority date (YYYYMMDD) in ascending order, then station number, before being read by the program.

The JPR file is used only if a "no spill" condition exists after the most senior right for a reservoir has been processed each month. The junior projects linked to the reservoir of interest are processed from the reservoir at the priority date of the reservoir right.



In a "spill" condition, the JPRs are read from the diversion file and processed at their own priority date in the same manner as a senior project right.

b. Limits

A maximum of 100 junior projects are allowed.

c. Format and Variable Names

FIRST RECORD

<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
1-3	A2	"JP"	DUMJPR	Identifies diversion type. Not read by computer except "NORMAL" diversions.
	1X	"R"		Not read by computer. Defines distribution curve in DATACK1, if desired.
4-9	I6		JPRSTA	Station number of where the diversion is to be modeled.
10-11	I2	2-51	RESNUM	Reservoir code for the junior project right.
12-14	F3.0	0-100	EFFJPR	Diversion efficiency, the percentage of the diverted amount consumed.
15-21	A4,A3	7CHAR	JPRPMT	Water right permit number which can consist of both alpha and numeric characters.



<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
22-29	2I4	MMDDYYYY	IJDATE	Priority date of water right.
30-31	I2	1-10	NJPRET	Number of return flow stations.
32-115	12F7.0		RITJPR	Twelve months (calendar year) of diversion amounts (CUBIC FEET PER SECOND).

**FORMAT USED:** [A2, 1X, I6, I2, F3.0, A4, A3, 2I4, I2, 12F7.0]

#### SECOND RECORD

The following three fields repeat up to ten times, once for each return flow (NJPRET).

116-121	I6	JPRETS	Return flow station number.	
122-124	F3.0	1-100	PCTJPR	Percent of return flow to be returned to the above return flow station.
125-126	I2	1-99	JPRDLY	Return flow delay pattern code to be used from delay table file.

**FORMAT USED:** [10(I6, F3.0, I2)]

**PROGRAM FORMAT:** [A2, 1X, I6, I2, F3.0, A4, A3, 2I4, I2, 12F7.0, /, 10(I6, F3.0, I2)]

#### 7. Junior Project Rights Processed As Senior Project Rights

##### a. Description

After the development of the model, the necessity to operate junior project rights differently was realized. A feature was added such that junior project rights could be processed as



senior project rights. This essentially means that junior project rights will try to meet their demand from the river before calling for water from the associated reservoir. These rights ARE NOT listed in the junior project rights file. They are listed in the diversion file and begin with "D1."

b. Limits

See Diversions (Section 5).

c. Format and Variable Names

See Diversions (Section 5).

8. Return Flow Delay Table

a. Description

This file (TAPE7) contains the return flow delay tables. These tables determine how much of the return flow for a diversion or project right will return to the stream in the next 12 months. Each record contains information about one type of delay pattern.

b. Limits

A maximum of 99 delay types are allowed.

A maximum delay of 12 months is allowed.

c. Format and Variable Names

<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
1-4	4X	DEL		Card identification, not read in WIRSOS. Used in data checking programs.



<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
5-6	I2	1-99	DLYNUM	Delay table identification number.
7-66	12(2X,F3.0)	0-100	DLYRAT	Twelve months of delay rates as a percentage of the return flow amount.

FORMAT USED: [4X, I2, 12(2X, F3.0)]

## 9. Reservoir Data

### a. Description

The reservoir data file (TAPE15) contains the physical data for the reservoirs to be modeled. Each reservoir has two records of data.

The first record contains the following: a reservoir name which can be up to 16 characters long; the station where the reservoir is to be modeled; a reservoir code which ties the reservoir data, reservoir rights and project rights files together; an on/off code to signal whether or not to model the reservoir in the current run; the reservoir minimum volume; the reservoir maximum volume; the maximum primary spillway outlet capacity; the initial storage volume; monthly evaporation data in feet; and the total decreed maximum volume for the reservoir.

The second record is for non-project and power releases. The non-project releases are calculated from the percentage of the volume available for release from storage in each month. This type of release is used when project users cannot be identified. The water is released and is available to downstream junior water rights. The power releases are determined from the goal



month and power storage goal volume coded on the reservoir record. The power storage goal volume is the desired storage level to be attained by the selected goal month. This process simulates the actual power generation releases made by the reservoir throughout the year.

b. Limits

A maximum of 50 reservoirs are allowed.

c. Format and Variable Names

First record

<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
1-16	4A4	16CHAR	RESNAM	Reservoir name, up to 16 characters.
17-22	I6		RSTNUM	Station number where reservoir is to be modeled.
23	1X	none		Blank space.
24-25	I2	2-51	IRSNUM	Reservoir code number.
26-27	I2	1	IRESSWI	Reservoir is to be modeled.
		0	IRESSWI	Reservoir is not to be modeled.
28	1X	none		Blank space.
29-36	F8.0		VOLMIN	Minimum reservoir storage volume (ACRE-FEET).
37	1X	none		Blank space.



<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
38-45	F8.0		VOLMAX	Maximum reservoir storage volume (ACRE-FEET).
46	1X	none		Blank space.
47-51	F5.0		FLOMAX	Maximum primary outlet capacity (CUBIC FEET PER SECOND).
52	1X	none		Blank space.
53-60	F8.0		BEGVOL	Initial storage volume (ACRE-FEET).
61	1X	none		Blank space.
62-109	12F4.2		EVAPRT	Evaporation rates for twelve months (FEET).
110	1X	none		Blank space.
111-118	F8.0		DECREE	Decree maximum, total of all water rights (ACRE-FEET).

**FORMAT USED:** [4A4, I6, 1X, I2, 1X, I1, 2(1X, F8.0), 1X, F5.0, 1X, F8.0, 1X, 12F4.2, 1X, F8.0]

#### SECOND RECORD

<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
1-48	12F4.0	0-100	RNPJRL	Non-project releases. Monthly percentage to be applied to volume available from storage.
49-52	4X	none		Blank spaces.
53-54	I2	1-12	GOALDT	Power release goal month.



<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
55-62	F8.0		GOALVL	Power release goal volume (ACRE-FEET).

**FORMAT USED: (12F4.0, 4X, I2, F8.0)**

#### 10. Reservoir Rights

##### a. Description

The reservoir right file contains the water rights data for each reservoir. Each record describes a single water right with a station number, priority date, permit number, reservoir code number, the decreed water right amount and a code indicating whether the right is the last or most junior right to that reservoir. The file should be sorted by priority date, in ascending order, then by station before submitting the file for processing. This sorting must be done by hand.

##### b. Limits

A maximum of four rights per reservoir is allowed.

##### c. Format and Variable Names

<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
1-6	I6		RESTAT	The reservoir's station number.
7	1X	none		Blank space.
8-15	2I4	MMDDYYYY	IRDATE	Priority date of water right.
16	1X	none		Blank space.



<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
17-23	A4,A3	7CHAR	RESPMT	Permit number for water right.
24	1X	none	.	Blank space.
25-26	I2	2-51	IRESOD	Reservoir code number.
27	1X	none	.	Blank space.
28-35	F8.0		RESRIT	Decreed water right storage amount (ACRE-FEET).
36	1X	none	.	Blank space.
37	I1	1	LR	Last (most junior) right for reservoir.
		0	LR	Not the last right for reservoir.

**FORMAT USED:** (I6, 1X, 2I4, 1X, A4, A3, 1X, I2, 1X, F8.0, IX, I1)

### 11. Reservoir Area-Capacity Curves

#### a. Description

The data for the area-capacity relationships for each reservoir is listed in this file (TAPE14). The code which identifies the reservoir is input first, followed by the number of relationships required to define the reservoir surface area for a volume from zero to the maximum capacity possible. For each relationship, an equation type and the upper range limit are identified as well as three coefficients for the equation.



b. Limits

Three area-capacity relationships per reservoir are allowed.

c. Format and Variable Names

<u>Columns</u>	<u>Fortran Format</u>	<u>Value</u>	<u>Variable Name</u>	<u>Description</u>
1-2	I2	2-51	IRC	Reservoir code. Identifies reservoir for area-capacity data.
1	I1	1-3	NRANGE	Number of area-capacity relationships for reservoirs.

The following five fields repeat up to three times, once for each set of area-capacity relationships (NRANGE).

1-10	F10.0	RLIMIT	Upper capacity limit for reservoir (ACRE-FEET).
11-12	2X	none	
13	I1	1,2 or 3* NEQTYPE*	Type of equation for area-capacity relationship.
1-36	3F12.4	ACOEF (-, -, 1-3)	Three coefficients for equation.

\*NEQTYPE=1 Equation: Area=CF1 + CF2\*(VOL\*\*CF3)  
                   =2 Equation: Area=CF1 + CF2\*(ALOG (VOL))  
                   =3 Equation: Area=CF1 \* (CF2\*\* (CF3 \* VOL))

ACOEF is renamed as CF1, CF2 & CF3 by subroutine EVAPSUB.

**FORMAT USED:** (I2, /, I1, /, F10.0, 2X, I1, /, 3F12.4)



**B. PREPARATION OF INPUT DATA FILES**

Sample data input files are presented in Appendix A to facilitate a better understanding of how to prepare these input files. These sample files represent the data used to produce sample runs #1 and #2.



### **III. PROGRAM OPERATION**

The operation of the WIRSOS model consists of three separate procedures: checking the data base, running the program and processing the output into appropriate formats. The programs and procedure files referred to in this chapter are listed in Appendices B, C, and D.

The programs and procedure files discussed in this manual were designed to run on Boeing Computer System's CDC Cyber computer and/or the CRAY computer. The programs were written in the FORTRAN EXTENDED VERSION IV computer language. Certain subroutines called from within the programs are specific to Boeing's system and will have to be changed to operate on other systems. This applies particularly to sorting procedures.

Procedure files consist of a series of job control language commands which access the necessary data files and programs to run in batch mode. Input data can also be incorporated into procedure files, if necessary. These input data are generally listed after the command procedure section.

There are two mandatory job control statements in a procedure file. The JOB CARD, or first entry, contains a name, the time the computer should allow the program to run (seconds), the core memory size (octal) and the priority number. The following statement is a JOB CARD sample:

SAMPLE,T20,CM50,P1.

The USER CARD is the second entry and contains the user identification number, a password, and an identifier for the job to be processed. The following statement illustrates the USER CARD format:

USER,USERNO,PW. USERID



The JOB CARD and USER CARD are then followed by a series of "control statement" records in the job control language. The statements together are filed for indirect access and given an acronym of up to seven characters. This procedure file is then used to submit a job in batch mode, a less expensive method than running a program interactively.

Table III-1 summarizes the programs and procedure files and the acronym definition associated with each.

#### A. CHECKING THE DATA BASE

The input data for the WIRSOS model must be setup according to the procedures described in Chapter II. Once this is achieved the data base can be checked for illegal characters by a series of programs. The data files may be checked, first, through a single file checking procedure and then, through a final checking routine which checks several files at one time. Table III-2 summarizes the data input checking procedures.

Caution should be used when checking the data base. These programs do not check for very large or very small values (unreasonableness), therefore, it is important that the LISTOUT (defined in Section 2) be reviewed thoroughly by the programmer/user before processing.

##### 1. Individual File Checking and Sorting Sequence

The station, runoff, instream flow, diversion, and delay table files can all be individually checked and sorted by using the RNSTA, RNRUN, RNFL0, RNDIV, RNDEL procedure files, respectively. All of these files except for diversions are read, checked, sorted and then written to output in the same input format. The



**Table III-1**  
**Procedure File and Program Acronym Definitions**

<u>Program or Procedure</u>	<u>Direct Definition</u>
BASACR	<b>BASE ACRES</b>
CHKCLM	<b>CHECK CLAIMS</b>
CKRCAP	<b>CHECK RESERVOIR CAPACITY CURVES</b>
CMPR2	<b>COMPARE PROGRAM - 2ND VERSION</b>
CUT	<b>CUT DIVERSION FILE INTO TWO LINES</b>
DATACK1	<b>DATA CHECK</b>
INSCHRT	<b>INSTREAM FLOW CHART</b>
LRCYBJ	<b>LRCWE CYBER JOB</b>
PERCHRT	<b>PERMIT CHART</b>
PERSORT	<b>PERMIT SORT</b>
RIGHT2	<b>WATER RIGHTS CHECKING PROCEDURES</b>
RNADJ	<b>RUN ADJUST</b>
RNCLM	<b>RUN CLAIM</b>
RNCOMP	<b>RUN COMPARE</b>
RNDEL	<b>RUN DELAY TABLE</b>
RNDIV	<b>RUN DIVERSION</b>
RNEDT	<b>RUN EDIT</b>
RNFLO	<b>RUN FLOW</b>
RNJOB	<b>RUN JOB</b>
RNRUN	<b>RUN RUNOFF</b>
RNSTA	<b>RUN STATIONS</b>
RNTBL	<b>RUN TABLE</b>
SORTDEL	<b>SORT DELAY TABLE</b>
SORTDIV	<b>SORT DIVERSIONS</b>
SORTDV1	<b>SORT DIVERSIONS</b>
SORTFLO	<b>SORT INSTREAM FLOWS</b>
SORTGEN	<b>SORT GENERAL</b>
SORTING	<b>SORTING RUNOFF</b>
TLMONT	<b>TOTAL MONTH TEST</b>
WAT12S	<b>WATER VERSION 12 SOURCE LISTING</b>



TABLE III-2  
DATA INPUT CHECKING PROCEDURES

FILE TYPE	INDIVIDUAL FILE CHECKING AND SORTING SEQUENCE	SORTING PROGRAMS USED (1)	FINAL CHECKING ROUTINE
STATION	RNSTA-RIGHT2-DATACK1	SORTGEN	
RUNOFF	RNRUN-RIGHT2-DATACK1	SORTING (2)	
INSTREAM FLOWS	RNFLO-RIGHT2-DATACK1	SORTGEN	
DELAY TABLE	RNDEL-RIGHT2-DATACK1	SORTDEL	
DIVERSIONS	RNDIV-RIGHT2-DATACK1	SORTDV1	
JUNIOR PROJECTS	NO CHECK	NO SORT (3)	
RES AREA/CAP	CKRCAP	NO SORT (3)	
RES RIGHTS	NO CHECK	NO SORT (3)	
RES DATA	NO CHECK	NO SORT (3)	

- (1) ANSWER\* IS THE OUTPUT FILE FOR ERROR MESSAGES. \* IS REPLACED BY LETTER DEPENDING ON FILE TYPE. ANSWERD FOR DIVERSIONS, ANSWERR FOR RUNOFF ETC.
- (2) RUNOFF MUST BE SORTED ONE YEAR AT A TIME. "SORTING" SORTS BY STATION NUMBER AND NOT BY YEAR. IN THE LISTING SUBROUTINE IN RIGHT2 THE RUNOFF WILL BE SORTED BY STATION WITH THE FIRST YEAR BEING THE FIRST RUNOFF CARD IN THE DATA FILE. THIS IS FOR THE LISTOUT AND NOT FOR DATA INPUT.
- (3) THESE FILES ARE NOT CHECKED IN THE EXISTING ROUTINES AND THE SORTING MUST BE DONE BY HAND.
- (4) LISTOUT IS THE OUTPUT PRODUCED FROM DATACK1 AND THIS FILE DISPLAYS ALL THE DATA INPUT IN A FORMAT SORTED BY STATION. JUNIOR PROJECT RIGHTS AND THE RESERVOIR AREA CAPACITY CURVES ARE NOT INCLUDED IN THIS CHECKING PROCEDURE.

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diversions are dealt with differently and will, therefore, be discussed separately from the other files.

Each of the above mentioned procedure files accesses another procedure file called RIGHT2. RIGHT2 consists of a series of commands for each type of file combined into one file. RIGHT2 then accesses the main program, DATACK1, which actually checks the data. DATACK1 is a large program composed of several subroutines. Each type of data, i.e., stations, runoff etc., is checked in the specific subroutine designed for the data set. RIGHT2 will again be accessed to sort the data subsequent to DATACK1 checking the data.

Table III-3 is a listing of procedure file, RNSTA, which checks the station data. The procedure files for data checking mentioned above are all similar to RNSTA in format allowing its use as an example for discussion in this part of the manual. In the text of the procedure file are several variables in bold print. These are highlighted for the user to quickly identify required data input.

As described in the introduction section of this chapter, the user must provide a user identification number (**USERNO**), password (**PW**) and a user identification code (**USERID**). The remaining variables printed in bold identify data input information required to submit RNSTA. "DATA=" renames the input file name for RIGHT2. **BRSTA** is the input station file for the sample data base for the Beaumont River Basin. RIGHT2 renames the sorted output file OUTSTA. RNSTA then assigns OUTSTA a user selected file name. In the example RNSTA, **OBRSTA** is the sorted output file. Certain data input, in addition to data files, are required by RNSTA. After the end-of-record in RNSTA, the user must input the subroutine name to be accessed in RIGHT2 and DATACK1 and the date RNSTA is submitted. **STATION** is the subroutine name



TABLE III-3  
PROCEDURE FILE NAME = **RNSTA**

```
SAMPLE,T30,CM350000,P2.  
USER,USERNO,PW.USERID  
GET,RIGHT2.  
CALL,RIGHT2,STATION(DATA=BRSTA,OUTSTA=OBRSTA)  
EXIT,U.  
REWIND,OUTPUT.  
COPYBF,OUTPUT,ANSWERS.  
REPLACE,ANSWERS.  
EXIT,U.  
DAYFILE,DAYFILE.  
REPLACE,DAYFILE.  
*WEOR  
STATION  
1/15/85  
*WEOF
```



called by the program in this actual example which is shown in Table III-3.

The RNRUN procedure must **not** be used for more than one year of runoff data. The runoff required for input into WIRSOS must be in a format such that it is sorted by year and then by station number. The sorting program for the runoff data only sorts by station number. For example, if two years of runoff data are entered at ten different stations, the result from RNRUN will be a file with two years of runoff listed consecutively at each station. The WIRSOS program would require, for this example, ten stations each with the first year of runoff data followed by another set of ten stations with the second year of data.

In sorting the data, RIGHT2 uses SORTGEN, SORTING, SORTDEL, and SORTDV1. These programs are listed in Appendix B.

The RNDIV, RIGHT2, and DATAACK1 procedure not only checks and sorts the diversion data but may also distribute one water right amount into monthly values. The data base for the Bighorn River Adjudication was setup so that one monthly distribution was applied to a majority of the irrigation diversions. The criteria used in that analysis was for water rights less than 15 cubic feet per second. The monthly demands were distributed April through October according to the monthly factors read by the program. All irrigation water rights greater than 15 cubic feet per second were assumed to divert the full permitted amount for the season May through September.

DATAACK1 has been modified to accept up to nine different monthly diversion distribution curves which may be applied to a water right. Table III-4 illustrates a sample RNDIV file with the input require-



TABLE III-4  
PROCEDURE FILE NAME = RNDIV

```
SAMPLE,T30,CM350000,P2.  
USER,USERNO,PW. USERID  
GET,RIGHT2.  
CALL,RIGHT2,DIVERTS(DATA=BRDIV,OUTDIV=OBRDIV)  
EXIT,U.  
REWIND,OUTPUT.  
COPYBF,OUTPUT,ANSWERD.  
REPLACE,ANSWERD.  
EXIT,U.  
DAYFILE,DAYFILE.  
REPLACE,DAYFILE.  
*WEOR  
DIVERSION 5  
CHECKING AND DISTRIBUTING SAMPLE DATA  
1/15/85  
1 0.00 0.00 0.00 0.05 0.45 1.00 1.00 0.80 0.40 0.05 0.00 0.00  
2 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00  
3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
4 0.00 0.00 0.00 5.00 0.45 1.00 1.00 0.80 0.40 0.05 0.00 0.00  
5 0.00 0.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 0.00  
*WEOF
```



ments, shown in bold print, necessary to check, distribute and sort the diversions.

The files read as input are listed in the RNDIV procedure file in a similar manner as those in RNSTA. The actual data read in this file is different, however. After the identification of the subroutine named **DIVERSION**, the number of distribution curves to be applied to the water rights is input. This variable, NCURVE, can be assigned a value of 0 to 9. The format for this line of data is (A10,5X,I1). If NCURVE equals zero, the diversions will not be distributed. In Table III-4, NCURVE is equal to 5.

The next two lines, procedure title and date, are written to the output file (ANSWERD) which lists any error messages from the run. The formats for the title and the date are both (8A10).

The next 9 lines are reserved for diversion distribution curves. The first value is the curve identifier which must match the value in the third column of the first record for each diversion. The next twelve values are monthly percentages which represent a diversion distribution curve. The format for each pattern is (I1,1X,12F5.3). If distribution is desired, the user should input the water right amount to be distributed in the first field of the variable DIVER on the diversion card leaving the other eleven fields blank. The program will match the third value on the diversion's first record with the correct curve identifier. Then the value in the first field of DIVER will be read and multiplied by each of the percentages listed with the correct pattern. The monthly diversion amounts will then be written into the twelve fields of DIVER. If the user desires to input the twelve monthly values by hand and, therefore, does not require any adjustments by the program, the third column



### III-10

of the first record for the particular diversion should be assigned the value of zero.

Finally, the diversion file will be sorted in ascending order by priority date and then by station number, the required format for the WIRSOS program. RNDIV can be used for the diversion file and for the junior project rights file.

It should be noted that the initial diversion file is set up with each diversion record containing two lines of 115 and 110 characters. The program subroutine, DIVERSN, will combine the two lines into a 240-character string. This must be done for the sorting routines to work. The diversion file must remain in the "240-format" for subsequent procedures. The LISTING subroutine also reads the data in the "240-format". In addition, the procedure file which submits the entire data set for processing through WIRSOS first sorts the diversions and instream flows and then produces a new diversion file consisting of two records per water right. Therefore, diversions must be in the "240-format".

Junior Project Rights must be in the two-line format for the WIRSOS program. If the user applies the RNDIV procedures to the Junior Project Rights file, then the file must be returned to the two-line format subsequent to checking, distribution, and sorting. The program CUT, listed in Appendix B, can be used for this purpose. The Junior Project Rights file is not currently set up to be included in the final checking routine or in the run submit procedure which divides the base diversion file into the two-line format.



## 2. Final Checking Procedures

The final checking procedure is achieved by the use of the procedure file RNADJ (see Appendix B). This procedure also accesses RIGHT2 and DATACK1, however, within these programs the subroutine LISTING processes the data. The RNADJ procedure checks for consistency among the station, runoff, instream flow, diversion, reservoir data and reservoir rights files. For example, if an instream flow right is assigned a station number 073229 and the station number is not in the station file, the program will print out an error message which can be read in the file labeled ANSWER4. Also, if a diversion contains a return flow station not in the station file, an error message will be written to ANSWER4. This type of error may occur when the return flow station is entered into columns to the left or right of the correct columns by one or more spaces.

In addition, DATACK1 will create a file called LISTOUT. LISTOUT contains a summary of all the input data sorted by station number. This file is a helpful tool in identifying errors in the data which may not show up in the above described checking procedures, particularly very large or very small numbers in the fields defined as diversion or instream flow amounts. For example, if a diversion of 10.5 cfs is entered incorrectly, such that the 10. is in the last three columns of say, January, then the 5 ends up in the first column of February and the computer will then read 5,000.00, provided February data is 0.00. If the February diversion were entered similarly to the January entry at a value of 10.5 cfs, the program will read 500010., a very large diversion. The LISTOUT presentation is also clear and concise enough to be used as an easy reference to the input data. Table III-5 is the LISTOUT for the sample data base for Beaumont River Basin.



TABLE III-5

LISTOUT

WYOMING INTEGRATED RIVER SYSTEM OPERATION STUDY

---

BY: LEONARD RICE CONSULTING WATER ENGINEERS, INC.  
DENVER, COLORADO 80211

COMMENTS ABOUT THIS RUN

BEAUMONT RIVER BASIN - SAMPLE RUN  
1/16/85

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DELAY TABLES

---

NUMBER	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
4	100	0	0	0	0	0	0	0	0	0	0	0
11	59	27	4	2	1	1	1	1	1	1	1	1
51	1	1	1	1	1	1	13	35	32	11	2	1
52	2	2	1	1	1	1	12	33	29	11	4	3



TABLE III-5 (Continued)

## STATION INFORMATION

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

+	+	+	+	+	+	+	+	+	+	+	+	+
---	---	---	---	---	---	---	---	---	---	---	---	---

\*\*\* STATION NO = 071200, ORDER NO =2 HEADWATER UPPER BEAUMONT RIVER

RUNOFF (A.F.)	516.	342.	516.	1031.	6186.	12033.	7907.	2407.	1031.	1033.	687.	686.
RUNOFF (A.F.)	516.	342.	516.	1031.	6186.	12033.	7907.	2407.	1031.	1033.	687.	686.
RUNOFF (A.F.)	516.	342.	516.	1031.	6186.	12033.	7907.	2407.	1031.	620.	584.	604.
RUNOFF (A.F.)	490.	366.	480.	505.	6866.	15402.	8144.	1805..	1103.	1126.	708.	789.
RUNOFF (A.F.)	630.	424.	557.	979.	6619.	17809.	12019.	3972.	1577.	1508.	948.	851.
INSM-CFS FS16H	03311891											
	2.9	2.1	2.9	2.8	35.2	32.7	2.9	2.9	2.8	2.9	1.8	1.8

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+	+	+	+	+	+	+	+	+	+	+	+	+
---	---	---	---	---	---	---	---	---	---	---	---	---

\*\*\* STATION NO = 071202, ORDER NO =2 STARLING DITCH

INSM-CFS FS16H	03311891											
	2.9	2.1	2.9	2.8	35.2	32.7	2.9	2.9	2.8	2.9	1.8	1.8

DIVERSION PERMIT # = 2576 , DATE = 03101978, RESERVOIR CODE = 1, EFF = 44, NO OF RF = 1  
 DIV. AMT. (CFS) 0.0000 0.0000 0.0000 .2500 2.2500 5.0000 5.0000 4.0000 2.0000 .2500 0.0000 0.0000  
 RETURN FLOWS : TO STA 071206, % OF TOT RF 100, DELAY TABLE NO 11

+	+	+	+	+	+	+	+	+	+	+	+	+
---	---	---	---	---	---	---	---	---	---	---	---	---



TABLE III-5 (Continued)

\*\*\* STATION NO = 071206, ORDER NO =2 ASHLEY STOCK RESERVOIR

INSM-CFS FS16H 03311891

2.9 2.1 2.9 2.8 35.2 32.7 2.9 2.9 2.8 2.9 1.8 1.8

DIVERSION PERMIT # = 2577 , DATE = 03101978, RESERVOIR CODE = 1, EFF = 100, NO OF RF = 0  
DIV. AMT. (CFS) 0.0000 0.0000 0.0000 .0500 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000

\*\*\* STATION NO = 072200. ORDER NO =3 BIRDS NEST CREEK

RUNOFF (A.F.) 6. 5. 6. 1193. 81. 134. 88. 27. 13. 12. 8. 9.

RUNOFF (A.F.) 6. 5. 6. 13. 81. 134. 88. 27. 13. 12. 8. 9.

RUNOFF (A.F.) 6. 5. 6. 13. 81. 134. 88. 27. 13. 7. 7. 8.

RUNOFF (A.F.) 6. 5. 6. 6. 90. 172. 91. 20. 14. 13. 8. 10.

BUNOFF (A. E.) 7. 6. 6. 12. 87. 198. 134. 45. 20. 18. 11. 11.

\*\*\* STATION NO = 072204 ORDER NO = 3 SPEEDY P.I.

DIVERSION PERMIT # = N1961 , DATE = 07031941, RESERVOIR CODE = 1, EFF = 10, NO OF RF = 1  
DIV. AMT. (CFS) 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000  
RETURN FLOWS : TO STA 072208. % OF TOT RF 100. DELAY TABLE NO 4

\*\*\* STATION NO = 072208, ORDER NO =3 S.D.P. DITCH

DIVERSION PERMIT # = 1662 , DATE = 06181923, RESERVOIR CODE = 1, EFF = 44, NO OF RF = 3  
DIV. AMT. (CFS) 0.0000 0.0000 0.0000 20.0000 1.8000 4.0000 4.0000 3.2000 1.6000 .2000 0.0000 0.0000  
RETURN FLOWS : TO STA 072210, % OF TOT RF 80, DELAY TABLE NO 11



TABLE III-5 (Continued)

RETURN FLOWS : TO STA 072414, % OF TOT RF 10, DELAY TABLE NO 11

RETURN FLOWS : TO STA 072418, % OF TOT RF 10, DELAY TABLE NO 11

\*\*\* STATION NO = 072210, ORDER NO =3 RF STATION

\*\*\* STATION NO = 072414, ORDER NO =2 DEAD BIRD DITCH

INSM-CFS 19154D 01152000

10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0

DIVERSION PERMIT # = 1519 , DATE = 08201918, RESERVOIR CODE = 1, EFF = 44, NO OF RF = 1

DIV. AMT. (CFS) 0.0000 0.0000 0.0000 .1500 1.3500 3.0000 3.0000 2.4000 1.2000 .1500 0.0000 0.0000

RETURN FLOWS : TO STA 072418, % OF TOT RF 100, DELAY TABLE NO 11

\*\*\* STATION NO = 072418, ORDER NO =2 TOWN OF BEAUMONT

DIVERSION PERMIT # = M768 , DATE = 03181907, RESERVOIR CODE = 1, EFF = 10, NO OF RF = 1

RETURN FLOWS : TO STA 073226 % OF TOT BE 100 DELAY TABLE NO 4

DIVERSION PERMIT # = 2832 DATE = 09211900 RESERVOIR CODE = 1 EEE = 44 NO OF RE = 1

VERSION: PENNY # - 2002, DATE: 09/21/1998, RESERVOIR CODE = 1, LIT = 44, NO OF N = 1

RETURN FLOWS : TO STA 073226 % OF TOT BE 100 DE AX TABLE NO 11

\*\*\* STATION NO = 072600 ORDER NO = 3 FLUSHING CREEK

BUNOFF (A. E.) 19 13 19 40 247 481 316 96 40 41 28 26

BUNOFF (A. E.) 19 13 19 40 247 481 316 95 40 41 28 26

PUNOFF (A. E.) 19 13 19 40 247 481 216 96 40 25 24 22



TABLE III-5 (Continued)

RUNOFF (A.F.)	18.	14.	18.	20.	274.	616.	325.	71.	43.	45.	29.	30.
RUNOFF (A.F.)	23.	16.	21.	38.	264.	712.	480.	157.	61.	60.	39.	32.
INSM-CFS FS16L	03311891	.1	.1	.1	.2	1.4	2.8	.4	.3	.2	.2	.1

+

\*\*\* STATION NO = 072602. ORDER NO =3    FREEDOM #1 DITCH

DIVERSION PERMIT # = 1211 , DATE = 11031913, RESERVOIR CODE = 1, EFF = 44, NO OF RF = 1  
 DIV. AMT. (CFS) 0.0000 0.0000 0.0000 .2000 1.8000 4.0000 4.0000 3.2000 1.6000 .2000 0.0000 0.0000  
 RETURN FLOWS : TO STA 072604, % OF TOT RF 100, DELAY TABLE NO 11

\*\*\*\*\*

\*\*\* STATION NO = 072604 ORDER NO =3 FLUSHING BE STATION

\*\*\* STATION NO = 073226 ORDER NO =? JOHNS RESERVOIR

# # # # RESERVOIR DATA # # # #

JOHN RESERVOIR , CODE=30, MIN VOL(AF)= 5000., MAX VOL(AF)= 50000., MAX OUT(CFS)= 1376. , INTL VOL (AF)= 0  
POWER STORAGE GOL (AF) = 10000. GOL MONTH = 04

POWER STORAGE GUL (AF) = 10000., GUL MONTH = 04

EVAPORATION RATE (FT) .052 .217 .377 .382 .100  
NON-PROT REAISSES (%) 5 5 5 30 60 80

NUN-FROM RELEASES (%) 5 5 5 5 50 60 80 90 5 5  
PERMIT NO = 100N DATE= 12311960 DECREED AMT(AE)= 50000

\*\*\* STATION NO = 073228. ORDER NO =? D/S OF JOHNS RES.

TABLE III-5 (Continued)

+ +

## \*\*\* STATION NO = 073230, ORDER NO =2 FREEDOM #2, S.P.R. DITCH

DIVERSION PERMIT # = 1520 , DATE = 02281918, RESERVOIR CODE = 30, EFF = 44, NO OF RF = 2  
 DIV. AMT. (CFS) 0.0000 0.0000 0.0000 .5000 4.5000 10.0000 10.0000 8.0000 4.0000 .5000 0.0000 0.0000  
 RETURN FLOWS : TO STA 073232, % OF TOT RF 50, DELAY TABLE NO 11  
 RETURN FLOWS : TO STA 074000, % OF TOT RF 50, DELAY TABLE NO 11  
 DIVERSION PERMIT # = N2647 , DATE = 10101978, RESERVOIR CODE = 30, EFF = 10, NO OF RF = 1  
 DIV. AMT. (CFS) 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000  
 RETURN FLOWS : TO STA 073232, % OF TOT RF 100, DELAY TABLE NO 4

+ +

## \*\*\* STATION NO = 073232, ORDER NO =2 FISH #1 &amp; #2 DITCHES

DIVERSION PERMIT # = 2650 , DATE = 10101974, RESERVOIR CODE = 30, EFF = 44, NO OF RF = 1  
 DIV. AMT. (CFS) 0.0000 0.0000 0.0000 .4000 3.6000 8.0000 8.0000 6.4000 3.2000 .4000 0.0000 0.0000  
 RETURN FLOWS : TO STA 074000, % OF TOT RF 100, DELAY TABLE NO 11  
 DIVERSION PERMIT # = 4627 , DATE = 04051938, RESERVOIR CODE = 30, EFF = 10, NO OF RF = 1  
 DIV. AMT. (CFS) 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000  
 RETURN FLOWS : TO STA 074000, % OF TOT RF 100, DELAY TABLE NO 4

+ +

## \*\*\* STATION NO = 073800, ORDER NO =3 ALPO CREEK, SPOON DITCH

|               |     |     |     |      |      |       |       |      |      |      |     |     |
|---------------|-----|-----|-----|------|------|-------|-------|------|------|------|-----|-----|
| RUNOFF (A.F.) | 54. | 35. | 54. | 105. | 634. | 1233. | 812.  | 246. | 105. | 103. | 71. | 69. |
| RUNOFF (A.F.) | 54. | 35. | 54. | 105. | 634. | 1233. | 812.  | 246. | 105. | 103. | 71. | 69. |
| RUNOFF (A.F.) | 54. | 35. | 54. | 105. | 634. | 1233. | 812.  | 246. | 105. | 62.  | 60. | 61. |
| RUNOFF (A.F.) | 51. | 37. | 50. | 51.  | 704. | 1578. | 836.  | 185. | 112. | 112. | 73. | 79. |
| RUNOFF (A.F.) | 66. | 43. | 58. | 100. | 678. | 1825. | 1234. | 406. | 161. | 150. | 98. | 86. |

DIVERSION PERMIT # = 2340 , DATE = 04221944, RESERVOIR CODE = 1, EFF = 10, NO OF RF = 1

I-III  
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TABLE III-5 (Continued)

DIV. AMT. (CFS) : 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000  
RETURN FLOWS : TO STA 073804, % OF TOT RF 100, DELAY TABLE NO 4

\*\*\* STATION NO = 073804, ORDER NO =3 HAWKEYE DITCH

DIVERSION PERMIT # = 2717 , DATE = 05291961, RESERVOIR CODE = 1, EFF = 44, NO OF RF = 1

VERSION : V1.01 , DATE : 10/20/2001 , RELEASE DATE : 10/20/2001  
DIV. AMT. (CFS) 0.0000 0.0000 0.0000 .4500 4.0500 9.0000 9.0000 7.2000 3.6000 .4500 0.0000 0.0000  
RETURN FLOWS : TO STA 074000, % OF TOT RF 100, DELAY TABLE NO 11

\*\*\* STATION NO = 074000, ORDER NO =2 BEAUMONT RIVER BELOW ALPO CREEK

DIVERSION PERMIT # = 2239 , DATE = 04221963, RESERVOIR CODE = 30, EFF = 44, NO OF RF = 1

DIV. AMT. (CFS) : 0.0000 0.0000 0.0000 .5000 4.5000 10.0000 10.0000 8.0000 4.0000 .5000 0.0000 0.0000  
RETURN FLOWS : TO STA 074002, % OF TOT RF 100, DELAY TABLE NO 51

DIVERSION PERMIT # = 2217 , DATE = 05291961, RESERVOIR CODE = 30, EFF = 44, NO OF RF = 1

DIV. AMT. (CFS) 0.0000 0.0000 0.0000 .7500 6.7500 15.0000 15.0000 12.0000 6.0000 .7500 0.0000 0.0000  
 RETURN FLOWS : TO STA 074002, % OF TOT RF 100, DELAY TABLE NO 11

DIVERSION PERMIT # = 2525 , DATE = 09241936 , RESERVOIR CODE = 30 , EFF = 44 , NO OF RF = 1

DIV. AMT. (CFS) 0.0000 0.0000 0.0000 1.4000 12.6000 28.0000 28.0000 22.4000 11.2000 1.4000 0.0000 0.0000  
RETURN FLOWS : TO STA 074002, % OF TOT RF 100, DELAY TABLE NO 11

\*\*\* STATION NO = 074002, ORDER NO =2 LAST POINT BEAUMONT RIVER

DIVERSION PERMIT # = INDC , DATE = 07021868, RESERVOIR CODE = 30, EFF = 44, NO OF RF = 1

DIV. AMT. (CFS) 0.0000 0.0000 0.0000 50.0000 50.0000 50.0000 50.0000 50.0000 50.0000 50.0000 0.0000 0.0000  
 RETURN FLOWS : TO STA 075000, % OF TOT RF 100, DELAY TABLE NO 11

\*\*\* STATION NO = 075000, ORDER NO =1 SUNRISE RIVER

EOI.



### 3. Modification of Diversion Data

The Bighorn River Adjudication data base was created several years ago, yet numerous changes have been made as part of the continuing negotiation and settlement phases of the litigation. Rather than using the original programs to change the data, revised or new programs were designed to read and redistribute diversion data in several different forms.

The initial diversion data was based upon the permitted or adjudicated amount of each water right. A single diversion distribution schedule (as a percent of water right amount) was applied to all irrigation rights less than 15 cfs for the season April through October: 5% 45% 100% 100% 80% 40% 5%. If a new distribution was desired, the program CHKCLM was used to read the month with 100 percent of the permitted amount (June or July), apply the new distribution and write the new diversion requirements in the data file.

At one point in the Bighorn River Adjudication analysis, an actual use data base was desired in addition to the water rights data base. The irrigated acreage values were then input in the first field of DIVER on each diversion card. A water duty was determined for each grouping of water rights which was used to convert the acreage value to an annual water demand in acre-feet. The program then applied a new distribution to the demand and converted it from acre-feet to cubic feet per second.

A general version of CHKCLM is included in Appendix B. Changes within the CHKCLM program will need to be made to tailor it to the specific needs of the user. RNCLM is the procedure file which accesses CHKCLM. The input data is highlighted for easy identification in the procedure file. In addition to distribution of the



diversion data, CHKCLM will also check for illegal characters in each field. The program is currently designed to read one line of data (240 characters per line) for each water right.

#### 4. Use of Existing Data Bases

The Bighorn River and Clarks Fork River data bases are already setup and accessible from magnetic tapes. The diversion data is in the 240-characters-per-line format. The procedures for checking the data discussed in this chapter may all be applied to the existing data with one exception. If, for some reason, the user desires to use RNDIV and the associated diversion subroutines in RIGHT2 and DATAACK1, the existing diversion data must be split into the two-line format first. This may be accomplished by using the program CUT listed in Appendix B.

#### B. SUBMITTAL OF WIRSOS COMPUTER MODEL

To submit WIRSOS for program execution, two procedure files must be setup. RNJOB is a procedure file which accesses all the data, except for diversions and instream flows, executes the program (WAT12S) and assigns the output files to user desired names. The procedure file, LRCYBJ, accesses and sorts the diversion and instream flow files, produces the diversion data in two-line format, and accesses the procedure file, RNJOB. The sorting routines used for the diversions and instream flow files are SORTDIV and SORTFLO. Appendix C contains the listing of these two routines in addition to LRCYBJ and RNJOB. Sorting should be done routinely by the user prior to program execution, since some modifications of the data through the use of the programs in Appendix B do not automatically sort.



Each time a river simulation is executed, an acronym of up to five characters identifying that run is selected. For example, when processing the sample data for the Beaumont River Basin, the model runs were identified as **SAMP1** and **SAMP2**. RNJOB was then renamed **RNSAMP1** and **RNSAMP2**, respectively. In addition, the output file names begin with the same acronym. The initial river flow was named **SAMP108** and **SAMP208**, the final river flow was called **SAMP109** and **SAMP209**, and so forth. Table III-6 shows the last two characters of the run acronym and the type of file the two characters represent.

The last three lines of RNJOB require input data. The first line is the title of the run which the user would like printed on the output. The second line indicates the number of stations with runoff. In the example, four stations will contribute runoff for the sample runs. WIRSOS will determine the number of years of processing through which it must proceed by dividing the total number of lines in the runoff file by the number of stations which contribute runoff. The final line of data indicates whether or not reservoirs will be included in the simulation. The example is currently setup to process reservoirs (RES). NOR would indicate reservoirs will not be included in the simulation.

### C. PROCESSING WIRSOS OUTPUT

#### 1. Processing Standard Output Files

WIRSOS will produce five output files which can be directly printed out. These five files include the initial runoff (TAPE8), final river flow (TAPE9), available river flow (TAPE10), the callout list (TAPE11), and the reservoir report (TAPE18). The general practice in the past, however, has been to edit these files, except the reservoir report, to eliminate the output



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Table III-6

WIRSOS Output File Identification

| <u>Last Two Characters of Acronym</u> | <u>Type of File</u>                      |
|---------------------------------------|--|
| 08                                    | Initial Runoff                           |
| 09                                    | Final River Flows                        |
| 10                                    | Available River Flows                    |
| 11                                    | Callout List                             |
| 12                                    | Called-Out Diversions                    |
| 13                                    | Called-Out Instream Flows                |
| 14                                    | Charted Called-Out Diversions            |
| 15                                    | Charted Called-Out Instream Flows        |
| 18                                    | Reservoir Report                         |
| 41                                    | Charted Negative Affected Instream Flows |
| 42                                    | Charted Positive Affected Instream Flows |
| 45                                    | Positive Affected Instream Flows         |
| 46                                    | Negative Affected Instream Flows         |
| 51                                    | Sorted Negative Affected Instream Flows  |
| 52                                    | Sorted Positive Affected Instream Flows  |
| 61                                    | Charted Negative Affected Diversions     |
| 62                                    | Charted Positive Affected Diversions     |
| 65                                    | Positive Affected Diversions             |
| 66                                    | Negative Affected Diversions             |
| 81                                    | Sorted Negative Affected Diversions      |
| 82                                    | Sorted Positive Affected Diversions      |



from the first three years. The reservoir report is printed out in its entirety since the file is not as long as the other output files.

The first three years of runoff data (usually for average streamflow conditions) were processed for the primary purpose of developing equilibrium conditions in the stream system. Therefore, engineering review of the first three years of output was unnecessary once verification of model operation was completed. The user may choose to print the output files without any prior editing by routing the files directly to the printer.

The final two output files, the called out diversions (TAPE12) and called out instream flows (TAPE13), not mentioned above, can be routed through programs PERSORT and PERCHRT or INSCHRT to achieve a more usable format. These programs are listed in Appendix D. The format for TAPE12 and TAPE13 is a listing of the rights called out: one right per line with the month number, permit number, percent called out and station number. The called-out diversions (TAPE12) and instream flow (TAPE13) files are sorted by month and then by permit number in the program PERSORT. PERCHRT is used to produce a chart (TAPE14) of the percent (decimal form) of the diversion right called out in each month. INSCHRT produces a similar chart of monthly called out instream flows (TAPE15). Tables E-9 and E-11 in Appendix E are examples of the callout charts.

If desired, the user can achieve in one step the deletion of the first three years of output data and the generation of charts of called out water rights by using the procedure file RNEDT. This procedure file uses the CMEDITOR on the Boeing Computer System. The charted diversions have been identified by the last two numbers of the file name, i.e., 14 for SAMP1 run (SAMP114 in



RNEDT, Appendix D) and the instream flows have been identified by 15 (SAMP115). Figure III-1 illustrates the procedure in RNEDT.

2. Comparison of Two WIRSOS Model Runs (Impact)

One of the most important features of the WIRSOS model is the ability to compare the output of two model runs for the purpose of determining impact (affect) of additional water rights on a "base" condition run.

In the Bighorn River Adjudication, a "base" run consisted of modeling the State-awarded water rights. A "claim" run involved the addition of Federal reserved water rights in the existing data base. The comparison of the "claim" run against the "base" run allowed an easy determination of the impact which the reserved rights posed on the State water rights.

The comparison of two model runs is achieved by using the program CMPR2 and the procedure file RNCOMP. CMPR2 simply compares the lists of called out rights (TAPE12 or TAPE13) from two model runs. The resulting output file is similar in format to TAPE12 or TAPE13 and can, therefore, be charted using the same procedures used in RNEDT. RNCOMP is designed to compare output from two computer runs and route the results through the charting procedures using PERSORT and PERCHRT/INSCHRT as described in the previous section. Figure III-2 and Figure III-3 are flowcharts illustrating these procedures. Appendix D contains both RNCOMP and CMPR2.

The input information in RNCOMP is highlighted in bold. TAPE10 is assigned the "base" file and TAPE20 is the "claim" file or file which is to be compared to the "base" file. The output files from CMPR2 end in either 65 or 66 for diversions and 45 or 46 for instream flows. Of these four files, those ending in 5



**FIGURE III-1**  
**PROCESSING STANDARD WIRSOS OUTPUT FILES**  
**USING SAMPLE RUN #1 (SAMP1) FILE NAMES**

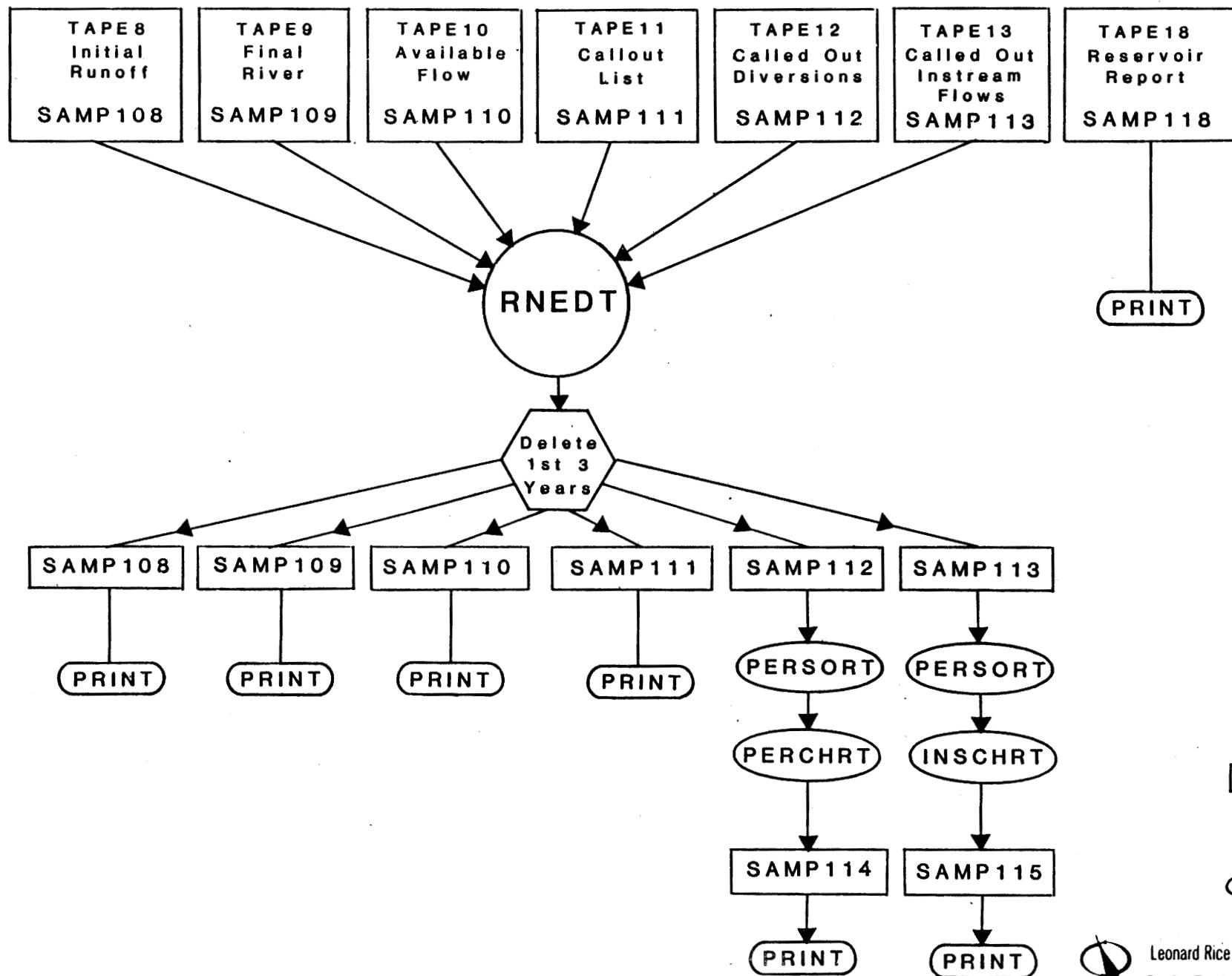
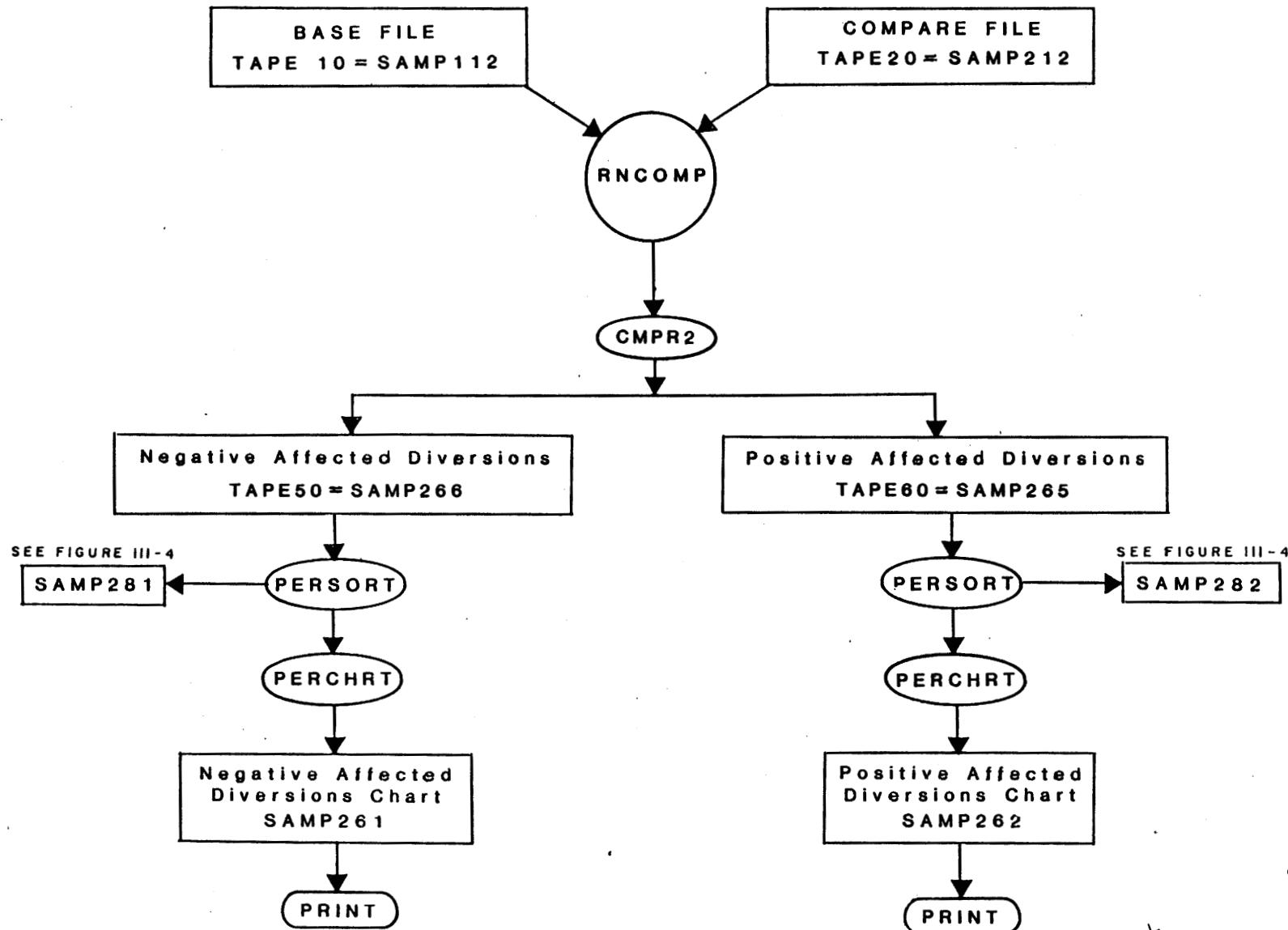


FIGURE III-2

**COMPARISON OF CALLED OUT DIVERSIONS  
FROM TWO WIRSOS MODEL RUNS**  
**SAMPLE RUN #1 (SAMP1) v. SAMPLE RUN #2 (SAMP2)**



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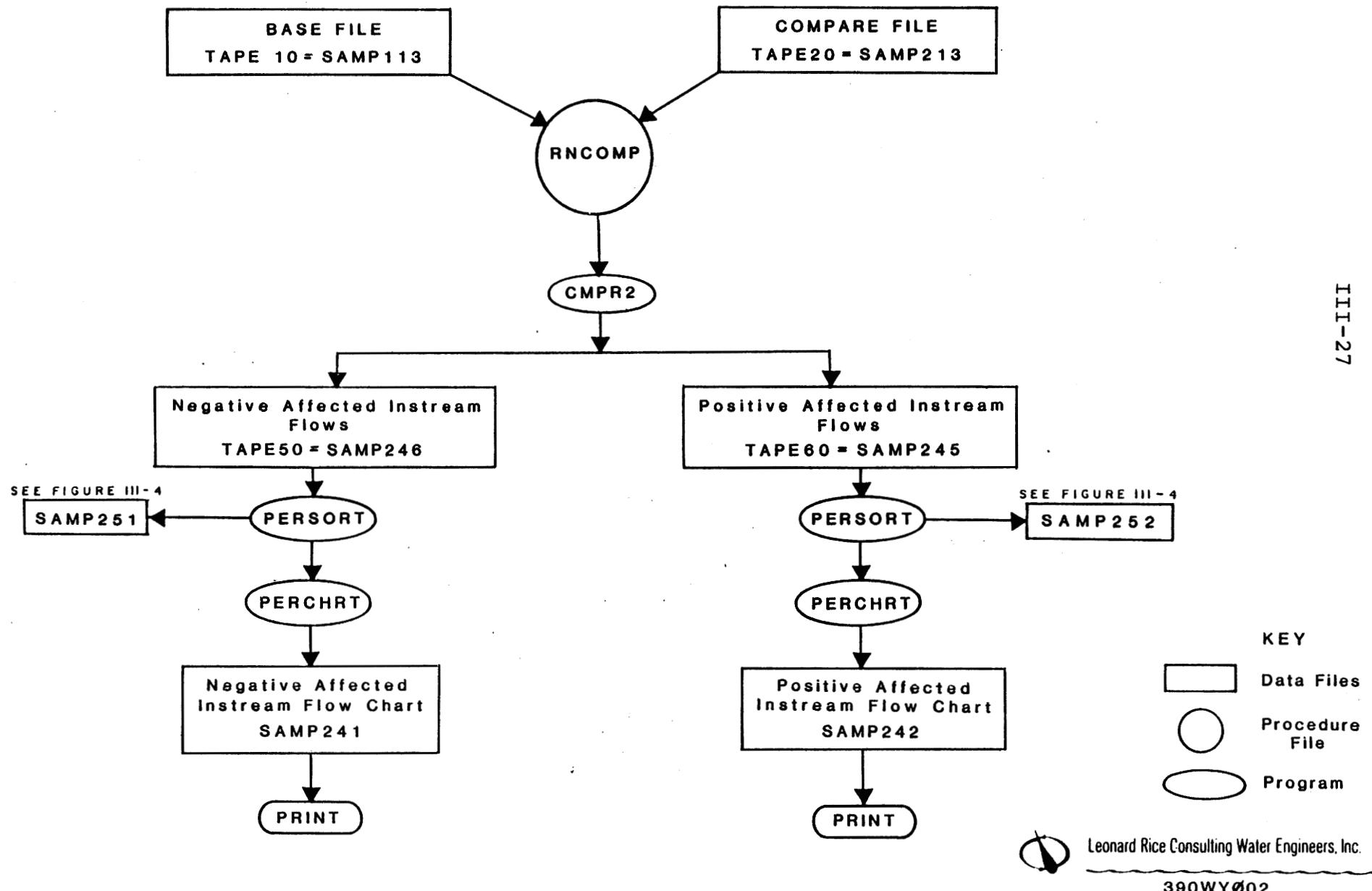
KEY

- [Data File] Data Files
- [Procedure File] Procedure File
- [Program] Program

FIGURE III-3

**COMPARISON OF CALLED OUT INSTREAM FLOWS  
FROM TWO WIRSOS MODEL RUNS**

SAMPLE RUN #1 (SAMP1) v. SAMPLE RUN #2 (SAMP2)



report positive affected diversions or instream flows and those ending in 6 represent negative affected diversions or instream flows. See Figure III-2 and Figure III-3.

Positive affected water rights are rights which receive a greater supply of water from the imposition of a proposed future right or claim. A negative affected right would, on the other hand, receive a smaller supply of water due to an additional water right imposed on the existing data base. For example, Permit No. N1961 was called out 77.6 percent in April of Year 1 (See Table E-9) in Sample Run #1. The same right was called out 100.0 percent in April of Year 1 (See Table E-21) in Sample Run #2. The program CMPR2 takes the difference of the two:  $77.6 - 100.0 = -22.4$ . The affect is negative; N1961 is called out 22.4 percent more in Sample Run #2 than in Sample Run #1. See Table E-25.

The CMPR2 output files are then read and sorted by the program PERSORT. RNCOMP is currently setup to save the output file of negative affected diversions in a file ending in 81. This file is used in developing a table of affected acreage and will be discussed in the next section. The positive affected diversions can be saved subsequent to sorting in PERSORT and renamed in a file ending in 82. RNCOMP is not currently setup to do this. Positive and negative instream flows can also be saved under the file names ending in 52 or 51, respectively.

The output from PERSORT is directly read by the program PERCHRT which will put the affected rights in a monthly chart format. The output file is saved under a name ending in 61 or 62 for negative or positive affected diversions. Instream flow output files may end in 41 and 42, if desired.



The number scheme described above was developed during the modeling of the Bighorn River Basin and proved useful in keeping track of the various output files. It is recommended the user follow this identification procedure. A different naming scheme may be adopted, however, to avoid confusion the selected system should be documented and followed throughout the process of modeling water rights. The charted output files containing affected diversions or instream flows use the same format as the charted files containing the called out diversions or instream flows and must, therefore, be uniquely identified.

### 3. Called Out or Affected Acreage in Table Format

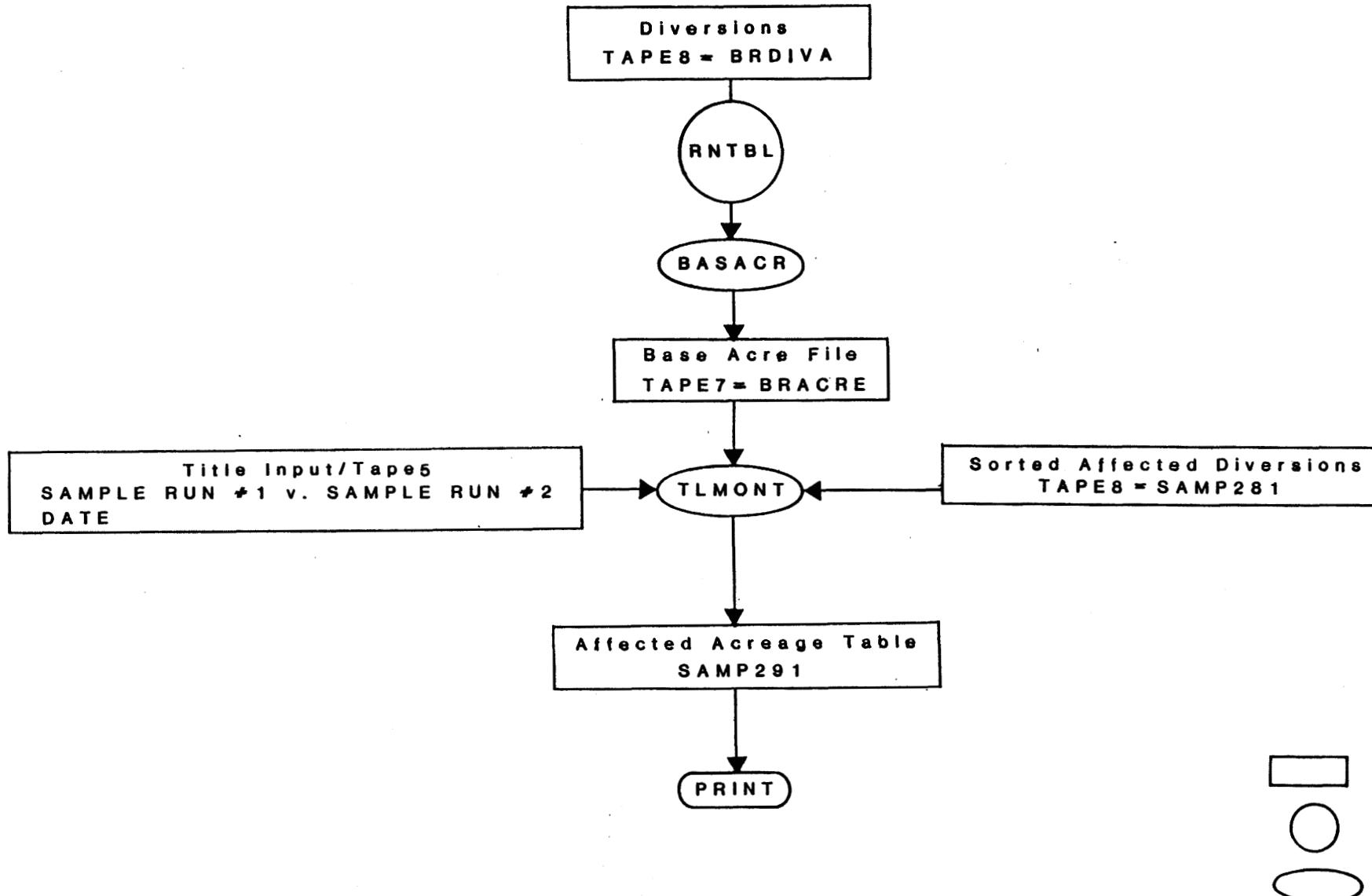
An additional optional output process was developed several years after the initial WIRSOS model development. The purpose was to summarize in table format the acreages called out or affected in each month of each of the ten years in the study period for the Bighorn River Adjudication. Several variations of the summary table were produced during the litigation to illustrate called out or affected State-awarded irrigation water rights, Federal and Indian claims for irrigation rights, and municipal rights (in cfs). The following description of the procedures to develop a summary table refer to affected irrigation rights. The program may be easily changed to produce tables which reflect other types of water rights.

Figure III-4 is a flowchart illustrating the process to develop a summary table using the procedure file RNTBL and the programs BASACR and TLMONT. The program BASACR reads in a file, in this case a variation of the diversion file (BRDIVA), which is identical to a diversion file except the first field of DIVER contains the irrigated acreage. The BRDIVA file can be developed by either writing a program to put acreage in the first field of DIVER or



FIGURE III-4

AFFECTED ACREAGE IN TABLE FORMAT USING  
SAMPLE RUN #1 (SAMP1) v. SAMPLE RUN #2 (SAMP2)



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by doing it by hand. BASACR sorts the data by permit number and then writes the information to a file in the format required by the program TLMONT. The output file from BASACR, BRACRE, will contain a sorted list of permit numbers and the associated irrigated acreage. If certain permits, such as municipal or industrial rights, need to be omitted from the output file, BASACR must be modified to exclude those permits when writing to BRACRE.

In the Bighorn River data base, initially water rights were identified as to type by certain prefixes or suffixes to the permit number. Later the identifier was the second character on the diversion card. For example, non-irrigation rights were identified by the number 5, irrigation rights downstream of Boysen Reservoir were identified by the number 0, carrier ditches used the value 7, etc. A water right type identification is recommended not only for producing a file such as BRACRE, but also for purposes of modifying the diversion data. The user may want to change certain types of rights while the remaining set of rights would be unchanged.

The BRACRE file is a base file from which called out or affected acreages may be determined. The output file, SAMP281, from the procedure file RNCOMP and the program PERSORT is read by the program TLMONT. SAMP281 is a listing of affected water rights sorted by permit number within each month. It contains the month in which the right was affected, the permit number and the percent of the right affected by the imposition of a claim; in this example, the water right INDC. TLMONT will match the permit number from SAMP281 with the corresponding permit number in BRACRE and will then multiply the percentage affected times the total irrigated acreage under that permit number. The acres are then totaled for each month and for each year and printed in



table format. The table is currently setup to report twelve monthly totals for ten years of data. Table E-31 is a summary table of affected lands resulting from the comparison of the two sample runs.

TLMONT will also read from the bottom of the procedure file the title of the model runs for which the table is reporting information. The date is input on the same line as the title and printed in the bottom right hand corner of the summary table. The format for the title and date is (6A10,A10).

The same procedure is used to develop tables of positive affected diversions and negative and positive affected instream flows. The files used for such a process are, for the sample runs, SAMP282, SAMP251 and SAMP252, respectively.



## **IV. ANALYSIS AND INTERPRETATION OF RESULTS**

### **A. GENERAL DISCUSSION**

Output from two sample runs was generated for the purposes of explanation and illustration of the model results. The first run, Sample Run #1, is considered a "base run" for water rights in Beaumont River Basin, a fictitious river basin. The base run includes the modeling of direct flow diversions, instream flow rights, one reservoir and the three different types of project rights described in the previous chapter. The second run, Sample Run #2, consists of the same data as in Sample Run #1 with the addition of one new fictitious direct flow diversion. This additional diversion will be considered a proposed claim, say by a new appropriator, to irrigate their land for farming. The impact of the claim on the base run can be determined by comparing the output from these two sample runs.

Both sample runs simulated five years of runoff. The first three years are considered average year runoff and the last two years may be considered as annual runoff for specific years. For purposes of reaching an equilibrium condition in the simulation considering delayed return flows, LRCWE adopted the procedure of processing three years of average flow prior to the analysis of the study period data. If results from one average runoff year is desired, LRCWE recommends processing four years of average year runoff data. The analysis and interpretations may then be accomplished by using the fourth year of output information.

For purposes of example, the first two years of output data will be presented in Appendix E with the exception of the CALLOUT LIST. Only one complete year of output from the CALLOUT LIST will be presented in Appendix E to avoid an overabundance of paper in this document. A sample table of each type of output file will be referenced below for purposes of describing the



format and interpretation of WIRSOS output in this manual. A thorough discussion of the input data formats is included in Chapter II of this manual.

## B. OUTPUT DESCRIPTION

### 1. Initial Runoff

The initial river flow is input at inflow stations only. The program takes the runoff file with twelve monthly flow values at each inflow station and generates the output report entitled "INITIAL RUNOFF IN MONTHLY CFS", referred to in this report as INITIAL RUNOFF, as shown in Table IV-1. The manner in which flow is accounted is illustrated in Figure IV-1. The runoff is accumulated from upstream to downstream, to a larger station number and an equal or smaller stream order number. The INITIAL RUNOFF table reports the initial river flow in average monthly cfs and the annual total in acre-feet for each accounting station. The stream order number for each accounting station is reported in the column entitled "ORD". An INITIAL RUNOFF report is generated for each year of data included in the runoff file. The name of the run and the year number is printed at the top of every page of output, as seen on Table IV-1.

The INITIAL RUNOFF report is developed directly from the input runoff file. Delayed return flows are not included in this report. However, an internal array in the program accounts for the delay in returns from irrigation and other uses and these amounts are included in the available streamflow when processing water rights.



Table IV-1

YEAR 1

INITIAL RUNOFF IN MONTHLY CFS  
BEAUMONT RIVER BASIN - SAMPLE RUN #1      07:19:04 PST 11/07/84

| STATION | ORD | JAN | FEB | MAR | APRIL | MAY   | JUNE  | JULY  | AUG  | SEPT | OCT  | NOV  | DEC  | TOTAL (AF) |
|---------|-----|-----|-----|-----|-------|-------|-------|-------|------|------|------|------|------|------------|
| 71200   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71202   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71206   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 72200   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72204   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72208   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72210   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72414   | 2   | 8.5 | 6.2 | 8.5 | 37.4  | 101.9 | 204.5 | 130.0 | 39.6 | 17.5 | 17.0 | 11.7 | 11.3 | 35957.     |
| 72418   | 2   | 8.5 | 6.2 | 8.5 | 37.4  | 101.9 | 204.5 | 130.0 | 39.6 | 17.5 | 17.0 | 11.7 | 11.3 | 35957.     |
| 72600   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 72602   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 72604   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 73226   | 2   | 8.8 | 6.5 | 8.8 | 38.0  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 37322.     |
| 73228   | 2   | 8.8 | 6.5 | 8.8 | 38.0  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 37322.     |
| 73230   | 2   | 8.8 | 6.5 | 8.8 | 38.0  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 37322.     |
| 73232   | 2   | 8.8 | 6.5 | 8.8 | 38.0  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 37322.     |
| 73800   | 3   | 0.9 | 0.6 | 0.9 | 1.8   | 10.3  | 20.7  | 13.2  | 4.0  | 1.8  | 1.7  | 1.2  | 1.1  | 3521.      |
| 73804   | 3   | 0.9 | 0.6 | 0.9 | 1.8   | 10.3  | 20.7  | 13.2  | 4.0  | 1.8  | 1.7  | 1.2  | 1.1  | 3521.      |
| 74000   | 2   | 9.7 | 7.1 | 9.7 | 39.8  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 40843.     |
| 74002   | 2   | 9.7 | 7.1 | 9.7 | 39.8  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 40843.     |
| 75000   | 1   | 9.7 | 7.1 | 9.7 | 39.8  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 40843.     |

IV-3



## 2. Final River

After all water rights have been processed, the WIRSOS program generates a report entitled "FINAL RIVER SYSTEM STATUS MONTHLY CFS IN RIVER", referenced in this manual as FINAL RIVER, as shown in Table IV-2. The format of this report is identical to the format for the INITIAL RUNOFF report except for the title. The FINAL RIVER report summarizes the amount of water at each station physically in the river after all diversions and return flows have been made and accounted. These amounts are reported in average monthly cfs and annual acre-feet at each station.

Instream flows, which are streamflows left in the river, are included as part of the FINAL RIVER values. These flows may cause the FINAL RIVER flows to be greater than the flows available for diversion (see next section).

The flows in the FINAL RIVER report may, where applicable, be compared to U.S.G.S. stream gage data provided an accounting station is designated at a U.S.G.S. stream gage location. This type of situation can assist the user in verifying that the simulation represents "real world conditions." The FINAL RIVER report may also be used to confirm river operations and flows with water commissioners.

## 3. Available River Flow

In addition to the FINAL RIVER report, the WIRSOS program generates a report entitled "FINAL RIVER SYSTEM STATUS MONTHLY CFS AVAILABLE IN RIVER", referenced in this report as AVAILABLE FLOW, subsequent to the processing of all water rights in the data base. This AVAILABLE FLOW report, shown in Table IV-3, summarizes the physical supply of water available for diversion from the river.



Table IV-2

YEAR 1

FINAL RIVER SYSTEM STATUS MONTHLY CFS IN RIVER  
BEAUMONT RIVER BASIN - SAMPLE RUN #1    07:19:04 PST 11/07/84

9-IV

| STATION | ORD | JAN | FEB | MAR | APRIL | MAY   | JUNE  | JULY  | AUG   | SEPT | OCT  | NOV  | DEC  | TOTAL (AF) |
|---------|-----|-----|-----|-----|-------|-------|-------|-------|-------|------|------|------|------|------------|
| 71200   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71202   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71206   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 72200   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72204   | 3   | 0.1 | 0.1 | 0.1 | 19.6  | 1.3   | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.0  | 0.0  | 1538.      |
| 72208   | 3   | 0.1 | 0.1 | 0.1 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  | 0.0  | 0.1  | 0.1  | 39.        |
| 72210   | 3   | 0.1 | 0.1 | 0.1 | 5.3   | 2.8   | 1.1   | 0.9   | 0.4   | 0.3  | 0.2  | 0.3  | 0.3  | 710.       |
| 72414   | 2   | 8.5 | 6.2 | 8.5 | 23.1  | 102.4 | 200.5 | 126.6 | 37.2  | 16.4 | 16.9 | 11.8 | 11.4 | 34485.     |
| 72418   | 2   | 0.0 | 0.0 | 0.0 | 13.5  | 90.5  | 185.8 | 112.1 | 23.8  | 4.9  | 7.0  | 2.0  | 1.5  | 26717.     |
| 72600   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5   | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 72602   | 3   | 0.3 | 0.2 | 0.3 | 0.5   | 2.2   | 4.1   | 1.1   | 0.0   | 0.0  | 0.5  | 0.5  | 0.4  | 614.       |
| 72604   | 3   | 0.3 | 0.2 | 0.3 | 0.5   | 2.8   | 5.7   | 3.1   | 1.2   | 0.6  | 0.7  | 0.6  | 0.5  | 1011.      |
| 73226   | 2   | 3.0 | 3.0 | 3.0 | 3.4   | 6.7   | 11.2  | 0.0   | 0.0   | 0.0  | 0.0  | 2.0  | 1.7  | 2039.      |
| 73228   | 2   | 3.0 | 3.0 | 3.0 | 3.4   | 23.3  | 47.7  | 88.0  | 159.7 | 91.8 | 23.8 | 4.8  | 4.9  | 27755.     |
| 73230   | 2   | 3.0 | 3.0 | 3.0 | 2.9   | 16.8  | 35.7  | 76.0  | 149.7 | 85.8 | 21.3 | 2.8  | 2.9  | 24506.     |
| 73232   | 2   | 0.0 | 0.0 | 0.0 | 0.0   | 12.8  | 28.5  | 69.3  | 144.3 | 82.8 | 20.3 | 1.8  | 1.8  | 22011.     |
| 73800   | 3   | 0.0 | 0.0 | 0.0 | 0.0   | 6.3   | 16.7  | 9.2   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 1949.      |
| 73804   | 3   | 0.8 | 0.6 | 0.8 | 1.1   | 5.4   | 17.7  | 3.8   | 0.0   | 0.0  | 1.1  | 1.1  | 1.0  | 2006.      |
| 74000   | 2   | 3.5 | 3.3 | 3.5 | 1.4   | 1.2   | 2.6   | 32.7  | 113.4 | 69.6 | 23.5 | 6.3  | 6.0  | 16238.     |
| 74002   | 2   | 3.5 | 3.3 | 3.5 | 2.1   | 7.7   | 19.8  | 55.6  | 138.8 | 88.6 | 30.7 | 8.4  | 7.2  | 22450.     |
| 75000   | 1   | 3.5 | 3.3 | 3.5 | 2.1   | 7.7   | 19.8  | 55.6  | 138.8 | 88.6 | 30.7 | 8.4  | 7.2  | 22450.     |



Table IV-3

YEAR 1

FINAL RIVER SYSTEM STATUS MONTHLY CFS AVAILABLE IN RIVER  
 BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84  
 (WATER AVAILABLE FOR DIVERSIONS MAY BE CONTROLLED  
 BY DOWNSTREAM FLOWS. WATER AVAILABLE FOR INSTREAM  
 FLOWS IS CONTROLLED BY FLOW AT INTERESTED STATION ONLY.)

IV-7

| STATION | ORD | JAN | FEB | MAR | APRIL | MAY  | JUNE  | JULY  | AUG   | SEPT | OCT  | NOV | DEC | TOTAL (AF) |
|---------|-----|-----|-----|-----|-------|------|-------|-------|-------|------|------|-----|-----|------------|
| 71200   | 2   | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5 | 13.9 | 9.7 | 9.4 | 28706.     |
| 71202   | 2   | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5 | 13.9 | 9.7 | 9.4 | 28706.     |
| 71206   | 2   | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5 | 13.9 | 9.7 | 9.4 | 28706.     |
| 72200   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3  | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.1 | 0.1 | 1582.      |
| 72204   | 3   | 0.1 | 0.1 | 0.1 | 19.6  | 1.3  | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.0 | 0.0 | 1538.      |
| 72208   | 3   | 0.1 | 0.1 | 0.1 | 0.0   | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  | 0.0  | 0.1 | 0.1 | 39.        |
| 72210   | 3   | 0.1 | 0.1 | 0.1 | 5.3   | 2.8  | 1.1   | 0.9   | 0.4   | 0.3  | 0.2  | 0.3 | 0.3 | 710.       |
| 72414   | 2   | 0.0 | 0.0 | 0.0 | 13.1  | 92.4 | 190.5 | 116.6 | 27.2  | 6.4  | 6.9  | 1.8 | 1.4 | 27640.     |
| 72418   | 2   | 0.0 | 0.0 | 0.0 | 13.5  | 90.5 | 185.8 | 112.1 | 23.8  | 4.9  | 7.0  | 2.0 | 1.5 | 26717.     |
| 72600   | 3   | 0.2 | 0.1 | 0.2 | 0.5   | 2.6  | 5.3   | 4.7   | 1.2   | 0.5  | 0.5  | 0.3 | 0.3 | 997.       |
| 72602   | 3   | 0.3 | 0.2 | 0.3 | 0.5   | 2.2  | 4.1   | 1.1   | 0.0   | 0.0  | 0.5  | 0.5 | 0.4 | 614.       |
| 72604   | 3   | 0.3 | 0.2 | 0.3 | 0.5   | 2.8  | 5.7   | 3.1   | 1.2   | 0.6  | 0.7  | 0.6 | 0.5 | 1011.      |
| 73226   | 2   | 3.0 | 3.0 | 3.0 | 3.4   | 6.7  | 11.2  | 0.0   | 0.0   | 0.0  | 0.0  | 2.0 | 1.7 | 2039.      |
| 73228   | 2   | 3.0 | 3.0 | 3.0 | 3.4   | 23.3 | 47.7  | 88.0  | 159.7 | 91.8 | 23.8 | 4.8 | 4.9 | 27755.     |
| 73230   | 2   | 3.0 | 3.0 | 3.0 | 2.9   | 16.8 | 35.7  | 76.0  | 149.7 | 85.8 | 21.3 | 2.8 | 2.9 | 24506.     |
| 73232   | 2   | 0.0 | 0.0 | 0.0 | 0.0   | 12.8 | 28.5  | 69.3  | 144.3 | 82.8 | 20.3 | 1.8 | 1.8 | 22011.     |
| 73800   | 3   | 0.0 | 0.0 | 0.0 | 0.0   | 6.3  | 16.7  | 9.2   | 0.0   | 0.0  | 0.0  | 0.0 | 0.0 | 1949.      |
| 73804   | 3   | 0.8 | 0.6 | 0.8 | 1.1   | 5.4  | 17.7  | 3.8   | 0.0   | 0.0  | 1.1  | 1.1 | 1.0 | 2006.      |
| 74000   | 2   | 3.5 | 3.3 | 3.5 | 1.4   | 1.2  | 2.6   | 32.7  | 113.4 | 69.6 | 23.5 | 6.3 | 6.0 | 16238.     |
| 74002   | 2   | 3.5 | 3.3 | 3.5 | 2.1   | 7.8  | 19.9  | 56.4  | 140.4 | 89.3 | 30.7 | 8.4 | 7.2 | 22641.     |
| 75000   | 1   | 3.5 | 3.3 | 3.5 | 2.1   | 7.8  | 19.9  | 56.4  | 140.4 | 89.3 | 30.7 | 8.4 | 7.2 | 22641.     |



The format for the AVAILABLE FLOW is the same as for both the INITIAL RUNOFF and FINAL RIVER reports. The available flow is calculated and reported for each month in average monthly cfs and the total annual amount in acre-feet at each accounting station.

To determine the amount of water available for potential diversion at a station of interest, the user must look at the available flow at the station of interest and all downstream stations. The minimum available flow determined from examining available flow at and downstream of the point of interest is the amount of flow available for diversion at the station of interest for a future diversion or storage reservoir operating under a new (junior) priority date. For example, in Sample Run #1 the available flow, in April of Year 1, at station 072200 is 20.0 cfs. (Please note the station numbers are right justified and preceding zeros are not printed on the output reports.) This is not the actual amount available for diversion. The minimum available flow downstream of 072200 occurs at station 072208, 0.0 cfs is available. Therefore, any right imposed on this sample run at station 072200 with a date junior to the date of the most junior right in the data base, will not receive any water and will be subsequently placed on the callout list. This results because any junior diversion from the 20.0 cfs available at Station 072200 would take water away from a senior appropriator who is currently using all the available stream flow.

Please note that reservoir releases delivered to a Junior Project Right (JPR) are reported on the AVAILABLE FLOW table at stations downstream of the reservoir and upstream of the JPR. In addition, available flow at station numbers at which instream flows occur are reduced by the amount of the instream flow. The instream flows are a part of the reported values in the FINAL RIVER output file as described in Subsection 2, above.



#### 4. Reservoir Report

A "RESERVOIR STATUS REPORT" is produced for each reservoir under analysis for each year of data processed, as shown in Table IV-4. This report states maximum and minimum capacities of each reservoir and monthly reservoir activities for each year modeled. The monthly activities accounted by the program and printed on the report include storage added, downstream flow at the reservoir, power and non-project releases requested and actual releases made, releases for project rights, reservoir evaporation losses and end-of-month volume in storage. The annual totals are printed in acre-feet at the bottom of each column. The last column labeled "ALL RES RIGHTS MET" indicates whether or not the storage water rights to the reservoir have all been satisfied during the current "water year" (October-September) of regulation.

#### 5. Call Out List

The water rights requesting diversion or storage amounts and not receiving their full supply (called-out rights) are summarized on two different reports. The most detailed listing of these "called-out" rights is produced in the CALLOUT LIST as shown in Table IV-5. The CALLOUT LIST summarizes the water right called out, the water right's priority date, the percent called out, the name of the station from which the right diverts, the type of right and the reason the right did not receive its full supply of water. Table IV-6 presents a description of each computer message for the type of water right which could be listed in the first column of the CALLOUT LIST. Table IV-7 presents a description of the computer message listed in the last column entitled "DETAILS (VALUES IN CFS)" and reports reasons for reservoir, instream flow, and direct flow water rights not being fully satisfied. Water rights with diversion or storage demands fully



Table IV-4

30 JOHN RESERVOIR (MAX CAP 50000. AF)  
 (MIN CAP 5000. AF)

RESERVOIR STATUS REPORT  
 BEAUMONT RIVER BASIN - SAMPLE RUN #1

07:19:04 PST 11/07/84

| MONTH      | YEAR | STORAGE ADDED | DOWNSTREAM FLOW AT RESERVOIR | POWER RELEASE REQUESTED | ACTUAL POWER RELEASE | NON-PROJECT RELEASE REQUESTED | ACTUAL NON-PROJECT RELEASE | RELEASE FOR PROJECT RIGHTS | EVAPORATION LOSS | END OF MONTH VOLUME | ALL RES RIGHTS MET |
|------------|------|---------------|------------------------------|-------------------------|----------------------|-------------------------------|----------------------------|----------------------------|------------------|---------------------|--------------------|
|            |      |               |                              |                         |                      |                               |                            |                            |                  |                     |                    |
|            |      | AF            | CFS                          | AF                      | AF                   | AF                            | AF                         | CFS                        | AF               | AF                  | AF                 |
| JAN        | 1    | 304.          | 3.0                          | 0.                      | 0.                   | 0.                            | 0.                         | 0.0                        | 0.               | 304.                | NO                 |
| FEB        | 1    | 159.          | 3.0                          | 0.                      | 0.                   | 0.                            | 0.                         | 0.0                        | 0.               | 463.                | NO                 |
| MAR        | 1    | 304.          | 3.0                          | 0.                      | 0.                   | 0.                            | 0.                         | 0.0                        | 0.               | 767.                | NO                 |
| APR        | 1    | 1176.         | 3.4                          | 0.                      | 0.                   | 0.                            | 0.                         | 0.0                        | 0.               | 1943.               | NO                 |
| MAY        | 1    | 5938.         | 23.3                         | 0.                      | 0.                   | 0.                            | 0.                         | 16.6                       | 1.               | 6861.               | NO                 |
| JUNE       | 1    | 11407.        | 47.7                         | 0.                      | 0.                   | 93.                           | 93.                        | 35.0                       | 9.               | 16085.              | NO                 |
| JULY       | 1    | 7821.         | 88.0                         | 609.                    | 609.                 | 3143.                         | 3143.                      | 27.0                       | 16.              | 18481.              | NO                 |
| AUG        | 1    | 2257.         | 159.7                        | 942.                    | 942.                 | 7523.                         | 7523.                      | 22.0                       | 16.              | 10906.              | NO                 |
| SEPT       | 1    | 969.          | 91.8                         | 113.                    | 113.                 | 4634.                         | 4634.                      | 12.0                       | 7.               | 6406.               | NO                 |
| OCT        | 1    | 1070.         | 23.8                         | 0.                      | 0.                   | 1266.                         | 1266.                      | 3.2                        | 0.               | 6013.               | NO                 |
| NOV        | 1    | 585.          | 4.8                          | 0.                      | 0.                   | 51.                           | 51.                        | 2.0                        | 0.               | 6428.               | NO                 |
| DEC        | 1    | 580.          | 4.9                          | 0.                      | 0.                   | 71.                           | 71.                        | 2.0                        | 0.               | 6815.               | NO                 |
| TOTALS(AF) |      | 32570.        | 27752.5                      | 1664.                   | 1664.                | 16781.                        | 16781.                     | 7269.1                     | 49.              |                     |                    |
| JAN        | 2    | 425.          | 4.9                          | 0.                      | 0.                   | 91.                           | 91.                        | 2.0                        | 0.               | 7028.               | NO                 |
| FEB        | 2    | 287.          | 4.9                          | 0.                      | 0.                   | 101.                          | 101.                       | 2.0                        | 0.               | 7102.               | NO                 |
| MAR        | 2    | 439.          | 4.9                          | 0.                      | 0.                   | 105.                          | 105.                       | 2.0                        | 0.               | 7315.               | NO                 |
| APR        | 2    | 926.          | 6.6                          | 0.                      | 0.                   | 116.                          | 116.                       | 3.2                        | 0.               | 7932.               | NO                 |
| MAY        | 2    | 5922.         | 22.8                         | 0.                      | 0.                   | 147.                          | 147.                       | 16.2                       | 2.               | 12710.              | NO                 |
| JUNE       | 2    | 11935.        | 47.4                         | 246.                    | 246.                 | 373.                          | 373.                       | 35.0                       | 9.               | 21937.              | NO                 |
| JULY       | 2    | 7813.         | 123.2                        | 1194.                   | 1194.                | 4723.                         | 4723.                      | 27.0                       | 16.              | 22159.              | NO                 |
| AUG        | 2    | 2252.         | 198.2                        | 1351.                   | 1351.                | 9485.                         | 9485.                      | 22.0                       | 16.              | 12209.              | NO                 |
| SEPT       | 2    | 963.          | 109.8                        | 276.                    | 276.                 | 5546.                         | 5546.                      | 12.0                       | 7.               | 6628.               | NO                 |
| OCT        | 2    | 1064.         | 27.1                         | 0.                      | 0.                   | 1465.                         | 1465.                      | 3.2                        | 0.               | 6028.               | NO                 |
| NOV        | 2    | 579.          | 4.8                          | 0.                      | 0.                   | 51.                           | 51.                        | 2.0                        | 0.               | 6437.               | NO                 |
| DEC        | 2    | 574.          | 4.9                          | 0.                      | 0.                   | 72.                           | 72.                        | 2.0                        | 0.               | 6817.               | NO                 |
| TOTALS(AF) |      | 33179.        | 34039.2                      | 3067.                   | 3067.                | 22275.                        | 22275.                     | 7792.0                     | 50.              |                     |                    |

IV-10



Table IV-5

## CALLOUT LIST

YEAR 1 MONTH JAN BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84

|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION      | DETAILS (VALUES IN CFS)           |
|---------------|---------|--------|-------------------|-----------------------|--------------------------|-----------------------------------|
| PART DIVERSN  | 72418   | M768   | 318 1907          | 15.1                  | TOWN OF BEAUMONT         | 10.0 REQ 8.5 AVAIL AT 72418       |
| NO DIVERSION  | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.              | SEN DS DIV NOT FULLY MET AT 72418 |
| PART DIVERSN  | 73800   | 2340   | 422 1944          | 78.0                  | ALPO CREEK, SPOON DITCH  | 4.0 REQ 0.9 AVAIL AT 73800        |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 99.4                  | JOHN RESERVOIR           | 813.2 REQ 4.9 AVAIL AT 73232      |
| NO JPR NOSP   | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH | 2.0 REQ 0.0 AVAIL AT RES 30       |
| PART JPR RIV  | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH | 2.0 REQ 0.0 AVAIL AT 73232        |
| IFR NOT MET   | 72414   | 19154D | 115 2000          | 15.1                  | DEAD BIRD DITCH          | 10.0 REQ 8.5 AVAILABLE            |

T1-AI



Table IV-6

**CALLOUT LIST DESCRIPTION**  
**Type of Water Right Not Fully Satisfied**  
(First Column Message)

| <b>Computer<br/>Message</b> | <b>Explanation</b>   |
|-----------------------------|--|
| IFR NOT MET                 | Instream flow requirement not fully satisfied.   |
| NO RES STO                  | Reservoir unable to store any water.   |
| PART RES STO                | Reservoir stored a portion of its water right demand.  |
| NO JPR NO SP                | Reservoir water not available for release to satisfy JPR <sup>1</sup> demand (under "NO SPILL" section).                             |
| PART JPR NO SP              | A portion of JPR demand (under "NO SPILL" section) is satisfied by reservoir releases.   |
| NO JPR RIV                  | JPR unable to satisfy any of its demand from river (JPR "NO SPILL" FROM RIVER SECTION).  |
| PART JPR RIV                | A portion of JPR demand ("NO SPILL" FROM RIVER SECTION) is satisfied by available river flow.  |
| NO DIVERSION                | A "normal" diversion was 100% called out. Water was not available for diversion from river.  |
| PART DIVERSN                | A "normal" diversion was able to satisfy a portion of its demand from the available river flow. The remaining portion is called out. |
| NO PROJ RIV                 | Project Right <sup>2</sup> unable to divert any of its demand directly from river.   |
| PART PROJ RIV               | Project Right demand is partially satisfied by diverting available flow from river. Remaining portion is called out.                 |
| NO PROJ RES                 | Water is not available for release from reservoir to satisfy project right demand.   |
| PART PROJ RES               | A portion of the project right's demand can be satisfied by the flow available for release from the associated reservoir.            |



**Table IV-6 (Continued)**

1 JPR = Junior Project Right

2 Project Right includes:

Senior Project Right

Junior Project Right deriving initial supply from river  
(reservoir is full and spilling)

Junior Project Right deriving initial supply from river  
regardless of reservoir status.



**Table IV-7**  
**CALLOUT LIST DESCRIPTION**  
**Reason For Water Right Called Out**  
**(Last Column Message)**

**COMPUTER MESSAGE**

REQ    AVAILABLE.

REQ    AVAIL AT   .

REQ    AVAIL AT RES   .

SEN DS DIV NOT FULLY MET AT   .

SEN DS IFR NOT FULLY MET AT   .

SEN DS RES NOT FULLY MET AT   .

REQ OUTFLOW AT MAX - RES   .

REQ    OUTFLOW RES   .

**EXPLANATION**

   REQ: Amount needed to fully satisfy right

   AVAILABLE: Amount available for instream flow right at instream flow station.

   REQ: Amount needed to fully satisfy right.

   AVAIL AT   : Minimum available amount at or downstream of the station from where the right calls for water.

   REQ: Amount needed to fully satisfy project right.

   AVAIL AT RES   : Amount available for release from reservoir (reservoir code number).

Senior downstream diversion not fully met at (station number). IV-14

Senior downstream instream flow requirement not fully met at (station number).

Senior downstream reservoir not fully met at (station number).

   REQ: Amount needed to fully satisfy right.

OUTFLOW AT MAX: The outflow from the reservoir has reached the maximum outlet capacity. The reservoir cannot release any more water to satisfy downstream requirements due to this physical constraint.

RES   : Reservoir Code Number

   REQ: Amount required by project right.

OUTFLOW RES   : Available flow capacity of outlet works from reservoir (reservoir code number).



satisfied are not reported on the CALLOUT LIST, with the following exception.

If a project right is reported on the CALLOUT LIST two times, then the demand from the project right was not fully satisfied. However, if the project right is listed only once, the right was fully satisfied by its second water source. For example, in January of Year 1 on Table IV-5, water right #N2647 was called out 100 percent from the reservoir supply and from the river supply and is, therefore, on the list twice. In April of Year 1 on Table IV-8, water right #2217, a junior project right, was called out 100 percent. The reservoir could not satisfy any portion of the right. The right was subsequently processed from the river. The flow available in the river was enough to satisfy the entire demand of right #2217 and, therefore, the right is reported on the CALLOUT LIST only once.

## 6. Callout Charts

In addition to the CALLOUT LIST, two "CALLOUT CHARTS" are generated by the WIRSOS model, as shown in Tables IV-9 and IV-10, called-out diversions and instream flows, respectively. The CALLOUT CHARTS are brief summary tables of the water right requirements not being fully satisfied. These charts, one for diversions and one for instream flows, present the twelve months and the permit numbers to the called-out rights for each year of analysis. Under each month and across from each right is the percent called out, in decimal form, for that right in that month. The six digit number on the far right of the table is the station number from where the water right is calling for water (point of diversion or storage). These charts are optional and are not directly produced from the WIRSOS model. Chapter III describes the procedures to



Table IV-8

## CALLOUT LIST

YEAR 1 MONTH APR BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84

|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION             | DETAILS (VALUES IN CFS)           |
|---------------|---------|--------|-------------------|-----------------------|---------------------------------|-----------------------------------|
| PART DIVERSN  | 72204   | N1961  | 703 1941          | 77.6                  | SPEEDY P.L.                     | 2.0 REQ 0.4 AVAIL AT 72208        |
| PART DIVERSN  | 73800   | 2340   | 422 1944          | 55.9                  | ALPO CREEK, SPOON DITCH         | 4.0 REQ 1.8 AVAIL AT 73800        |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 97.6                  | JOHN RESERVOIR                  | 827.4 REQ 19.8 AVAIL AT 73232     |
| NO JPR NOSP   | 74000   | 2217   | 529 1961          | 100.0                 | BEAUMONT RIVER BELOW ALPO CREEK | 0.8 REQ 0.0 AVAIL AT RES 30       |
| NO JPR NOSP   | 74000   | 2239   | 422 1963          | 100.0                 | BEAUMONT RIVER BELOW ALPO CREEK | 0.5 REQ 0.0 AVAIL AT RES 30       |
| NO JPR NOSP   | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH        | 2.0 REQ 0.0 AVAIL AT RES 30       |
| PART PROJ RIV | 73232   | 2650   | 1010 1974         | 100.0                 | FISH #1 & #2 DITCHES            | 0.4 REQ 0.0 AVAIL AT 73232        |
| NO PROJ RES   | 73232   | 2650   | 1010 1974         | 100.0                 | FISH #1 & #2 DITCHES            | 0.4 REQ 0.0 AVAIL AT RES 30       |
| NO DIVERSION  | 71202   | 2576   | 310 1978          | 100.0                 | STARLING DITCH                  | SEN DS RES NOT FULLY MET AT 73226 |
| NO DIVERSION  | 71206   | 2577   | 310 1978          | 100.0                 | ASHLEY STOCK RESERVOIR          | SEN DS RES NOT FULLY MET AT 73226 |
| NO JPR RIV    | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH        | SEN DS DIV NOT FULLY MET AT 73232 |

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Table IV-9

## CHART OF CALLED OUT DIVERSIONS

## SAMPLE RUN #1 - BEAUMONT RIVER BASIN

YEAR = 1 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

|   |      |       |       |       |       |       |       |       |       |       |      |      |       |
|---|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|
| M | 768  | .151  | .375  | .151  |       |       |       |       |       |       |      |      | 72418 |
|   | 1211 |       |       |       |       |       |       |       |       |       |      |      | 72602 |
|   | 1662 |       |       |       | .296  | .437  | .642  | .863  | .863  | .274  |      |      | 72208 |
| N | 1961 | 1.000 | 1.000 | 1.000 | .776  | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .933 | .927 | 72204 |
|   | 2340 | .780  | .842  | .780  | .559  |       |       |       |       |       | .559 | .581 | 73800 |
|   | 2576 |       |       |       |       | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |      |      | 71202 |
|   | 2577 |       |       |       |       |       | 1.000 |       |       |       |      |      | 71206 |
| N | 2647 | 1.000 | 1.000 | 1.000 | 1.000 |       |       |       |       |       |      |      | 73230 |
|   | 2650 |       |       |       | 1.000 |       |       |       |       |       |      |      | 73232 |
|   | 2717 |       |       |       |       | .707  |       | .500  | .559  |       |      |      | 73804 |

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Table IV-10

CHART OF CALLED OUT INSTREAM FLOWS

SAMPLE RUN #1 - BEAUMONT RIVER BASIN

YEAR = 1 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

19154D .15 .37 .15 72414

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produce these charts and Appendix D lists the procedure files and programs.

Using the examples from the above section, right #N2647 is listed as called out 100 percent in January of Year 1 and #2217 is not listed in April of Year 1 since the river supplied the right with its entire demand for that month, as discussed previously.

#### 7. Affected Charts

If desired, output from two WIRSOS computer runs may be compared to determine the impact (additional water rights called out in whole or part) of one data base on another. In the example situation, the impact on Sample Run #1 by imposing a new water right(s) on the data base can be generated by comparing the two files that contain the output data for the called-out rights. These output data files were also used to generate the individual CALLOUT CHARTS described in the above section.

The resulting "AFFECTED CHARTS" are produced in the same format as the CALLOUT CHARTS. Two affected charts for diversions can be prepared: POSITIVE AFFECTED DIVERSIONS and NEGATIVE AFFECTED DIVERSIONS. Positive affected diversions are diversions which derive a greater water supply from the imposition of new water right(s) and negative affected diversions are diversions which have an added shortage of their water supply due to the new right(s). Two charts can also be produced for POSITIVE AFFECTED INSTREAM FLOWS and NEGATIVE AFFECTED INSTREAM FLOWS. Table IV-11 and Table IV-12 illustrate charts of positive and negative affected diversions which can be produced. These charts are optional and not directly produced from the WIRSOS model. For the sample runs, a positive affected instream flow chart was not created,



Table IV-11

## AFFECTION CHART FOR DIVERSIONS - NEGATIVE

SAMPLE RUN #1 V. SAMPLE RUN #2 - BEAUMONT RIVER BASIN

YEAR = 1 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

|   | INDC | .204  | .083  | 74002 |
|---|------|-------|-------|-------|
| M | 768  | 1.000 | 1.000 | 72418 |
|   | 1211 | 1.000 | 1.000 | 72602 |
|   | 1519 | 1.000 | 1.000 | 72414 |
|   | 1520 | 1.000 | 1.000 | 73230 |
|   | 1662 | 1.000 | .726  | 72208 |
| N | 1961 | .224  |       | 72204 |
|   | 2217 | 1.000 | 1.000 | 74000 |
|   | 2239 | 1.000 | 1.000 | 74000 |
|   | 2340 | .441  | .419  | 73800 |
|   | 2525 | 1.000 | 1.000 | 74000 |
| N | 2647 |       | 1.000 | 73230 |
|   | 2650 |       | 1.000 | 73232 |
|   | 2717 | 1.000 | 1.000 | 73804 |
|   | 2832 | 1.000 | 1.000 | 72418 |
|   | 4627 | 1.000 | 1.000 | 73232 |

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Table IV-12  
AFFECTED CHART FOR DIVERSIONS - POSITIVE  
SAMPLE RUN #1 V. SAMPLE RUN #2 - BEAUMONT RIVER BASIN

YEAR = 1      JAN    FEB    MAR    APR    MAY    JUN    JUL    AUG    SEP    OCT    NOV    DEC

2717

.707

73804

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therefore, only a sample negative affected instream flow chart is included with the tables referenced above.

Rights included in a "claim run" and not in a "base run" may show up on an AFFECTED CHART. This is due to the program assumption that these rights were totally satisfied in the base run since they were not on the CALLOUT LIST or CALLOUT CHARTS. These claim rights are not actually "affected" rights and this should be taken into consideration when conducting an analysis of the AFFECTED CHARTS. As an example, consider the water right INDC, the only right not in Sample Run #1, but added to Sample Run #2. Since INDC is not in the data base for Sample Run #1, the right will not appear on a CALLOUT CHART or CALLOUT LIST. On the other hand, INDC is included in the data base for Sample Run #2 and may appear on the CALLOUT LIST and CALLOUT CHART depending on the physical and legal availability of water. INDC does, in fact, appear on Table E-21 as being called out 20.4 percent in April of the first year. When the comparison of the callout charts from each of the two runs is conducted, the affect appears as a negative called-out diversion at 20.4 percent on Table E-25.

The assumption of this comparison program is that any water right not appearing on the list of called-out rights has been fully satisfied. Since this is not true, caution should be used when reviewing an affected chart particularly in reference to water rights added to a base run.

#### 8. Summary Tables

The called-out rights or affected rights may be presented in a summary table format in addition to the CALLOUT CHARTS and AFFECTED CHARTS. This table summarizes the called-out or affected rights by month and by year. Table IV-13 illustrates the affected



Table IV-13

## BEAUMONT RIVER BASIN

## ANALYSIS OF IMPACT DUE TO IMPOSED CLAIM

## AFFECTED STATE RIGHTS - ACRES

## ALTERNATIVE-SAMPLE RUN #1 V. SAMPLE RUN #2

| MONTH     | 1970  | 1971  | 1972  | 1973  | 1974  | 1975 | 1976 | 1977 | 1978 | 1979 | AVE   |
|-----------|-------|-------|-------|-------|-------|------|------|------|------|------|-------|
| JANUARY   | 0.    | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 0.    |
| FEBRUARY  | 0.    | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 0.    |
| MARCH     | 0.    | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 0.    |
| APRIL     | 6230. | 6513. | 6513. | 6300. | 6513. | 0.   | 0.   | 0.   | 0.   | 0.   | 3207. |
| MAY       | 2940. | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 294.  |
| JUNE      | 0.    | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 0.    |
| JULY      | 0.    | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 0.    |
| AUGUST    | 0.    | 0.    | 0.    | 0.    | 350.  | 0.   | 0.   | 0.   | 0.   | 0.   | 35.   |
| SEPTEMBER | 0.    | 0.    | 0.    | 0.    | 350.  | 0.   | 0.   | 0.   | 0.   | 0.   | 35.   |
| OCTOBER   | 6713. | 6080. | 6599. | 560.  | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 1995. |
| NOVEMBER  | 0.    | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 0.    |
| DECEMBER  | 0.    | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 0.    |

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irrigation rights from a comparison of Sample Run #1 and Sample Run #2. The five year "study period" used for the sample runs are not any specific five years; the river basin is fictitious and so is the associated data. Therefore, the year titles may be misleading. The five years of affected data may show up under years 1970 through 1974. The remaining years report zeros.

The program written to produce these summary tables can be adapted for use in developing called-out tables for irrigation rights (in acres, acre-feet or cfs) and/or summaries of industrial and municipal rights affected or called out and presented as total cubic feet per second for each month of each year.



**APPENDIX A**  
**WIRSOS INPUT DATA**

| <u>Table Number</u> | <u>Table Name</u>                           | <u>Page</u> |
|---------------------|---|-------------|
| A-1                 | Station File (TAPE1)                        | A-1         |
| A-2                 | Runoff File (TAPE2)                         | A-2         |
| A-3                 | Instream Flow File (TAPE3)                  | A-3         |
| A-4                 | Diversion File (2-line format) (TAPE4)      | A-4         |
| A-5                 | Junior Project Rights File (TAPE17)         | A-5         |
| A-6                 | Delay Table File (TAPE7)                    | A-6         |
| A-7                 | Reservoir Data File (TAPE15)                | A-7         |
| A-8                 | Reservoir Rights File (TAPE16)              | A-8         |
| A-9                 | Reservoir Area/Capacity Curve File (TAPE14) | A-9         |



TABLE A-1  
BEAUMONT RIVER BASIN  
SAMPLE DATA INPUT FILE - STATIONS

STA 071200 2 HEADWATER UPPER BEAUMONT RIVER  
STA 071202 2 STARLING DITCH  
STA 071206 2 ASHLEY STOCK RESERVOIR  
STA 072200 3 BIRDS NEST CREEK  
STA 072204 3 SPEEDY P.L.  
STA 072208 3 S.D.P. DITCH  
STA 072210 3 RF STATION  
STA 072414 2 DEAD BIRD DITCH  
STA 072418 2 TOWN OF BEAUMONT  
STA 072600 3 FLUSHING CREEK  
STA 072602 3 FREEDOM #1 DITCH  
STA 072604 3 FLUSHING RF STATION  
STA 073226 2 JOHNS RESERVOIR  
STA 073228 2 D/S OF JOHNS RES.  
STA 073230 2 FREEDOM #2, S.P.R. DITCH  
STA 073232 2 FISH #1 & #2 DITCHES  
STA 073800 3 ALPO CREEK, SPOON DITCH  
STA 073804 3 HAWKEYE DITCH  
STA 074000 2 BEAUMONT RIVER BELOW ALPO CREEK  
STA 074002 2 LAST POINT BEAUMONT RIVER  
STA 075000 1 SUNRISE RIVER



TABLE A-2

## BEAUMONT RIVER BASIN

## SAMPLE DATA INPUT FILE - RUNOFF

|            |      |      |      |       |       |        |        |       |       |       |      |      |
|------------|------|------|------|-------|-------|--------|--------|-------|-------|-------|------|------|
| RUN 071200 | 516. | 342. | 516. | 1031. | 6186. | 12033. | 7907.  | 2407. | 1031. | 1033. | 687. | 686. |
| RUN 072200 | 6.   | 5.   | 6.   | 1193. | 81.   | 134.   | 88.    | 27.   | 13.   | 12.   | 8.   | 9.   |
| RUN 072600 | 19.  | 13.  | 19.  | 40.   | 247.  | 481.   | 316.   | 95.   | 40.   | 41.   | 28.  | 26.  |
| RUN 073800 | 54.  | 35.  | 54.  | 105.  | 634.  | 1233.  | 812.   | 246.  | 105.  | 103.  | 71.  | 69.  |
| RUN 071200 | 516. | 342. | 516. | 1031. | 6186. | 12033. | 7907.  | 2407. | 1031. | 1033. | 687. | 686. |
| RUN 072200 | 6.   | 5.   | 6.   | 13.   | 81.   | 134.   | 88.    | 27.   | 13.   | 12.   | 8.   | 9.   |
| RUN 072600 | 19.  | 13.  | 19.  | 40.   | 247.  | 481.   | 316.   | 95.   | 40.   | 41.   | 28.  | 26.  |
| RUN 073800 | 54.  | 35.  | 54.  | 105.  | 634.  | 1233.  | 812.   | 246.  | 105.  | 103.  | 71.  | 69.  |
| RUN 071200 | 516. | 342. | 516. | 1031. | 6186. | 12033. | 7907.  | 2407. | 1031. | 620.  | 584. | 604. |
| RUN 072200 | 6.   | 5.   | 6.   | 13.   | 81.   | 134.   | 88.    | 27.   | 13.   | 7.    | 7.   | 8.   |
| RUN 072600 | 19.  | 13.  | 19.  | 40.   | 247.  | 481.   | 316.   | 95.   | 40.   | 25.   | 24.  | 23.  |
| RUN 073800 | 54.  | 35.  | 54.  | 105.  | 634.  | 1233.  | 812.   | 246.  | 105.  | 62.   | 60.  | 61.  |
| RUN 071200 | 490. | 366. | 480. | 505.  | 6866. | 15402. | 8144.  | 1805. | 1103. | 1126. | 708. | 789. |
| RUN 072200 | 6.   | 5.   | 6.   | 6.    | 90.   | 172.   | 91.    | 20.   | 14.   | 13.   | 8.   | 10.  |
| RUN 072600 | 18.  | 14.  | 18.  | 20.   | 274.  | 616.   | 325.   | 71.   | 43.   | 45.   | 29.  | 30.  |
| RUN 073800 | 51.  | 37.  | 50.  | 51.   | 704.  | 1578.  | 836.   | 185.  | 112.  | 112.  | 73.  | 79.  |
| RUN 071200 | 630. | 424. | 557. | 979.  | 6619. | 17809. | 12019. | 3972. | 1577. | 1508. | 948. | 851. |
| RUN 072200 | 7.   | 6.   | 6.   | 12.   | 87.   | 198.   | 134.   | 45.   | 20.   | 18.   | 11.  | 11.  |
| RUN 072600 | 23.  | 16.  | 21.  | 38.   | 264.  | 712.   | 480.   | 157.  | 61.   | 60.   | 39.  | 32.  |
| RUN 073800 | 66.  | 43.  | 58.  | 100.  | 678.  | 1825.  | 1234.  | 406.  | 161.  | 150.  | 98.  | 86.  |

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TABLE A-3  
BEAUMONT RIVER BASIN  
SAMPLE DATA INPUT FILE - INSTREAM FLOWS

|                           |         |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------|---------|------|------|------|------|------|------|------|------|------|------|------|------|
| FLO 071200FS16H           | 3311891 | 2.9  | 2.1  | 2.9  | 2.8  | 35.2 | 32.7 | 2.9  | 2.9  | 2.8  | 2.9  | 1.8  | 1.8  |
| FLO 071202FS16H           | 3311891 | 2.9  | 2.1  | 2.9  | 2.8  | 35.2 | 32.7 | 2.9  | 2.9  | 2.8  | 2.9  | 1.8  | 1.8  |
| FLO 071206FS16H           | 3311891 | 2.9  | 2.1  | 2.9  | 2.8  | 35.2 | 32.7 | 2.9  | 2.9  | 2.8  | 2.9  | 1.8  | 1.8  |
| FLO 072600FS16L           | 3311891 | .1   | .1   | .1   | .2   | 1.4  | 2.8  | .4   | .3   | .2   | .2   | .2   | .1   |
| FLO 072414 19154D01152000 |         | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |



Table A-4

## BEAUMONT RIVER BASIN

## SAMPLE DATA INPUT FILE - DIVERSIONS

|             |      |       |          |            |          |          |          |          |          |          |          |          |          |          |          |          |          |        |
|-------------|------|-------|----------|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--------|
| D01071202   | 1    | 44    | 2576     | 03101978   | 1        | 0.0000   | 0.0000   | 0.0000   | .2500    | 2.2500   | 5.0000   | 5.0000   | 4.0000   | 2.0000   | .2500    | 0.0000   | 0.0000   |        |
| 7120610011  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D02071206   | 1100 | 2577  | 03101978 | 0          | 0.0000   | 0.0000   | 0.0000   | .0500    | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 0.0000   |        |
| 0           |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D00072204   | 1    | 10    | N1961    | 07031941   | 1        | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000 |
| 7220810004  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D04072208   | 1    | 44    | 1662     | 06181923   | 3        | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 20.0000  | 1.8000   | 4.0000   | 4.0000   | 3.2000   | 1.6000   | .2000    | 0.0000   | 0.0000 |
| 7221008011  |      |       |          | 7241401011 |          | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D01072414   | 1    | 44    | 1519     | 08201918   | 1        | 0.0000   | 0.0000   | 0.0000   | .1500    | 1.3500   | 3.0000   | 3.0000   | 2.4000   | 1.2000   | .1500    | 0.0000   | 0.0000   |        |
| 7241810011  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D03072418   | 1    | 10    | M768     | 03181907   | 110.0000 | 010.0000 | 010.0000 | 010.0000 | 010.0000 | 010.0000 | 010.0000 | 010.0000 | 010.0000 | 010.0000 | 010.0000 | 010.0000 | 010.0000 |        |
| 7322610004  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D01072418   | 1    | 44    | 2832     | 09211900   | 1        | 0.0000   | 0.0000   | 0.0000   | .3000    | 2.7000   | 6.0000   | 6.0000   | 4.8000   | 2.4000   | .3000    | 0.0000   | 0.0000   |        |
| 7322610011  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D01072602   | 1    | 44    | 1211     | 11031913   | 1        | 0.0000   | 0.0000   | 0.0000   | .2000    | 1.8000   | 4.0000   | 4.0000   | 3.2000   | 1.6000   | .2000    | 0.0000   | 0.0000   |        |
| 7260410011  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D0107323030 | 44   | 1520  | 02281918 | 2          | 0.0000   | 0.0000   | 0.0000   | .5000    | 4.5000   | 10.0000  | 10.0000  | 8.0000   | 4.0000   | .5000    | 0.0000   | 0.0000   |          |        |
| 7323205011  |      |       |          | 7400005011 |          | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D0307323030 | 10   | N2647 | 10101978 | 1          | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   | 2.0000   |        |
| 7323210004  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D1107323230 | 44   | 2650  | 10101974 | 1          | 0.0000   | 0.0000   | 0.0000   | .4000    | 3.6000   | 8.0000   | 8.0000   | 6.4000   | 3.2000   | .4000    | 0.0000   | 0.0000   |          |        |
| 7400010011  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D0307323230 | 10   | 4627  | 04051938 | 1          | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   | 3.0000   |        |
| 7400010004  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D03073800   | 1    | 10    | 2340     | 04221944   | 1        | 4.0000   | 4.0000   | 4.0000   | 4.0000   | 4.0000   | 4.0000   | 4.0000   | 4.0000   | 4.0000   | 4.0000   | 4.0000   | 4.0000   |        |
| 7380410004  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D01073804   | 1    | 44    | 2717     | 05291961   | 1        | 0.0000   | 0.0000   | 0.0000   | .4500    | 4.0500   | 9.0000   | 9.0000   | 7.2000   | 3.6000   | .4500    | 0.0000   | 0.0000   |        |
| 7400010011  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D0107400030 | 44   | 2239  | 04221963 | 1          | 0.0000   | 0.0000   | 0.0000   | .5000    | 4.5000   | 10.0000  | 10.0000  | 8.0000   | 4.0000   | .5000    | 0.0000   | 0.0000   |          |        |
| 7400210051  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D0107400030 | 44   | 2217  | 05291961 | 1          | 0.0000   | 0.0000   | 0.0000   | .7500    | 6.7500   | 15.0000  | 15.0000  | 12.0000  | 6.0000   | .7500    | 0.0000   | 0.0000   |          |        |
| 7400210011  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D0107400030 | 44   | 2525  | 09241936 | 1          | 0.0000   | 0.0000   | 0.0000   | 1.4000   | 12.6000  | 28.0000  | 28.0000  | 22.4000  | 11.2000  | 1.4000   | 0.0000   | 0.0000   |          |        |
| 7400210011  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |
| D2507400230 | 44   | INDC  | 07021868 | 1          | 0.0000   | 0.0000   | 0.0000   | 0.0000   | 50.0000  | 50.0000  | 50.0000  | 50.0000  | 50.0000  | 50.0000  | 0.0000   | 0.0000   | 0.0000   |        |
| 7500010011  |      |       |          | 0          | 0        | 0        |          | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        | 0        |        |



TABLE A-5  
BEAUMONT RIVER BASIN  
SAMPLE DATA INPUT FILE - JUNIOR PROJECT RIGHTS

|             |    |       |          |   |     |     |      |      |      |      |     |     |
|-------------|----|-------|----------|---|-----|-----|------|------|------|------|-----|-----|
| D0707400030 | 44 | 2217  | 05291961 | 1 |     | .75 | 6.75 | 15.0 | 15.0 | 12.0 | 6.0 | .75 |
| 07400210011 |    | 0     | 0        |   | 0   | 0   | 0    | 0    | 0    | 0    | 0   | 0   |
| D0807400030 | 44 | 2239  | 04221963 | 1 |     | 0.5 | 4.5  | 10.0 | 10.0 | 8.0  | 4.0 | 0.5 |
| 07400210051 |    | 0     | 0        |   | 0   | 0   | 0    | 0    | 0    | 0    | 0   | 0   |
| D0807323030 | 10 | N2647 | 10101978 | 1 | 2.0 | 2.0 | 2.0  | 2.0  | 2.0  | 2.0  | 2.0 | 2.0 |
| 07323210004 |    | 0     | 0        |   | 0   | 0   | 0    | 0    | 0    | 0    | 2.0 | 2.0 |



TABLE A-6  
BEAUMONT RIVER BASIN  
SAMPLE DATA INPUT FILE - DELAY TABLES

|        |     |    |   |   |   |    |    |    |    |    |   |   |
|--------|-----|----|---|---|---|----|----|----|----|----|---|---|
| DEL 04 | 100 | 0  | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0 | 0 |
| DEL 11 | 59  | 27 | 4 | 2 | 1 | 1  | 1  | 1  | 1  | 1  | 1 | 1 |
| DEL 51 | 1   | 1  | 1 | 1 | 1 | 13 | 35 | 32 | 11 | 2  | 1 |   |
| DEL 52 | 2   | 2  | 1 | 1 | 1 | 1  | 12 | 33 | 29 | 11 | 4 | 3 |



TABLE A-7  
BEAUMONT RIVER BASIN  
SAMPLE DATA INPUT FILE - RESERVOIR DATA

JOHN RESERVOIR 073226 30 1 5000. 50000. 1376. 0. .052.217.377.382.166  
5 5 5 5 5 30 60 80 90 5 5 04 10000. 50000.

A-7



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TABLE A-8  
BEAUMONT RIVER BASIN  
SAMPLE DATA INPUT FILE - RESERVOIR RIGHTS

073226 12311960 JOHN 30 50000. 1

A-8



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TABLE A-9  
BEAUMONT RIVER BASIN  
SAMPLE DATA INPUT FILE - AREA/CAPACITY CURVES

30  
2  
5000. 1  
0 .0313 1  
50000. 1  
42.31 .024 1

A-9



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## APPENDIX B

### Procedure Files and Programs for Data Checking Procedures

| <u>Table Number</u> | <u>Procedure File or Program Name</u> | <u>Page</u> |
|---------------------|---------------------------------------|-------------|
| B-1                 | RNSTA                                 | B-1         |
| B-2                 | RNFLO                                 | B-2         |
| B-3                 | RNRUN                                 | B-3         |
| B-4                 | RNDEL                                 | B-4         |
| B-5                 | RNDIV                                 | B-5         |
| B-6                 | RNADJ                                 | B-6         |
| B-7                 | RIGHT2                                | B-7         |
| B-8                 | SORTDEL, SORTDV1, SORTGEN, SORTING    | B-9         |
| B-9                 | DATACK1                               | B-10        |
| B-10                | CKRCAP                                | B-22        |
| B-11                | RNCLM                                 | B-23        |
| B-12                | CHKCLM                                | B-24        |
| B-13                | CUT                                   | B-26        |



TABLE B-1  
PROCEDURE FILE NAME = RNSTA

```
SAMPLE,T30,CM350000,P2.  
USER,USERNO,PW.USERID  
GET,RIGHT2.  
CALL,RIGHT2,STATION(DATA=BRSTA2,OUTSTA=OBRSTA)  
EXIT,U.  
REWIND,OUTPUT.  
COPYBF,OUTPUT,ANSWERS.  
REPLACE,ANSWERS.  
EXIT,U.  
DAYFILE,DAYFILE.  
REPLACE,DAYFILE.  
*WEOR  
STATION  
1/15/85  
*WEOF
```



TABLE B-2  
PROCEDURE FILE NAME = **RNFLO**

```
SAMPLE,T30,CM377000,P2.  
USER,USERNO,PW. USERID  
GET,RIGHT2.  
CALL,RIGHT2,FLOW(DATA=BRFLO,OUTSTRM=0BRFLO)  
EXIT,U.  
REWIND,OUTPUT.  
COPYBF,OUTPUT,ANSWERF.  
REPLACE,ANSWERF.  
DAYFILE,DAYFILE.  
REPLACE,DAYFILE.  
*WEOR  
INSTREAM  
1/15/85  
*WE0F
```



TABLE B-3  
PROCEDURE FILE NAME = RNRUN

```
SAMPLE,T30,CM377000,P2.  
USER,USERNO,PW. USERID  
GET,RIGHT2.  
CALL,RIGHT2,RUNOFF(DATA=BRRUN,OUTRUN=OBRRUN)  
EXIT,U.  
REWIND,OUTPUT.  
COPYBF,OUTPUT,ANSWERR.  
REPLACE,ANSWERR.  
EXIT,U.  
DAYFILE,DAYFILE.  
REPLACE,DAYFILE.  
*WEOR  
RUNOFF  
1/15/85  
*WEOF
```

The sorting portion of this routine should not be used for more than 1 year of runoff.

SORTGEN sorts by station and not by year.

WIRSOS requires the data to be sorted by year and then by station.



TABLE B-4  
PROCEDURE FILE NAME = RNDEL

```
SAMPLE,T30,CM350000,P10.  
USER,USERNO,PW. USERID  
GET,RIGHT2.  
CALL,RIGHT2,DELAY(DATA=DELAY,OUTDEL=OUTDEL)  
EXIT,U.  
REWIND,OUTPUT.  
COPYBF,OUTPUT,ANSWERL.  
REPLACE,ANSWERL.  
EXIT,U.  
DAYFILE,DAYFILE.  
REPLACE,DAYFILE.  
*WEOR  
DELAY  
1/15/85  
*WEOF
```



TABLE B-5  
PROCEDURE FILE NAME = RNDIV

```
SAMPLE,T30,CM350000,P2.  
USER,USERNO,PW. USERID  
GET,RIGHT2.  
CALL,RIGHT2,DIVERTS(DATA=BRDIV,OUTDIV=0BRDIV)  
EXIT,U.  
REWIND,OUTPUT.  
COPYBF,OUTPUT,ANSWERD.  
REPLACE,ANSWERD.  
EXIT,U.  
DAYFILE,DAYFILE.  
REPLACE,DAYFILE.  
*WEOR  
DIVERSION 5  
CHECKING AND DISTRIBUTING SAMPLE DATA  
1/15/85  
1 0.00 0.00 0.00 0.05 0.45 1.00 1.00 0.80 0.40 0.05 0.00 0.00  
2 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00  
3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00  
4 0.00 0.00 0.00 5.00 0.45 1.00 1.00 0.80 0.40 0.05 0.00 0.00  
5 0.00 0.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00  
*WEOF
```



TABLE B-6  
PROCEDURE FILE NAME = RNADJ

```
SAMPLE,T40,CM330000,P2.  
USER,USERNO,PW. USERID  
GET,RIGHT2.  
CALL,RIGHT2,LISTING(S=BRSTA,R=BRRUN,D=BRDIV,F=BRFLO,RD=BRRSDT,RR=BRRSRT)  
EXIT,U.  
REWIND,OUTPUT.  
COPYBF,OUTPUT,ANSWER4.  
REPLACE,ANSWER4.  
EXIT,U.  
DAYFILE,DAYFILE.  
REPLACE,DAYFILE.  
*WEOR  
LISTING  
BEAUMONT RIVER BASIN - SAMPLE RUN  
1/16/85  
*WEOF
```



TABLE B-7  
PROCEDURE FILE NAME = **RIGHT2**

```
STATION
FILE,TAPE10,BT=C,RT=Z,FL=110.
FILE,TAPE20,BT=C,RT=Z,FL=110.
GET,BDATAACK.
MAP,OFF.
FETCH,DN=TAPE10,GDN=DATA.
BDATAACK,INPUT,OUTPUT.
REWIND,OUTPUT.
GET,SORTGEN.
SORTMRG,I=SORTGEN.
REPLACE,TAPE10=OUTSTA.
*WEOR
RUNOFF
FILE,TAPE10,BT=C,RT=Z,FL=110.
FILE,TAPE20,BT=C,RT=Z,FL=110.
GET,BDATAACK.
GET,TAPE10=DATA.
MAP,OFF.
BDAACK,INPUT,OUTPUT.
GET,SORTGEN.
SORTMRG,I=SORTGEN.
REPLACE,TAPE10=OUTRUN.
*WEOR
FLOW
FILE,TAPE10,BT=C,RT=Z,FL=110.
FILE,TAPE20,BT=C,RT=Z,FL=110.
GET,BDATAACK.
GET,TAPE10=DATA.
MAP,OFF.
BDAACK,INPUT,OUTPUT.
GET,SORTGEN.
SORTMRG,I=SORTGEN.
REPLACE,TAPE10=OUTSTRM.
*WEOR
DELAY
FILE,TAPE10,BT=C,RT=Z,FL=110.
FILE,TAPE20,BT=C,RT=Z,FL=110.
GET,BDATAACK.
GET,TAPE10=DATA.
MAP,OFF.
BDAACK,INPUT,OUTPUT.
GET,SORTDEL.
SORTMRG,I=SORTDEL.
REPLACE,TAPE10=OUTDEL.
*WEOR
DIVERTS
```



```
FILE,TAPE30,BT=C,RT=Z,FL=230.  
FILE,TAPE40,BT=C,RT=Z,FL=230.  
GET,BDATAACK.  
GET,TAPE10=DATA.  
MAP,OFF.  
BDATAACK,INPUT,OUTPUT.  
GET,SORTDV1.  
SORTMRG,I=SORTDV1.  
REPLACE,TAPE40=OUTDIV.  
*WEOR  
LISTING  
*PRE SORT DIVERSION FILE BY STATIONS  
FILE,TAPE30,BT=C,RT=Z,FL=230.  
FILE,TAPE40,BT=C,RT=Z,FL=230.  
GET,TAPE30=D.  
GET,SORTDV1.  
SORTMRG,I=SORTDV1.  
RETURN,TAPE30.  
REWIND,TAPE40.  
RENAME,TAPE30=TAPE40.  
GET,BDATAACK.  
* SORT RUNOFF FILE FROM ALL STATIONS PER EACH YEAR  
* TO ALL YEARS PER STATION  
FILE,TAPE10,BT=C,RT=Z,FL=150.  
FILE,TAPE20,BT=C,RT=Z,FL=150.  
GET,TAPE20=R.  
GET,SORTGEN.  
SORTMRG,I=SORTGEN.  
RETURN,TAPE20.  
REWIND,TAPE10.  
GET,TAPE11=S.  
GET,TAPE12=F.  
GET,TAPE15=RD/NA.  
GET,TAPE16=RR/NA.  
RENAME,TAPE13=TAPE10.  
GET,TAPE14=OUTDEL.  
MAP,OFF.  
BDATAACK,INPUT,OUTPUT.  
REPLACE,TAPE20=LISTOUT.  
*WEOR
```



Table B-8

SORTING PROCEDURE NAME = **SORTDEL**

```
SORT
FILE,SORT=TAPE20,OUTPUT=TAPE10
FIELD,F1(5,2,DISPLAY)
KEY,F1(A,DISPLAY)
EQUATE,DISPLAY( ,0)
OPTIONS,RETAIN,NODUMP
END
```

SORTING PROCEDURE NAME = **SORTDV1**

```
SORT
FILE,SORT=TAPE30,OUTPUT=TAPE40
FIELD,F4(4,6,DISPLAY)
KEY,F4(A,DISPLAY)
EQUATE,DISPLAY( ,0)
OPTIONS,RETAIN,NODUMP
END
```

SORTING PROCEDURE NAME = **SORTGEN**

```
SORT
FILE,SORT=TAPE20,OUTPUT=TAPE10
FIELD,F1(5,6,DISPLAY)
KEY,F1(A,DISPLAY)
EQUATE,DISPLAY( ,0)
OPTIONS,RETAIN,NODUMP
END
```

SORTING PROCEDURE NAME = **SORTING**

```
SORT
FILE,SORT=SORTIN,OUTPUT=SORTOUT
FIELD,F4(5,6,DISPLAY)
KEY,F4(A,DISPLAY)
EQUATE,DISPLAY( ,0)
OPTIONS,RETAIN,NODUMP
END
```



TABLE B-9  
PROGRAM NAME = DATACK1

```
PROGRAM DATACK(INPUT,OUTPUT,TAPE10,TAPE20,TAPE30=/230,TAPE 40=/230,
+TAPE11,TAPE12,TAPE13,TAPE14,TAPE15,TAPE16,
+TAPE5=INPUT,TAPE6=OUTPUT)

C      PROGRAM CHECKS FOR BASIC ILLEGAL DATA IN FIELDS
C
C      TAPE10 = INPUT DATA FILES IF FROM PERMANENT FILES
C      ALSO TAPE10 USED FOR SORTED OUTPUT FROM TAPE20
C
C      TAPE20 = TEMP FILE FOR DATA TO BE SORTED
C
C      EXTERNAL FATL78
COMMON /COM1/IERR(6), CARD(12), NERR, INPT, IEQU(2),LINES
DIMENSION TMONFCT(9,12)
DATA IERR/0,0,0,4096,-1,-1/, IEQU/1R ,1R0/
INPT = 10
C      NEXT TWO LINES CHECK FOR ILLEGAL CHAR IN FIELD
C      DOES NOT KILL PROGRAM -- COMMENT OUT IF NOT NEEDED

IERR(5) =LOCF(FATL78)
CALL SYSTEMC (78,IERR)
C
C      FILETYP = STATION , RUNOFF, INSTREAM, DIVERSION, LISTING
C
C      (A10) CC 1-10
C
C      NCURVE = NUMBER OF CURVES READ IN FROM PROC FILE
C
C      TMONFCT = % FACTOR FOR JAN THRU DEC (12F5.3)
C
READ(5,9010)FILETYP,NCURVE
9010 FORMAT (A10,5X,I1)
IF (EOF(5)) 100,200
100 WRITE(6,9020)
IF(FILETYP.NE.10HLISTING )IERR(5) =LOCF(FATL78)
IF(FILETYP.NE.10HLISTING )CALL SYSTEMC (78,IERR)
9020 FORMAT(5X," + + DATA FILE CONTROL CARD MISSING")
STOP "DATA FILE CARD MISSING"
C      WRITE OUT TITLE AND COMMENT CARDS
200 WRITE(6,9022)
9022 FORMAT(1H1,///,11X,
+"W Y O M I N G   I N T E G R A T E D   R I V E R   S Y S T E M"
+"   O P E R A T I O N   S T U D Y"
+/,11X"-----",,
+"-----"
```



```

+" ,///,30X,"BY: LEONARD RICE CONSULTING WATER ENGINEERS, INC.",/,
+30X,"      DENVER, COLORADO 80211",///
+//,20X"C O M M E N T S A B O U T T H I S R U N",//,
    IF(FILETYP.EQ.10HLISTING ) WRITE(20,9022)
225 READ(5,9025)(CARD(I),I=1,8)
9025 FORMAT(8A10)
    IF(EOF(5))280,250
250 WRITE(6,9026)(CARD(I),I=1,8)
9026 FORMAT(10X,8A10)
    IF(FILETYP.EQ.10HLISTING ) WRITE(20,9026)(CARD(I),I=1,8)
    READ(5,9025)(CARD(I),I=1,8)
    IF(EOF(5))280,99008
99008 WRITE(6,9026)(CARD(I),I=1,8)
    IF(FILETYP.EQ.10HLISTING ) WRITE(20,9026)(CARD(I),I=1,8)
280 WRITE(6,9000)
9000 FORMAT(1H1)
    IF(FILETYP.EQ.10HLISTING ) WRITE(20,9000)
300 IF (FILETYP.EQ.10HSTATION ) GO TO 500
    IF (FILETYP.EQ.10HRUNOFF ) GO TO 550
    IF (FILETYP.EQ.10HINSTREAM ) GO TO 600
    IF (FILETYP.EQ.10HDIVERSION ) GO TO 650
    IF (FILETYP.EQ.10HDELAY ) GO TO 700
    IF (FILETYP.EQ.10HLISTING ) GO TO 750
    WRITE(6,9030) FILETYP
9030 FORMAT(5X," ** FILE CHECK CONTROL CARD IN ERROR **",2X,A10)
STOP " BAD DATA FILE CARD"
500 CALL STATION
GO TO 8000
550 CALL RUNOFF
GO TO 8000
600 CALL INSTRM
GO TO 8000
650 IF(NCURVE .EQ.0) GO TO 99002
DO 99000 I=1,NCURVE
    READ(5,99001) IDUM1,(TMONFCT(IDUM1,J), J=1,12)
99001 FORMAT(I1,1X,12F5.3)
99000 CONTINUE
99002 CALL DIVERSN(NCURVE,TMONFCT)
GO TO 8000
700 CALL DELAY
GO TO 8000
750 CALL LISTING
GO TO 8000
8000 CONTINUE
STOP
END
SUBROUTINE FATL78
C
C      ROUTINE CHECKS FOR ILLEGAL DATA IN FIELDS AND
C      KEEPS THEM FROM BEING FATAL ERRORS
C
COMMON /COM1/IERR(6), CARD(12), NERR, INPT, IEQU(2),LINES

```



```

        WRITE(6,9000)LINES,(CARD(I),I=1,11)
9000  FORMAT(" LINE "I7" BAD DATA IN FIELDS -CHECK -- ",3X,11A10,/)
NERR = NERR + 1
RETURN
END
SUBROUTINE STATION
C           CHECK OF STATION DATA FILE
C
COMMON /COM1/IERR(6), CARD(12), NERR, INPT, IEQU(2),LINES
DIMENSION IDT(9)
WRITE(6,9003)
9003 FORMAT(5X,"DATA CHECKING OF STATIONS",//)
90  NERR = 0
100 READ(INPT,9010) (CARD(I),I=1,11)
9010 FORMAT(11A10)
    IF.EOF(INPT)) 5000, 300
300 DECODE(60,9020,CARD) (IDT(I),I=1,9)
9020 FORMAT(A3,1X,I6,1X,I1,1X,I2,3X,4A10)
    IF(IDT(1).NE.3HSTA) WRITE(6,9030) (CARD(I),I=1,11)
9030 FORMAT(5X," + + CARD TYPE NOT CORRECT",3X,11A10)
    WRITE(20,9010)(CARD(I),I=1,11)
    GO TO 100
5000 IF (NERR.EQ.0) GO TO 6000
    WRITE(6,9040)NERR
9040 FORMAT(5X,I5," ERRORS IN STATION INPUT FILE")
    STOP " ERRORS IN STATION FILE"
6000 WRITE(6,9050)
9050 FORMAT(5X," NO ERRORS FOUND IN STATION FILE")
C
C           PROCEDURE WILL SORT STATION FILE AFTER REWIND
C
REWIND 20
REWIND 10
RETURN
END
SUBROUTINE INSTRM
C
C           CHECK OF INSTREAM FLOW DATA FILE
C
COMMON /COM1/IERR(6), CARD(12), NERR, INPT, IEQU(2),LINES
DIMENSION IDT(4),DT(12)
WRITE(6,9003)
9003 FORMAT(5X,"DATA CHECKING OF INSTREAM FLOWS",//)
90  NERR = 0
100 READ(INPT,9010) (CARD(I),I=1,11)
9010 FORMAT(11A10)
    IF.EOF(INPT)) 5000, 300
300 DECODE(110,9020,CARD) (IDT(I),I=1,4),(DT(I),I=1,12)
9020 FORMAT(A3,1X,I6,A7,I8,12F7.0)
    IF(IDT(1).NE.3HFLO) WRITE(6,9030) (CARD(I),I=1,11)
9030 FORMAT(5X," + + CARD TYPE NOT CORRECT",3X,11A10)

```



```

        WRITE(20,9010)(CARD(I),I=1,11)
        GO TO 100
5000  IF (NERR.EQ.0) GO TO 6000
        WRITE(6,9040)NERR
9040  FORMAT(5X,I5," ERRORS IN INSTREAM INPUT FILE")
        STOP " ERRORS IN INSTREAM FILE"
6000  WRITE(6,9050)
9050  FORMAT(5X," NO ERRORS FOUND IN INSTREAM FILE")
C
C      PROCEDURE WILL SORT INSTREAM FLOW FILE AFTER REWIND
C
        REWIND 20
        REWIND 10
        RETURN
        END
        SUBROUTINE RUNOFF
C
C      CHECK OF RUNOFF FLOW DATA FILE
C
COMMON /COM1/IERR(6), CARD(12), NERR, INPT, IEQU(2),LINES
DIMENSION IDT(4),DT(12),DTW(12)
NEORRS = 0
WRITE(6,9003)
9003  FORMAT(5X,"DATA CHECKING OF RUNOFF",//)
90    NERR = 0
100   READ(INPT,9010) (CARD(I),I=1,11)
9010  FORMAT(11A10)
        IF.EOF(INPT) 5000, 300
300   DECODE(106,9020,CARD) (IDT(I),I=1,2),(DT(I),I=1,12)
9020  FORMAT(A3,1X,I6,12F8.0)
        DECODE (106,9025,CARD) (DTW(I),I=1,12)
9025  FORMAT(10X,12A8)
        IF(IDT(1).NE.3HRUN) WRITE(6,9030)(CARD(I),I=1,11)
        IF(IDT(1).NE.3HRUN) NEORRS =NEORRS + 1
9030  FORMAT(5X," + + CARD TYPE NOT CORRECT"/,3X,11A10)
        WRITE(20,9070)IDT(2),(DTW(I),I=1,12)
9070  FORMAT("RUN ",I6.6,12(A8),4X)
        IF(NEORRS.LT.10) GO TO 100
        WRITE(6,9100) NEORRS
9100  FORMAT(/,5X,I5," OUT OF SEQUENCE ERRORS - STOP PROG.")
        STOP " OUT OF SEQ ERRORS"
5000  IF (NERR.EQ.0) GO TO 6000
        WRITE(6,9040)NERR
9040  FORMAT(5X,I5," ERRORS IN RUNOFF INPUT FILE")
        STOP " ERRORS IN RUNOFF FILE"
6000  WRITE(6,9050)
9050  FORMAT(5X," NO ERRORS FOUND IN RUNOFF FILE")
C
C      PROCEDURE WILL SORT RUNOFF FILE AFTER REWIND
C      CAUTION: DO NOT SORT MORE THAN 1 YEAR
C              OF RUNOFF !!!

```



```

REWIND 20
REWIND 10
RETURN
END
SUBROUTINE DELAY
C           CHECK OF DELAY DATA FILE
C
COMMON /COM1/IERR(6), CARD(12), NERR, INPT, IEQU(2),LINES
DIMENSION IDT(14)
WRITE(6,9003)
9003 FORMAT(5X,"DATA CHECKING OF DELAY TABLES",//)
90 NERR = 0
100 READ(INPT,9010) (CARD(I),I=1,8)
9010 FORMAT(8A10)
IF.EOF(INPT)) 5000, 300
300 DECODE(66,9020,CARD) (IDT(I),I=1,14)
9020 FORMAT(A3,1X,I2.2,12(2X,I3))
IF(IDT(1).NE.3HDEL) WRITE(6,9030) (CARD(I),I=1,8)
9030 FORMAT(5X," + + CARD TYPE NOT CORRECT"/,3X,11A10)
WRITE(20,9020)IDT
GO TO 100
5000 IF (NERR.EQ.0) GO TO 6000
WRITE(6,9040)NERR
9040 FORMAT(5X,I5," ERRORS IN DELAY INPUT FILE")
STOP " ERRORS IN DELAY FILE"
6000 WRITE(6,9050)
9050 FORMAT(5X," NO ERRORS FOUND IN DELAY FILE")
C
C           SORT DELAY FILE
C
REWIND 20
REWIND 10
RETURN
END
SUBROUTINE DIVERSN (NCURVE,TMONFCT)
C
C           CHECK OF DIVERSION FLOW DATA FILE
C
COMMON /COM1/IERR(6), CARD(12), NERR, INPT, IEQU(2),LINES
DIMENSION IDT(25),IRF(10),DT(13),DTW(12),TMONFCT(9,12)
LINES = 0
NEORRS = 0
WRITE(6,9003)
9003 FORMAT(5X,"DATA CHECKING OF DIVERSIONS",//)
90 NERR = 0
100 DO 120 I = 1,25
IDT(I) = 0
IF(I.LE.10) IRF(I) = 0
IF(I.LE.13) DT(I)=0.
IF(I.LE.12) DTW(I) = 10H
120 CONTINUE
READ(INPT,9010) (CARD(I),I=1,12)

```



```

        LINES = LINES + 1
9010  FORMAT(12A10)
      IF.EOF(INPT)) 5000, 300
300   DECODE(115,9020,CARD)(IDT(I),I=1,7),(DT(J),J=1,12)
9020  FORMAT(A3,I6,I2,I3,A7,I8,I2,12F7.0)
      DECODE(3,99003,CARD) AI1, IDUM1
99003 FORMAT(A1,1X,I1)
      IF(AI1.NE.1HD) WRITE(6,9030) LINES, IDT(2), (CARD(I), I=1,11)
      IF(AI1.NE.1HD) NEORRS = NEORRS + 1
9030  FORMAT(" LINE "I7," AT D STA= ",I6," D CARD TYPE ORDER ",8A10)

      NRF = IDT(7)
      IF(NCURVE .EQ. 0) GO TO 99005
      IF (IDUM1.EQ.0) GO TO 99005
C           FILL IN DISTRIBUTED MONTHS IF APPROPRIATE
      DO 400 I = 2,12
      DT(I) = DT(1)*TMONFCT(IDUM1,I)
400   CONTINUE
      DT(1)=DT(1)*TMONFCT(IDUM1,1)
99005 DO 99004 I=1,12
      IF(DT(I).LT.1000000)IENC=10H(F7.0)
      IF(DT(I).LT.10000)IENC=10H(F7.2)
      IF(DT(I).LT.1000)IENC=10H(F7.3)
      IF(DT(I).LT.100)IENC=10H(F7.4)
      IF(DT(I).LT.0)IENC=10H(F7.6)
      ENCODE(7,IENC,DTW(I))DT(I)
99004 CONTINUE
      READ (INPT,9010) (CARD(I),I=1,11)
      LINES = LINES + 1
      IF.EOF(INPT)) 5000, 1100
1100  DECODE(120,9050,CARD) (IDT(I),I=14,18),(IDT(I),I=21,25)
9050  FORMAT(10I11)
      DECODE(3,99006,CARD) AI1, IDUM
99006 FORMAT(A1,1X,I1)
      IF(AI1 .EQ. 1HD) WRITE(6,9033) LINES, (CARD(I),I=1,11)
9033  FORMAT(" LINE= "I7," RF CARD MISSING",8A10)
      IF(AI1 .EQ. 1HD) NEORRS = NEORRS + 1
      DO 1200 I = 1,5
      IRF(I) = IDT(I + 13)
1200  CONTINUE
      DO 99007 I=6,10
      IRF(I) = IDT(I+15)
99007 CONTINUE
1350  CONTINUE
      WRITE(30,9060)(IDT(I),I=1,7),(DTW(I),I=1,12),(IRF(I),I=1,10)

9060  FORMAT(A3,I6.6,I2,I3,A7,I8.8,I2,12A7,10I11,4X)
      IF(NRF.LE.10) GO TO 1700
      WRITE(6,9070)
9070  FORMAT(5X, " NUMBER OF RETURN FLOWS EXCEEDS 10")
1700  DO 1800 I = 1,10
      J = 10-I+1

```



```

IF(IRF(J).EQ.0) GO TO 1800
IF(NRF.EQ.J) GO TO 1900
WRITE(6,9080) IDT(5),IDT(2)
9080 FORMAT(5X,"-- NUMBER OF RETURN FLOWS DIFFER FROM CARDS ON ",  

+A7," AT STATION ", I6.6)
GO TO 1900
1800 CONTINUE
1900 CONTINUE
IF(NEORRS.LE.0) GO TO 100
WRITE(6,9100) NEORRS
9100 FORMAT(//,5X,I5," OUT OF SEQUENCE ERRORS - STOP ")
GO TO 100
5000 IF (NERR.EQ.0) GO TO 6000
. WRITE(6,9090)NERR
9090 FORMAT(5X,I5," ERRORS IN DIVERSION INPUT FILE")
STOP " ERRORS IN DIVERSION FILE"
C      SORT DIVERSION FILE BY ORIGIN STATION
C
6000 CONTINUE
REWIND 30
REWIND 40
RETURN
END
SUBROUTINE LISTING
C
C      THIS ROUTINE LISTS THE STATIONS AND RELATED
C      RUNOFF, INSTREAM FLOWS, DIVERSION AND
C      RESERVOIR DATA
C
DIMENSION ISTA(8,1700),IFLO(15,600),IRUN(13,3700),IDEL(13)
DIMENSION IDIV(6),IRF(60),DTW(12),IDELAY(40)
DIMENSION IRESDT(34,40),IRESRT(5,70),IDUM(40)
C
C
C      READ STATION FILE DATA
C
J = 1
NNRESDT = 0
C      READ STATION FILE AS TAPE11
REWIND 11
100 READ(11,9010)(ISTA(I,J),I=1,8)
IF.EOF(11)) 200,300
9010 FORMAT(4X,I6,1X,I1,1X,I1,1X,I2,3X,4A10)
200 NSTA = J -1
GO TO 400
300 J = J + 1
GO TO 100
400 CONTINUE
C
C      READ INSTREAM FILE DATA
C

```



```

J = 1
C      READ INSTREAM FLOW FILE AS TAPE12
      REWIND 12
500  READ(12,9030)(IFLO(I,J),I=1,15)
      IF(EOF(12)) 600,700
9030 FORMAT(4X,I6,A7,I8,12A7)
600  NFL0 = J -1
      GO TO 800
700  J = J + 1
      GO TO 500
800  CONTINUE
C
C----- READ RESERVOIR DATA FROM TAPE15
C
      REWIND 15
      I = 1
905  READ(15,900)(IRESDT(J,I),J=1,4),IDUM(I),(IRESDT(J,I),J=5,34)
900  FORMAT(A10,A6,I6,X,I2,I2,2(X,A8),X,A5,X,A8,X,12A4,/,12A4,4X,A2,
+A8)
      IF(EOF(15)) 910, 909
909  I = I + 1
      GO TO 905
910  NRESDT = I - 1
C
C----- READ RESERVOIR RIGHTS FILE
      REWIND 16
      I = 1
915  READ(16,920) (IRESRT(J,I),J=1,5)
920  FORMAT(I6,X,A8,X,A7,X,I2,X,A8)
      IF(EOF(16)) 930, 925
925  I = I + 1
      GO TO 915
930  NRESRT= I - 1
C
C
C      READ RUNOFF FILE DATA
C
      J = 1
C      READ RUNOFF FILE AS TAPE13
      REWIND 13
1000 READ(13,9050)(IRUN(I,J),I=1,13)
      IF(EOF(13)) 1100,1200
9050 FORMAT(4X,I6,12(1X,A7))
1100 NRUN = J -1
      GO TO 1300
1200 J = J + 1
      GO TO 1000
1300 CONTINUE
C

```



```

C      READ DELAY    FILE DATA
C
C      J = 1
C      READ DELAY TABLE AS TAPE14
REWIND 14
1400 WRITE(20,9070)
9070 FORMAT(1H1,T30,"D E L A Y    T A B L E S",/,T30,
+23("-"),//,6X,"NUMBER    JAN    FEB    MAR    APR    MAY    JUN    JUL    AUG    SE
+P OCT NOV DEC",/)
1500 READ(14,9080) IDEL
IF.EOF(14)) 1700,1600
9080 FORMAT(4X,I2,12(2X,A3))
1600 WRITE(20,9090) IDEL
9090 FORMAT(8X,I2,5X,12(A3,2X))
IDELAY(J) = IDEL(1)
J = J + 1
GO TO 1500
1700 CONTINUE
NDEL = J - 1
1750 CONTINUE
C      START PRINT OF STATION LISTINGS
WRITE(20,9100)
9100 FORMAT(1H1,T30,
+"S T A T I O N    I N F O R M A T I O N ",/T30,
+-----",//,
+T29,"JAN"6X,"FEB"6X"MAR"6X"APR"6X"MAY"6X"JUN"6X,
+"JUL"6X,"AUG"6X"SEP"6X"OCT"6X"NOV"6X"DEC",//)
IRN = 1
IFL = 1
DO 5000 IST= 1 , NSTA
NDIVCK = 0
WRITE(20,9110)(ISTA(I,IST),I=1,2),(ISTA(I,IST),I=5,8)
9110 FORMAT(/,1X,65("+"),//,5X,"*** STATION NO = ",I6.6,, ORDER NO =
+",I1,"    ",4A10,/)
C
C      CHECK RUNOFF AT THIS STATION
C
IF(IRN.GT.NRUN) GO TO 2000
IF(IRUN(1,IRN).GT.ISTA(1,IST)) GO TO 2000
1800 IF(IRUN(1,IRN).EQ.ISTA(1,IST)) WRITE(20,9120)(IRUN(I,IRN),I=2,13)
9120 FORMAT(1X,"RUNOFF (A.F.)",T27,12(A7,2X),/,)
IF(IRUN(1,IRN).LT.ISTA(1,IST)) WRITE(6,9130) IRUN(1,IRN)
9130 FORMAT(5X,"RUNOFF STATION ",I6.6," NOT FOUND IN STATION LIST")
IRN = IRN + 1
IF(IRUN(1,IRN).EQ.ISTA(1,IST)) GO TO 1800
2000 CONTINUE
C
C      CHECK INSTREAM AT THIS STATION
C
IF(IFL.GT.NFL0) GO TO 2200

```



```

1 IF(IFLO(1,IFL).GT.ISTA(1,IST)) GO TO 2200
2100 IF(IFLO(1,IFL).EQ.ISTA(1,IST)) WRITE(20,9140)(IFLO(I,IFL),I=2,15)
9140 FORMAT(1X,"INSM-CFS ",A7,1X,I8.8,/,T6,12(A7,4X)/)
IF(IFLO(1,IFL).LT.ISTA(1,IST)) WRITE(6,9150)IFLO(1,IFL)
9150 FORMAT(5X,"INSTREAM STATION ",I6.6," NOT FOUND IN STATION LIST")

    IFL = IFL + 1
    IF(IFLO(1,IFL).EQ.ISTA(1,IST)) GO TO 2100
2200 CONTINUE
C
C      CHECK DIVERSION DATA AGAINST STATION
C
2300 READ(30,9160)IDIV,DTW,(IRF(I),I=1,30)
IF(EOF(30)) 2625,2400
9160 FORMAT(3X,I6,I2,I3,A7,I8,I2,12A7,10(I6,I3,I2))
2400 IF(IDIV(1).GT.ISTA(1,IST)) GO TO 2600
2500 IF(IDIV(1).LT.ISTA(1,IST)) GO TO 2580
NDIVCK = NDIVCK + 1
NRF=IDIV(6)
IF(NRF.GT.10) READ(30,9165)(IRF(I),I=31,60)
9165 FORMAT(114X,10(I6,I3,I2))
WRITE(20,9170)IDIV(4),IDIV(5),IDIV(2),IDIV(3),IDIV(6)
9170 FORMAT(" DIVERSION PERMIT # = ",A7,", DATE = ",I8.8,
+", RESERVOIR CODE = ",I2,", EFF = ",I3,", NO OF RF = ",I2)

    IF(IDIV(3).LT.0.OR.IDIV(3).GT.100) WRITE(6,9172)
+IDIV(1),IDIV(4),IDIV(3)
9172 FORMAT(5X,"% EFF LT ZERO OR GT 100 AT STA ",I6.6,
+" DIV NO ",A7," EFF % = ", I3.3)
DO 2510 I=1,12
    IF(DTW(I).EQ.7H )DTW(I)=7H      0
2510 CONTINUE
WRITE(20,9175) DTW
9175 FORMAT("     DIV. AMT. (CFS)",T27,12(A7,2X))
C
C      CHECK NUMBER OF RETURN FLOWS
C
DO 2541 I = 1,30
J = 30-I+1
IF(IRF(J).EQ.0) GO TO 2541
JKP =J/3
IF(NRF.EQ.JKP) GO TO 2542
WRITE(6,9081) IDIV(4),IDIV(1)
9081 FORMAT(5X,"-- NUMBER OF RETURN FLOWS DIFFER FROM CARDS ON ",
+A7," AT STATION ", I6.6)
GO TO 2542
2541 CONTINUE
2542 CONTINUE
C
C      CHECK IF RF STATION IN STATION LIST
C
IF(NRF.EQ.0) GO TO 2580

```



```

KK = -2
DO 2550 ICT=1,NRF
KK = KK + 3
DO 2540 ICT2 = 1, NSTA
IF(IRF(KK).EQ.ISTA(1,ICT2)) GO TO 2550
2540 CONTINUE
WRITE(6,9180)IRF(KK),ISTA(1,IST),IDIV(4)
9180 FORMAT(5X,"RET. FLOW STA ",I6.6," FROM STA ", I6.6,
+" PERMIT NO. ",A7," NOT FOUND IN STATION LIST")
2550 CONTINUE
C
C      PRINT RETURN FLOWS LISTS
C
ICT3 = 0
NTAS=0
DO 2560 ICT = 1, NRF
ICT2 = ICT3 + 1
ICT3 = ICT2 + 2
DO 2552 J = 1, NDEL
IF(IRF(ICT2+2).EQ.IDELAY(J)) GO TO 2553
2552 CONTINUE
WRITE(6,9185)IRF(ICT2+2),IRF(ICT2),IDIV(4),ISTA(1,IST)
9185 FORMAT(5X"RET. FLO. TABLE NO. "I2" TO STA. "I6.6,
+" FROM DIV. NO "A7" AT STA. ",
+I6.6" NOT FOUND IN DELAY TABLES")
2553 CONTINUE
WRITE(20,9190)(IRF(I),I=ICT2,ICT3)
9190 FORMAT(7X,"RETURN FLOWS : ",2X,"TO STA ",I6.6,", % OF TOT RF ",
+I3,", DELAY TABLE NO ",I2,5X)
NTAS=IRF(ICT2+1)+NTAS
IF(IRF(ICT2+1).LE.0.OR.IRF(ICT2+1).GT.100) WRITE(6,9195)
+IDIV(1),IDIV(4),IRF(ICT2),IRF(ICT2+1)
9195 FORMAT(5X,"% OF TOT RF LT ZERO OR GT 100 AT STA ",I6.6,
+" FROM DIV ",A7," TO STA ",I6.6," % = " I3.3)
2560 CONTINUE
IF(NTAS.GT.100) WRITE(6,9211) IDIV(4),ISTA(1,IST)
9211 FORMAT(5X,*TOTAL RETURN FLOW GT 100 FOR PERMIT # *A7*AT STATION *
+I6.6)
2580 IF(IDIV(1).LT.ISTA(1,IST)) WRITE(6,9210) IDIV(4),IDIV(1)
9210 FORMAT(5X,"DIV. ",A7," AT STA. ",I6.6," NOT FOUND IN STATIONS")
READ(30,9160) IDIV,DTW,(IRF(I),I=1,30)
IF(EOF(30))2625,2590
2590 IF(IDIV(1).LT.ISTA(1,IST)) GO TO 2580
IF(IDIV(1).EQ.ISTA(1,IST)) GO TO 2500
C      IF(NDIVCK.NE.ISTA(4,IST)) WRITE(6,9220) ISTA(1,IST)
9220 FORMAT(5X,"NO OF DIVERSION DO NOT MATCH AT STA ",I6.6)
2600 CONTINUE
BACKSPACE 30
C
C----- CHECK RESERVOIR DATA
2625 DO 2700 I = 1, NRESDT

```



```

IF(IDUM(I).EQ.0 .AND. ISTA(1,IST) .EQ. IRESDT(3,I)) GO TO 2655

IF(ISTA(1,IST).NE.IRESDT(3,I)) GO TO 2700
DO 935 IXX = 9, 32
935 IF(IRESDT(IXX,I).EQ.4H ) IRESDT(IXX,I) = 4H 0
IF(IRESDT(34,I).EQ.8H ) IRESDT(34,I) = 8HNOT APPL
WRITE(20,940)IRESDT(1,I),IRESDT(2,I),(IRESDT(K,I),K=4,8),
+IRESDT(34,I),IRESDT(33,I),(IRESDT(K,I),K=9,32)
940 FORMAT(/,5(" #")," RESERVOIR DATA",5(" #"),//,5X,A10,A6,", CODE=",
+I2,", MIN VOL(AF)= ",A8,", MAX VOL(AF)= ",A8,", MAX OUT(CFS)=
",
+A8,", INTL VOL (AF)= ",A8,/,,23X,"POWER STORAGE GOAL(AF) = ",A8,
+" , GOAL MONTH = ",A2,,/,6X,"EVAPORATION RATE(FT)",T29,12(A4,5X),/,
+6X,"NON-PROJ RELEASES(%)",T29,12(A4,5X))
C DO 945 IY=9,32
C DECODE(4,936,IRESDT(IY,I)) IRESDT(IY,I)
C36 FORMAT(F4.0)
C45 IF(IRESDT(IY,I).GT.100.)WRITE(6,937)IRESDT(4,I)
C37 FORMAT(1X,*RES *I2* EVAPORATION OR NON-PROJ RELEASE GT 100% *)
DO 2650 J = 1,NRESRT
IF(ISTA(1,IST).NE.IRESRT(1,J)) GO TO 2650
IF(IRESRT(4,J).NE.IRESDT(4,I)) GO TO 2650
WRITE(20,950)IRESRT(3,J),IRESRT(2,J),IRESRT(5,J)
950 FORMAT(10X,"PERMIT NO.= ",A7,", DATE= ",A8,
+", DECREED AMT(AF)= ",A8)
2650 CONTINUE
2655 NNRESDT = NNRESDT + 1
2700 CONTINUE
5000 CONTINUE
C
C           CHECK IF RESERVOIR STATIONS ALL MATCHED
C
9131 IF(NNRESDT.NE.NRESDT) WRITE (6,9131)
FORMAT(5X,"RESERVOIR STATION(S) NOT FOUND")
C
C           CHECK IF INSTREAM STATION GREATER THAN STATION LIST
C
5500 IF(NFL0.LE.IFL) GO TO 6000
DO 5500 I = IFL,NFL0
WRITE(6,9150) IFL0(1,I)
6000 CONTINUE
C
C           CHECK IF RUNOFF STATIONS GREATER THAN STATION LIST
C
6500 IF(NRUN.LE.IRN) GO TO 7000
DO 6500 I = IRN,NRUN
WRITE(6,9130) IRUN(1,I)
7000 CONTINUE
END

```



TABLE B-10  
PROGRAM NAME = CKRCAP

```

PROGRAM CKRCAP(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT)

      DIMENSION IEQ(3),COEF(3,3),LIMIT(3)
  5   READ(5,10) ICN,NEQ
 10   FORMAT(I2,/,I1)
     IF.EOF(5)) 99,6
  6   DO 13 I=1,NEQ
     READ(5,11) LIMIT(I),IEQ(I)
 11   FORMAT(F10.0,2X,I1)
     READ(5,12)(COEF(I,J),J=1,3)
 12   FORMAT(3F12.4)
 13   CONTINUE
     WRITE(6,20) ICN
     DO 14 I=1,NEQ
     IF(IEQ(I) .EQ. 1) WRITE(6,15) LIMIT(I),(COEF(I,J),J=1,3)
     IF(IEQ(I) .EQ. 2) WRITE(6,16) LIMIT(I),(COEF(I,J),J=1,2)
     IF(IEQ(I) .EQ. 3) WRITE(6,17) LIMIT(I),(COEF(I,J),J=1,3)
 20   FORMAT((1X,*RESERVOIR*,1X,I2)
 15   FORMAT(1X,*FOR VOLUMES LESS THAN *,F10.0,//,1X,*AREA = *
     +,F12.4* + *F12.4," * (VOL ** ",F12.4)
 16   FORMAT(1X,*FOR VOLUMES LESS THAN *,F10.0,//,1X,*AREA = *
     +F12.4,* + (*F12.4" * (LN(VOL))))")
 17   FORMAT(1X,*FOR VOLUMES LESS THAN *,F10.0,//,1X,*AREA = *
     +F12.4," * ( "F12.4" **("F12.6" * VOL)))")
 14   CONTINUE
     GO TO 5
 99   STOP
     END

```



Table B-11  
PROCEDURE FILE NAME = RNCLM

```
SETTLE,CM260000,P2.  
USER,USERNO,PW. USERID  
GET,CHKCLM.  
GET,TAPE7=BRDIV.  
FTN,I=CHKCLM,L=0.  
LGO.  
REWIND,TAPE10.  
REWIND,TAPE11.  
REPLACE,TAPE11=OBRDIV.  
EXIT,U.  
REWIND,OUTPUT.  
COPYBF,OUTPUT,ANSWERD.  
REPLACE,ANSWERD.  
EXIT,U.  
DAYFILE,DAYFILE.  
REPLACE,DAYFILE.  
*WEOR  
2 1  
0 1  
2 1  
*WEOF
```



Table B-12

PROGRAM NAME = **CHKCLM**

```

PROGRAM CHK240(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,TAPE7=/240,
+TAPE10=/240)
C THIS PROGRAM CHECKS 240 DIVERSION FILE FOR ILLEGAL CHARACTERS
C AND REDISTRIBUTES DIVERSION AMOUNTS.
C DIVERSIONS MUST BE IDENTIFIED FOR REDISTRIBUTION.
C THE CURRENT FORMAT READS THE 2ND COLUMN OF THE DIVERSION CARD
C AS THE IDENTIFIER.
EXTERNAL FATAL78
COMMON /COM1/IERR(6),LINES
DIMENSION IDIV(9),DIV(12),IR1(10),R2(10),IR3(10),ITYP(8),PER(8)
+,IRTF(20)
DATA IERR/0,0,0,4096,-1,-1/
IERR(5) = LOCF(FATAL78)
CALL SYSTEMC(78,IERR)
LINES=1
READ (5,*) LOP,LOPE
K=LOP
READ(5,*) (ITYP(I),PER(I),I=1,K)
25 J1=0
READ(7,100) IDIV,DIV,IRTF
IF.EOF(7) 400,75
75 LINES=LINES+1
100 FORMAT(A1,2I1,I6,I2,I3,A7,I8,I2,12F7.0,10(A6,A5))
DECODE(110,120,IRTF)(IR1(I),R2(I),IR3(I),I=1,10)
120 FORMAT(10(I6,F3.0,I2))
DO 200 J=1,K
IF(IDIV(2).EQ.ITYP(J)) J1=J
200 CONTINUE
IF(J1.EQ.0) GO TO 50
IF(LOPE.GE.1.AND.ITYP(J1).EQ.2 .OR. ITYP(J1) .EQ. 0) GO TO 125
DO 300 J=1,12
DIV(J)=DIV(J)*PER(J1)
300 CONTINUE
50 DO 115 J=1,12
IF(DIV(J).GE.1000.) GO TO 118
115 CONTINUE
WRITE(10,110) IDIV,DIV,IRTF
GO TO 25
110 FORMAT(A1,2I1,I6.6,I2,I3,A7,I8,I2,12F7.3,10(A6,A5))
118 WRITE(10,111) IDIV,DIV,IRTF
111 FORMAT(A1,2I1,I6.6,I2,I3,A7,I8,I2,12F7.2,10(A6,A5))
GO TO 25
125 DIVI=DIV(6)
IF(DIVI .GT. 15.) GO TO 50
DIV(1)=0.0
DIV(2)=0.0
DIV(3)=0.0
DIV(4)=.05 * DIVI

```



```

DIV(5)=.45 * DIVI
DIV(6)=DIVI
DIV(7)=DIVI
DIV(8)= .8 * DIVI
DIV(9)=.4 * DIVI
DIV(10)=.05 * DIVI
DIV(11)=0.0
DIV(12)=0.0
GO TO 50
160 DO 170 J=5,9
170 DIV(J)=DIVI
DIV(1)=0.0
DIV(2)=0.0
DIV(3)=0.0
DIV(4)=0.0
DIV(10)=0.0
DIV(11)=0.0
DIV(12)=0.0
GO TO 50
400 STOP
END
SUBROUTINE FATL78
C
C      ROUTINE CHECKS FOR ILLEGAL DATA IN FILEDS AND
C      KEEPS THEM FROM BEING FATAL ERRORS
C
COMMON /COM1/IERR(6),LINES
WRITE(6,9000)LINES
9000 FORMAT(" LINE "I7" BAD DATA IN FIELDS -CHECK -- "/)
NERR = NERR + 1
RETURN
END

```



TABLE B-13

PROGRAM NAME = CUT

```
PROGRAM CUT(TAPE50=/240,TAPE60,INPUT,OUTPUT,  
+ TAPE5=INPUT,TAPE6=OUTPUT)  
DIMENSION A(12),B(11)  
10 READ (50,100)A,B  
100 FORMAT(11A10,A5,11A10)  
IF(EOF(50))500,20  
20 WRITE(60,200)A,B  
200 FORMAT(11A10,A5,/,11A10)  
GO TO 10  
500 REWIND 50  
END
```



**APPENDIX C**  
**Procedure Files and Programs**  
**to**  
**Submit and Run the WIRSOS Model**

| <u>Table Number</u> | <u>Procedure File or Program Name</u> | <u>Page</u> |
|---------------------|---------------------------------------|-------------|
| C-1                 | LRCYBJ                                | C-1         |
| C-2                 | RNJOB                                 | C-2         |
| C-3                 | SORTDIV, SORTFLO                      | C-3         |
| C-4                 | WAT12S (WIRSOS Model)                 | C-4         |



Table C-1  
PROCEDURE FILE NAME = LRCYBJ

```
SAMPLE,T1000,CM100000,P1.  
USER,USERNO,PW. USERID  
* RUNS ON CYBER, WILL ROUTE TO CRAY  
GET,DIVERT=DIV.  
FILE,DIVERT,BT=C,RT=Z,FL=230.  
FILE,TAPE4,BT=C,RT=Z,FL=230.  
GET,SORTDIV.  
SORTMRG,I=SORTDIV.  
REWIND,TAPE4.  
RETURN,DIVERT.  
GET,INSTREM=STRM.  
FILE,INSTREM,BT=C,RT=Z,FL=110.  
FILE,TAPE3,BT=C,RT=Z,FL=110.  
GET,SORTFLO.  
SORTMRG,I=SORTFLO.  
RETURN,INSTREM.  
REWIND,TAPE4.  
FTN,L=0.  
MAP,OFF.  
LGO,TAPE4,CUT1.  
EXIT,C.  
GET,RNJOB.  
REWIND,*.  
SKIPIR,RNJOB,2.  
COPYBR,TAPE3,RNJOB.  
COPYBR,CUT1,RNJOB.  
ROUTE,RNJOB,DC=IN,UN=RJEDN1.  
EXIT,U.  
DAYFILE,DAYFILE.  
REPLACE,DAYFILE.  
PROGRAM CUT(TAPE50=/240,TAPE60,INPUT,OUTPUT,  
+ TAPE5=INPUT,TAPE6=OUTPUT)  
DIMENSION A(12),B(11)  
10 READ (50,100)A,B  
100 FORMAT(11A10,A5,11A10)  
IF.EOF(50))500,20  
20 WRITE(60,200)A,B  
200 FORMAT(11A10,A5,/,11A10)  
GO TO 10  
500 REWIND 50  
END
```



Table C-2  
PROCEDURE FILE = RNJOB

```
SAMPLE,T10000,CM50,P2,STVSP1.  
USER,USERNO,PW. USERID  
FETCH, DN=TAPE1, GDN=BRSTA, DT=C, DS=FF.  
FETCH, DN=TAPE2, GDN=BRRUN, DT=C, DS=FF.  
FETCH, DN=TAPE7, GDN=OUTDEL, DT=C, DS=FF.  
FETCH, DN=TAPE15, GDN=BRRSDT, DT=C, DS=FF.  
FETCH, DN=TAPE16, GDN=BRRSRT, DT=C, DS=FF.  
FETCH, DN=TAPE14, GDN=BRRSACC, DT=C, DS=FF.  
FETCH, DN=TAPE17, GDN=BRJPR, DT=C, DS=FF.  
FETCH, DN=WAT12C, DS=CI.  
ASSIGN, DN=TAPE1, A=FT01, BS=10.  
ASSIGN, DN=TAPE2, A=FT02, BS=10.  
ASSIGN, DN=TAPE3, A=FT03, BS=10.  
ASSIGN, DN=TAPE4, A=FT04, BS=10.  
ASSIGN, DN=TAPE5, A=FT05, BS=10.  
ASSIGN, DN=TAPE7, A=FT07, BS=10.  
ASSIGN, DN=TAPE8, A=FT08, BS=10.  
ASSIGN, DN=TAPE9, A=FT09, BS=10.  
ASSIGN, DN=TAPE10, A=FT10, BS=10.  
ASSIGN, DN=TAPE11, A=FT11, BS=10.  
ASSIGN, DN=TAPE12, A=FT12, BS=10.  
ASSIGN, DN=TAPE13, A=FT13, BS=10.  
ASSIGN, DN=TAPE14, A=FT14, BS=10.  
ASSIGN, DN=TAPE15, A=FT15, BS=10.  
ASSIGN, DN=TAPE16, A=FT16, BS=10.  
ASSIGN, DN=TAPE17, A=FT17, BS=10.  
ASSIGN, DN=TAPE18, A=FT18, BS=10.  
COPYF, I=$IN, O=TAPE5.  
REWIND, DN=TAPE5.  
COPYF, I=$IN, O=TAPE3.  
REWIND, DN=TAPE3.  
COPYF, I=$IN, O=TAPE4.  
REWIND, DN=TAPE4.  
ASSIGN, DN=$OUT, A=FT06.  
LDR, DN=WAT12C.  
EXIT, U.  
REWIND, DN=$OUT.  
COPYD, I=$OUT, O=CRAYLOG.  
EXIT, U.  
REWIND, DN=TAPE18.  
COPYD, I=TAPE18, O=$OUT.  
EXIT, U.  
REWIND, DN=TAPE8:TAPE9:TAPE10:TAPE11:TAPE12:TAPE13:TAPE18.  
STORE, DN=TAPE8, GDN=SAMP208, DT=C, DS=FF.  
STORE, DN=TAPE9, GDN=SAMP209, DT=C, DS=FF.  
STORE, DN=TAPE10, GDN=SAMP210, DT=C, DS=FF.  
STORE, DN=TAPE11, GDN=SAMP211, DT=C, DS=FF.  
STORE, DN=TAPE18, GDN=SAMP218, DT=C, DS=FF.
```



Table C-2 (Continued)

```
STORE ,DN=TAPE12 ,GDN=SAMP212 ,DT=C ,DS=FF .
STORE ,DN=TAPE13 ,GDN=SAMP213 ,DT=C ,DS=FF .
EXIT ,U .
FETCH ,DN=$PROC ,GDN=PROCLIB ,UN=Y9AC07 ,DS=CI .
DOLLAR .
EXIT ,U .
LOGFILE ,L=CRAYLOG ,FULL .
STORE ,DN=CRAYLOG ,DT=C ,DS=FF .
BEAUMONT RIVER BASIN - SAMPLE RUN
 4
RES
```

Table C-3

PROCEDURE FILE = **SORTDIV**

```
SORT
FILE ,SORT=DIVERT ,OUTPUT=TAPE4
FIELD ,F1(26,4,DISPLAY) ,F2(22,2,DISPLAY) ,F3(24,2,DISPLAY) ,
,F4(4,6,DISPLAY)
KEY ,F1(A,DISPLAY) ,F2(A,DISPLAY) ,F3(A,DISPLAY) ,F4(A,DISPLAY)
EQUATE ,DISPLAY( ,0)
OPTIONS ,RETAIN ,NODUMP
END
```

PROGRAM NAME = **SORTFLO**

```
SORT
FILE ,SORT=INSTREM ,OUTPUT=TAPE3
FIELD ,F1(22,4,DISPLAY) ,F2(18,2,DISPLAY) ,F3(20,2,DISPLAY) ,
,F4(5,6,DISPLAY)
KEY ,F1(A,DISPLAY) ,F2(A,DISPLAY) ,F3(A,DISPLAY) ,F4(A,DISPLAY)
EQUATE ,DISPLAY( ,0)
OPTIONS ,RETAIN ,NODUMP
END
```



Table C-4

PROGRAM NAME = WIRSOS

PROGRAM WAT12S(INPUT,OUTPUT,TAPE1,TAPE2,TAPE3,TAPE4,  
+TAPE5=INPUT,TAPE6=OUTPUT,TAPE7,TAPE8,TAPE9,TAPE10,TAPE11,TAPE12  
+,TAPE13,TAPE14,TAPE15,TAPE16,TAPE17,TAPE18)

C  
C-----  
C  
C----- DATE: JUNE 16, 1983  
C  
C----- AUTHOR: PAUL T. MUSSER  
C DENVER, COLORADO  
C  
C----- CONTRACTED BY: LEONARD RICE CONSULTING WATER ENGINEERS, INC  
C DENVER, COLORADO  
C  
C----- PROJECT: 390 WYO 01 BIGHORN  
C  
C----- VERSION 12.3  
C  
C-----  
C  
C  
C 11.0 FINAL WYOMING MODEL  
C 11.1 RESERVOIR RELEASE TO SECOND STATION DOWNSTREAM.  
C 12.0 RESERVOIR AREA/CAPACITY CALC CHG  
C 12.1 FIX OF JPR RETURN FLOW PROBLEM  
C  
C 12.2 6-83 ADDED SENIOR PROJECT RIGHTS WITH JUNIOR DATE  
C  
C 12.3 4-84 FIX OF DECREE MAX RESET - VECTORIZED WRONG  
C-----  
C  
C FILES AND REQUIRED SORT PRIORITIES:  
C  
C TAPE 1 - INPUT STATION FILE - SORT BY STATION  
C TAPE 2 - INPUT RUNOFF FILE - SORT BY YEAR  
C TAPE 3 - INPUT IFR FILE - SORT BY DATE THEN STATION  
C TAPE 4 - INPUT DIVERSION AND RET FLOW FILE - SORT BY DATE  
C THEN STATION.  
C TAPE 5 - INPUT FROM TERMINAL / JOB STREAM  
C TAPE 6 - OUTPUT TO TERMINAL / PRINTER  
C TAPE 7 - INPUT RETURN FLOW DELAY TABLES  
C TAPE 8 - OUTPUT INITIAL RUNOFF REPORT. WRITTEN FOR ALL STATIONS,  
C 12 MONTHS, EACH YEAR.  
C TAPE 9 - OUTPUT FINAL RIVER STATUS REPORT. CFS WHICH IS ACTUALLY  
C IN THE STREAM



C (INCLUDING IFR AMOUNTS) WRITTEN FOR ALL STATIONS,  
C 12 MONTHS, EACH YEAR.  
C TAPE 10- OUTPUT FINAL WATER AVAILABLE REPORT. CFS WHICH IS  
C AVAILABLE IN THE STREAM FOR OTHER RIGHTS.  
C WRITTEN FOR ALL STATIONS, 12 MONTHS,  
C EACH YEAR.  
C TAPE 11- OUTPUT LIST OF STATIONS CALLED OUT. WRITTEN FOR ALL  
C RIGHTS CALLED OUT EACH MONTH.  
C TAPE 12- OUTPUT LIST OF PERMIT NUMBERS AND PERCENTAGES CALLED OUT  
C FOR DIVERSIONS.  
C TAPE 13- OUTPUT LIST OF STATIONS AND PERCENTAGES CALLED OUT FOR  
C INSTREAM FLOW REQUIREMENTS.  
C TAPE 14- INPUT RESERVOIR AREA-CAPACITY CURVE DATA.  
C TAPE 15- INPUT RESERVOIR DATA FILE - SORT BY RESERVOIR CODE  
C TAPE 16- INPUT RESERVOIR RIGHTS FILE - SORT BY PRIORITY DATE THEN  
C STATION.  
C TAPE 17- INPUT JUNIOR PROJECT RIGHTS FILE - SORT BY RESERVOIR  
C CODE, THEN PRIORITY DATE.  
C TAPE 18- OUTPUT MONTHLY RESERVOIR STATUS REPORT. SORTED BY  
C RESERVOIR CODE, THEN YEAR.  
C TAPE 19- OUTPUT/INPUT - TEMP RESERVOIR STATUS REPORT

C-----\*

C PROGRAM LIMITS:

C STATIONS 1550  
C DIVERSIONS 4500  
C IFRS 500  
C RETURNS/DIV 10  
C RET DELAY TYPES 99  
C YEARS DEPENDENT ON AMOUNT OF DATA IN RUNOFF FILE  
C RESERVOIRS 50  
C RIGHTS PER RESERVOIR 4  
C JUNIOR PROJECT RIGHTS 100

C-----

C RIVER BASIN

C-----  
C DIMENSION ISTATA(1550,12),RIVER(1550,24)  
C DIMENSION AVAIL(1550),AVWRET(1550),AVOUT(1550,12)

C----- RUNOFF

C-----  
C DIMENSION RUNOFF(12)

C----- DIVERSIONS



```

DIMENSION DIVER(12),DIVPMT(2),IDDATE(2)
DIMENSION RETSTA(10),RETDLY(10),PCTTOT(10)
C
C----- INSTREAM FLOW REQUIREMENTS
C
DIMENSION FLOWRQ(12),IFRPMT(2),IFDATE(2)
C
C----- RESERVOIRS
C
DIMENSION RESNAM(50,4),RESPMT(2),IRDATE(2),RSTNUM(50)
DIMENSION RSRMET(50),IRSTAN(50),IRSORD(50),INDXRR(50)
DIMENSION IRESSWI(50)
C
.C----- RESERVOIR LIMITS
C
DIMENSION VOLMIN(50),VOLMAX(50),FLOMAX(50),DCRMAX(50),DECREE(50)
C
C----- RESERVOIR - POWER AND NON-PROJECT RELEASES, EVAPORATION
C
DIMENSION POWREQ(50),POWREL(50),GOALDT(50),GOALVL(50)
DIMENSION EVAPRT(50,12),EVAP(50)
DIMENSION RNPJRL(50,12),REQNP(50),RELNP(50)
DIMENSION NRANGE(50),RLIMIT(50,3),NEQTYPE(50,3),ACOEF(50,3,3)
C
C----- RESERVOIR SUBTOTALS
C
DIMENSION VOLINT(50),STOMON(50),CURSTO(50),YTDSTO(50),BEGVOL(50)
DIMENSION RRYTD(50,4),PROJTF(50),RS DATA(10),RTOTAL(8)
C
C----- JUNIOR PROJECT RIGHTS
C
DIMENSION RITJPR(12),JPRPMT(2),IJDATE(2)
DIMENSION JPRETS(10),JPRDLY(10),PCTJPR(10)
DIMENSION REMJPR(100),JPREMP(100,2)
C
C----- CALLED OUT RIGHTS
C
DIMENSION NODIV(4500),NOFLOW(500),NORES(200)
C
C----- MISC
C
DIMENSION RTEMP(30),IRTEMP(8)
DIMENSION DLYRAT(100,12),DLYNUM(100)
DIMENSION MONTHN(12),MTHDAY(12)
DIMENSION IHED(10),HEAD2(2)
C
C
LOGICAL IFFLAG, IDFLAG, RNFLAG, IRFLAG, RESFLG(50)
LOGICAL IRFILL(50), MSPILL(50)
C

```





```

CALL DATE(HEAD2(2))

C
C-----INITIALIZE CONTROL AND INDEXING VARIABLES.
C----- LINPPAG - NUMBER OF LINES PER PAGE ON OUTPUT FORMS.
C----- IYR - CURRENT YEAR BEING PROCESSED.
C----- IMO - CURRENT MONTH BEING PROCESSED. (1 THROUGH TOTAL NUMBER .
C-----          OF MONTHS TO BE PROCESSED)
C----- RNFLAG - SET TO TRUE WHEN AN END-OF-FILE IS READ ON THE
C-----          RUNOFF FILE (TAPE2). THIS TELLS THE PROGRAM TO
C-----          PROCESS ONE MORE YEAR AND STOP.
C
C
MAXRES=50
LINPPAG=60
IYR=0
IMO=1
RNFLAG=.FALSE.

C
C-----READ IN RETURN FLOW DELAY TABLES FROM TAPE7
C
DO 10 IDL=1,99
READ(7,5030) DLYNUM(IDL),(DLYRAT(IDL,IM),IM=1,12)
5030 FORMAT(4X,I2,12(2X,F3.0))
IF.EOF(7) 15,10
10 CONTINUE
C
C-----FILL ISTATA ARRAY WITH STATION NUMBERS , STREAM ORDERS AND
C-----STATION DESCRIPTIONS FROM TAPE1
C
15 DO 25 IS=1,1550
READ(1,5040) (ISTATA(IS,IM),IM=1,12)
5040 FORMAT(4X,I6,I2,8X,10A4)
IF.EOF(1) 20,25
C
C----- SET NUMSTA TO NUMBER OF STATIONS READ.
C
20 NUMSTA=IS-1
GO TO 30
25 CONTINUE
C
C----- IF NO RESERVOIRS, SKIP RESERVOIR INITIALIZATION SECTION, GO
C----- TO FIRST YEAR RUNOFF SECTION.
C
30 IF(IRESOPT.EQ.3HNOR) GO TO 60
C
C
C-----READ RESERVOIR DATA FROM TAPE 15.
C
NUMRES=0
MAXRESD=MAXRES+1
DO 55 NUMR=1,MAXRESD

```



```

      READ(15,5050) (IRTEMP(I),I=5,8),(IRTEMP(J),J=1,3),(RTEMP(K),
+ K=1,17)
5050 FORMAT(4A4,I6,1X,I2,1X,I1,2(1X,F8.0),1X,F5.0,1X,F8.0,1X,
+ 12F4.2,1X,F8.0)
C
      IF.EOF(15) ) 35,40
C
C----- SET NUMREST TO THE CODE OF THE RESERVOIR WITH THE
C----- HIGHEST CODE WHICH IS ACTIVE.
C
35   MR=MAXRES+1
36   MR=MR-1
      IF(MR.GT.0) GO TO 37
C
      WRITE(6,5055)
5055 FORMAT("RESERVOIR OPTION IS SET TO -RES- , BUT THERE",
+ "ARE NO ACTIVE RESERVOIRS.")
      STOP 18
C
37   IF(IRESSWI(MR).EQ.0) GO TO 36
      NUMREST=MR
      GO TO 60
C
40   READ(15,5060) (RTEMP(I),I=18,29),IRTEMP(4),RTEMP(30)
5060 FORMAT(12F4.0,4X,I2,F8.0)
C
C----- IF RES IS NOT ACTIVE, SET SWITCH TO 0 AND GO
C----- TO READ OF NEXT RESERVOIR.
C
      IF(IRTEMP(3).EQ.1) GO TO 42
      IRSNUM=IRTEMP(2)
      IRESSWI(IRSNUM)=0
      GO TO 55
C
C----- IF RES IS ACTIVE, SET RES VARIABLES TO TEMP VARIABLE
C
42   NUMRES=NUMRES+1
      IRSNUM=IRTEMP(2)
      RESNAM(IRSNUM,1)=IRTEMP(5)
      RESNAM(IRSNUM,2)=IRTEMP(6)
      RESNAM(IRSNUM,3)=IRTEMP(7)
      RESNAM(IRSNUM,4)=IRTEMP(8)
      RSTNUM(IRSNUM)=IRTEMP(1)
      IRESSWI(IRSNUM)=IRTEMP(3)
      VOLMIN(IRSNUM)=RTEMP(1)
      VOLMAX(IRSNUM)=RTEMP(2)
      FLOMAX(IRSNUM)=RTEMP(3)
      BEGVOL(IRSNUM)=RTEMP(4)
C
      DO 43 IMTH=1,12

```



```
EVAPRT(IRSNUM,IMTH)=RTEMP(IMTH+4)
RNPJRL(IRSNUM,IMTH)=RTEMP(IMTH+17)
43 CONTINUE
C
DECREE(IRSNUM)=RTEMP(17)
GOALDT(IRSNUM)=IRTEMP(4)
GOALVL(IRSNUM)=RTEMP(30)
C
C----- SET JUNIOR PROJECTS PROCESSED WITH RESERVOIR FLAG TO FALSE
C
45 RESFLG(IRSNUM)=.FALSE.
C
C----- SET POWER REQUEST AND RELEASE TO ZERO FOR THE FIRST MONTH
C
POWREL(IRSNUM)=0.
POWREQ(IRSNUM)=0.
C
C----- SET RESERVOIR RIGHT INDEX AND YTD SUBTOTALS TO ZERO.
C
INDXRR(IRSNUM)=0
RRYTD(IRSNUM,1)=0.
RRYTD(IRSNUM,2)=0.
RRYTD(IRSNUM,3)=0.
RRYTD(IRSNUM,4)=0.
C
C----- SET MONTHLY AND YEARLY SUBTOTALS TO ZERO FOR FIRST MONTH OF RUN
C
STOMON(IRSNUM)=0.
YTDSSTO(IRSNUM)=0.
C
C----- SET RESERVOIR RIGHTS MET FLAG TO NO.
C
RSRMET(IRSNUM)=2HNO
C
C----- SET CURRENT STORAGE TO BEGINNING VOLUME FROM RES DATA FILE
C
CURSTO(IRSNUM)=BEGVOL(IRSNUM)
C
C----- STORE DECREE MAX FOR LATER USE.
C
DCRMAX(IRSNUM)=DECREE(IRSNUM)
C
C----- SET RESERVOIR FILL AND SPILL FLAGS TO FALSE.
C
IRFILL(IRSNUM)=.FALSE.
MSPILL(IRSNUM)=.FALSE.
C
C----- FIND RESERVOIR STATION INDEX AND ORDER IN ISTATA ARRAY.
C
```



```

DO 50 IS=1,NUMSTA
IF(ISTATA(IS,1).NE.RSTNUM(IRSNUM)) GO TO 50
IRSTAN(IRSNUM)=IS
IRSORD(IRSNUM)=ISTATA(IS,2)
GO TO 55
50   CONTINUE
C
C----- IF STATION IS NOT FOUND, WRITE ERROR MESSAGE AND STOP PROGRAM
C
      WRITE(6,5100) RSTNUM(IRSNUM)
      STOP 2
C
C----- GO TO NEXT RESERVOIR
C
55   CONTINUE
C
      WRITE(6,5070) MAXRES
5070 FORMAT("TOO MANY RESERVOIRS      MAXIMUM = ",I5)
C
      STOP 12
C
C----- READ RES AREA/CAPACITY CURVE DATA
C
      60 DO 64 IR=2,MAXRESD
C
C
      READ(14,5073) IRC
5073 FORMAT(I2)
C
      IF.EOF(14)) 63,61
C
      61 READ(14,5075) NRANGE(IRC)
5075 FORMAT(I1)
C
      NR=NRANGE(IRC)
C
      DO 62 IRG=1,NR
C
      READ(14,5077) RLIMIT(IRC,IRG),NEQTYPE(IRC,IRG)
5077 FORMAT(F10.0,2X,I1)
C
      READ(14,5078) (ACOEF(IRC,IRG,IC),IC=1,3)
5078 FORMAT(3F12.4)
C
      62 CONTINUE
C
      64 CONTINUE
C
C-----
```



```

C      START 1ST YEAR RUNOFF SECTION
C-----*-----*
C
C-----READ RUNOFF DATA FOR THE 1ST YEAR FROM TAPE2 -----
C----- RUNOFF AT EACH ENTRY STATION IS READ AND PROCESSED SEPARATELY.
C
C      63 DO 110 IRN=1,NUMRUNS
C
C-----READ IN RUNOFF STATION AND AMOUNTS.
C
C      READ(2,5080) ISTAT,RUNOFF
C      IF.EOF(2) 65,70
5080  FORMAT(4X,I6,12F8.0)
C
C----- IF THERE IS LESS THAN 1 YEAR OF DATA IN THE RUNOFF FILE,
C----- WRITE AN ERROR MESSAGE TO OUTPUT AND STOP PROGRAM.
C
65      WRITE(6,5090)
5090  FORMAT(" NOT ENOUGH DATA IN RUNOFF FILE")
      STOP 3
C
C-----CONVERT RUNOFF DATA FROM ACRE-FEET TO CFS.
C
70      DO 75 IM=1,12
      RUNOFF(IM)=RUNOFF(IM)/FACTOR/MTHDAY(IM)
75      CONTINUE
C
C----- FIND ENTRY STATION INDEX AND STREAM ORDER IN ISTATA ARRAY.
C
DO 80 IS=1,NUMSTA
IF(ISTATA(IS,1).NE.ISTAT) GO TO 80
ORDER=ISTATA(IS,2)
C      NSTAT - STATION INDEX WHERE CURRENT RUNOFF ENTERS THE BASIN.
NSTAT=IS
GO TO 85
80      CONTINUE
C
C----- IF THE STATION IS NOT FOUND, WRITE AN ERROR MESSAGE TO OUTPUT
C----- AND STOP THE PROGRAM.
C
      WRITE(6,5100) ISTAT
5100  FORMAT("1 STATION NOT FOUND - ",I6)
      STOP 4
C
C-----ADD RUNOFF AMOUNTS TO ALL STATIONS AT AND DOWNSTREAM OF THE STATION
C-----WHERE IT ENTERS THE BASIN IN MONTHS 1-12 IN RIVER ARRAY.
C
85      DO 105 ISS=NSTAT,NUMSTA
IF(ISTATA(ISS,2).EQ.ORDER) GO TO 95
IF(ISTATA(ISS,2).EQ.ORDER-1) GO TO 90

```



```

GO TO 105
90 ORDER=ORDER-1
95 DO 100 IM=1,12
      RIVER(ISS,IM)=RIVER(ISS,IM)+RUNOFF(IM)
100 CONTINUE
C
105 CONTINUE
C
C-----GO TO READ OF NEXT RUNOFF STATION
C
110 CONTINUE
C
C----- WHEN ALL THE RUNOFF HAS BEEN ENTERED FOR THE FIRST YEAR,
C----- WRITE THE FIRST 12 MONTHS OF RIVER ARRAY ON
C----- INITIAL RUNOFF REPORT(TAPE8)
C----- THE MONTHLY DATA IS IN CFS, YEARLY TOTALS ARE IN ACRE-FEET.
C
IRUNYR=1
WRITE(8,5110) IRUNYR,IHEAD,HEAD2
5110 FORMAT("1",*YEAR *,I2,45X," INITIAL RUNOFF IN MONTHLY CFS",/,35X
+ ,10A4,2X,A8," PST ",A8,/)
      WRITE(8,5120)
5120 FORMAT(" STATION ORD",4X,"JAN",6X,"FEB",6X,"MAR",5X,"APRIL",5X,
+ "MAY",6X,"JUNE",5X,"JULY",5X,"AUG",6X,"SEPT",5X,"OCT",6X,"NOV",
+ 6X,"DEC",3X,"TOTAL (AF)",/)
C
      DO 120 IS=1,NUMSTA
      DO 115 IM=1,12
C
C-----CONVERT TOTALS FROM CFS TO ACRE-FEET
C
      YTOT=YTOT+RIVER(IS,IM)*MTHDAY(IM)*FACTOR
115 CONTINUE
C
      WRITE(8,5130) ISTATA(IS,1),ISTATA(IS,2),(RIVER(IS,I),I=1,12)
+ ,YTOT
5130 FORMAT(" ",I6,I3,2X,12(F8.1,1X),F9.0)
      YTOT=0.
C
120 CONTINUE
C
C----- END 1ST YEAR RUNOFF SECTION
C----- END BEGINNING-OF-RUN SECTION.
C

```

C  
C-----  
C-----  
C----- START OF MAJOR PROGRAM LOOP  
C-----  
C----- 1 THE NEXT YEAR OF DATA IN THE RUNOFF FILE IS READ INTO THE  
C----- SECOND YEAR OF ARRAY 'RIVER', AND WRITTEN ON TAPE8.  
C-----  
C----- 2 DIVERSIONS, INSTREAM FLOW REQUIREMENTS, RESERVOIRS,  
C----- AND JUNIOR AND SENIOR PROJECT RIGHTS ARE PROCESSED  
C----- AGAINST EACH MONTH IN THE FIRST YEAR OF RIVER ARRAY.  
C----- CALL OUT MESSAGES ARE WRITTEN TO TAPE11, TAPE12 AND TAPE13.  
C----- RESERVOIR ACTIVITY IS WRITTEN TO TAPE19.  
C-----  
C----- 3 FINAL STATUS OF WATER IN THE BASIN, IN YEAR 1 OF RIVER ARRAY  
C----- IS WRITTEN ON TAPE9 AND TAPE10.  
C-----  
C----- 4 YEAR 2 DATA IS MOVED TO YEAR 1 IN ARRAY 'RIVER'.  
C-----  
C----- 5 YEAR 2 OF ARRAY 'RIVER' IS RESET TO ZERO.  
C-----  
C----- 6 START AGAIN AT STEP 1.  
C-----  
C----- WHEN THERE IS NO MORE DATA IN THE RUNOFF FILE, STEPS  
C----- 2 THROUGH 5 ARE EXECUTED ONCE MORE AND THE .  
C----- END OF RUN SECTION IS PROCESSED.  
C-----  
C----- -----"  
C-----  
C-----  
C----- \*  
C-----  
C-----\* START BEGINNING OF YEAR SECTION  
C-----  
C-----  
C-----  
C----- INCREMENT YEAR COUNTER AND  
C-----READ NEXT YEAR OF RUNOFF DATA, PROCESSING EACH ENTRY STATION SEPE  
C  
125 IYR=IYR+1  
DO 175 IRN=1,NUMRUNS  
C  
C-----READ RUNOFF STATION AND AMOUNT  
C  
READ(2,5080) ISTAT,RUNOFF  
C  
C----- IF THERE IS NO MORE DATA IN THE RUNOFF FILE,  
C----- SET RNFLAG TO TRUE,  
C----- SKIP BEGINNING OF YEAR SECTION,  
C----- GO TO BEGINNING OF MONTH SECTION.



```

C
      IF(EOF(2)) 130,135
130  RNFLAG=.TRUE.
      GO TO 190
C
C-----CONVERT RUNOFF FROM ACRE-FEET TO CFS
C
135  DO 140 IM=1,12
      RUNOFF(IM)=RUNOFF(IM)/FACTOR/MTHDAY(IM)
140  CONTINUE
C
C-----FIND STATION INDEX AND STREAM ORDER TO RECIEVE RUNOFF
C
      DO 145 IS=1,NUMSTA
      IF(ISTATA(IS,1).NE.ISTAT) GO TO 145
      ORDER=ISTATA(IS,2)
      NSTAT=IS
      GO TO 150
145  CONTINUE
C
C----- IF ENTRY STATION NUMBER IS NOT FOUND, WRITE ERROR
C----- MESSAGE AND STOP THE PROGRAM.
C
      WRITE(6,5100) ISTAT
      STOP 5
C
C-----ADD RUNOFF TO STATIONS AT AND DOWNSTREAM OF STATION WHERE IT ENTE
C----- THE BASIN IN SECOND YEAR (MONTHS 13-24) OF RIVER ARRAY.
C
150  DO 170 ISS=NSTAT,NUMSTA
      IF(ISTATA(ISS,2).EQ.ORDER) GO TO 160
      IF(ISTATA(ISS,2).EQ.ORDER-1) GO TO 155
      GO TO 170
155  ORDER=ORDER-1
C
160  DO 165 IM=1,12
      RIVER(ISS,IM+12)=RIVER(ISS,IM+12)+RUNOFF(IM)
C
165  CONTINUE
C
170  CONTINUE
C
C-----GO TO READ OF NEXT RUNOFF STATION
C
175  CONTINUE
C
C----- WHEN MONTHS 13-24 OF ARRAY 'RIVER' ARE FILLED WITH THE
C----- NEXT YEAR OF RUNOFF DATA ,
C----- WRITE 2ND YEAR OF RIVER TO INITIAL RUNOFF REPORT(TAPE8)
C----- WITH YEARLY TOTALS IN ACRE-FEET.

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C
IRUNYR=IYR+1
WRITE(8,5110) IRUNYR,IHEAD,HEAD2
WRITE(8,5120)

C
DO 185 IS=1,NUMSTA
C
DO 180 IM=1,12
YTOT=YTOT+(RIVER(IS,IM+12)*FACTOR*MTHDAY(IM))
C
180 CONTINUE
C
WRITE(8,5130) ISTATA(IS,1),ISTATA(IS,2),(RIVER(IS,K),K=13,24),YTOT
YTOT=0.

C
185 CONTINUE
C
C-----*
C
C-----END BEGINNING OF YEAR SECTION
C-----*
C
C-----START BEGINNING-OF-MONTH SECTION
C
C-----*
C
C-----WRITE HEADINGS ON CALL OUT REPORT(TAPE11), AND SET LINE COUNTER
C
      WRITE(11,5140) IYR,MONTHN(MON),IHEAD,HEAD2
5140 FORMAT("1 YEAR ",I3," MONTH ",A4,10X,10A4,
          +A8," PST ",A8,/)

      CALL PAGE11
      ILINE=7

C-----FILL AVAIL ARRAY WITH CURRENT MONTHS DATA FROM RIVER ARRAY
C-----THIS ARRAY CONTAINS THE CFS IN THE STREAM WHICH IS ACTUALLY
C-----AVAILABLE FOR OTHER RIGHTS TO USE. IN ADDITION TO DIVERSIONS,
C-----RESERVOIRS AND JUNIOR AND SENIOR PROJECT RIGHTS,
C-----INSTREAM FLOW REQUIREMENTS WHICH ARE MET ARE SUBTRACTED FROM
C-----THIS ARRAY EVEN THOUGH THE WATER IS NOT ACTUALLY REMOVED FROM
C-----THE STREAM.
C

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DO 195 IS=1,NUMSTA
AVAIL(IS)=RIVER(IS,MON)
195  CONTINUE
C
C----- INITIALIZE II, ID, IR, AND IJ
C----- II REPRESENTS HOW MANY SENIOR INSTREAM FLOW REQUIREMENTS WE
C----- SO FAR IN THE CURRENT MONTH.
C----- ID REPRESENTS HOW MANY SENIOR DIVERSIONS WERE CALLED OUT
C----- SO FAR IN THE CURRENT MONTH.
C----- IR REPRESENTS THE NUMBER OF RESERVOIRS WHICH WERE CALLED.
C----- SO FAR IN THE CURRENT MONTH.
C----- IJ REPRESENTS THE NUMBER OF JPRS (NOSPILL) WHICH WERE NOT FU
C----- BY THEIR RESERVOIR. THESE JPRS ARE PROCESSED AGAIN
C----- THE REMAINDER OF THEIR RIGHT FROM THE STREAM.
C
II=0
ID=0
IR=0
IJ=0
C
C----- INITIALIZE IFFLAG, IDFLAG AND IRFLAG.
C----- THESE FLAGS ARE SET TO .TRUE. WHEN AN END-OF-FILE IS
C----- READ ON THE RESPECTIVE FILE. THIS BYPASSES READS OF THE FI
C----- WHEN ALL THREE FILES HAVE BEEN READ, THEY ARE REWOUND FOR THE
C----- NEXT MONTH.
C
IFFLAG=.FALSE.
IDFLAG=.FALSE.
IRFLAG=.FALSE.
C
C----- IF NO RESERVOIRS, SKIP RESERVOIR MONTHLY INITIALIZATION SECTION
C----- GO TO WATER RIGHT READING AND PROCESSING SECTION.
C
IF(IRESOPT.EQ.3HNOR) GO TO 275
C
C----- IF CURRENT MONTH IS BEGINNING OF NEW WATER YEAR(OCTOBER),
C----- RESET FILL AND SPILL FLAGS, SUBTOTALS
C----- YEAR TO DATE TOTALS, AND RESERVOIR RIGHTS MET FLAG,
C----- FOR EACH RESERVOIR
C
IF(MON.NE.10) GO TO 205
C
DO 200 NUMR=2,NUMREST
C
IF(IRESSWI(NUMR).EQ.0) GO TO 200
C
IRFILL(NUMR)=.FALSE.
MSPILL(NUMR)=.FALSE.
C
RRYTD(NUMR,1)=0.

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RRYTD(NUMR,2)=0.
RRYTD(NUMR,3)=0.
RRYTD(NUMR,4)=0.
YTDSTO(NUMR)=0.
RSRMET(NUMR)=2HNO
C
C----- IF DECREE MAX IS GREATER THAN THE REMAINING CAPACITY OF THE
C----- RESERVOIR, REDUCE DECREE MAX TO REMAINING CAPACITY
C
REMCP=VOLMAX(NUMR)-CURSTO(NUMR)
DCRMAX(NUMR) = CVMGM(REMCP,DECREE(NUMR),REMCP-DECREE(NUMR))
C
C----- GO TO NEXT RESERVOIR
.C
200    CONTINUE
C
C----- END NEW WATER YEAR RESETS AND CHECKS.
C
C
205    DO 270 NUMR=2,NUMREST
C
IF(IRESSWI(NUMR).EQ.0) GO TO 270
C
C----- RESET RESERVOIR RIGHTS INDEX TO ZERO.
C
indxrr(NUMR)=0
C
C----- SET INITIAL VOLUME FOR THE MONTH FOR USE IN EVAPORATION CALCULAT
C
VOLINT(NUMR)=CURSTO(NUMR)
C
C----- CHECK BEGINNING OF MONTH POWER RELEASE.
C----- AGAINST FLOW AND VOLUME AVAILABLE FROM EACH RESERVOIR.
C----- REDUCE RELEASE IF NECESSARY.
C
NSTR=IRSTAN(NUMR)
ORDER=IRSORD(NUMR)
C
C----- CHECK AMOUNT AVAIL FROM RES
C
RESAVL=CURSTO(NUMR)-VOLMIN(NUMR)
IF(RESAVL.GT.0.) GO TO 210
RESAVL=0.
POWREL(NUMR)=0.
GO TO 230
C
C----- CHECK FLOW AVAIL FROM RES
C
C----- IF SPILL CONDITION EXISTS IN CURRENT MONTH, DO NOT CHECK FLOW.
C

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```

210 IF(MSPILL(NUMR)) GO TO 220
    FLOAVL=FLOMAX(NUMR)-RIVER(NSTR+1,MON)
    IF(FLOAVL.GT.0.) GO TO 215
    FLOAVL=0.
    POWREL(NUMR)=0.
    GO TO 230
C
215 FAVLAF=FLOAVL*MTHDAY(MON)*FACTOR
    IF(FAVLAF.LT.RESAVL) GO TO 225
220 IF(POWREL(NUMR).LE.RESAVL) GO TO 230
    POWREL(NUMR)=RESAVL
    GO TO 230
C
225 IF(POWREL(NUMR).LE.FAVLAF) GO TO 230
    POWREL(NUMR)=FAVLAF
C
C----- SET RELINT TO POWER RELEASE TO BE MADE.
C
230 RELINT=POWREL(NUMR)
    RESAVL=RESAVL-RELINT
C
C----- CALCULATE NON-PROJECT RELEASE AMOUNT AS PERCENT OF AVAILABLE VOL
C
    RELNP(NUMR)=0.
    REQNP(NUMR)=RNPJRL(NUMR,MON)*.01*RESAVL
    IF(REQNP(NUMR).LT.0.) REQNP(NUMR)=0.
    IF(REQNP(NUMR).LE.0.) GO TO 250
C
C----- CHECK FLOW AVAIL FROM RESERVOIR, IF SPILL CONDITION EXISTS IN
C----- CURRENT MONTH, DO NOT CHECK FLOW.
C
    IF(MSPILL(NUMR)) GO TO 240
C
    FAVLAF=FAVLAF-RELINT
    IF(FAVLAF.LE.0.) GO TO 250
C
235 IF(FAVLAF.GE.REQNP(NUMR)) GO TO 240
    RELNP(NUMR)=FAVLAF
    GO TO 245
C
240 RELNP(NUMR)=REQNP(NUMR)
C
C----- ADD NON-PROJECT RELEASE TO INITIAL RELEASE .
C
245 RELINT=RELINT+RELNP(NUMR)
250 CURSTO(NUMR)=CURSTO(NUMR)-RELINT
C
C----- CONVERT INITIAL RELEASE FROM AF TO CFS
C
    RELCFS=RELINT/MTHDAY(MON)/FACTOR

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```

C      ADD FLOW FROM INITIAL RELEASE TO ALL STATIONS DOWNSTREAM OF RESERVO
C
C
C      ISTART=NSTR+1
C      IST1 = ISTART + 1
C      NORD(ISTART) = ORDER
C
C      DO 260 ISS=IST1,NUMSTA
C          IF(ISTATA(ISS-1,2) .EQ. (ORDER-1)) ORDER=ORDER-1
C          NORD(ISS) = ORDER
260 CONTINUE
C
C      IF(ISTATA(NUMSTA,2) .EQ. (ORDER-1)) ORDER=ORDER-1
C
C      DO 265 ISS=ISTART,NUMSTA
C          BITV = ISTATA(ISS,2) .EQ. NORD(ISS) .OR.
1          ISTATA(ISS,2) .EQ. (NORD(ISS)-1)
C          AVAIL(ISS) = CVMGT(AVAIL(ISS)+RELCFS,AVAIL(ISS),BITV)
C          RIVER(ISS,MON) = CVMGT(RIVER(ISS,MON)+RELCFS,RIVER(ISS,MON),
1                               BITV)
265 CONTINUE
C
C----- GO TO NEXT RESERVOIR
C
270 CONTINUE
C
C----- END BEGINNING-OF-MONTH SECTION
C
C----- START WATER RIGHT READING AND PROCESSING SECTION
C
C-----READ FIRST INSTREAM FLOW REQUIREMENT DATA FROM TAPE3
C
275 READ(3,5150) IFRSTA,IFRPMT,IFDATE,(FLOWRQ(I),I=1,12)
C          IF.EOF(3)) 350,280
5150 FORMAT(4X,I6,A4,A3,2I4,12F7.1)
C
C-----CONVERT I F R PRIORITY DATE FROM MMDDYYYY TO YYYYMMDD
C

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280  IFRDAT=IFDATE(1)+(IFDATE(2)*10000)
C
C----- IF NO RESERVOIRS, SKIP READ OF RES RIGHT, SET FLAG AND DATE,
C----- AND GO TO READ OF DIVERSION RIGHT.
C
C      IF(IRESOPT.EQ.3HRES) GO TO 285
C
C      IRFLAG=.TRUE.
C      RESDAT=99999999
C      GO TO 295
C
C-----READ FIRST RESERVOIR RIGHT FROM TAPE 16
C
285  READ(16,5160) RESTAT,IRDATE,RESPMT,IRESOD,RESRIT,LR
5160  FORMAT(I6,1X,2I4,1X,A4,A3,1X,I2,1X,F8.0,1X,I1)
C
C      IF.EOF(16) ) 640,290
C
C----- CONVERT RES PRIORITY DATE FROM MMDDYYYY TO YYYYMMDD
C
290  IF(IRESSWI(IRESOD).EQ.0) GO TO 285
C
C      RESDAT=IRDATE(1)+(IRDATE(2)*10000)
C
C-----READ DIVERSION DATA FROM TAPE4
C
295  READ(4,5170) DVTYP2,DIVSTA,DIVTYP,DIVEFF,DIVPMT,IDDAT,NRET
+,(DIVER(I),I=1,12),((RETSTA(J),PCTTOT(J),RETDLY(J)),J=1,10)
5170  FORMAT(A2,1X,I6,I2,F3.0,A4,A3,2I4,I2,12F7.0,/,10(I6,F3.0,I2))
C
C----- IF THERE IS NO MORE DATA IN THE DIVERSION FILE, CHECK IF
C----- IRFLAG AND IFFLAG ARE BOTH TRUE, IF SO GO TO END OF MONTH SE
C
C      IF.EOF(4)) 300,305
C
300  IF(IRFLAG.AND.IFFLAG) GO TO 1255
C
C----- IF NOT SET IDFLAG TO TRUE,
C----- SET DIVDAT TO 99999999
C----- GO TO DATE COMPARISON SECTION.
C
C      IDFLAG=.TRUE.
C      DIVDAT=99999999
C      GO TO 310
C
C-----CONVERT DIVERSION PRIORITY DATE FROM MMDDYYYY TO YYYYMMDD
C
305  DIVDAT=IDDAT(1)+(IDDAT(2)*10000)
C
C-----

```



```

C
C---- DATE COMPARISON SECTION
C
C-----
C----- COMPARE CURRENT DIVERSION, RESERVOIR AND IFR PRIORITY DATES
C----- AND GO TO SECTION OF MOST SENIOR RIGHT.
C----- IF THE DATES ARE ALL THE SAME
C----- THE DIVERSION GETS PRIORITY, THEN THE RESERVOIR RIGHT,
C----- THEN THE FLOW REQUIREMENT.
C
310   IF(DIVDAT.LE.RESDAT.AND.DIVDAT.LE.IFRDAT) GO TO 765
      IF(IFRDAT.LT.RESDAT.AND.IFRDAT.LT.DIVDAT) GO TO 315
      IF(RESDAT.LE.IFRDAT.AND.RESDAT.LT.DIVDAT) GO TO 360
      STOP 6
C
C-----
C----- START INSTREAM FLOW REQUIREMENT SECTION
C
C----- IF THE CURRENT MONTH REQUIREMENT IS ZERO, READ NEXT I F R.
C
315   IF(FLOWRQ(MON).EQ.0.) GO TO 345
C
C----- FIND FLOW STATION INDEX IN ISTATA ARRAY
C
320   DO 325 IS=1,NUMSTA
      IF(IFRSTA.NE.ISTATA(IS,1)) GO TO 325
      NSTAT=IS
      GO TO 330
325   CONTINUE
C
C----- IF THE STATION IS NOT FOUND, WRITE AN ERROR MESSAGE
C----- TO OUTPUT AND STOP THE PROGRAM.
C
      WRITE(6,5100) IFRSTA
      STOP 7
C
C----- CHECK IF INSTREAM FLOW REQUIREMENT IS MET AT CURRENT STATION.
C
C
330   IF(FLOWRQ(MON).LE.AVAIL(NSTAT)) GO TO 340
C
C----- IF I F R IS NOT FUTLLY MET, CALCULATE PERCENT CALLED
C----- OUT AND WRITE MESSAGE TO TAPE11 AND TAPE13.
C

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335 PCTCAL=100.-(100.*AVAIL(NSTAT)/FLOWRQ(MON))
    IF(ILINE.GE.LINPPAG) CALL PAGE11
    ILINE=ILINE+1
    WRITE(11,5180) IFRSTA,IFRPMT,IFDATE,PCTCAL,(ISTATA(NSTAT,J),
    + J=3,12),FLOWRQ(MON),AVAIL(NSTAT)
5180 FORMAT(" IFR NOT MET ",I6,2X,A4,A3,3X,I4,1X,I4,3X,F5.1,
    +       6X,10A4,1X,F7.1," REQ ",F7.1," AVAILABLE")
    WRITE(13,5360) IMO,IFRPMT,PCTCAL,IFRSTA
C
C-----INCREMENT COUNTER OF I F R CALLED OUT AND STORE STATION NUMBER
C
    II=II+1
    NOFLOW(II)=IFRSTA
C
C-----ALL AVAILABLE CFS IS TAKEN, SO AVAIL IS SET TO ZERO AT
C----- ITS STATION.
C
    AVAIL(NSTAT)=0.
C
C----- GO TO READ OF NEXT I F R.
C
    GO TO 345
C
C----- IF I F R IS FULLY MET, ADJUST THE AMOUNT AVAILABLE AT
C----- THAT STATION.
C
340 AVAIL(NSTAT)=AVAIL(NSTAT)-FLOWRQ(MON)
C
C-----READ DATA FOR NEXT INSTREAM FLOW REQUIREMENT FROM FILE 3
C
345 READ(3,5150) IFRSTA,IFRPMT,IFDATE,(FLOWRQ(I),I=1,12)
    IF.EOF(3) ) 350,355
C
C----- IF THERE IS NO MORE DATA IN THE IFR FILE,
C-----     CHECK IF IDFLAG AND IRFLAG ARE BOTH TRUE,
C-----     IF SO, GO TO END OF MONTH SECTION.
C
350 IF(IRFLAG.AND.IDFLAG) GO TO 1255
C
C-----     IF NOT,     SET IFFLAG TO TRUE,
C-----             SET IFRDAT TO 99999999,
C-----             GO TO DATE COMPARISON SECTION.
C
    IFFLAG=.TRUE.
    IFRDAT=99999999
    GO TO 310
C
C-----     CONVERT FLOW REQ DATE FROM MMDDYYYY TO YYYYMMDD.
355 IFRDAT=IFDATE(1)+(IFDATE(2)*10000)
C

```



C----- GO TO DATE COMPARISON SECTION  
C  
GO TO 310  
C  
C-----  
C  
C----- END OF INSTREAM FLOW REQUIREMENT SECTION  
C  
C-----  
C  
C-----  
C  
C-----  
C  
C----- START RESERVOIR RIGHTS SECTION  
C  
C-----  
C  
C-----  
C  
C----- FIND RESERVOIR STATION INDEX AND STREAM ORDER IN ISTATA ARRAY  
C  
360 NSTAT=IRSTAN(IRESID)  
ORDER=IRSORD(IRESID)  
ORD=ORDER  
C  
C----- INCREMENT RESERVOIR RIGHT INDEX FOR THIS RESERVOIR  
C  
INDXRR(IRESID)=INDXRR(IRESID)+1  
NRIGHT=INDXRR(IRESID)  
C  
C----- IF RES HAS BEEN FILLED THIS WATER YEAR, GO TO JUNIOR PROJECT  
C----- WITH RESERVOIR CHECK.  
C  
IF(IRFILL(IRESID)) GO TO 465  
C  
C----- CALCULATE REMAINING WATER NOT TAKEN THIS YEAR FOR THE  
C----- CURRENT RIGHT.  
C  
REMRIT=RESRIT-RRYTD(IRESID,NRIGHT)  
C  
C----- CALCULATE REMAINING DECREE MAX LEFT THIS WATER YEAR  
C  
REMDCR=DCRMAX(IRESID)-YTDSTO(IRESID)  
C  
C----- IF REMAINING RIGHT IS GREATER THAN REMAINING DECREE, REDUCE  
C----- REMAINING RIGHT TO REMAINING DECREE.  
C  
IF(REMRIT.GT.REMDCR) REMRIT=REMDCR  
C  
C----- IF REMAINING RIGHT IS ZERO, GO TO JUNIOR PROJECT



```

C----- WITH RESERVOIR CHECK.
C
C      IF(REMRIT.LE.0.) GO TO 465
C
C----- CALCULATE REMAINING STORAGE CAPACITY OF RESERVOIR
C
C      REMCAP=VOLMAX(IRESOD)-CURSTO(IRESOD)
C
C----- IF REMAINING RIGHT IS GREATER THAN REMAINING CAPACITY, REDUCE
C----- REMAINING RIGHT TO REMAINING CAPACITY.
C      IF(REMRIT.GT.REMCAP) REMRIT=REMCAP
C
C----- IF REMAINING RIGHT IS ZERO, GO TO JUNIOR PROJECT
C----- WITH RESERVOIR CHECK.
C
C      IF(REMRIT.LE.0.) GO TO 465
C
C-----CHECK IF ALL SENIOR, DOWNSTREAM IFR, RES AND DIV HAVE BEEN FULLY
C----- IF ANY HAVE PUT A CALL ON THE RIVER,
C-----      WRITE A MESSAGE TO TAPE11,
C-----      INCREMENT COUNTER OF RESERVOIR RIGHTS CALLED OUT(IR)
C-----      STORE STATION NUMBER
C-----      AND GO TO JUNIOR PROJECT WITH RESERVOIR CHECK.
C
C
C      IF(II.EQ.0.AND.ID.EQ.0.AND.IR.EQ.0) GO TO 405
C
C      DO 400 ISS=NSTAT,NUMSTA
C      IF(ISTATA(ISS,2).EQ.ORDER) GO TO 370
C      IF(ISTATA(ISS,2).EQ.ORDER-1) GO TO 365
C      GO TO 400
C
365    ORDER=ORDER-1
C
C-----CHECK DIVERSIONS
C
370    IF(ID.EQ.0) GO TO 380
C
C      DO 375 IDV=1,ID
C      IF(NODIV(IDV).NE.ISTATA(ISS,1)) GO TO 375
C      IF(ILINE.GE.LINPPAG) CALL PAGE11
C      ILINE=ILINE+1
C      WRITE(11,5190) RESTAT,RESPMT,IRDATE,(RESNAM(IRESOD,J),J=1,4),
C      + NODIV(IDV)
5190  FORMAT(" NO RES   STOR ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
C      + "100.0",6X,4A4,24X,"   SEN DS DIV NOT FULLY MET AT ",I6)
C      IR=IR+1
C      NORES(IR)=RESTAT
C
C      GO TO 465

```



```

C
375  CONTINUE
C
C----- CHECK IFR S
C
380  IF(II.EQ.0) GO TO 390
C
DO 385 IFR=1,II
IF(NOFLOW(IFR).NE.ISTATA(ISS,1) ) GO TO 385
IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
WRITE(11,5200) RESTAT,RESPMT,IRDATE,(RESNAM(IRESCD,J),J=1,4),
+ NOFLOW(IFR)
5200 FORMAT(" NO RES    STOR ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
+ "100.0 ",5X,4A4,24X,"    SEN DS IFR NOT FULLY MET AT ",I6)
IR=IR+1
NORES(IR)=RESTAT
GO TO 465
C
385  CONTINUE
C
C----- CHECK RESERVOIRS
C
390  IF(IR.EQ.0) GO TO 400
C
IEND=IR
DO 395 IRS=1,IEND
IF(NORES(IRS).NE.ISTATA(ISS,1) ) GO TO 395
IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
WRITE(11,5210) RESTAT,RESPMT,IRDATE,(RESNAM(IRESCD,J),J=1,4),
+ NORES(IRS)
5210 FORMAT(" NO RES    STOR ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
+ "100.0 ",6X,4A4,24X,"    SEN DS RES NOT FULLY MET AT ",I6)
IR=IR+1
NORES(IR)=RESTAT
GO TO 465
395  CONTINUE
C
400  CONTINUE
C
C----- IF ALL SENIOR DOWNSTREAM RIGHTS WERE MET,
C----- CHECK WATER AVAIL AT RESERVOIR STATION.
C
405  ORDER=ORD
AVAILR=AVAIL(NSTAT)
C----- NST - CONTROLLING STATION
NST=NSTAT
IF(AVAIL(NSTAT).LE.0.) GO TO 425
C

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C----- FIND MAX WATER AVAIL DOWNSTREAM OF THE RESERVOIR.
C
DO 420 ISS=NSTAT,NUMSTA
IF(ISTATA(ISS,2).EQ.ORDER) GO TO 415
IF(ISTATA(ISS,2).EQ.ORDER-1) GO TO 410
GO TO 420
410 ORDER=ORDER-1
415 IF(AVAIL(ISS).GE.AVAILR) GO TO 420
AVAILR=AVAIL(ISS)
NST=ISS
IF(AVAILR.LE.0.) GO TO 425
C
420 CONTINUE
C
GO TO 430
C
C----- IF NO WATER IS AVAIL FROM THE RIVER,
C----- WRITE MESSAGE TO TAPE11,
C----- INCREMENT COUNTER OF RESERVOIR RIGHTS CALLED OUT,
C----- AND GO TO JUNIOR PROJECT WITH RESERVOIR CHECK.
C
425 IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
RITCFS=REMRIT/MTHDAY(MON)/FACTOR
WRITE(11,5220) RESTAT,RESPMT,IRDATE,(RESNAM(IRESID,J),J=1,4),
+ RITCFS,ISTATA(NST,1)
5220 FORMAT(" NO RES STOR ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
+ "100.0",6X,4A4,25X,F7.1," REQ 0.0 AVAIL AT ",I6)
C
IR=IR+1
NORES(IR)=RESTAT
GO TO 465
C
C----- CONVERT CFS AVAILABLE IN RIVER FROM CFS TO AF
C
430 AVRAF=AVAILR*MTHDAY(MON)*FACTOR
C
C----- IF THERE IS SUFFICIENT WATER IN STREAM, TO MEET RESERVOIR RIGHT
C----- GO TO FILL/SPILL CHECK.
C
435 IF(REMRIT.LE.AVRAF) GO TO 440
C
C----- IF REMAINING RIGHT IS GREATER THAN AVAILABLE WATER,
C----- WRITE MESSAGE TO TAPE11
C
RITCFS=REMRIT/MTHDAY(MON)/FACTOR
PCTCAL=100.-(100.*AVAILR/RITCFS)
IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
C

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      WRITE(11,5230) RESTAT,RESPMT,IRDATE,PCTCAL,(RESNAM(IRESCD,J),
+ J=1,4),RITCFS,AVAILR,ISTATA(NST,1)
5230 FORMAT(" PART RES STOR ",I6,2X,A4,A3,3X,I4,1X,I4,3X,F5.1,
+ 6X,4A4,25X,F7.1," REQ ",F7.1," AVAIL AT ",I6)
C
C----- INCREMENT COUNTER OF RESERVOIR RIGHTS CALLED OUT, AND STORE STA
C
      IR=IR+1
      NORES(IR)=RESTAT
C
      REMRIT=AVRAF
C
C----- IF REMAINING RIGHT IS GREATER THAN OR EQUAL TO THE REMAINING
C----- CAPACITY, SET FILL AND SPILL FLAGS TO TRUE
C
440  IF(REMRIT.LT.REMCAP) GO TO 445
      MSPILL(IRESCD)=.TRUE.
      IRFILL(IRESCD)=.TRUE.
C
C----- ADD WATER TO CURRENT STORAGE AND MONTHLY AND YEARLY TOTALS
C
445  CURST0(IRESCD)=CURST0(IRESCD)+REMRIT
      YTDST0(IRESCD)=YTDST0(IRESCD)+REMRIT
C
C----- IF YEAR TO DATE STORAGE IS GREATER THAN OR EQUAL TO
C----- THE DECREE MAX, SET RESERVOIR RIGHTS MET FLAG TO YES.
C
      IF(YTDST0(IRESCD).GE.DCRMAX(IRESCD)) RSRMET(IRESCD)=3HYES
C
      STOMON(IRESCD)=STOMON(IRESCD)+REMRIT
      RRYTD(IRESCD,NRIGHT)=RRYTD(IRESCD,NRIGHT)+REMRIT
C
C----- CONVERT AF STORED TO CFS.
C
      STOCFS=REMRIT/MTHDAY(MON)/FACTOR
C
C----- REMOVE WATER ADDED TO RESERVOIR STORAGE FROM STATIONS DOWNSTREAM
C
      ORDER=ORD
      IST1 = NSTAT + 1
      NORD(NSTAT) = ORDER
C
      DO 455 ISS=IST1,NUMSTA
          IF(ISTATA(ISS-1,2) .EQ. (ORDER-1)) ORDER=ORDER-1
          NORD(ISS) = ORDER
455  CONTINUE
C
      IF(ISTATA(NUMSTA,2) .EQ. (ORDER-1)) ORDER=ORDER-1
C
      DO 460 ISS=NSTAT,NUMSTA

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1      BITV = ISTATA(ISS,2) .EQ. NORD(ISS) .OR.
1          ISTATA(ISS,2) .EQ. (NORD(ISS)-1)
1      AVAIL(ISS) = CVMGT(AVAIL(ISS)-STOCFS,AVAIL(ISS),BITV)
1      RIVER(ISS,MON)=CVMGT(RIVER(ISS,MON)-STOCFS,RIVER(ISS,MON),
1                                BITV)
460 CONTINUE
C
C----- JUNIOR PROJECTS WITH RESERVOIR CHECK
C
C----- CHECK IF SPILL SITUATION IN CURRENT MONTH.
C----- IF SO, SKIP JPRS AND GO TO READ OF NEXT RES RIGHT
.C
465 IF(MSPILL(IRESID)) GO TO 635
C
C----- CHECK IF LAST WATER RIGHT FOR THIS RESERVOIR
C----- IF NOT SKIP JPRS AND GO TO READ OF NEXT RES RIGHT
C
        IF(LR.EQ.0) GO TO 635
C
C-----START JUNIOR PROJECT RIGHTS (NO SPILL) FROM RESERVOIR SECTION
C
C----- SET JPRS PROCESSED WITH RESERVOIR FLAG TO TRUE
C
        RESFLG(IRESID)=.TRUE.
C
C-----FIND JPRS FOR CURRENT RESERVOIR IN JPR DATA FILE TAPE17
C
470 REWIND 17
475 READ(17,5240) RESNUM
        IF.EOF(17)) 635,480
5240 FORMAT(9X,I2/5X)
480 IF(RESNUM.NE.IRESID) GO TO 475
        BACKSPACE 17
        BACKSPACE 17
C
C----- READ JUNIOR PROJECT RIGHT DATA FROM TAPE 17
C
485 READ(17,5170) DUMJPR,JPRSTA,RESNUM,EFFJPR,JPRPMT,IJDATE,NJPRET,
        +(RITJPR(I),I=1,12),((JPRETS(J),PCTJPR(J),JPRDLY(J)),J=1,10)
        IF.EOF(17)) 635,490
C
C----- IF JPR RESERVOIR CODE IS NOT EQUAL TO CODE OF CURRENT RESERVOIR,

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C----- ALL THE JPRS FOR THIS RESERVOIR HAVE BEEN PROCESSED, GO TO
C----- READ OF NEXT RESERVOIR RIGHT.
C
490 IF(RESNUM.NE.IRESCD) GO TO 635
C
C----- IF JPR FOR CURRENT MONTH IS 0. GO TO READ OF NEXT JPR.
C
495 IF(RITJPR(MON).EQ.0.) GO TO 485
C
C----- FIND JPR STATION INDEX IN ISTATA ARRAY
C
DO 500 IS=1,NUMSTA
C
IF(JPRSTA.NE.ISTATA(IS,1) ) GO TO 500
NSTATJ=IS
GO TO 505
C
500 CONTINUE
C
C----- IF JPR STATION IS NOT FOUND, WRITE ERROR MESSAGE AND
C----- STOP THE PROGRAM.
C
WRITE(6,5100) JPRSTA
STOP 8
C
C----- CALCULATE WATER AVAIL FROM RES AND CONVERT TO CFS
C
505 RESAVL=(CURSTO(RESNUM)-VOLMIN(RESNUM))/MTHDAY(MON)/FACTOR
IF(RESAVL.LT.0.) RESAVL=0.
C
C----- CALC REMAINING FLOW AVAIL FROM RES
C
FLOAVL=FLOMAX(RESNUM)-RIVER(NSTAT+1,MON)
IF(FLOAVL.LT.0.) FLOAVL=0.
IF(FLOAVL.LT.RESAVL) GO TO 520
C
C----- IF REMAINING VOLUME AVAILABLE IS LESS THAN REMAINING FLOW CAPAC
C----- RES MIN VOL IS LIMITING FACTOR
C
510 IF(RITJPR(MON).LE.RESAVL) GO TO 530
IF(RESAVL.GT.0.) GO TO 515
C
C----- IF REMAINING VOLUME AVAILABLE IS ZERO,
C----- WRITE MESSAGE TO TAPE11,
C----- INCREMENT COUNTER OF JPRS NOT MET BY THE RESERVOIR
C----- STORE THE JPR PERMIT NUMBER AND REMAINING AMOUNT IN
C----- AND GO TO READ OF NEXT JPR.
C
IF(ILINE.GE.LINPPAG) CALL PAGE11

```



```

ILINE=ILINE+1
      WRITE(11,5250) JPRSTA,JPRPMT,IJDATE,(ISTATA(NSTATJ,J),J=3,12),
      + RITJPR(MON),RESNUM
5250  FORMAT(" NO JPR    NOSP ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
      + "100.0",6X,10A4,1X,F7.1," REQ",6X,"0.0 AVAIL AT RES ",I2)
      IJ=IJ+1
      REMJPR(IJ)=RITJPR(MON)
      JPREMP(IJ,1)=JPRPMT(1)
      JPREMP(IJ,2)=JPRPMT(2)
C
      GO TO 485
C
C----- IF JPR IS PARTIALLY MET BY THE RESERVOIR,
C-----      WRITE MESSAGE TO TAPE11,
C-----      INCREMENT COUNTER OF JPRS MET BY THE RESERVOIR,
C-----      STORE THE JPR PERMIT NUMBER AND REMAINING AMOUNT OF RIG
C-----      AND GO TO CONVERSION OF RELEASE FROM AF TO CFS.
C
515   PCTCAL=100.-(100.*RESAVL/RITJPR(MON))
      IF(ILINE.GE.LINPPAG) CALL PAGE11
      ILINE=ILINE+1
      WRITE(11,5260) JPRSTA,JPRPMT,IJDATE,PCTCAL,(ISTATA(NSTATJ,J),
      + J=3,12),RITJPR(MON),RESAVL,RESNUM
5260  FORMAT(" PART JPR NOSP ",I6,2X,A4,A3,3X,I4,1X,I4,3X,F5.1,
      + 6X,10A4,1X,F7.1," REQ ",F7.1," AVAIL AT RES ",I2)
C
      IJ=IJ+1
      REMJPR(IJ)=RITJPR(MON)-RESAVL
      JPREMP(IJ,1)=JPRPMT(1)
      JPREMP(IJ,2)=JPRPMT(2)
C
      RITJPR(MON)=RESAVL
      GO TO 530
C
C----- IF REMAINING FLOW CAPACITY IS LESS THAN THE REMAINING
C----- VOLUME AVAILABLE,
C----- FLOW CAPACITY IS LIMITING FACTOR
C
520   IF(RITJPR(MON).LE.FLOAVL) GO TO 530
      IF(FLOAVL.GT.0.) GO TO 525
C
C----- IF REMAINING FLOW CAPACITY IS ZERO,
C-----      WRITE MESSAGE TO TAPE11
C-----      INCREMENT COUNTER OF JPRS NOT MET BY THE RESERVOIR,
C-----      STORE THE JPR PERMIT NUMBER AND REMAINING AMOUNT OF R
C-----      AND GO TO READ OF NEXT JPR.
C
      IF(ILINE.GE.LINPPAG) CALL PAGE11
      ILINE=ILINE+1
      WRITE(11,5270) JPRSTA,JPRPMT,IJDATE,(ISTATA(NSTAT,J),J=3,12),

```



```

+ RITJPR(MON),RESNUM
5270 FORMAT(" NO JPR   NOSP ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
+ "100.0",6X,10A4,1X,F7.1," REQ OUTFLOW AT MAX - RES ",I2)
IJ=IJ+1
REMJPR(IJ)=RITJPR(MON)
JPREMP(IJ,1)=JPRPMT(1)
JPREMP(IJ,2)=JPRPMT(2)
GO TO 485

C
C----- IF JPR IS PARTIALLY MET BY THE RESERVOIR,
C----- WRITE MESSAGE TO TAPE11,
C----- INCREMENT COUNTER OF JPRS NOT MET BY THE RESERVOIR,
C----- STORE THE JPR PERMIT NUMBER AND REMAINING AMOUNT OF R
C----- AND GO TO CONVERSION OF RELEASE FROM AF TO CFS.
.C
525 PCTCAL=100.-(100.*FLOAVL/RITJPR(MON))
IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
WRITE(11,5280) JPRSTA,JPRPMT,IJDATE,PCTCAL,(ISTATA(NSTAT,J)
+ ,J=3,12),RITJPR(MON),FLOAVL,RESNUM
5280 FORMAT(" PART JPR NOSP ",I6,2X,A4,A3,3X,I4,1X,I4,3X,F5.1,
+ 6X,10A4,1X,F7.1," REQ ",F7.1," OUTFLOW RES ",I2)

C
IJ=IJ+1
REMJPR(IJ)=RITJPR(MON)-FLOAVL
JPREMP(IJ,1)=JPRPMT(1)
JPREMP(IJ,2)=JPRPMT(2)
RITJPR(MON)=FLOAVL

C
C
C----- CONVERT FROM CFS TO ACRE FEET
C
530 JPRAF=RITJPR(MON)*MTHDAY(MON)*FACTOR
C
C----- REMOVE WATER FROM RESERVOIR CURRENT STORAGE
C
CURSTO(RESNUM)=CURSTO(RESNUM)-JPRAF
C
C----- ADD TO TOTAL PROJECT FLOW FOR THIS MONTH
C
PROJTF(RESNUM)=PROJTF(RESNUM)+RITJPR(MON)
C
C-----ADD RELEASED WATER TO STREAM BETWEEN RESERVOIR AND JPR STATION
C----- IN RIVER AND AVAIL ARRAYS.
C
IF(NSTAT.EQ.NSTATJ) GO TO 550
ORDER=ORD
ISTART=NSTAT+1
IEND=NSTATJ-1
IF(ISTART.GT.IEND) GO TO 550

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```

IST1 = ISTART + 1
NORD(ISTART) = ORDER
C
DO 540 ISS=IST1,IEND
    IF(ISTATA(ISS-1,2) .EQ. (ORDER-1)) ORDER=ORDER-1
    NORD(ISS) = ORDER
540 CONTINUE
C
IF(ISTATA(IEND,2) .EQ. (ORDER-1)) ORDER=ORDER-1
C
DO 545 ISS=ISTART,IEND
    BITV = ISTATA(ISS,2) .EQ. NORD(ISS) .OR.
1        ISTATA(ISS,2) .EQ. (NORD(ISS)-1)
    AVAIL(ISS) = CVMGT(AVAIL(ISS)+RITJPR(MON),AVAIL(ISS),BITV)
    RIVER(ISS,MON) = CVMGT(RIVER(ISS,MON)+RITJPR(MON)
1                    ,RIVER(ISS,MON),BITV)
545 CONTINUE
C
C----- JPR(NO SPILL) FROM RESERVOIR RETURN FLOW SECTION
C
C----- IF NO RETURN FLOW STATIONS, GO TO READ OF NEXT JPR.
C
550 IF(NJPRET.EQ.0) GO TO 485
555 TOTRET=RITJPR(MON)*((100.-EFFJPR)/100.)
C
DO 630 IJP=1,NJPRET
C
C-----FIND RETURN STATION INDEX IN ISTATA ARRAY
C
DO 560 IS=1,NUMSTA
IF(JPRETS(IJP).NE.ISTATA(IS,1) ) GO TO 560
ORDERR=ISTATA(IS,2)
ORDR=ORDERR
C----- NSTJR - JPR RETURN STATION INDEX.
NSTJR=IS
GO TO 565
C
560 CONTINUE
C
C----- IF RETURN STATION NUMBER IS NOT FOUND, WRITE ERROR MESSAGE
C----- AND STOP PROGRAM.
C
      WRITE(6,5100) JPRETS(IJP)
      STOP 9
C
C-----FIND DELAY TABLE FOR CURRENT RETURN
C
565 DO 570 IDL=1,99
IF(JPRDLY(IJP).NE.DLYNUM(IDL) ) GO TO 570
DLY=IDL

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GO TO 575
C
570  CONTINUE
C
C----- IF DELAY TYPE IS NOT FOUND, WRITE ERROR MESSAGE
C----- AND STOP PROGRAM.
C
        WRITE(6,5410) JPRDLY(IJP)
        STOP 10
C
575  IF(JPRDLY(IJP).GT.50) GO TO 600
C
C----- IF THE DELAY TYPE IS LESS THAN OR EQUAL TO 50,
C----- ADD RET FLOW TO ALL STATIONS DS FOR THE NEXT 12 MONTHS
C----- STARTING WITH THE FIRST VALUE IN THE DELAY TABLE
C----- IN THE CURRENT MONTH.
C
        IEND=MON+12
        I=0
C
DO 595 ISS=NSTJR,NUMSTA
IF(ISTATA(ISS,2).EQ.ORDERR) GO TO 585
IF(ISTATA(ISS,2).EQ.ORDERR-1) GO TO 580
GO TO 595
C
580  ORDERR=ORDERR-1
585  I=0
      AVAIL(ISS) = AVAIL(ISS) + TOTRET*(PCTJPR(IJP)/100.)*
      1          (DLYRAT(DLY,1)/100.)
      DO 590 IM=MON,IEND
      I=I+1
      RET=TOTRET*(PCTJPR(IJP)/100.)*(DLYRAT(DLY,I)/100.)
      RIVER(ISS,IM)=RIVER(ISS,IM)+RET
C
590  CONTINUE
C
595  CONTINUE
C
      GO TO 630
C
C----- IF DELAY TYPE IS GREATER THAN 50,
C----- ADD RETURN FLOW TO ALL STATIONS DOWNSTREAM FOR THE REST
C----- OF THE CURRENT YEAR STARTING WITH THE CURRENT MONTH VALUE IN TH
C----- DELAY TABLE. THEN THE FIRST VALUES IN THE TABLE ARE USED FOR
C----- THE FIRST MONTHS OF THE NEXT YEAR.
C
600  DO 625 ISS=NSTJR,NUMSTA
      K=MON
      IF(ISTATA(ISS,2).EQ.ORDERR) GO TO 610
      IF(ISTATA(ISS,2).EQ.ORDERR-1) GO TO 605

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GO TO 625
C
605  ORDERR=ORDERR-1
610  IF(K .EQ. MON) AVAIL(ISS) = AVAIL(ISS) + TOTRET*PCTJPR(IJP)/100.*  

     1      (DLYRAT(DLY,MON)/100.)
     DO 615 IM=MON,12
     RET=TOTRET*PCTJPR(IJP)/100.* (DLYRAT(DLY,IM)/100.)
     RIVER(ISS,K)=RIVER(ISS,K)+RET
     IF(K.EQ.MON) AVAIL(ISS)=AVAIL(ISS)+RET
     K=K+1
615  CONTINUE
C
IEND=MON-1
C
DO 620 IM=1,IEND
RET=TOTRET*PCTJPR(IJP)/100.* (DLYRAT(DLY,IM)/100.)
RIVER(ISS,K)=RIVER(ISS,K)+RET
K=K+1
620  CONTINUE
C
625  CONTINUE
C
630  CONTINUE
C
C----- GO TO READ OF NEXT JPR
C
GO TO 485
C
C----- 8
C
C----- END JPR-NO SPILL- FROM-RESERVOIR SECTION
C
C----- -----
C
C----- READ NEXT RESERVOIR WATER RIGHT.
C
635  READ(16,5160) RESTAT,IRDATE,RESPMT,IRESRD,RESRIT,LR
C
C----- IF THERE ARE NO MORE RESERVOIR RIGHTS IN TAPE16,
C----- CHECK IF IDFLAG AND IFFLAG ARE BOTH TRUE,
C----- IF SO, GO TO END OF MONTH SECTION,
C----- IF NOT, SET IRFLAG TO TRUE
C----- SET RESDAT TO 99999999
C----- GO TO DATE COMPARISON.
C
IF.EOF(16) ) 640,645
640  IF(IDFLAG.AND.IFFLAG) GO TO 1255
     IRFLAG=.TRUE.
     RESDAT=99999999

```



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GO TO 310
C
C----- IF ANOTHER RESERVOIR RIGHT IS READ,
C----- CONVERT RESERVOIR PRIORITY DATE FROM MMDDYYYY TO YYYYMMDD.
C
645 IF(IRESSWI(IRESCL).EQ.0) GO TO 635
C
      RESDAT=IRDATE(1)+(IRDATE(2)*10000)
C
C----- GO TO DATE COMPARISON
C
      GO TO 310
C
C----- END RESERVOIR SECTION
C
C----- START JPR(NO SPILL) FROM RIVER SECTION
C
C----- IF COUNTER OF JPRS NOT MET BY THE RESERVOIR IS ZERO,
C----- GO TO READ OF NEXT DIVERSION.
      DO 655 IJP=1,IJ
C
C----- CHECK IF PERMIT OF CURRENT JPR MATCHES ONE OF THOSE IN
C----- LIST OF JPRS NOT MET BY ITS RESERVOIR.
C
      IF(DIVPMT(1).NE.JPREMP(IJP,1).OR.DIVPMT(2).NE.JPREMP(IJP,2))
      +                               GO TO 655
      NPROJ=IJP
      GO TO 660
C
655  CONTINUE
C
C----- IF NO PERMITS MATCH, GO TO READ OF NEXT DIVERSION.
C
      GO TO 295
C
C----- FIND JPR STATION INDEX
C
660  DO 665 IS=1,NUMSTA
      IF(ISTATA(IS,1).NE.DIVSTA) GO TO 665

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```

ORDER=ISTATA(IS,2)
ORD=ORDER
NSTATJ=IS
GO TO 670
C
665  CONTINUE
C
C----- IF JPR STATION NUMBER IS NOT FOUND, WRITE ERROR MESSAGE
C----- AND STOP PROGRAM
C
        WRITE(6,5100) DIVSTA
        STOP 11
C
C----- CHECK WATER AVAILABLE AT JPR STATION.
C
'C
670  IF(AVAIL(NSTATJ).GT.0.) GO TO 680
NSTJ=NSTATJ
675  IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
        WRITE(11,5290) DIVSTA,DIVPMT,IDDATE,(ISTATA(NSTATJ,J),J=3,12),
+      REMJPR(NPROJ),ISTATA(NSTJ,1)
5290  FORMAT(" NO JPR      RIV ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
+      "100.0",6X,10A4,1X,F7.1," REQ      0.0 AVAIL AT ",I6)
C
        PCTCAL=100.-(100.*(DIVER(MON)-REMJPR(NPROJ))/DIVER(MON))
        WRITE(12,5360) IMO,DIVPMT,PCTCAL,DIVSTA
C
        ID=ID+1
NODIV(ID)=DIVSTA
GO TO 295
C
C----- CHECK IF ALL SENIOR DOWNSTREAM RIGHTS HAVE BEEN FULLY MET
C
C----- IF ANY HAVE BEEN CALLED OUT,
C-----      WRITE MESSAGE TO TAPE11,
C-----      INCREMENT COUNTER OF DIVERSIONS CALLED OUT THIS MONTH,
C-----      STORE STATION NUMBER OF JPR,
C-----      GO TO READ OF NEXT DIVERSION.
C
C
680  IF(II.EQ.0.AND.ID.EQ.0.AND.IR.EQ.0) GO TO 725
C
        DO 720 ISS=NSTATJ,NUMSTA
        IF(ISTATA(ISS,2).EQ.ORDER) GO TO 690
        IF(ISTATA(ISS,2).EQ.ORDER-1) GO TO 685
        GO TO 720
C
685  ORDER=ORDER-1
C

```



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C----- CHECK DIVERIONS
C
690  IF(ID.EQ.0) GO TO 700
IEND=ID
C
DO 695 IDV=1,IEND
IF(NODIV(IDV).NE.ISTATA(ISS,1)) GO TO 695
IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
WRITE(11,5300) DIVSTA,DIVPMT,IDDAT,(ISTATA(NSTATJ,J),J=3,12),
+ NODIV(IDV)
5300 FORMAT(" NO JPR      RIV ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
+ "100.0",6X,10A4,2X," SEN DS DIV NOT FULLY MET AT ",I6)
C
PCTCAL=100.-(100.*(DIVER(MON)-REMJPR(NPROJ))/DIVER(MON))
WRITE(12,5360) IMO,DIVPMT,PCTCAL,DIVSTA
C
ID=ID+1
NODIV(ID)=DIVSTA
GO TO 295
C
695  CONTINUE
700  IF(II.EQ.0) GO TO 710
C
C----- CHECK IFRS
C
DO 705 IFR=1,II
IF(NOFLOW(IFR).NE.ISTATA(ISS,1)) GO TO 705
IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
WRITE(11,5310) DIVSTA,DIVPMT,IDDAT,(ISTATA(NSTATJ,J),J=3,12),
+ NOFLOW(IFR)
5310 FORMAT(" NO JPR      RIV ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
+ "100.0",6X,10A4,2X," SEN DS IFR NOT FULLY MET AT ",I6)
C
PCTCAL=100.-(100.*(DIVER(MON)-REMJPR(NPROJ))/DIVER(MON))
WRITE(12,5360) IMO,DIVPMT,PCTCAL,DIVSTA
C
ID=ID+1
NODIV(ID)=DIVSTA
GO TO 295
C
705  CONTINUE
C
C----- CHECK RESERVOIRS
C
710  IF(IR.EQ.0) GO TO 720
C
DO 715 IRS=1,IR
IF(NORES(IRS).NE.ISTATA(ISS,1)) GO TO 715

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```

IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
WRITE(11,5320) DIVSTA,DIVPMT,IDDATE,(ISTATA(NSTATJ,J),J=3,12),
+ NORES(IRS)
5320 FORMAT(" NO JPR      RIV ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
+ "100.0",6X,10A4,2X," SEN DS RES NOT FULLY MET AT ",I6)
C
PCTCAL=100.-(100.*(DIVER(MON)-REMJPR(NPROJ))/DIVER(MON))
WRITE(12,5360) IMO,DIVPMT,PCTCAL,DIVSTA
C
ID=ID+1
NODIV(ID)=DIVSTA
GO TO 295
C
715  CONTINUE
C
720  CONTINUE
C
C----- FIND MAX WATER AVAIL DOWNSTREAM
C
725  ORDER=ORD
REQJPR=REMJPR(NPROJ)
C
DO 740 ISS=NSTATJ,NUMSTA
C
IF(ISTATA(ISS,2).EQ.ORDER) GO TO 735
IF(ISTATA(ISS,2).EQ.ORDER-1) GO TO 730
GO TO 740
C
730  ORDER=ORDER-1
735  IF(REMJPR(NPROJ).LE.AVAIL(ISS)) GO TO 740
REMJPR(NPROJ)=AVAIL(ISS)
NSTJ=ISS
740  CONTINUE
C
C----- IF NO WATER IS AVAILABLE FROM THE STREAM,
C-----      WRITE MESSAGE TO TAPE11,
C-----      INCREMENT COUNTER OF DIVERSIONS CALLED OUT THIS MONTH
C-----      STORE STATION NUMBER ,
C-----      GO TO READ OF NEXT DIVERSION.
C
C
IF(REMJPR(NPROJ).EQ.0.) GO TO 675
C
C----- REMOVE WATER DIVERTED FROM STREAM, FROM STATIONS DOWNSTREAM
C
ORDER=ORD
C
IST1 = NSTATJ + 1

```



```

NORD(NSTATJ) = ORDER
C
DO 750 ISS=IST1,NUMSTA
  IF(ISTATA(ISS-1,2) .EQ. (ORDER-1)) ORDER=ORDER-1
  NORD(ISS) = ORDER
750 CONTINUE
C
IF(ISTATA(NUMSTA,2) .EQ. (ORDER-1)) ORDER=ORDER-1
C
DO 755 ISS=NSTATJ,NUMSTA
  BITV = ISTATA(ISS,2) .EQ. NORD(ISS) .OR.
1      ISTATA(ISS,2) .EQ. (NORD(ISS)-1)
  AVAIL(ISS)=CVMGT(AVAIL(ISS)-REMJPR(NPROJ),AVAIL(ISS),BITV)
  RIVER(ISS,MON)=CVMGT(RIVER(ISS,MON)-REMJPR(NPROJ)
1          ,RIVER(ISS,MON),BITV)
755 CONTINUE
C
IF(REQJPR.EQ.REMJPR(NPROJ)) GO TO 760
C
C----- IF JPR WAS PARTIALLY MET,
C----- WRITE MESSAGE TO TAPE11 AND TAPE12
C----- INCREMENT COUNTER OF DIVERSIONS CALLED OUT THIS MONTH,
C----- STORE STATION NUMBER,
C----- GO TO CONVERSION OF RELEASE FROM AF TO CFS.
C
PCTCAL=100.-(100.*REMJPR(NPROJ)/REQJPR)
IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
WRITE(11,5330) DIVSTA,DIVPMT,IDDATE,PCTCAL,(ISTATA(NSTATJ,J),
+ J=3,12),REQJPR,REMJPR(NPROJ),ISTATA(NSTJ,1)
5330 FORMAT(" PART JPR RIV ",I6,2X,A4,A3,3X,I4,1X,I4,3X,F5.1,
+ 6X,10A4,1X,F7.1," REQ ",F7.1," AVAIL AT ",I6)
C
JPRTOT=(DIVER(MON)-REQJPR)+REMJPR(NPROJ)
PCTCAL=100.-(100.*JPRTOT/DIVER(MON))
WRITE(12,5360) IMO,DIVPMT,PCTCAL,DIVSTA
C
ID=ID+1
NODIV(ID)=DIVSTA
C
C----- CALCULATE TOTAL RETURN AND
C----- GO TO DIVERSION AND PROJECT RETURN FLOW SECTION
C
760 TOTRET=REMJPR(NPROJ)*((100.-DIVEFF)/100.)
GO TO 995
C
C-----
C
C----- END JPR(NO SPILL) FROM RIVER SECTION
C

```



C-----8  
C  
C-----\*  
C  
C-----DIVERSION DECISION SECTION  
C-----\*  
C  
C----- IF DIVTYP = 1 THEN GO TO NORMAL DIVERSION SECTION  
C  
765 IF(DIVTYP.EQ.1) GO TO 770  
C  
C----- IF NO RESERVOIRS, AND DIVTYPE GREATER THAN 1, GO TO READ  
C----- OF NEXT DIVERSION  
C  
IF(IRESOPT.EQ.3HNOR) GO TO 295  
C  
C  
C----- IF DIV TYPE 2 IS 'D1' THEN IT IS A SENIOR PROJECT RIGHT  
C----- WITH A PRIORITY DATE JUNIOR TO THE ASSOC RESERVOIR.  
C  
C----- GO TO THE SEN PROJ/JUN PROJ(SPILL) SECTION  
IF(DVTYP2.EQ.2HD1) GO TO 1085  
C  
C----- IF IF DIVTYP IS GREATER THAN 1, THEN ITS A JUNIOR OR SENIOR PRO  
C----- IF RESFLG IS TRUE THEN GO TO JUNIOR PROJECT(NO SPILL) FROM RIV  
C  
IF(IRESSWI(DIVTYP).EQ.0) GO TO 295  
IF(RESFLG(DIVTYP)) GO TO 650  
C  
C----- IF RESFLG IS FALSE, GO TO SENIOR PROJECT/JUNIOR PROJECT(SPILL)  
C  
GO TO 1085  
C  
C-----\*  
C  
C----- NORMAL DIVERSION SECTION  
C  
C-----\*  
C  
C----- IF AMOUNT TO BE DIVERTED IS ZERO, GO TO READ OF NEXT DIVERSION  
C  
770 IF(DIVER(MON).EQ.0.) GO TO 295  
C  
C----- SET DIVREQ TO THE REQUESTED DIVERSION AMOUNT  
C  
DIVREQ=DIVER(MON)  
C



```

C-----FIND DIVERSION STATION INDEX IN ISTATA ARRAY
C
    DO 775 IS=1,NUMSTA
    IF(DIVSTA.NE.ISTATA(IS,1)) GO TO 775
C----- NSTAT - DIVERSION STATION
    NSTAT=IS
    ORDER=ISTATA(IS,2)
    ORD=ORDER
    GO TO 780
775   CONTINUE
C
C-----IF STATION IS NOT FOUND, WRITE ERROR MESSAGE TO OUTPUT
C----- AND STOP PROGRAM.
C
    WRITE(6,5100) DIVSTA
    STOP 13
C
C-----CHECK WATER AVAILABLE AT THE CURRENT STATION,
C
780   IF(AVAIL(NSTAT).GT.0.) GO TO 785
    CONSTA=DIVSTA
    GO TO 970
C
C-----ALL SENIOR DOWNSTREAM DIV, RES AND IFR MUST HAVE BEEN FULLY MET
C-----THIS MONTH IN ORDER FOR THE CURRENT DIVERSION TO BE TAKEN OUT.
C
C----- IF ANY WERE CALLED OUT,
C-----     WRITE MESSAGE TO TAPE11 AND TAPE12,
C-----     INCREMENT COUNTER OF DIVERSIONS CALLED OUT THIS MONTH
C-----     STORE STATION NUMBER,
C-----     GO TO READ OF NEXT DIVERSION.
C
C
785   IF(II.EQ.0.AND.ID.EQ.0.AND.IR.EQ.0) GO TO 830
C
C-----STEP THROUGH EACH STATION DOWNSTREAM OF THE CURRENT
C-----DIVERSION AND CHECK IF ANY MATCH A LIST OF STATIONS OF
C-----SENIOR DIVERSIONS AND I F RS WHICH WERE CALLED OUT.
C
    DO 825 ISS=NSTAT,NUMSTA
    IF(ISTATA(ISS,2).EQ.ORDER) GO TO 795
    IF(ISTATA(ISS,2).EQ.ORDER-1) GO TO 790
    GO TO 825
790   ORDER=ORDER-1
C
C-----CHECK DIVERSIONS
C
795   IF(ID.EQ.0) GO TO 805
    IEND=ID
    DO 800 IDV=1,IEND

```



```

IF(NODIV(IDV).NE.ISTATA(ISS,1)) GO TO 800
IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
WRITE(11,5340) DIVSTA,DIVPMT,IDDATE,(ISTATA(NSTAT,J),J=3,12),
+           NODIV(IDV)
5340 FORMAT(" NO DIVERSION ",I6,2X,A4,A3,3X,I4,1X,I4,
+         " 100.0",6X,10A4," SEN DS DIV NOT FULLY MET AT ",I6)
PCTCAL=100.
WRITE(12,5360) IMO,DIVPMT,PCTCAL,DIVSTA
C
C-----INCREMENT COUNTER OF DIVERSIONS CALLED OUT AND STORE
C-----THE STATION NUMBER .
C
        ID=ID+1
        NODIV(ID)=DIVSTA
C
C-----GO TO READ OF NEXT DIVERSION.
C
        GO TO 295
800    CONTINUE
C
C-----CHECK IFR'S
C
805    IF(II.EQ.0) GO TO 815
DO 810 IFR=1,II
IF(NOFLOW(IFR).NE.ISTATA(ISS,1)) GO TO 810
IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
WRITE(11,5350) DIVSTA,DIVPMT,IDDATE,(ISTATA(NSTAT,J),J=3,12),
+           NOFLOW(IFR)
5350 FORMAT(" NO DIVERSION ",I6,2X,A4,A3,3X,I4,1X,I4,
+         " 100.0",6X,10A4," SEN DS IFR NOT FULLY MET AT "
+ ,I6)
PCTCAL=100.
WRITE(12,5360) IMO,DIVPMT,PCTCAL,DIVSTA
5360 FORMAT(I3,A4,A3,1X,F5.1,1X,I6)
C
C-----INCREMENT COUNTER OF DIVERSIONS CALLED OUT AND STORE
C-----THE STATION NUMBER .
C
        ID=ID+1
        NODIV(ID)=DIVSTA
C
C-----GO TO READ OF NEXT DIVERSION.
C
        GO TO 295
810    CONTINUE
C
C-----      CHECK RESERVOIR RIGHTS.
C

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815 IF(IR.EQ.0) GO TO 825
DO 820 IRS=1,IR
IF(NORES(IRS).NE.ISTATA(ISS,1)) GO TO 820
IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
WRITE(11,5370) DIVSTA,DIVPMT,IDDAT,(ISTATA(NSTAT,J),J=3,12),
+ NORES(IRS)
5370 FORMAT(" NO DIVERSION ",I6,2X,A4,A3,3X,I4,1X,I4,
+ " 100.0",6X,10A4," SEN DS RES NOT FULLY MET AT ",I6)
PCTCAL =100.
WRITE(12,5360) IMO,DIVPMT,PCTCAL,DIVSTA
ID=ID+1
NODIV(ID)=DIVSTA
GO TO 295
820 CONTINUE
C
825 CONTINUE
C
C-----IF ALL DOWNSTREAM DIVERSIONS AND I F RS ARE FULLY MET,
C-----CHECK IF THERE IS ENOUGH WATER DOWNSTREAM FOR THE DIVERSION
C
830 ORDER=ORD
DO 845 ISS=NSTAT,NUMSTA
IF(ISTATA(ISS,2).EQ.ORDER) GO TO 840
IF(ISTATA(ISS,2).EQ.ORDER-1) GO TO 835
GO TO 845
835 ORDER=ORDER-1
840 IF(DIVER(MON).LE.AVAIL(ISS)) GO TO 845
NST=ISS
GO TO 850
845 CONTINUE
C
C----- DIVERSION CAN BE MADE.
C
GO TO 960
C
C----- IF THERE IS INSUFFICIENT WATER IN THE RIVER TO MEET THE DIVERSI
C-----AND IF THERE IS RETURN FLOW FROM THE CURRENT DIVERSION,
C-----AN ATTEMPT WILL BE MADE TO MEET THE DIVERSION BY ADDING
C-----ITS RETURN FLOW TO THE AMOUNT AVAILABLE IN THE CURRENT
C-----MONTH. OTHERWISE, REDUCE DIVERSION AMOUNT TO WHAT IS
C-----AVAILABLE DOWNSTREAM.
C
850 IF(NRET.GT.0) GO TO 860
ORDER=ORD
DIVER(MON)=AVAIL(NST)
IF(DIVER(MON).GT.0.) GO TO 855
DIVER(MON)=0.
CONSTA=ISTATA(NST,1)
GO TO 970

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855 CONSTA=ISTATA(NST,1)
GO TO 830
C
C-----
C-----ADD RETURN FLOW, THEN CHECK IF DIVERSION CAN BE MET DOWNSTREAM
C-----IF NOT, REDUCE DIVERSION TO SMALLEST AMOUNT AVAILABLE AND TRY AGAIN
C-----
C
860 DO 955 ITRY=1,1000
ORDER=ORD
IF(DIVER(MON).LE.0.) GO TO 970
C
C-----INITIALIZE AVAIL W/RETURN ARRAY.
C
DO 865 IS=1,NUMSTA
AVWRET(IS)=AVAIL(IS)
865 CONTINUE
C
C-----STEP THROUGH RETURN FLOWS FOR CURRENT DIVERSION.
C
DO 925 IRT=1,NRET
C
C-----FIND STATION FOR CURRENT RET FLOW
C
DO 870 IS=1,NUMSTA
IF(RETSTA(IRT).NE.ISTATA(IS,1)) GO TO 870
NSTATR=IS
ORDERR=ISTATA(IS,2)
GO TO 875
870 CONTINUE
WRITE(6,5100) RETSTA(IRT)
GO TO 1615
C
C-----FIND DELAY TABLE FOR CURRENT RETURN FLOW
C
875 DO 880 IDL=1,99
IF(RETDLY(IRT).NE.DLYNUM(IDL)) GO TO 880
DLY=IDL
GO TO 885
880 CONTINUE
WRITE(6,5380) RETDLY(IRT)
5380 FORMAT("1 DELAY TYPE ",I2," NOT FOUND")
STOP 14
C
C-----CHECK DELAY TYPE
C
885 TOTRET=DIVER(MON)*((100.-DIVEFF)/100.)
IF(RETDLY(IRT).GT.50) GO TO 905
C
C-----ADD RETURN FLOW FOR NORMAL DELAY DOWNSTREAM. (RETDLY(M) LE 50)

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C----- IN CURRENT MONTH ONLY
C
C      IST1 = NSTATR + 1
C      NORD(NSTATR) = ORDERR
C
C      DO 895 ISS=IST1,NUMSTA
C          IF(ISTATA(ISS-1,2) .EQ. (ORDERR-1)) ORDERR=ORDERR-1
C          NORD(ISS) = ORDERR
C
C      895 CONTINUE
C
C      IF(ISTATA(NUMSTA,2) .EQ. (ORDERR-1)) ORDERR=ORDERR-1
C
C      RET = TOTRET*PCTTOT(IRT)/100.*(DLYRAT(DLY,1)/100.)
C
C      DO 900 ISS=NSTATR,NUMSTA
C          BITV = ISTATA(ISS,2) .EQ. NORD(ISS) .OR.
C          1          ISTATA(ISS,2) .EQ. (NORD(ISS)-1)
C          AVWRET(ISS) = CVMGT(AVWRET(ISS)+RET,AVWRET(ISS),BITV)
C
C      900 CONTINUE
C
C      GO TO 925
C
C-----ADD RETURN FLOW USING CURRENT MONTH OF DELAY TABLE(RETDLY(M) GT 5
C-----IN CURRENT MONTH ONLY
C
C      905 IST1 = NSTATR + 1
C      NORD(NSTATR) = ORDERR
C      DO 910 ISS=IST1,NUMSTA
C          IF(ISTATA(ISS-1,2) .EQ. (ORDERR-1)) ORDERR=ORDERR-1
C          NORD(ISS) = ORDERR
C
C      910 CONTINUE
C
C      IF(ISTATA(NUMSTA,2) .EQ. (ORDERR-1)) ORDERR=ORDERR-1
C      RET = TOTRET*PCTTOT(IRT)/100.*(DLYRAT(DLY,MON)/100.)
C
C      DO 920 ISS=NSTATR,NUMSTA
C          BITV = ISTATA(ISS,2) .EQ. NORD(ISS) .OR.
C          1          ISTATA(ISS,2) .EQ. (NORD(ISS)-1)
C          AVWRET(ISS) = CVMGT(AVWRET(ISS)+RET,AVWRET(ISS),BITV)
C
C      920 CONTINUE
C
C      925    CONTINUE
C
C-----CHECK IF DIVERSION CAN NOW BE MET DOWNSTREAM WITH RET FLOW ADDED
C
C      930    IFLAG=0
C              ORDER=ORD
C
C      DO 950 ISS=NSTAT,NUMSTA

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C
    IF(ISTATA(ISS,2).EQ.ORDER) GO TO 940
    IF(ISTATA(ISS,2).EQ.ORDER-1) GO TO 935
    GO TO 950
935  ORDER=ORDER-1
940  IF(DIVER(MON).LE.AVWRET(ISS)) GO TO 950
      CONSTA=ISTATA(ISS,1)
      DIFFER=DIVER(MON)-AVWRET(ISS)
      IF(DIFFER.GT.1.) GO TO 945
      DIVER(MON)=AVWRET(ISS)-.05
      IF(DIVER(MON).LE.0.) DIVER(MON)=0.
      IFLAG=1
      GO TO 950
945  DIVER(MON)=AVWRET(ISS)
      IFLAG=1
950  CONTINUE
C
C----- A DIVERSION CAN BE MADE
C
        IF(IFLAG.EQ.0) GO TO 960
C
955  CONTINUE
C
C----- IF AFTER 1000 TRIES TO MEET THE DIVERSION WITH ITS RETURN
C----- FLOW (EACH TIME REDUCING THE DIVERSION TO THE SMALLEST AMOUNT
C----- AVAILABLE ALL THE WAY DOWNSTREAM). REDUCE THE DIVERSION
C----- BY 3 AND TRY ANOTHER 1000 TIMES
C
        DIVER(MON)=DIVER(MON)-3.
C
        IF(DIVER(MON).LE.0.) GO TO 970
        GO TO 860
C
C-----DIVERSION CAN BE MADE
C
960  IF(DIVER(MON).LE.0.) GO TO 970
      IF(DIVER(MON).EQ.DIVREQ) GO TO 975
C
C-----IF FULL DIVERSION CAN'T BE MET, AS MUCH AS POSSIBLE WILL BE DIVER
C----- WRITE MESSAGE TO TAPE11 AND TAPE12,
C----- INCREMENT COUNTER OF DIVERSIONS CALLED OUT THIS MONTH
C----- STORE STATION NUMBER,
C----- GO TO REMOVE DIVERSION FROM RIVER.
C
965  PCTCAL=100.-(100.*DIVER(MON)/DIVREQ)
      IF(ILINE.GE.LINPPAG) CALL PAGE11
      ILINE=ILINE+1
      WRITE(11,5390) DIVSTA,DIVPMT,IDDAT,PCTCAL,(ISTATA(NSTAT,J),
      +                      J=3,12),DIVREQ,DIVER(MON),CONSTA
5390  FORMAT(" PART DIVERSN ",I6,2X,A4,A3,3X,I4,1X,I4,3X,F5.1,

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+      6X,10A4,1X,F7.1," REQ  ",F7.1," AVAIL AT ",I6)
WRITE(12,5360) IMO,DIVPMT,PCTCAL,DIVSTA
ID=ID+1
NODIV(ID)=DIVSTA
C
C-----GO TO DIVERT
C
C     GO TO 975
C
C
C----- IF NO WATER IS AVAILABLE FROM THE RIVER,
C-----     WRITE MESSAGE TO TAPE11 AND TAPE12,
C-----     INCREMENT COUNTER OF DIVERSIONS CALLED OUT THIS MONTH
C-----     STORE STATION NUMBER,
C-----     GO TO READ OF NEXT DIVERSION.
.C
C
970  IF(ILINE.GE.LINPPAG) CALL PAGE11
    ILINE=ILINE+1
    WRITE(11,5400) DIVSTA,DIVPMT,IDDATE,(ISTATA(NSTAT,J),J=3,12),
+          DIVREQ,CONSTA
5400  FORMAT(" NO DIVERSION ",I6,2X,A4,A3,3X,I4,1X,I4,
+ " 100.0",6X,10A4,1X,F7.1," REQ      0.0 AVAIL AT ",I6)
    PCTCAL=100.
    WRITE(12,5360) IMO,DIVPMT,PCTCAL,DIVSTA
    ID=ID+1
    NODIV(ID)=DIVSTA
    GO TO 295
C
C----- IF ANY WATER WAS DIVERTED,
C-----REFLECT DIVERSION EFFECT DOWNSTREAM
C-----AMOUNT DIVERTED IS TAKEN OUT AT AND DOWNSTREAM OF THE
C-----DIVERSION STATION.
C
975  ORDER=ORD
    IST1 = NSTAT + 1
    NORD(NSTAT) = ORDER
C
    DO 985 ISS=IST1,NUMSTA
        IF(ISTATA(ISS-1,2) .EQ. (ORDER-1)) ORDER=ORDER-1
        NORD(ISS) = ORDER
985 CONTINUE
C
    IF(ISTATA(NUMSTA,2) .EQ. (ORDER-1)) ORDER=ORDER-1
C
    DO 990 ISS=NSTAT,NUMSTA
        BITV = ISTATA(ISS,2) .EQ. NORD(ISS) .OR.
1           ISTATA(ISS,2) .EQ. (NORD(ISS)-1)
        AVAIL(ISS) = CVMGT(AVAIL(ISS)-DIVER(MON),AVAIL(ISS),BITV)
        RIVER(ISS,MON) = CVMGT(RIVER(ISS,MON)-DIVER(MON))

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1 ,RIVER(ISS,MON),BITV)
990 CONTINUE
C
C----- CALCULATE TOTAL AMOUNT OF DIVERSION TO BE RETURNED
C
TOTRET=DIVER(MON)*((100.-DIVEFF)/100.)
C
C----- GO TO DIV AND PROJ RETURN FLOW SECTION
C
C----- END NORMAL DIVERSION SECTION
C
C----- START DIVERSION AND PROJECT RETURN FLOW SECTION
C
C----- IF WATER RIGHT HAS NO RETURN FLOW STATIONS,GO TO READ OF NEXT D
C
995 IF(NRET.EQ.0) GO TO 295
      DO 1080 IRT=1,NRET
C
C-----FIND STATION AND STREAM ORDER IN ARRAY ISTATA
C
      DO 1000 IS=1,NUMSTA
      IF(RETSTA(IRT).NE.ISTATA(IS,1)) GO TO 1000
      NSTADR=IS
      ORDERR=ISTATA(IS,2)
      GO TO 1005
1000 CONTINUE
      WRITE(6,5100) RETSTA(IRT)
      GO TO 1615
C
C-----FIND DELAY TABLE FOR CURRENT RETURN FLOW
C
1005 DO 1010 IDL=1,99
      IF(RETDLY(IRT).NE.DLYNUM(IDL)) GO TO 1010
      DLY=IDL
      GO TO 1015
1010 CONTINUE
      WRITE(6,5410) RETDLY(IRT)
5410 FORMAT("1 DELAY TABLE NOT FOUND ",I3)
      STOP 15
C
C----- IF DELAY TYPE IS LESS THAN OR EQUAL TO 50,
C-----ADD RETURN FLOW FOR NEXT 12 MONTH PERIOD

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C----- STARTING WITH THE FIRST VALUE IN DELAY TABLE IN THE CURRENT MON
C
1015 IF(RETDLY(IRT).GT.50) GO TO 1045
    IEND=MON+12
    I=0
C
DO 1040 ISS=NSTATR,NUMSTA
C
IF(ISTATA(ISS,2).EQ.ORDERR) GO TO 1025
IF(ISTATA(ISS,2).EQ.ORDERR-1) GO TO 1020
GO TO 1040
1020 ORDERR=ORDERR-1
1025 I=0
    AVAIL(ISS) = AVAIL(ISS) + TOTRET*PCTTOT(IRT)/100.*  

    1           (DLYRAT(DLY,1)/100.)
C
DO 1035 IM=MON,IEND
1030 I=I+1
    RET=TOTRET*PCTTOT(IRT)/100.*(DLYRAT(DLY,I)/100.)
    RIVER(ISS,IM)=RIVER(ISS,IM)+RET
C
1035 CONTINUE
C
1040 CONTINUE
C
GO TO 1080
C
C----- IF DELAY TYPE IS GREATER THAN 50,
C----- ADD RETURN FLOW FOR THE NEXT 12 MONTHS, STARTING WITH THE
C----- CURRENT MONTH VALUE OF DELAY TABLEIN CURRENT MONTH.
C
1045 DO 1070 ISS=NSTATR,NUMSTA
    K=MON
    IF(ISTATA(ISS,2).EQ.ORDERR) GO TO 1055
    IF(ISTATA(ISS,2).EQ.ORDERR-1) GO TO 1050
    GO TO 1070
1050 ORDERR=ORDERR-1
C
1055 DO 1060 IM=MON,12
    RET=TOTRET*PCTTOT(IRT)/100.*(DLYRAT(DLY,IM)/100.)
    RIVER(ISS,K)=RIVER(ISS,K)+RET
    IF(K.EQ.MON) AVAIL(ISS)=AVAIL(ISS)+RET
    K=K+1
1060 CONTINUE
    IEND=MON-1
C
DO 1065 IM=1,IEND
    RET=TOTRET*PCTTOT(IRT)/100.*(DLYRAT(DLY,IM)/100.)
    RIVER(ISS,K)=RIVER(ISS,K)+RET
    K=K+1

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```
1065 CONTINUE
C
1070 CONTINUE
C
1075 CONTINUE
C
1080 CONTINUE
C
C-----GO TO READ NEXT DIVERSION AND RETURN FLOW DATA FROM TAPE4
C
    GO TO 295
C
C-----END DIVER AND PROJ RETURN FLOW SECTION
C
C-----*
C
C-----START PROJECT RIGHT SECTION
C
C-----SENIOR PROJECT RIGHTS
C-----JUNIOR PROJECT RIGHTS(SPILL)
C
C-----IF RIGHT IS ZERO FOR THE CURRENT MONTH, GO TO READ OF NEXT DIVE
C
1085 IF(DIVER(MON).EQ.0.) GO TO 295
C
C-----SET DIVREQ TO REQUESTED DIVERSION AMOUNT
C
    DIVREQ=DIVER(MON)
    RETCFS=0.
    RESREL=0.
C
C-----FIND PROJECT STATION INDEX.
C
    DO 1090 IS=1,NUMSTA
    IF(ISTATA(IS,1).NE.DIVSTA) GO TO 1090
    ORDER=ISTATA(IS,2)
    ORD=ORDER
C-----NSTATP - PROJECT STATION
    NSTATP=IS
    GO TO 1095
1090 CONTINUE
C
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        WRITE(6,5100) DIVSTA
        STOP 16
C
C----- IF NO WATER AVAILABLE AT CUR STATION
C-----      WRITE MESSAGE TO TAPE11,
C-----      GO TO RESERVOIR FOR REMAINDER OF RIGHT.
C
C
1095  IF(AVAIL(NSTATP).GT.0.) GO TO 1105
      NSTP=NSTATP
1100  IF(ILINE.GE.LINPPAG) CALL PAGE11
      ILINE=ILINE+1
      WRITE(11,5420) DIVSTA,DIVPMT,IDDATE,(ISTATA(NSTATP,J),J=3,12),
      + DIVER(MON),ISTATA(NSTP,1)
5420  FORMAT(" NO PROJ    RIV ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
      + "100.0",6X,10A4,1X,F7.1," REQ      0.0 AVAIL AT ",I6)
C
      REMDIV=DIVREQ
      GO TO 1190
C
C----- CHECK IF ALL DOWNSTREAM, SENIOR RIGHTS HAVE BEEN FULLY MET
C
C----- IF ANY WERE CALLED OUT,
C-----      WRITE MESSAGE TO TAPE11,
C-----      GO TO RESERVOIR FOR REMAINDER OF RIGHT.
1105  IF(II.EQ.0.AND.ID.EQ.0.AND.IR.EQ.0) GO TO 1150
C
      DO 1145 ISS=NSTATP,NUMSTA
      IF(ISTATA(ISS,2).EQ.ORDER) GO TO 1115
      IF(ISTATA(ISS,2).EQ.ORDER-1) GO TO 1110
      GO TO 1145
C
1110  ORDER=ORDER-1
C
C----- CHECK DIV S
C
1115  IF(ID.EQ.0) GO TO 1125
C
      IEND=ID
      DO 1120 IDV=1,IEND
      IF(NODIV(IDV).NE.ISTATA(ISS,1)) GO TO 1120
      IF(ILINE.GE.LINPPAG) CALL PAGE11
      ILINE=ILINE+1
      WRITE(11,5430) DIVSTA,DIVPMT,IDDATE,(ISTATA(NSTATP,J),J=3,12),
      + NODIV(IDV)
5430  FORMAT(" NO PROJ    RIV ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
      + "100.0",6X,10A4,2X," SEN DS DIV NOT FULLY MET AT ",I6)
C
      REMDIV=DIVREQ
C

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```

C----- GO TO RESERVOIR
C
C      GO TO 1190
C
1120  CONTINUE
C
C----- CHECK IFR S
C
1125  IF(II.EQ.0) GO TO 1135
C
DO 1130 IFR=1,II
IF(NOFLOW(IFR).NE.ISTATA(ISS,1)) GO TO 1130
IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
WRITE(11,5440) DIVSTA,DIVPMT,IDDAT,(ISTATA(NSTATP,J),J=3,12),
+ NOFLOW(IFR)
5440  FORMAT(" NO PROJ    RIV ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
+ "100.0",6X,10A4,2X," SEN DS IFR NOT FULLY MET AT ",I6)
C
      REMDIV=DIVREQ
C
C-----GO TO RESERVOIR
C
C      GO TO 1190
C
1130  CONTINUE
C
C
C----- CHECK RESERVOIRS
C
1135  IF(IR.EQ.0) GO TO 1145
DO 1140 IRS=1,IR
IF(NORES(IRS).NE.ISTATA(ISS,1) ) GO TO 1140
IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
WRITE(11,5450) DIVSTA,DIVPMT,IDDAT,(ISTATA(NSTATP,J),J=3,12),
+ NORES(IRS)
5450  FORMAT(" NO PROJ    RIV ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
+ "100.0",6X,10A4,2X," SEN DS RES NOT FULLY MET AT ",I6)
C
      REMDIV=DIVREQ
C
C      GO TO 1190
1140  CONTINUE
C
1145  CONTINUE
C
C----- IF ALL SENIOR DOWNSTREAM RIGHTS WERE MET,
C----- FIND MAX WATER AVAILABLE DOWNSTREAM
C

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```

1150 ORDER=ORD
C
DO 1165 ISS=NSTATP,NUMSTA
IF(ISTATA(ISS,2).EQ.ORDER) GO TO 1160
IF(ISTATA(ISS,2).EQ.ORDER-1) GO TO 1155
GO TO 1165
C
1155 ORDER=ORDER-1
1160 IF(DIVER(MON).LE.AVAIL(ISS)) GO TO 1165
DIVER(MON)=AVAIL(ISS)
NSTP=ISS
C
1165 CONTINUE
C
C----- IF NO WATER IS AVAILABLE FROM THE RIVER,
C----- WRITE MESSAGE TO TAPE11,
C----- GO TO RESERVOIR FOR REMAINDER OF RIGHT.
C
IF(DIVER(MON).EQ.0.) GO TO 1100
C
C----- REMOVE DIVERSION (FROM STREAM) FROM RIVER DOWNSTREAM
C
ORDER=ORD
IST1 = NSTATP + 1
NORD(NSTATP) = ORDER
C
DO 1175 ISS=IST1,NUMSTA
IF(ISTATA(ISS-1,2) .EQ. (ORDER-1)) ORDER=ORDER-1
NORD(ISS)=ORDER
1175 CONTINUE
C
IF(ISTATA(NUMSTA,2) .EQ. (ORDER-1)) ORDER=ORDER-1
C
DO 1180 ISS=NSTATP,NUMSTA
BITV = ISTATA(ISS,2) .EQ. NORD(ISS) .OR.
1      ISTATA(ISS,2) .EQ. (NORD(ISS)-1)
AVAIL(ISS) = CVMGT(AVAIL(ISS)-DIVER(MON),AVAIL(ISS),BITV)
RIVER(ISS,MON) = CVMGT(RIVER(ISS,MON)-DIVER(MON),
1                           RIVER(ISS,MON),BITV)
1180 CONTINUE
C
REMREQ=DIVREQ-DIVER(MON)
RETCFS=DIVER(MON)
IF(REMDIV.GT.0.) GO TO 1185
TOTRET=DIVER(MON)*((100.-DIVEFF)/100.)
GO TO 995
1185 PCTCAL=100.-(100.*DIVER(MON)/DIVREQ)
IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
WRITE(11,5460) DIVSTA,DIVPMT,IDDAT,PCTCAL,(ISTATA(NSTATP,J),

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+ J=3,12),DIVREQ,DIVER(MON),ISTATA(NSTP,1)
5460 FORMAT(" PART PROJ RIV ",I6,2X,A4,A3,3X,I4,1X,I4,3X,F5.1,
+ 6X,10A4,1X,F7.1," REQ ",F7.1," AVAIL AT ",I6)
C
C
C----- REMAINING PROJECT RIGHT FROM RESERVOIR
C
1190 NSTATR=IRSTAN(DIVTYP)
      ORDERR=IRSORD(DIVTYP)
C
C----- CALCULATE VOLUME AVAILABLE FROM RESERVOIR.
C
      RESAVL=CURSTO(DIVTYP)-VOLMIN(DIVTYP)
      IF(RESAVL.LT.0.) RESAVL=0.
      RAVCFS=RESAVL/MTHDAY(MON)/FACTOR
      IF(MSPILL(DIVTYP)) GO TO 1195
C
C----- CALCULATE FLOW AVAILABLE FROM RESERVOIR.
C
C----- IF SPILL CONDITION EXISTS THIS MONTH, SKIP FLOW CHECK.
C
      FLOAVL=FLOMAX(DIVTYP)-RIVER(NSTATR+1,MON)
      IF(FLOAVL.LT.0.) FLOAVL=0.
      IF(FLOAVL.LE.RAVCFS) GO TO 1210
C
C----- IF FLOW AVAILABLE IS GREATER THAN VOLUME AVAILABLE,
C----- MIN VOL IS LIMITING FACTOR
C
1195 IF(RAVCFS.GT.0.) GO TO 1200
C
C----- IF VOLUME AVAILABLE IS ZERO,
C----- WRITE MESSAGE TO TAPE11 AND TAPE12,
C----- INCREMENT COUNTER OF DIVERSIONS CALLED OUT,
C----- STORE STATION NUMBER,
C----- GO TO CALCULATE TOTAL RETURN FLOW.
C
C
      IF(ILINE.GE.LINPPAG) CALL PAGE11
      ILINE=ILINE+1
      WRITE(11,5470) DIVSTA,DIVPMT,IDDATE,(ISTATA(NSTATP,J),
+ J=3,12),REMDEV,DIVTYP
5470 FORMAT(" NO PROJ    RES ",I6,2X,A4,A3,3X,I4,1X,I4,3X,
+ " 100.0",6X,10A4,1X,F7.1," REQ      0.0 AVAIL AT RES ",I2)
      PCTCAL=100.-(100.* (DIVREQ-REMDEV)/DIVREQ)
      WRITE(12,5360) IMO,DIVPMT,PCTCAL,DIVSTA
      ID=ID+1
      NODIV(ID)=DIVSTA
      RESREL=0.
      GO TO 1250
C

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1200 IF(RAVCFS.LT.REMDIV) GO TO 1205
    RESREL=REMDIV
    GO TO 1225
C
C----- IF PARTIAL PROJECT DIVERSION IS MADE,
C----- WRITE MESSAGE TO TAPE11 AND TAPE12,
C----- INCREMENT COUNTER OF DIVERSIONS CALLED OUT THIS MONTH
C----- STORE STATION NUMBER,
C----- GO TO MAKE RELEASE.
C
C
1205 PCTCAL=100.-(100.*RAVCFS/REMDIV)
    IF(ILINE.GE.LINPPAG) CALL PAGE11
    ILINE=ILINE+1
    WRITE(11,5480) DIVSTA,DIVPMT,IDDATE,PCTCAL,
    + (ISTATA(NSTATP,J),J=3,12),REMDIV,RAVCFS,DIVTYP
5480 FORMAT(" PART PROJ RES ",I6,2X,A4,A3,3X,I4,1X,I4,3X,F5.1,
    + 6X,10A4,1X,F7.1," REQ ",F7.1," AVAIL AT RES ",I2)
    PCTCAL=100.-(100.*((DIVREQ-REMDIV)+RAVCFS)/DIVREQ)
    WRITE(12,5360) IMO,DIVPMT,PCTCAL,DIVSTA
    ID=ID+1
    NODIV(ID)=DIVSTA
C
    RESREL=RAVCFS
    GO TO 1225
C
C----- MAX FLOW IS LIMITING FACTOR
C
1210 IF(FLOAVL.GT.0.) GO TO 1215
C
C----- IF FLOW AVAILABLE IS ZERO,
C----- WRITE MESSAGE TO TAPE11 AND TAPE12,
C----- INCREMENT COUNTER OF DIVERSIONS CALLED OUT THIS MONTH
C----- STORE STATION NUMBER,
C----- GO TO CALCULATE TOTAL RETURN FLOW.
C
    IF(ILINE.GE.LINPPAG) CALL PAGE11
    ILINE=ILINE+1
    WRITE(11,5490) DIVSTA,DIVPMT,IDDATE,(ISTATA(NSTATP,J),J=3,12),
    + REMDIV,DIVTYP
5490 FORMAT(" NO PROJ RES ",I6,2X,A4,A3,3X,I4,1X,I4,2X,
    + " 100.0",6X,10A4,1X,F7.1," REQ OUTFLOW AT MAX - RES ",I2)
    PCTCAL=100.-(100.*((DIVREQ-REMDIV)/DIVREQ))
    WRITE(12,5360) IMO,DIVPMT,PCTCAL,DIVSTA
    ID=ID+1
    NODIV(ID)=DIVSTA
    RESREL=0.
    GO TO 1250
C
1215 IF(FLOAVL.LT.REMDIV) GO TO 1220

```



```

RESREL=REMDIV
GO TO 1225
C
C----- IF PARTIAL PROJECT DIVERSION IS MADE,
C----- WRITE MESSAGE TO TAPE11 AND TAPE12,
C----- INCREMENT COUNTER OF DIVERSIONS CALLED OUT,
C-----N STORE STATION NUMBER,
C----- GO TO MAKE RELEASE.
C
1220 PCTCAL=100.-(100.*FLOAVL/REMDIV)
IF(ILINE.GE.LINPPAG) CALL PAGE11
ILINE=ILINE+1
WRITE(11,5500) DIVSTA,DIVPMT,IDDATE,PCTCAL,
+ (ISTATA(NSTATP,J),J=3,12),REMDIV,FLOAVL,DIVTYP
5500 FORMAT(" PART PROJ RES ",I6,2X,A4,A3,3X,I4,1X,I4,3X,F5.1,
+ 6X,10A4,1X,F7.1," REQ ",F7.1," OUTFLOW RES ",I2)
PCTCAL=100.-(100.*((DIVREQ-REMDIV)+FLOAVL)/DIVREQ)
WRITE(12,5360) IMO,DIVPMT,PCTCAL,DIVSTA
ID=ID+1
NODIV(ID)=DIVSTA
RESREL=FLOAVL
C
C----- MAKE RESERVOIR RELEASE .
C----- ADD WATER TO STREAM BETWEEN RESERV AND PROJ STATION
C
1225 IF(NSTATR.EQ.NSTATP) GO TO 1245
ISTART=NSTATR+1
IEND=NSTATP-1
IF(ISTART.GT.IEND) GO TO 1245
IST1 = ISTART + 1
NORD(ISTART) = ORDERR
C
DO 1235 ISS=IST1,IEND
IF(ISTATA(ISS-1,2) .EQ. (ORDERR-1)) ORDERR=ORDERR-1
NORD(ISS) = ORDERR
1235 CONTINUE
C
IF(ISTATA(IEND,2) .EQ. (ORDERR-1)) ORDERR=ORDERR-1
C
DO 1240 ISS=ISTART,IEND
BITV = ISTATA(ISS,2) .EQ. NORD(ISS) .OR.
1      ISTATA(ISS,2) .EQ. (NORD(ISS)-1)
AVAIL(ISS) = CVMGT(AVAIL(ISS)+RESREL,AVAIL(ISS),BITV)
RIVER(ISS,MON)=CVMGT(RIVER(ISS,MON)+RESREL,RIVER(ISS,MON),
1                           BITV)
1240 CONTINUE
C
C----- REDUCE RESERVOIR STORAGE BY AMOUNT RELEASED
C
1245 RELAF=RESREL*MTHDAY(MON)*FACTOR

```



```

C CURSTO(DIVTYP)=CURSTO(DIVTYP)-RELAF
C----- ADD TO MONTHLY TOTAL PROJECT FLOW
C PROJTF(DIVTYP)=PROJTF(DIVTYP)+RESREL
C----- CALCULATE TOTAL RETURN FLOW
C
1250 TOTRET=(RETCFS+RESREL)*((100.-DIVEFF)/100.)
C----- GO TO DIVERSION-PROJECT RETURN FLOW SECTION.
C     GO TO 995
C
C----- END PROJECT RIGHTS SECTION
C----- END WATER RIGHT READING AND PROCESSING SECTION
C----- START END-OF MONTH SECTION
C----- IF EOF ON DIV FILE, IFR FILE AND RES FILE, REWIND INPUT FILES.
C
1255 REWIND 3
      REWIND 4
      REWIND 16
C-----PUT CURRENT MONTHS AVAIL ARRAY INTO AVOUT ARRAY
C
DO 1260 IS=1,NUMSTA
      AVOUT(IS,MON)=AVAIL(IS)
1260 CONTINUE
C
C----- IF NO RESERVOIRS, SKIP EVAPORATION SECTION.
C
IF(IRESOPT.EQ.3HNOR) GO TO 1575

```



```

C
C----- RESERVOIR EVAPORATION SECTION
C
C      DO 1340 NR=2,NUMR
C
C      IF(IRESSWI(NR).EQ.0) GO TO 1340
C
C      IF(NRANGE(NR).GE.2) GO TO 1285
C
C----- -----
C
C----- SINGLE RANGE
C
C      CALL EVAPSUB(VOLINT(NR),NEQTYPE(NR,1),ACOEF(NR,1,1),ACOEF(NR,1,2),
C      + ACOEF(NR,1,3),AREA1)
C
C      CALL EVAPSUB(CURSTO(NR),NEQTYPE(NR,1),ACOEF(NR,1,1),ACOEF(NR,1,2),
C      + ACOEF(NR,1,3),AREA2)
C
C      GO TO 1335
C
C
C 1285 IF(NRANGE(NR).GE.3) GO TO 1305
C
C----- -----
C
C----- DOUBLE RANGE
C
C      IF(VOLINT(NR).GT.RLIMIT(NR,1)) GO TO 1290
C
C      CALL EVAPSUB(VOLINT(NR),NEQTYPE(NR,1),ACOEF(NR,1,1),ACOEF(NR,1,2),
C      + ,ACOEF(NR,1,3),AREA1)
C
C      GO TO 1295
C
C 1290 CALL EVAPSUB(VOLINT(NR),NEQTYPE(NR,2),ACOEF(NR,2,1),ACOEF(NR,2,2),
C      + ,ACOEF(NR,2,3),AREA1)
C
C 1295 IF(CURSTO(NR).GT.RLIMIT(NR,1)) GO TO 1300
C
C      CALL EVAPSUB(CURSTO(NR),NEQTYPE(NR,1),ACOEF(NR,1,1),ACOEF(NR,1,2),
C      + ,ACOEF(NR,1,3),AREA2)
C
C      GO TO 1335
C
C 1300 CALL EVAPSUB(CURSTO(NR),NEQTYPE(NR,2),ACOEF(NR,2,1),ACOEF(NR,2,2),
C      + ,ACOEF(NR,2,3),AREA2)
C
C      GO TO 1335
C

```



```

C----- TRIPLE RANGE
C
C 1305 IF(NRANGE(NR).GT.3) STOP 20
C
C      IF(VOLINT(NR).GT.RLIMIT(NR,1)) GO TO 1310
C
C      CALL EVAPSUB(VOLINT(NR),NEQTYPE(NR,1),ACOEF(NR,1,1),ACOEF(NR,1,2)
C      + ,ACOEF(NR,1,3),AREA1)
C      GO TO 1320
C
C 1310 IF(VOLINT(NR).GT.RLIMIT(NR,2)) GO TO 1315
C
C      CALL EVAPSUB(VOLINT(NR),NEQTYPE(NR,2),ACOEF(NR,2,1),ACOEF(NR,2,2)
C      + ,ACOEF(NR,2,3),AREA1)
C      GO TO 1320
C
C 1315 CALL EVAPSUB(VOLINT(NR),NEQTYPE(NR,3),ACOEF(NR,3,1),ACOEF(NR,3,2)
C      + ,ACOEF(NR,3,3),AREA1)
C
C 1320 IF(CURST0(NR).GT.RLIMIT(NR,1)) GO TO 1325
C
C      CALL EVAPSUB(CURST0(NR),NEQTYPE(NR,1),ACOEF(NR,1,1),ACOEF(NR,1,2)
C      + ,ACOEF(NR,1,3),AREA2)
C
C      GO TO 1335
C
C 1325 IF(CURST0(NR).GT.RLIMIT(NR,2)) GO TO 1330
C
C      CALL EVAPSUB(CURST0(NR),NEQTYPE(NR,2),ACOEF(NR,2,1),ACOEF(NR,2,2)
C      + ,ACOEF(NR,2,3),AREA2)
C
C      GO TO 1335
C
C 1330 CALL EVAPSUB(CURST0(NR),NEQTYPE(NR,3),ACOEF(NR,3,1),ACOEF(NR,3,2)
C      + ,ACOEF(NR,3,3),AREA2)
C
C----- CALC EVAPORATION
C
C 1335 EVAP(NR)=((AREA1+AREA2)/2.)*EVAPRT(NR,MON)
C
C      IF(EVAP(NR).LT.0.) EVAP(NR)=0.
C      CURST0(NR)=CURST0(NR)-EVAP(NR)
C
C      IF(CURST0(NR).GE.0.) GO TO 1340
C
C      EVAP(NR)=EVAP(NR)+CURST0(NR)
C      CURST0(NR)=0.
C

```



```

C----- GO TO NEXT RESERVOIR
C
1340 CONTINUE
C
C----- END RESERVOIR EVAPORATION SECTION
C
C----- END EVAPORATION SECTION
C
C----- WRITE END OF MONTH RESERVOIR STATUS REPORT
C
C
1560 DO 1570 NUMR=2,NUMREST
      IF(IRESSWI(NUMR).EQ.0) GO TO 1570
C
C
      NS=IRSTAN(NUMR)+1
      WRITE(19,5510) (RESNAM(NUMR,J),J=1,4),STOMON(NUMR),RIVER(NS,MON),
      + POWREQ(NUMR),POWREL(NUMR),REQNP(NUMR),RELNP(NUMR),PROJTF(NUMR),
      + EVAP(NUMR),CURSTO(NUMR),RSRMET(NUMR)
5510 FORMAT(1X,4A4,F10.0,F10.1,4F10.0,F10.1,2F10.0,A4)
C
C----- RESET MONTHLY FLAGS AND SUBTOTALS.
C
      PROJTF(NUMR)=0.
      STOMON(NUMR)=0.
      MSPILL(NUMR)=.FALSE.
      RESFLG(NUMR)=.FALSE.
C
C----- POWER SECTION
C----- CALCULATE POWER RELEASE FOR BEGINNING OF NEXT MONTH.
C----- TO REACH GOAL VOLUME
C
      IF(GOALDT(NUMR).GT.0) GO TO 1565
      POWREL(NUMR)=0.
      POWREQ(NUMR)=0.
      GO TO 1570
1565 GOALRL=CURSTO(NUMR)-GOALVL(NUMR)
      GLDATE=GOALDT(NUMR)
C
      IF(GOALDT(NUMR).LE.MON) GLDATE=GOALDT(NUMR)+12
      NUMMON=GLDATE-MON

```



```

POWREL(NUMR)=GOALRL/NUMMON
IF(POWREL(NUMR).LT.0.) POWREL(NUMR)=0.
POWREQ(NUMR)=POWREL(NUMR)

C
C
1570 CONTINUE
C
1575 IMO=IMO+1
C
C----- IF END OF YEAR GO TO END OF YEAR SECTION,
C----- OTHERWISE GO TO BEGINNING OF MONTH SECTION.
C
C
1580 CONTINUE
C
C
C----- END END-OF-MONTH SECTION
C
C----- START END-OF-YEAR SECTION
C----- WRITE FIRST YEAR OF ARRAY RIVER OUT TO TAPE9
C
      WRITE(9,5520) IYR,IHEAD,HEAD2
5520 FORMAT("1",*YEAR *,I2,33X,"FINAL RIVER SYSTEM STATUS MONTHLY",
+" CFS IN RIVER ",/,31X,10A4,A8," PST ",A8,/)
      WRITE(9,5120)
      DO 1590 IS=1,NUMSTA
      DO 1585 IM=1,12
      YTOT=YTOT+(RIVER(IS,IM)*MTHDAY(IM)*FACTOR)
1585 CONTINUE
      WRITE(9,5130) (ISTATA(IS,KK),KK=1,2),(RIVER(IS,J),J=1,12)
      +,YTOT
      YTOT=0.
1590 CONTINUE
C
C----- WRITE AVOUT ARRAY ON TAPE10 ( CFS IN THE STREAM WHICH IS AVAILAB
C----- FOR USE BY IFR OR DIV).
C
      WRITE(10,5530) IYR,IHEAD,HEAD2
5530 FORMAT("1","YEAR ",I2,28X,"FINAL RIVER SYSTEM STATUS MONTHLY CFS"
+" AVAILABLE IN RIVER",/,30X,10A4,A8," PST ",A8,/
+39X,"(WATER AVAILABLE FOR DIVERSIONS MAY BE CONTROLLED",/,,
+38X,"BY DOWNSTREAM FLOWS. WATER AVAILABLE FOR INSTREAM",/,,

```



```

+37X,"FLOWS IS CONTROLLED BY FLOW AT INTERESTED STATION ONLY.",/)
WRITE(10,5120)
DO 1600 IS=1,NUMSTA
C
DO 1595 IM=1,12
YTOT=YTOT+(AVOUT(IS,IM)*MTHDAY(IM)*FACTOR)
1595 CONTINUE
WRITE(10,5130) (ISTATA(IS,KK),KK=1,2),(AVOUT(IS,J),J=1,12)
+,YTOT
YTOT=0.
1600 CONTINUE
C
C-----IF RNFLAG IS TRUE, THERE IS NO MORE RUNOFF DATA.
C----- GO TO END OF RUN SECTION.
C
IF(RNFLAG) GO TO 1615
C
C----- IF RNFLAG IS FALSE,
C-----MOVE SECOND YEAR OF RIVER TO THE FIRST YEAR, AND
C-----SET VALUES IN THE SECOND YEAR TO ZERO.
C
DO 1610 IS=1,NUMSTA
DO 1605 IM=1,12
RIVER(IS,IM)=RIVER(IS,IM+12)
RIVER(IS,IM+12)=0.
1605 CONTINUE
1610 CONTINUE
C
C----- GO TO BEGINNING OF YEAR SECTION.
C
GO TO 125
C
C
C----- *8
C
C----- END END-OF-YEAR SECTION
C
C----- START END-OF-RUN SECTION
C
C----- IF NO RESERVOIRS, STOP PROGRAM.
C
1615 IF(IRESOPT.EQ.3HNOR) STOP
C

```



```

C----- RESORT MONTHLY RESERVOIR STATUS REPORT(TAPE19) BY RES THEN MONTH
C
    NSKIP=0
    MSKIP=NUMRES-1
    DO 1670 NUMR=1,NUMREST
    IF(IRESSWI(NUMR).EQ.0) GO TO 1670
    IPAGE=1
    REWIND 19
C
C----- WRITE HEADINGS FOR CURRENT RESERVOIR.
C
    WRITE(18,5540) NUMR,(RESNAM(NUMR,J),J=1,4),
    + VOLMAX(NUMR),VOLMIN(NUMR),IHEAD
    + ,HEAD2
5540  FORMAT("1",/,1X,I2,2X,4A4," (MAX CAP ",F8.0," AF)",13X,
    +"RESERVOIR STATUS REPORT", /,22X,"(MIN CAP ",F8.0," AF)",9X,10A4,
    + 10X,A8," PST ",A8,/)

    WRITE(18,5550)
5550  FORMAT(92X,"RELEASE")
    WRITE(18,5560)
5560  FORMAT(28X,"DOWNSTREAM      POWER",7X,"ACTUAL      NON-PROJECT",
    + 5X,"ACTUAL",8X,"FOR",19X,"END OF      ALL RES")
    WRITE(18,5570)
5570  FORMAT(17X,"STORAGE      FLOW AT      RELEASE      POWER",
    + 6X,"RELEASE      NON-PROJECT      PROJECT      EVAPORATION",
    + 3X,"MONTH      RIGHTS")
    WRITE(18,5580)
5580  FORMAT(" MONTH      YEAR      ADDED      RESERVOIR      REQUESTED",
    + 4X,"RELEASE      REQUESTED      RELEASE      RIGHTS",
    + 7X,"LOSS      VOLUME      MET")
    WRITE(18,5590)
5590  FORMAT(" -----",
    + "-----",
    + "-----")
    WRITE(18,5600)
5600  FORMAT(19X,"AF",10X,"CFS",10X,"AF",11X,"AF",9X,"AF",11X,"AF",
    + 10X,"CFS",10X,"AF",10X,"AF")
    WRITE(18,5590)
    WRITE(18,5610)
C
C
C----- SET TOTALS TO ZERO.
C
    DO 1620 IT=1,8
    RTOTAL(IT)=0.
1620  CONTINUE
C
C----- SKIP TO FIRST RECORD OF CURRENT RESERVOIR.
C
    IF(NSKIP.EQ.0) GO TO 1630

```



```

C
      DO 1625 ISK=1,NSKIP
      READ(19,5610)
5610  FORMAT(3X)
1625  CONTINUE
C
1630  IMTH=1
      IYEAR=1
      NSKIP=NSKIP+1
C
C----- READ RESERVOIR RECORDS FROM TAPE19 AND WRITE TO TAPE18,
C----- SKIPPING RECORDS FOR OTHER RESERVOIRS.
C
      DO 1660 IM=1,IMO
      READ(19,5620) RSDATA
5620  FORMAT(17X,F10.0,F10.1,4F10.0,F10.1,2F10.0,A4)
      IF(EOP(19)) 1665,1635
1635  IF(IMTH.LE.12) GO TO 1650
C
      WRITE(18,5630)
5630  FORMAT(16X,4("-----",2X),2("-----",3X),
      + 2("-----",2X))
      WRITE(18,5640) RTOTAL
5640  FORMAT(1X,"TOTALS(AF)",5X,F10.0,2X,F10.1,2X,F10.0,2X,
      + F10.0,2X,F10.0,3X,F10.0,3X,F10.1,2X,F10.0,/)
C
C
      IMTH=IMTH-12
      IYEAR=IYEAR+1
      IPAGE=IPAGE+1
      IF(IPAGE.LE.3) GO TO 1640
      IPAGE=1
      WRITE(18,5540) NUMR,(RESNAM(NUMR,J),J=1,4),VOLMAX(NUMR),
      + VOLMIN(NUMR)
      + ,IHEAD,HEAD2
      WRITE(18,5550)
      WRITE(18,5560)
      WRITE(18,5570)
      WRITE(18,5580)
      WRITE(18,5590)
      WRITE(18,5600)
      WRITE(18,5590)
      WRITE(18,5610)
C
C
1640  DO 1645 IT=1,8
      RTOTAL(IT)=0.
1645  CONTINUE
C
1650  RTOTAL(1)=RTOTAL(1)+RSDATA(1)

```



```

RTOTAL(2)=RTOTAL(2)+(RSADATA(2)*MTHDAY(IMTH)*FACTOR)
RTOTAL(3)=RTOTAL(3)+RSADATA(3)
RTOTAL(4)=RTOTAL(4)+RSADATA(4)
RTOTAL(5)=RTOTAL(5)+RSADATA(5)
RTOTAL(6)=RTOTAL(6)+RSADATA(6)
RTOTAL(7)=RTOTAL(7)+(RSADATA(7)*MTHDAY(IMTH)*FACTOR)
RTOTAL(8)=RTOTAL(8)+RSADATA(8)

C
      WRITE(18,5650) MONTHN(IMTH),IYEAR,RSADATA
5650  FORMAT(1X,A4,4X,I2,5X,F10.0,2X,F10.1,2X,F10.0,2X,F10.0,2X,
+ F10.0,3X,F10.0,3X,F10.1,2X,F10.0,2X,F10.0,4X,A4)
      IMTH=IMTH+1
      IF(MSKIP.EQ.0) GO TO 1660
      DO 1655 ISK=1,MSKIP
      READ(19,5610)
      IF.EOF(19)) 1660,1655
1655  CONTINUE
C
1660  CONTINUE
C
1665  WRITE(18,5630)
      WRITE(18,5640) RTOTAL
1670  CONTINUE
C
      STOP
      END
      SUBROUTINE PAGE11
C
      COMMON ILINE
C
      WRITE(11,5000)
5000  FORMAT(/,
+         35X,"DATE",7X,"PERCENT",/,
+         14X,"STATION",3X,"PERMIT",3X,"MMDD YEAR",2X,"CALLED OUT",
+         6X,"STATION DESCRIPTION",24X,"DETAILS (VALUES IN CFS)",//)
      ILINE=5
      RETURN
      END

C
C-----  

C
      SUBROUTINE EVAPSUB(VOL,NEQTY,CF1,CF2,CF3,AREA)
C
      IF(NEQTY.GT.1) GO TO 10
C
      AREA=CF1+CF2*(VOL**CF3)
C
      RETURN
C
10  IF(NEQTY.GT.2) GO TO 20

```



```
C          AREA=CF1+(CF2*(ALOG(VOL)))
C          RETURN
C
20 IF(NEQTY.GT.3) STOP 21
C          AREA=CF1*(CF2***(CF3*VOL))
C          RETURN
END
C>
```



**APPENDIX D**  
**Procedure Files and Programs**  
**to**  
**Process Output from WIRSOS Model Runs**

| <u>Table Number</u> | <u>Procedure File or Program Name</u> | <u>Page</u> |
|---------------------|---------------------------------------|-------------|
| D-1                 | RNEDT                                 | D-1         |
| D-2                 | PERSORT                               | D-3         |
| D-3                 | PERCHRT                               | D-6         |
| D-4                 | INSCHRT                               | D-8         |
| D-5                 | RNCOMP                                | D-10        |
| D-6                 | CMPR2                                 | D-11        |
| D-7                 | RNTBL                                 | D-14        |
| D-8                 | BASACR                                | D-15        |
| D-9                 | TLMONT                                | D-17        |



Table D-1

PROCEDURE FILE NAME = RNEDT

```
SAMPLE,CM250000,T500,P2.  
USER,USERNO,PW . USERID  
FETCH, DN=SAMP108.  
CMEDIT,SAMP108.  
EXIT,U.  
REWIND,SAMP108.  
FETCH, DNSAMP109.  
CMEDIT,SAMP109.  
EXIT,U.  
REWIND,SAMP109.  
FETCH, DN=SAMP110.  
CMEDIT,SAMP110.  
EXIT,U.  
REWIND,SAMP110.  
FETCH, DN=SAMP111.  
CMEDIT,SAMP111.  
EXIT,U.  
REWIND,SAMP111.  
FETCH, DN=SAMP112.  
CMEDIT,SAMP112.  
EXIT,U.  
REWIND,SAMP112.  
FETCH, DN=SAMP113.  
CMEDIT,SAMP113.  
EXIT,U.  
REWIND,SAMP113.  
GET,PERSORT.  
GET,TAPE12=SAMP112.  
MAP,OFF.  
FTN,I=PERSORT,L=0.  
LGO.  
RETURN,TAPE9.  
RETURN,LGO.  
REWIND,TAPE10.  
GET,PERCHRT.  
FTN,I=PERCHRT,L=0.  
LGO,PL=40000,SAMP114.  
REPLACE,SAMP114.  
EXIT,U.  
GET,PERSORT.  
GET,TAPE12=SAMP113.  
MAP,OFF.  
FTN,I=PERSORT,L=0.  
LGO.  
RETURN,TAPE9.  
RETURN,LGO.  
REWIND,TAPE10.  
GET,INSCHRT.
```



FTN,I=INSCHRT,L=0.  
LGO,PL=40000,SAMP115.  
REPLACE,SAMP115.  
EXIT,U.  
DAYFILE,DAYFILE.  
REPLACE,DAYFILE.  
\*WEOR  
Z 1 25  
BRIEF  
DEL /1YEAR 4/  
FILE,0  
Z 1 25  
BRIEF  
DEL /1YEAR 4/  
FILE,0  
Z 1 25  
BRIEF  
DEL /1YEAR 4/  
FILE,0  
Z 1 25  
BRIEF  
DEL /1 YEAR 4/  
FILE,0  
Z 1 3  
BRIEF  
DEL / 37/  
FILE,0  
Z 1 3  
BRIEF  
DEL / 37/  
FILE,0  
\*WEOF



Table D-2

PROGRAM NAME = PERSORT

```
PROGRAM PERSORT (INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,TAPE12,
+TAPE10,TAPE8)
C      THIS PROGRAM SORTS THE OUTPUT FILE TAPE12 FROM WATER
C      PROGRAM ALSO REARRANGES THE PERMIT NO'S
DIMENSION NUMB(10), IN2(7),IOUT1(7),IOUT2(7),IOUT3(7)

DIMENSION IEQU(3),COMM(4),IPER(7),IP(21)
DATA NUMB/1H0,1H1,1H2,1H3,1H4,1H5,1H6,1H7,1H8,1H9/
DATA IEQU/1R ,1R0,-1/
10 READ(12,9000)IN,IN2,PC,STA,COMM
9000  FORMAT(I3,7A1,1X,F5.1,1X,I6,1X,4A10)
      IF (EOF(12)) 9999,50
50   PC=PC/100.
      DO 100 I=1,7
      IOUT1(I)=1H
      IOUT2(I)=1H
      IOUT3(I)=1H
100  CONTINUE
      DO 250 I = 1,7
      J= 7 -I + 1
      KK = J
      DO 200 K = 1,10
      IF(IN2(J).EQ.NUMB(K)) GO TO 300
200  CONTINUE
250  CONTINUE
      KK = 0
      GO TO 311
300  CONTINUE
      IST = 7
      DO 310 I = 1,KK
      I2 = KK - I + 1
      IOUT2(IST) = IN2(I2)
      IST= IST -1
310  CONTINUE
311  IF(KK.EQ.7) GO TO 400
      IST = 1
      KK1 = KK + 1
      DO 350 I = KK1,7
      IOUT3(IST) = IN2(I)
      IST= IST + 1
350  CONTINUE
400  DO 500 I=1,7
      IN2(I) = IOUT2(I)
      IOUT2(I) = 1H
500  CONTINUE
      L =7
```



```

DO 700 I =1,7
J =7+1-I
DO 600 K =1,10
IF (IN2(J).EQ.NUMB(K)) GO TO 650
600 CONTINUE
IOUT1(L) = IN2(J)
L = L-1
GO TO 700
650 IOUT2(J) =IN2(J)
700 CONTINUE
WRITE(10,9010)IN,IOUT1,IOUT2,IOUT3,PC,STA,COMM
9010 FORMAT(I3,5X,7A1,7A1,7A1,1X,F5.3,1X,I6,1X,4A10)
GO TO 10
9999 CONTINUE
REWIND 12
REWIND 10
CALL SMSORT(80,0)
CALL SMFILE("SORT","CODED",10,"REWIND")
CALL SMFILE("OUTPUT","CODED",12,"REWIND")
CALL SMEQU("DISPLAY",IEQU)
CALL SMKEY(1,1,3,0,"DISPLAY","DISPLAY","A")
CALL SMKEY(16,1,7,0,"DISPLAY","DISPLAY","A")
CALL SMKEY(23,1,7,0,"DISPLAY","DISPLAY","A")
CALL SMKEY(9,1,7,0,"DISPLAY","DISPLAY","A")
CALL SMEND
REWIND 12
REWIND 10
WRITE(6,9001)
9001 FORMAT(1H1)
INX = 0
IOUT1X=7H
IOUT2X=7H
IOUT3X=7H
750 READ(12,9020)INY,IOUT1Y,IOUT2Y,IOUT3Y,PC,STA,COMM
IF(EOF(12)) 99991, 760
9020 FORMAT(I3,5X,3A7,1X,A5,1X,I6,1X,4A10)
760 CONTINUE
9025 FORMAT(5X,I3,5X,3A7,1X,A5,1X,I6,1X,4A10)
IF(INX.NE.INY) GO TO 800
IF(IOUT1X.NE.IOUT1Y) GO TO 800
IF(IOUT2X.NE.IOUT2Y) GO TO 800
IF(IOUT3X.NE.IOUT3Y) GO TO 800
GO TO 850
800 WRITE(10,9020)INY,IOUT1Y,IOUT2Y,IOUT3Y,PC,STA,COMM
850 INX=INY
IOUT1X=IOUT1Y
IOUT2X=IOUT2Y
IOUT3X=IOUT3Y
GO TO 750
99991 CONTINUE
REWIND 10
8888 DO 80 I=1,7

```



```
80 IPER(I)=1H
    READ(10,9021)INY,IP,PC,STA,COMM
9021 FORMAT(I3,5X,21A1,1X,F5.3,1X,I6,1X,4A10)
    IF (EOF(10)) 99992,81
81 K=7
    DO 83 I=1,21
    J=21-I+1
    IF(IP(J).EQ.1H ) GO TO 83
    IPER(K)=IP(J)
    K=K-1
83 CONTINUE
    WRITE(8,9022) INY,IPER,PC,STA,COMM
9022 FORMAT(I3,7A1,1X,F5.3,1X,I6,1X,4A10)
    GO TO 8888
99992 CONTINUE
END
```



Table D-3

PROGRAM NAME = PERCHRT

```

PROGRAM PERCHRT(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,
+TAPE9,TAPE10,TAPE20,TAPE77)
C           INPUT IS FROM TAPE10 WHICH IS CREATED BY
C           RUNNING THE PERSORT PROGRAM
C           PROGRAM CHARTS CALLED OUT OR AFFECTED
C           DIVERSIONS
DIMENSION PER(12),IEQU(3),CHART(16,3000)
DIMENSION DATES(2)
DATA IEQU/1R ,1R0,-1/,END/0/
REWIND 10
REWIND 9
REWIND 20
IMON =13
JMON= 0
YEAR=1
IYEAR = 0
DATES(1)=10H
DATES(2)=10H
10 CONTINUE
IPCNT = 0
IYEAR = IYEAR + 1
DO 40 I = 1, 3000
DO 40 J = 1,16
CHART(J,I) = 10H
40 CONTINUE
9001 FORMAT(1H1,5X,"YEAR = ",I5,10X,
+" JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG",
+" SEP   OCT   NOV   DEC",8X,2A10,//)
50 DO 100 I = 1, 12
PER(I)=4H
100 CONTINUE
READ(10,9000) MON,P1,P2,P3,PCT,STA
IF.EOF(10)) 250,200
9000 FORMAT(I3,5X,3A7,1X,A5,1X,I6)
200 IF(MON.LT.IMON) GO TO 300
BACKSPACE 10
GO TO 400
250 END = 1
GO TO 400
300 PER(MON-JMON) = PCT
WRITE(9,9010)P1,P2,P3,PER,STA
9010 FORMAT(3A7,12A5,5X,I6)
GO TO 50
400 CALL SMSORT(95,0)
CALL SMFILE("SORT","CODED",9,"REWIND")
CALL SMFILE("OUTPUT","CODED",20,"REWIND")
CALL SMEQU ("DISPLAY",IEQU)
CALL SMKEY(8,1,7,0,"DISPLAY","DISPLAY","A")

```



```

CALL SMKEY(15,1,7,0,"DISPLAY","DISPLAY","A")
CALL SMKEY(1,1,7,0,"DISPLAY","DISPLAY","A")
CALL SMEND
P1X=7H
P2X=7H
P3X=7H
500 READ(20,9010)P1,P2,P3,PER,STA
IF(EOF(20)) 1000,550
550 IF(P1X.NE.P1) GO TO 600
IF(P2X.NE.P2) GO TO 600
IF(P3X.NE.P3) GO TO 600
DO 570 I =1, 12
IF(PER(I).EQ.4H ) GO TO 570
CHART(I+3,IPCNT) = PER(I)
570 CONTINUE
GO TO 500
600 CONTINUE
DO 650 I = 1, 12
IF(PER(I).EQ.4H )GO TO 650
IPCNT = IPCNT +1
CHART(1,IPCNT) = P1
CHART(2,IPCNT) = P2
CHART(3,IPCNT)= P3
CHART(16,IPCNT) =STA
CHART(I+3,IPCNT) = PER(I)
650 CONTINUE
P1X=P1
P2X=P2
P3X=P3
DO 700 I = 1,12
PER(I) = 4H
700 CONTINUE
GO TO 500
1000 IMON = IMON + 12
JMON= JMON + 12
REWIND 9
REWIND 20
LINE = 65
DO 1900 J =1,IPCNT
IF(LINE .GT. 60) WRITE(6,9001)IYEAR,DATES
IF(LINE .GT. 60) LINE = 5
WRITE(6,9030) (CHART(I,J),I=1,16)
9030 FORMAT (1X,3A7,5X,12(A5,1X),5X,I6)
YEAR = YEAR + 1
LINE = LINE + 1
1900 CONTINUE
IF(END.EQ.1) GO TO 2000
GO TO 10
2000 STOP
END

```



Table D-4

PROGRAM NAME = INSCHRT

```

PROGRAM INSCHRT(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,
+TAPE9,TAPE10,TAPE20)
C           INPUT IS FROM TAPE10 WHICH IS CREATED BY
C           RUNNING THE PERSORT PROGRAM
C
C           PROGRAM CHARTS CALLED OUT OR AFFECTED
C           INSTREAM FLOW PERMITS
DIMENSION PER(12),IEQU(2),CHART(16,1000)
DIMENSION DATES(2)
DATA IEQU/1R ,1R0/,END/0/
REWIND 10
REWIND 9
REWIND 20
IMON =13
JMON= 0
IYEAR = 0
DATES(1)=10H
DATES(2)=10H
10  CONTINUE
IPCNT = 0
IYEAR = IYEAR + 1
DO 40 I = 1, 1000
DO 40 J = 1,16
CHART(J,I) = 10H
40  CONTINUE
9001 FORMAT(1H1,5X,"YEAR = ",I5,10X,
+" JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG",
+"   SEP   OCT   NOV   DEC",8X,2A10,//)
50  DO 100 I = 1, 12
PER(I)=4H
100 CONTINUE
READ(10,9000) MON,P1,P2,P3,PCT,STA
IF.EOF(10)) 250,200
9000 FORMAT(I3,5X,3A7,1X,A5,1X,A6)
200 IF(MON.LT.IMON) GO TO 300
BACKSPACE 10
GO TO 400
250 END = 1
GO TO 400
300 PER(MON-JMON) = PCT
WRITE(9,9010)P1,P2,P3,PER,STA
9010 FORMAT(3A7,12A5,5X,A6)
GO TO 50
400 CALL SMSORT(100,0)
CALL SMFILE("SORT", "CODED", 9, "REWIND")
CALL SMFILE("OUTPUT", "CODED", 20, "REWIND")
CALL SMEQU ("DISPLAY", IEQU)
CALL SMKEY(8,1,7,0, "DISPLAY", "DISPLAY", "A")
CALL SMKEY(15,1,7,0, "DISPLAY", "DISPLAY", "A")
CALL SMKEY(1,1,7,0, "DISPLAY", "DISPLAY", "A")

```



```

CALL SMKEY(87,1,6,0,"DISPLAY","DISPLAY","A")
CALL SMEND
P1X=7H
P2X=7H
P3X=7H
STAX=6H
500 READ(20,9010)P1,P2,P3,PER,STA
IF(EOF(20)) 1000,550
550 IF(P1X.NE.P1) GO TO 600
IF(P2X.NE.P2) GO TO 600
IF(P3X.NE.P3) GO TO 600
IF(STAX.NE.STA) GO TO 600
DO 570 I =1, 12
IF(PER(I).EQ.4H ) GO TO 570
CHART(I+3,IPCNT) = PER(I)
570 CONTINUE
GO TO 500
600 CONTINUE
DO 650 I = 1, 12
IF(PER(I).EQ.4H )GO TO 650
IPCNT = IPCNT +1
CHART(1,IPCNT) = P1
CHART(2,IPCNT) = P2
CHART(3,IPCNT)= P3
CHART(16,IPCNT) =STA
CHART(I+3,IPCNT) = PER(I)
650 CONTINUE
STAX=STA
P1X=P1
P2X=P2
P3X=P3
DO 700 I = 1,12
PER(I) = 4H
700 CONTINUE
GO TO 500
1000 IMON = IMON + 12
JMON= JMON + 12
REWIND 9
REWIND 20
LINE = 65
DO 1900 J =1,IPCNT
IF(LINE.GT.60) WRITE(6,9001)IYEAR,DATES
IF(LINE.GT.60) LINE = 5
WRITE(6,9030) (CHART(I,J),I=1,16)
9030 FORMAT (1X,3A7,5X,12(A4,2X),5X,A6)
LINE =LINE + 1
1900 CONTINUE
IF(END.EQ.1) GO TO 2000
GO TO 10
2000 STOP
END

```



Table D-5

PROCEDURE FILE NAME = RNCOMP

```
COMPARE,CM250000,T400,P2.  
USER,USERNO,PW. USERID  
GET,TAPE10=SAMP112,TAPE20=SAMP212.  
GET,CMPR2.  
FTN,I=CMPR2,L=0.  
MAP,OFF.  
LGO.  
RETURN,LGO.  
REWIND,TAPE30,TAPE40,TAPE50,TAPE60.  
COPYBF,TAPE50,SAMP266.  
COPYBF,TAPE60,SAMP265.  
REPLACE,SAMP266.  
REPLACE,SAMP265.  
REWIND,SAMP266.  
REWIND,SAMP265.  
RETURN,TAPE10,TAPE20,TAPE30.  
RETURN,TAPE40,TAPE50,TAPE60.  
GET,PERSORT.  
GET,TAPE12=SAMP266.  
MAP,OFF.  
FTN,I=PERSORT,L=0.  
LGO.  
RETURN,TAPE9.  
RETURN,LGO.  
REWIND,TAPE10.  
REWIND,TAPE8.  
REPLACE,TAPE8=SAMP281.  
RETURN,TAPE8,TAPE12.  
GET,PERCHRT.  
FTN,I=PERCHRT,L=0.  
LGO,PL=40000,,SAMP261.  
RETURN,LGO.  
REPLACE,SAMP261.  
REWIND,SAMP261.  
RETURN,TAPE6,TAPE9,TAPE10,TAPE20.  
GET,PERSORT.  
GET,TAPE12=SAMP265.  
FTN,I=PERSORT,L=0.  
LGO.  
RETURN,TAPE9.  
RETURN,LGO.  
REWIND,TAPE10.  
GET,PERCHRT.  
FTN,I=PERCHRT,L=0.  
LGO,PL=40000,,SAMP262.  
RETURN,LGO.  
REPLACE,SAMP262.  
EXIT,U.  
DAYFILE,DAYFIL2.  
REPLACE,DAYFIL2.
```



Table D-6

## PROGRAM NAME = CMPR2

```

PROGRAM COMPARE (INPUT,OUTPUT,TAPE10,TAPE20,TAPE30,TAPE40,
+ TAPE5=INPUT,TAPE6=OUTPUT,TAPE50,TAPE60)
C           PROGRAM COMPARES OUTPUT FILES FROM WIRSOS TAPE12&13
C           TO PRODUCE Affected LIST
DIMENSION BASEPER(3000),BASEPCT(3000),COMPPER(3000),
+COMPPCT(3000),BASESTA(3000),COMPSTA(3000)
DATA IEOF10/0/,IEOF20/0/
C           READ IN BASE AND COMPARE FILES
READ(10,9000) MONB
READ(20,9000) MONC
WRITE(30,7010)
7010 FORMAT(1H1,30X*WYOMING INTEGRATED RIVER SYSTEM OPERATION STUDY*/
+30X,*-----*/,
+40X*Affected(+) WATER RIGHTS *)
        WRITE(40,7020)
7020 FORMAT(1H1,30X*WYOMING INTEGRATED RIVER SYSTEM OPERATION STUDY*/
+30X,*-----*/,
+40X*Affected WATER RIGHTS *)
9000 FORMAT(I3,A7,F7.0,I6)
BACKSPACE 10
BACKSPACE 20
C
10      DO 100 I = 1,3000
        BASEPER(I)=10H
        BASEPCT(I)=0.0
        COMPPER(I) = 10H
        COMPPCT(I) = 0.0
100     CONTINUE
C
        IOMONB = MONB
        IOMONC = MONC
        IF(IOMONB .EQ. IOMONC) GO TO 180
        IF(IOMONB .LT. IOMONC) GO TO 150
        ICTC=0
        DO 140 I=1,3000
        READ(20,9000)MONC,COMPPER(I),COMPPCT(I),COMPSTA(I)
        IF.EOF(20)) 115,110
110     ICTC=ICTC+1
        IF(MONC .EQ. IOMONC) GO TO 140
        BACKSPACE 20
        ICTC=ICTC-1
        GO TO 145
115     IEOF20=1
        GO TO 145
140     CONTINUE
145     DO 146 I=1,ICTC
        WRITE(50,8030)IOMONC,COMPPER(I),COMPPCT(I),COMPSTA(I)
146     CONTINUE

```



```

        IF(IEOF10 .EQ. 1 .AND. IEOF20 .EQ. 1) STOP
        GO TO 10
150 ICTB=0
        DO 170 I=1,3000
        READ(10,9000)MONB,BASEPER(I),BASEPCT(I),BASESTA(I)
        IF.EOF(20) 160,155
155 ICTB=ICTB+1
        IF(MONB .EQ. IOMONB) GO TO 170
        BACKSPACE 10
        ICTB=ICTB-1
        GO TO 165
160 IEOF10=1
        GO TO 165
170 CONTINUE
165 DO 167 I=1,ICTB
        WRITE(60,8030)IOMONB,BASEPER(I),BASEPCT(I),BASESTA(I)
167 CONTINUE
        IF(IEOF10 .EQ. 1 .AND. IEOF20 .EQ. 1) STOP
        GO TO 10
C
C
180 ICTB = 0
        DO 200 I = 1,3000
        READ(10,9000)MONB,BASEPER(I),BASEPCT(I),BASESTA(I)
        IF.EOF(10) 195, 190
190 ICTB = ICTB + 1
        IF(MONB.EQ.IOMONB) GO TO 200
        BACKSPACE 10
        ICTB = ICTB -1
        GO TO 300
195 IEOF10 = 1
        GO TO 300
200 CONTINUE
C
300 ICTC = 0
        DO 400 I = 1,3000
        READ(20,9000)MONC,COMPPER(I),COMPPCT(I),COMPSTA(I)
        IF.EOF(20) 395, 390
390 ICTC = ICTC + 1
        IF(MONC.EQ.IOMONC) GO TO 400
        BACKSPACE 20
        ICTC = ICTC -1
        GO TO 500
395 IEOF20 = 1
        GO TO 500
400 CONTINUE
C
500 CONTINUE
C
C     CHECK BASE AGAINST COMP FILE PERMIT CHECK ONLY
        DO 1100 I = 1 , ICTB
        DO 1000 J = 1,ICTC

```



```

1000  IF(BASEPER(I).EQ.COMPPER(J)) GO TO 1100
      CONTINUE
      WRITE(30,9010) IOMONB,BASEPER(I),BASEPCT(I)
      WRITE(60,8030) IOMONC,BASEPER(I),BASEPCT(I),BASESTA(I)
9010  FORMAT(5X,"MONTH NO. = ",I3," BASE PERMIT NO. = ",A7,
+ " WITH PERCENT OF = ",F8.1," NOT FOUND IN COMPARE FILE")
1100  CONTINUE
C
C          CHECK COMPARE FILE AGAINST BASE FILE PERMIT AND PERCENT
      DO 1500 J = 1,ICTC
      DO 1400 I = 1, ICTB
      IF(COMPPER(J).EQ.BASEPER(I)) GO TO 1450
1400  CONTINUE
      WRITE(40,9030) IOMONC,COMPPER(J),COMPPCT(J)
      WRITE(50,8030) IOMONC,COMPPER(J),COMPPCT(J),COMPSTA(J)
9030  FORMAT(5X,"MONTH NO. = ",I3," COMPARE PERMIT NO. = ",A7,
+ " WITH PERCENT OF = ",F8.1," NOT FOUND IN BASE FILE")
     8030 FORMAT(I3,A7,1X,F5.1,1X,I6.6)
     GO TO 1500
1450  PCTDIFF = COMPPCT(J)-BASEPCT(I)
      IF(PCTDIFF.EQ.0.0) GO TO 1500
      IF(PCTDIFF.LT.0.0) GO TO 1425
      WRITE(40,9020) IOMONC,COMPPER(J),BASEPCT(I),
+COMPPCT(J),PCTDIFF
      WRITE(50,8030) IOMONC,COMPPER(J),PCTDIFF,COMPSTA(J)
9020  FORMAT(2X,"MON = "I3" PERMIT # = "A7" BASE% ="F8.1,
+ " COMP% = "F8.1" DIFF% = "F8.1)
     GO TO 1500
1425  WRITE(30,9020) IOMONC,COMPPER(J),BASEPCT(I),COMPPCT(J),PCTDIFF
     WRITE(60,8030) IOMONC,COMPPER(J),PCTDIFF,COMPSTA(J)
1500  CONTINUE
      IF(IEOF10.EQ.1.OR.IEOF20.EQ.1) STOP "EOF ON TAPE 10 OR 20"
      GO TO 10
      STOP "NORMAL ENDING"
      END

```



Table D-7  
PROCEDURE FILE NAME = RNTBL

```
TABLE,CM200000,T400,P2.  
USER,USERNO,PW. USERID  
GET,BASACR,TAPE8=BRDIVA.  
FTN,I=BASACR,L=0.  
MAP,OFF.  
LGO.  
RETURN,LGO.  
REWIND,TAPE7,TAPE9,TAPE10.  
REPLACE,TAPE7=BRACRE.  
RETURN,TAPE8.  
EXIT,U.  
GET,TLMONT,TAPE7=BRACRE,TAPE8=SAMP281.  
FTN,I=TLMONT,L=0.  
MAP,OFF.  
LGO,,SAMP291.  
RETURN,LGO.  
EXIT,U.  
REPLACE,SAMP291.  
EXIT,U.  
DAYFILE,DAYFILE.  
REPLACE,DAYFILE.  
*WEOR  
SAMPLE RUN #1 V. SAMPLE RUN #2  
*WEOF
```

1/31/85



Table D-8

## PROGRAM NAME = BASACR

```
PROGRAM BASACR (INPUT,OUTPUT,TAPE20,TAPE5=INPUT,TAPE6=OUTPUT,
+TAPE9=/250,TAPE10=/250,TAPE7,TAPE8=/250,TAPE21)
```

```
C
C   PROGRAM PRODUCES A LIST OF PERMITS AND ACREAGES IRRIGATED
C   AND SORTS BY PERMIT NO./ OUTPUT FILE USED AS BASE FILE IN
C   PRODUCING CALLED OUT OR AFFECTED TABLE/ ACREAGE AMOUNT MUST
C   BE IN FIRST FIELD OF "DIVER" ON DIVERSION CARD/
C
C   DIMENSION NUMB(10), IN2(7),IOUT1(7),IOUT2(7),IOUT3(7)
C   DIMENSION IEQU(2),AIN6(12),IX(21),IPER(7),IN7(11),IN4(20)
C   DATA NUMB/1H0,1H1,1H2,1H3,1H4,1H5,1H6,1H7,1H8,1H9/
C   DATA IEQU/1R ,1R0/
C   KP =0
10    READ(8,9000)IN2,IN3
9000  FORMAT(14X,7A1,10X,A7)
      IF (EOF(8)) 9999,50
50    DO 100 I=1,7
         IOUT1(I) = 1H
         IOUT2(I)=1H
         IOUT3(I)=1H
100   CONTINUE
      DO 250 I = 1,7
         J= 7 - I + 1
         KK = J
         DO 200 K = 1,10
            IF(IN2(J).EQ.NUMB(K)) GO TO 300
200   CONTINUE
250   CONTINUE
         KK = 0
         GO TO 311
300   CONTINUE
         IST = 7
         DO 310 I = 1,KK
            I2 = KK - I + 1
            IOUT2(IST) = IN2(I2)
            IST= IST -1
310   CONTINUE
311   IF(KK.EQ.7) GO TO 400
         IST = 1
         KK1 = KK + 1
         DO 350 I = KK1,7
            IOUT3(IST) = IN2(I)
            IST= IST + 1
350   CONTINUE
400   DO 500 I=1,7
            IN2(I) = IOUT2(I)
            IOUT2(I) = 1H
500   CONTINUE
```



```

L =7
DO 700 I =1,7
J =7+1-I
DO 600 K =1,10
IF (IN2(J).EQ.NUMB(K)) GO TO 650
600 CONTINUE
IOUT1(L) = IN2(J)
L = L-1
GO TO 700
650 IOUT2(J) =IN2(J)
700 CONTINUE
WRITE(10,9010)IOUT1,IOUT2,IOUT3,IN3
9010 FORMAT(14X,7A1,7A1,7A1,A10)
GO TO 10
9999 CONTINUE
REWIND 9
REWIND 10
CALL SMSORT(250,0)
CALL SMFILE("SORT","CODED",10,"REWIND")
CALL SMFILE("OUTPUT","CODED",9,"REWIND")
CALL SMEQU("DISPLAY",IEQU)
CALL SMKEY(22,1,7,0,"DISPLAY","DISPLAY","A")
CALL SMKEY(29,1,7,0,"DISPLAY","DISPLAY","A")
CALL SMKEY(15,1,7,0,"DISPLAY","DISPLAY","A")
CALL SMEND
REWIND 7
REWIND 8
REWIND 9
7000 DO 30 I=1,7
30 IPER(I)=1H
READ(9,9020) IX,IN3
IF.EOF(9)) 9998,800
9020 FORMAT (14X,21A1,A10)
800 K=7
DO 20 I=1,21
J=21-I+1
21 IF(IX(J).EQ.1H ) GO TO 20
IPER(K)=IX(J)
K=K-1
20 CONTINUE
WRITE(7,9030)IPER,IN3
9030 FORMAT(1X,7A1,A10)
7001 GO TO 7000
9998 STOP
END

```



Table D-9

PROGRAM NAME = TLMONT

```

PROGRAM TLMONT (INPUT,OUTPUT,TAPE5=INPUT,TAPE7,TAPE8,TAPE6=OUTPUT)
DIMENSION PERN1(3000),AMO(3000),TMONT(11,12),TITLE(6),CREEK(5)

C
C      THIS PROGRAM CALCULATES MONTHLY CALLED OUT OR AFFECTED AMOUNTS
C      AND PRODUCES THE RESULTS IN TABLE FORMAT BY MONTH AND BY YEAR
C      FOR TEN YEARS OF DATA
C
C      READ(5,1) TITLE,DATE
1      FORMAT(6A10,A10)
      KN2 =0
      K=1
      KN1 =0
      DO 6 J=1,12
      DO 5 I=1,11
5      TMONT(I,J) = 0
6      CONTINUE
10     FORMAT(I3,A7,F6.0)
      DO 25 I=1,3000
      READ (7,15) PERN1(I),AMO(I)
15     FORMAT(1X,A7,F10.0)
      IF (EOF(7)) 20,23
23     KN1 = KN1 + 1
25     CONTINUE
20     READ(8,10) MONTH,PERN2,PEC
      MM= (K * 12)
      IF(MONTH.GE.MM) K=K+1
      IF(EOF(8)) 99,30
30     CONTINUE
      JMM =(K*12)-12
      DO 35 I=1,KN1
      IF (PERN2.NE.PERN1(I)) GO TO 35
      DO 60 J=1,12
      JM = J+JMM
      IF(MONTH.EQ.JM) TMONT(K,J) = TMONT(K,J)+(ABS(PEC)*AMO(I))
60     CONTINUE
      GO TO 20
35     IF(I.EQ.KN1) GO TO 20
99     DO 50 J=1,12
      TOTAL=0.0
      DO 55 I=1,10
55     TOTAL=TMONT(I,J) + TOTAL
50     TMONT(11,J)=TOTAL/10.0
      WRITE(6,64)
64     FORMAT(1H1)
      WRITE(6,65)TITLE
65     FORMAT(//46X*BEAUMONT RIVER BASIN*//37X*ANALYSIS OF IMPACT*
      /* DUE TO IMPOSED CLAIM*
      //41X*AFFECTED STATE RIGHTS - ACRES*//,

```



```
+31X,*ALTERNATIVE-*6A10
+///3X*MONTH*7X*1970      1971      1972      1973      1974      *
+*1975      1976      1977      1978      1979      AVE*/122(1H-)/)
66   WRITE(6,66)((TMONTH(I,J),I=1,11),J=1,12)
      FORMAT(1X*JANUARY *11F10.0///* FEBRUARY *11F10.0///* MARCH *11F
+10.0///* APRIL *11F10.0///* MAY *11F10.0///* JUNE *11F10.
+0///* JULY *11F10.0///* AUGUST *11F10.0///* SEPTEMBER*11F10.0/
+/* OCTOBER *11F10.0///* NOVEMBER *11F10.0///* DECEMBER *11F10.0/)
      WRITE (6,67) DATE
67   FORMAT(/94X*LRCWE-390WY001*,/101XA10)
      STOP
      END
```



**Appendix E**  
**WIRSOS Output Data**

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**Appendix E (continued)**  
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Table E-1

YEAR 1

INITIAL RUNOFF IN MONTHLY CFS  
BEAUMONT RIVER BASIN - SAMPLE RUN #1      07:19:04 PST 11/07/84

| STATION | ORD | JAN | FEB | MAR | APRIL | MAY   | JUNE  | JULY  | AUG  | SEPT | OCT  | NOV  | DEC  | TOTAL (AF) |
|---------|-----|-----|-----|-----|-------|-------|-------|-------|------|------|------|------|------|------------|
| 71200   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71202   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71206   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 72200   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72204   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72208   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72210   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72414   | 2   | 8.5 | 6.2 | 8.5 | 37.4  | 101.9 | 204.5 | 130.0 | 39.6 | 17.5 | 17.0 | 11.7 | 11.3 | 35957.     |
| 72418   | 2   | 8.5 | 6.2 | 8.5 | 37.4  | 101.9 | 204.5 | 130.0 | 39.6 | 17.5 | 17.0 | 11.7 | 11.3 | 35957.     |
| 72600   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 72602   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 72604   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 73226   | 2   | 8.8 | 6.5 | 8.8 | 38.0  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 37322.     |
| 73228   | 2   | 8.8 | 6.5 | 8.8 | 38.0  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 37322.     |
| 73230   | 2   | 8.8 | 6.5 | 8.8 | 38.0  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 37322.     |
| 73232   | 2   | 8.8 | 6.5 | 8.8 | 38.0  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 37322.     |
| 73800   | 3   | 0.9 | 0.6 | 0.9 | 1.8   | 10.3  | 20.7  | 13.2  | 4.0  | 1.8  | 1.7  | 1.2  | 1.1  | 3521.      |
| 73804   | 3   | 0.9 | 0.6 | 0.9 | 1.8   | 10.3  | 20.7  | 13.2  | 4.0  | 1.8  | 1.7  | 1.2  | 1.1  | 3521.      |
| 74000   | 2   | 9.7 | 7.1 | 9.7 | 39.8  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 40843.     |
| 74002   | 2   | 9.7 | 7.1 | 9.7 | 39.8  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 40843.     |
| 75000   | 1   | 9.7 | 7.1 | 9.7 | 39.8  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 40843.     |



Table E-2

YEAR 2

INITIAL RUNOFF IN MONTHLY CFS  
BEAUMONT RIVER BASIN - SAMPLE RUN #1      07:19:04 PST 11/07/84

| STATION | ORD | JAN | FEB | MAR | APRIL | MAY   | JUNE  | JULY  | AUG  | SEPT | OCT  | NOV  | DEC  | TOTAL (AF) |
|---------|-----|-----|-----|-----|-------|-------|-------|-------|------|------|------|------|------|------------|
| 71200   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71202   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71206   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 72200   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 402.       |
| 72204   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 402.       |
| 72208   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 402.       |
| 72210   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 402.       |
| 72414   | 2   | 8.5 | 6.2 | 8.5 | 17.5  | 101.9 | 204.5 | 130.0 | 39.6 | 17.5 | 17.0 | 11.7 | 11.3 | 34777.     |
| 72418   | 2   | 8.5 | 6.2 | 8.5 | 17.5  | 101.9 | 204.5 | 130.0 | 39.6 | 17.5 | 17.0 | 11.7 | 11.3 | 34777.     |
| 72600   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 72602   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 72604   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 73226   | 2   | 8.8 | 6.5 | 8.8 | 18.2  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 36142.     |
| 73228   | 2   | 8.8 | 6.5 | 8.8 | 18.2  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 36142.     |
| 73230   | 2   | 8.8 | 6.5 | 8.8 | 18.2  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 36142.     |
| 73232   | 2   | 8.8 | 6.5 | 8.8 | 18.2  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 36142.     |
| 73800   | 3   | 0.9 | 0.6 | 0.9 | 1.8   | 10.3  | 20.7  | 13.2  | 4.0  | 1.8  | 1.7  | 1.2  | 1.1  | 3521.      |
| 73804   | 3   | 0.9 | 0.6 | 0.9 | 1.8   | 10.3  | 20.7  | 13.2  | 4.0  | 1.8  | 1.7  | 1.2  | 1.1  | 3521.      |
| 74000   | 2   | 9.7 | 7.1 | 9.7 | 20.0  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 39663.     |
| 74002   | 2   | 9.7 | 7.1 | 9.7 | 20.0  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 39663.     |
| 75000   | 1   | 9.7 | 7.1 | 9.7 | 20.0  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 39663.     |

E-2



Leonard Rice Consulting Water Engineers, Inc.

Table E-3

YEAR 1

FINAL RIVER SYSTEM STATUS MONTHLY CFS IN RIVER  
BEAUMONT RIVER BASIN - SAMPLE RUN #1    07:19:04 PST 11/07/84

E-3

| STATION | ORD | JAN | FEB | MAR | APRIL | MAY   | JUNE  | JULY  | AUG   | SEPT | OCT  | NOV  | DEC  | TOTAL (AF) |
|---------|-----|-----|-----|-----|-------|-------|-------|-------|-------|------|------|------|------|------------|
| 71200   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71202   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71206   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 72200   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72204   | 3   | 0.1 | 0.1 | 0.1 | 19.6  | 1.3   | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.0  | 0.0  | 1538.      |
| 72208   | 3   | 0.1 | 0.1 | 0.1 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  | 0.0  | 0.1  | 0.1  | 39.        |
| 72210   | 3   | 0.1 | 0.1 | 0.1 | 5.3   | 2.8   | 1.1   | 0.9   | 0.4   | 0.3  | 0.2  | 0.3  | 0.3  | 710.       |
| 72414   | 2   | 8.5 | 6.2 | 8.5 | 23.1  | 102.4 | 200.5 | 126.6 | 37.2  | 16.4 | 16.9 | 11.8 | 11.4 | 34485.     |
| 72418   | 2   | 0.0 | 0.0 | 0.0 | 13.5  | 90.5  | 185.8 | 112.1 | 23.8  | 4.9  | 7.0  | 2.0  | 1.5  | 26717.     |
| 72600   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5   | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 72602   | 3   | 0.3 | 0.2 | 0.3 | 0.5   | 2.2   | 4.1   | 1.1   | 0.0   | 0.0  | 0.5  | 0.5  | 0.4  | 614.       |
| 72604   | 3   | 0.3 | 0.2 | 0.3 | 0.5   | 2.8   | 5.7   | 3.1   | 1.2   | 0.6  | 0.7  | 0.6  | 0.5  | 1011.      |
| 73226   | 2   | 3.0 | 3.0 | 3.0 | 3.4   | 6.7   | 11.2  | 0.0   | 0.0   | 0.0  | 0.0  | 2.0  | 1.7  | 2039.      |
| 73228   | 2   | 3.0 | 3.0 | 3.0 | 3.4   | 23.3  | 47.7  | 88.0  | 159.7 | 91.8 | 23.8 | 4.8  | 4.9  | 27755.     |
| 73230   | 2   | 3.0 | 3.0 | 3.0 | 2.9   | 16.8  | 35.7  | 76.0  | 149.7 | 85.8 | 21.3 | 2.8  | 2.9  | 24506.     |
| 73232   | 2   | 0.0 | 0.0 | 0.0 | 0.0   | 12.8  | 28.5  | 69.3  | 144.3 | 82.8 | 20.3 | 1.8  | 1.8  | 22011.     |
| 73800   | 3   | 0.0 | 0.0 | 0.0 | 0.0   | 6.3   | 16.7  | 9.2   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 1949.      |
| 73804   | 3   | 0.8 | 0.6 | 0.8 | 1.1   | 5.4   | 17.7  | 3.8   | 0.0   | 0.0  | 1.1  | 1.1  | 1.0  | 2006.      |
| 74000   | 2   | 3.5 | 3.3 | 3.5 | 1.4   | 1.2   | 2.6   | 32.7  | 113.4 | 69.6 | 23.5 | 6.3  | 6.0  | 16238.     |
| 74002   | 2   | 3.5 | 3.3 | 3.5 | 2.1   | 7.7   | 19.8  | 55.6  | 138.8 | 88.6 | 30.7 | 8.4  | 7.2  | 22450.     |
| 75000   | 1   | 3.5 | 3.3 | 3.5 | 2.1   | 7.7   | 19.8  | 55.6  | 138.8 | 88.6 | 30.7 | 8.4  | 7.2  | 22450.     |



Table E-4

YEAR 2

FINAL RIVER SYSTEM STATUS MONTHLY CFS IN RIVER  
BEAUMONT RIVER BASIN - SAMPLE RUN #1    07:19:04 PST 11/07/84

| STATION | ORD | JAN | FEB | MAR | APRIL | MAY   | JUNE  | JULY  | AUG   | SEPT  | OCT  | NOV  | DEC  | TOTAL (AF) |
|---------|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|------|------|------|------------|
| 71200   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3  | 16.8 | 11.5 | 11.2 | 34375.     |
| 71202   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3  | 16.8 | 11.5 | 11.2 | 34375.     |
| 71206   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3  | 16.8 | 11.5 | 11.2 | 34375.     |
| 72200   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 1.3   | 2.3   | 1.4   | 0.4   | 0.2   | 0.2  | 0.1  | 0.1  | 402.       |
| 72204   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 1.3   | 2.3   | 1.4   | 0.4   | 0.2   | 0.2  | 0.0  | 0.0  | 385.       |
| 72208   | 3   | 0.1 | 0.1 | 0.1 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  | 0.1  | 0.1  | 38.        |
| 72210   | 3   | 0.2 | 0.2 | 0.2 | 0.1   | 0.4   | 0.8   | 0.7   | 0.3   | 0.2   | 0.2  | 0.2  | 0.2  | 217.       |
| 72414   | 2   | 8.6 | 6.4 | 8.6 | 17.3  | 99.7  | 200.1 | 126.4 | 37.1  | 16.3  | 16.8 | 11.7 | 11.3 | 33931.     |
| 72418   | 2   | 0.0 | 0.0 | 0.0 | 7.1   | 87.6  | 185.4 | 111.9 | 23.7  | 4.8   | 6.9  | 1.8  | 1.4  | 26086.     |
| 72600   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5   | 0.7   | 0.7  | 0.5  | 0.4  | 1365.      |
| 72602   | 3   | 0.3 | 0.2 | 0.3 | 0.5   | 2.2   | 4.1   | 1.1   | 0.0   | 0.0   | 0.5  | 0.5  | 0.4  | 614.       |
| 72604   | 3   | 0.4 | 0.3 | 0.4 | 0.6   | 2.9   | 5.7   | 3.1   | 1.2   | 0.6   | 0.7  | 0.6  | 0.5  | 1035.      |
| 73226   | 2   | 1.4 | 1.1 | 1.2 | 1.4   | 4.2   | 2.0   | 0.0   | 0.0   | 0.0   | 0.0  | 1.9  | 1.7  | 902.       |
| 73228   | 2   | 4.9 | 4.9 | 4.9 | 6.6   | 22.8  | 47.4  | 123.2 | 198.2 | 109.8 | 27.1 | 4.8  | 4.9  | 34041.     |
| 73230   | 2   | 2.9 | 2.9 | 2.9 | 4.1   | 16.3  | 35.4  | 111.2 | 188.2 | 103.8 | 24.6 | 2.8  | 2.9  | 30316.     |
| 73232   | 2   | 1.8 | 1.8 | 1.8 | 2.7   | 12.4  | 28.3  | 104.5 | 182.9 | 100.9 | 23.6 | 1.8  | 1.8  | 28263.     |
| 73800   | 3   | 0.0 | 0.0 | 0.0 | 0.0   | 6.3   | 16.7  | 9.2   | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 1949.      |
| 73804   | 3   | 0.8 | 0.6 | 0.8 | 1.1   | 5.4   | 17.7  | 3.8   | 0.0   | 0.0   | 1.1  | 1.1  | 1.0  | 2006.      |
| 74000   | 2   | 5.7 | 5.5 | 5.7 | 4.6   | 1.2   | 2.6   | 68.0  | 152.0 | 87.7  | 26.8 | 6.3  | 6.0  | 22643.     |
| 74002   | 2   | 6.8 | 6.6 | 6.8 | 6.4   | 8.7   | 20.5  | 92.2  | 178.4 | 106.7 | 34.0 | 8.4  | 7.2  | 29358.     |
| 75000   | 1   | 6.8 | 6.6 | 6.8 | 6.4   | 8.7   | 20.5  | 92.2  | 178.4 | 106.7 | 34.0 | 8.4  | 7.2  | 29358.     |



Table E-5

YEAR 1

FINAL RIVER SYSTEM STATUS MONTHLY CFS AVAILABLE IN RIVER  
 BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84  
 (WATER AVAILABLE FOR DIVERSIONS MAY BE CONTROLLED  
 BY DOWNSTREAM FLOWS. WATER AVAILABLE FOR INSTREAM  
 FLOWS IS CONTROLLED BY FLOW AT INTERESTED STATION ONLY.)

| STATION | ORD | JAN | FEB | MAR | APRIL | MAY  | JUNE  | JULY  | AUG   | SEPT | OCT  | NOV | DEC | TOTAL (AF) |
|---------|-----|-----|-----|-----|-------|------|-------|-------|-------|------|------|-----|-----|------------|
| 71200   | 2   | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5 | 13.9 | 9.7 | 9.4 | 28706.     |
| 71202   | 2   | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5 | 13.9 | 9.7 | 9.4 | 28706.     |
| 71206   | 2   | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5 | 13.9 | 9.7 | 9.4 | 28706.     |
| 72200   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3  | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.1 | 0.1 | 1582.      |
| 72204   | 3   | 0.1 | 0.1 | 0.1 | 19.6  | 1.3  | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.0 | 0.0 | 1538.      |
| 72208   | 3   | 0.1 | 0.1 | 0.1 | 0.0   | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  | 0.0  | 0.1 | 0.1 | 39.        |
| 72210   | 3   | 0.1 | 0.1 | 0.1 | 5.3   | 2.8  | 1.1   | 0.9   | 0.4   | 0.3  | 0.2  | 0.3 | 0.3 | 710.       |
| 72414   | 2   | 0.0 | 0.0 | 0.0 | 13.1  | 92.4 | 190.5 | 116.6 | 27.2  | 6.4  | 6.9  | 1.8 | 1.4 | 27640.     |
| 72418   | 2   | 0.0 | 0.0 | 0.0 | 13.5  | 90.5 | 185.8 | 112.1 | 23.8  | 4.9  | 7.0  | 2.0 | 1.5 | 26717.     |
| 72600   | 3   | 0.2 | 0.1 | 0.2 | 0.5   | 2.6  | 5.3   | 4.7   | 1.2   | 0.5  | 0.5  | 0.3 | 0.3 | 997.       |
| 72602   | 3   | 0.3 | 0.2 | 0.3 | 0.5   | 2.2  | 4.1   | 1.1   | 0.0   | 0.0  | 0.5  | 0.5 | 0.4 | 614.       |
| 72604   | 3   | 0.3 | 0.2 | 0.3 | 0.5   | 2.8  | 5.7   | 3.1   | 1.2   | 0.6  | 0.7  | 0.6 | 0.5 | 1011.      |
| 73226   | 2   | 3.0 | 3.0 | 3.0 | 3.4   | 6.7  | 11.2  | 0.0   | 0.0   | 0.0  | 0.0  | 2.0 | 1.7 | 2039.      |
| 73228   | 2   | 3.0 | 3.0 | 3.0 | 3.4   | 23.3 | 47.7  | 88.0  | 159.7 | 91.8 | 23.8 | 4.8 | 4.9 | 27755.     |
| 73230   | 2   | 3.0 | 3.0 | 3.0 | 2.9   | 16.8 | 35.7  | 76.0  | 149.7 | 85.8 | 21.3 | 2.8 | 2.9 | 24506.     |
| 73232   | 2   | 0.0 | 0.0 | 0.0 | 0.0   | 12.8 | 28.5  | 69.3  | 144.3 | 82.8 | 20.3 | 1.8 | 1.8 | 22011.     |
| 73800   | 3   | 0.0 | 0.0 | 0.0 | 0.0   | 6.3  | 16.7  | 9.2   | 0.0   | 0.0  | 0.0  | 0.0 | 0.0 | 1949.      |
| 73804   | 3   | 0.8 | 0.6 | 0.8 | 1.1   | 5.4  | 17.7  | 3.8   | 0.0   | 0.0  | 1.1  | 1.1 | 1.0 | 2006.      |
| 74000   | 2   | 3.5 | 3.3 | 3.5 | 1.4   | 1.2  | 2.6   | 32.7  | 113.4 | 69.6 | 23.5 | 6.3 | 6.0 | 16238.     |
| 74002   | 2   | 3.5 | 3.3 | 3.5 | 2.1   | 7.8  | 19.9  | 56.4  | 140.4 | 89.3 | 30.7 | 8.4 | 7.2 | 22641.     |
| 75000   | 1   | 3.5 | 3.3 | 3.5 | 2.1   | 7.8  | 19.9  | 56.4  | 140.4 | 89.3 | 30.7 | 8.4 | 7.2 | 22641.     |



Table E-6

YEAR 2

FINAL RIVER SYSTEM STATUS MONTHLY CFS AVAILABLE IN RIVER  
 BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84  
 (WATER AVAILABLE FOR DIVERSIONS MAY BE CONTROLLED  
 BY DOWNSTREAM FLOWS. WATER AVAILABLE FOR INSTREAM  
 FLOWS IS CONTROLLED BY FLOW AT INTERESTED STATION ONLY.)

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| STATION | ORD | JAN | FEB | MAR | APRIL | MAY  | JUNE  | JULY  | AUG   | SEPT  | OCT  | NOV | DEC | TOTAL (AF) |
|---------|-----|-----|-----|-----|-------|------|-------|-------|-------|-------|------|-----|-----|------------|
| 71200   | 2   | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5  | 13.9 | 9.7 | 9.4 | 28706.     |
| 71202   | 2   | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5  | 13.9 | 9.7 | 9.4 | 28706.     |
| 71206   | 2   | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5  | 13.9 | 9.7 | 9.4 | 28706.     |
| 72200   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 1.3  | 2.3   | 1.4   | 0.4   | 0.2   | 0.2  | 0.1 | 0.1 | 402.       |
| 72204   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 1.3  | 2.3   | 1.4   | 0.4   | 0.2   | 0.2  | 0.0 | 0.0 | 385.       |
| 72208   | 3   | 0.1 | 0.1 | 0.1 | 0.0   | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  | 0.1 | 0.1 | 38.        |
| 72210   | 3   | 0.2 | 0.2 | 0.2 | 0.1   | 0.4  | 0.8   | 0.7   | 0.3   | 0.2   | 0.2  | 0.2 | 0.2 | 217.       |
| 72414   | 2   | 0.0 | 0.0 | 0.0 | 7.3   | 89.7 | 190.1 | 116.4 | 27.1  | 6.3   | 6.8  | 1.7 | 1.3 | 27062.     |
| 72418   | 2   | 0.0 | 0.0 | 0.0 | 7.1   | 87.6 | 185.4 | 111.9 | 23.7  | 4.8   | 6.9  | 1.8 | 1.4 | 26086.     |
| 72600   | 3   | 0.2 | 0.1 | 0.2 | 0.5   | 2.6  | 5.3   | 4.7   | 1.2   | 0.5   | 0.5  | 0.3 | 0.3 | 997.       |
| 72602   | 3   | 0.3 | 0.2 | 0.3 | 0.5   | 2.2  | 4.1   | 1.1   | 0.0   | 0.0   | 0.5  | 0.5 | 0.4 | 614.       |
| 72604   | 3   | 0.4 | 0.3 | 0.4 | 0.6   | 2.9  | 5.7   | 3.1   | 1.2   | 0.6   | 0.7  | 0.6 | 0.5 | 1035.      |
| 73226   | 2   | 1.4 | 1.1 | 1.2 | 1.4   | 4.2  | 2.0   | 0.0   | 0.0   | 0.0   | 0.0  | 1.9 | 1.7 | 902.       |
| 73228   | 2   | 4.9 | 4.9 | 4.9 | 6.6   | 22.8 | 47.4  | 123.2 | 198.2 | 109.8 | 27.1 | 4.8 | 4.9 | 34041.     |
| 73230   | 2   | 2.9 | 2.9 | 2.9 | 4.1   | 16.3 | 35.4  | 111.2 | 188.2 | 103.8 | 24.6 | 2.8 | 2.9 | 30316.     |
| 73232   | 2   | 1.8 | 1.8 | 1.8 | 2.7   | 12.4 | 28.3  | 104.5 | 182.9 | 100.9 | 23.6 | 1.8 | 1.8 | 28263.     |
| 73800   | 3   | 0.0 | 0.0 | 0.0 | 0.0   | 6.3  | 16.7  | 9.2   | 0.0   | 0.0   | 0.0  | 0.0 | 0.0 | 1949.      |
| 73804   | 3   | 0.8 | 0.6 | 0.8 | 1.1   | 5.4  | 17.7  | 3.8   | 0.0   | 0.0   | 1.1  | 1.1 | 1.0 | 2006.      |
| 74000   | 2   | 5.7 | 5.5 | 5.7 | 4.6   | 1.2  | 2.6   | 68.0  | 152.0 | 87.7  | 26.8 | 6.3 | 6.0 | 22643.     |
| 74002   | 2   | 6.8 | 6.6 | 6.8 | 6.4   | 8.7  | 20.5  | 92.9  | 180.0 | 107.5 | 34.0 | 8.4 | 7.2 | 29549.     |
| 75000   | 1   | 6.8 | 6.6 | 6.8 | 6.4   | 8.7  | 20.5  | 92.9  | 180.0 | 107.5 | 34.0 | 8.4 | 7.2 | 29549.     |



Table E-7

30 JOHN RESERVOIR (MAX CAP 50000. AF)  
(MIN CAP 5000. AF)RESERVOIR STATUS REPORT  
BEAUMONT RIVER BASIN - SAMPLE RUN #1

07:19:04 PST 11/07/84

| MONTH      | YEAR | STORAGE ADDED | DOWNSTREAM FLOW AT RESERVOIR | POWER RELEASE REQUESTED | ACTUAL POWER RELEASE | NON-PROJECT RELEASE REQUESTED | ACTUAL NON-PROJECT RELEASE | RELEASE FOR PROJECT RIGHTS | EVAPORATION LOSS | END OF MONTH VOLUME | ALL RES RIGHTS MET |
|------------|------|---------------|------------------------------|-------------------------|----------------------|-------------------------------|----------------------------|----------------------------|------------------|---------------------|--------------------|
|            |      |               |                              |                         |                      |                               |                            |                            |                  |                     |                    |
|            |      | AF            | CFS                          | AF                      | AF                   | AF                            | AF                         | CFS                        | AF               | AF                  |                    |
| JAN        | 1    | 304.          | 3.0                          | 0.                      | 0.                   | 0.                            | 0.                         | 0.0                        | 0.               | 304.                | NO                 |
| FEB        | 1    | 159.          | 3.0                          | 0.                      | 0.                   | 0.                            | 0.                         | 0.0                        | 0.               | 463.                | NO                 |
| MAR        | 1    | 304.          | 3.0                          | 0.                      | 0.                   | 0.                            | 0.                         | 0.0                        | 0.               | 767.                | NO                 |
| APR        | 1    | 1176.         | 3.4                          | 0.                      | 0.                   | 0.                            | 0.                         | 0.0                        | 0.               | 1943.               | NO                 |
| MAY        | 1    | 5938.         | 23.3                         | 0.                      | 0.                   | 0.                            | 0.                         | 16.6                       | 1.               | 6861.               | NO                 |
| JUNE       | 1    | 11407.        | 47.7                         | 0.                      | 0.                   | 93.                           | 93.                        | 35.0                       | 9.               | 16085.              | NO                 |
| JULY       | 1    | 7821.         | 88.0                         | 609.                    | 609.                 | 3143.                         | 3143.                      | 27.0                       | 16.              | 18481.              | NO                 |
| AUG        | 1    | 2257.         | 159.7                        | 942.                    | 942.                 | 7523.                         | 7523.                      | 22.0                       | 16.              | 10906.              | NO                 |
| SEPT       | 1    | 969.          | 91.8                         | 113.                    | 113.                 | 4634.                         | 4634.                      | 12.0                       | 7.               | 6406.               | NO                 |
| OCT        | 1    | 1070.         | 23.8                         | 0.                      | 0.                   | 1266.                         | 1266.                      | 3.2                        | 0.               | 6013.               | NO                 |
| NOV        | 1    | 585.          | 4.8                          | 0.                      | 0.                   | 51.                           | 51.                        | 2.0                        | 0.               | 6428.               | NO                 |
| DEC        | 1    | 580.          | 4.9                          | 0.                      | 0.                   | 71.                           | 71.                        | 2.0                        | 0.               | 6815.               | NO                 |
| <hr/>      |      | <hr/>         |                              | <hr/>                   |                      | <hr/>                         |                            | <hr/>                      |                  | <hr/>               |                    |
| TOTALS(AF) |      | 32570.        | 27752.5                      | 1664.                   | 1664.                | 16781.                        | 16781.                     | 7269.1                     | 49.              |                     |                    |
| JAN        | 2    | 425.          | 4.9                          | 0.                      | 0.                   | 91.                           | 91.                        | 2.0                        | 0.               | 7028.               | NO                 |
| FEB        | 2    | 287.          | 4.9                          | 0.                      | 0.                   | 101.                          | 101.                       | 2.0                        | 0.               | 7102.               | NO                 |
| MAR        | 2    | 439.          | 4.9                          | 0.                      | 0.                   | 105.                          | 105.                       | 2.0                        | 0.               | 7315.               | NO                 |
| APR        | 2    | 926.          | 6.6                          | 0.                      | 0.                   | 116.                          | 116.                       | 3.2                        | 0.               | 7932.               | NO                 |
| MAY        | 2    | 5922.         | 22.8                         | 0.                      | 0.                   | 147.                          | 147.                       | 16.2                       | 2.               | 12710.              | NO                 |
| JUNE       | 2    | 11935.        | 47.4                         | 246.                    | 246.                 | 373.                          | 373.                       | 35.0                       | 9.               | 21937.              | NO                 |
| JULY       | 2    | 7813.         | 123.2                        | 1194.                   | 1194.                | 4723.                         | 4723.                      | 27.0                       | 16.              | 22159.              | NO                 |
| AUG        | 2    | 2252.         | 198.2                        | 1351.                   | 1351.                | 9485.                         | 9485.                      | 22.0                       | 16.              | 12209.              | NO                 |
| SEPT       | 2    | 963.          | 109.8                        | 276.                    | 276.                 | 5546.                         | 5546.                      | 12.0                       | 7.               | 6628.               | NO                 |
| OCT        | 2    | 1064.         | 27.1                         | 0.                      | 0.                   | 1465.                         | 1465.                      | 3.2                        | 0.               | 6028.               | NO                 |
| NOV        | 2    | 579.          | 4.8                          | 0.                      | 0.                   | 51.                           | 51.                        | 2.0                        | 0.               | 6437.               | NO                 |
| DEC        | 2    | 574.          | 4.9                          | 0.                      | 0.                   | 72.                           | 72.                        | 2.0                        | 0.               | 6817.               | NO                 |
| <hr/>      |      | <hr/>         |                              | <hr/>                   |                      | <hr/>                         |                            | <hr/>                      |                  | <hr/>               |                    |
| TOTALS(AF) |      | 33179.        | 34039.2                      | 3067.                   | 3067.                | 22275.                        | 22275.                     | 7792.0                     | 50.              |                     |                    |



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Table E-8

## CALLOUT LIST

YEAR 1 MONTH JAN BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84

|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION      | DETAILS (VALUES IN CFS)     |       |                     |
|---------------|---------|--------|-------------------|-----------------------|--------------------------|-----------------------------|-------|---------------------|
| PART DIVERSN  | 72418   | M768   | 318 1907          | 15.1                  | TOWN OF BEAUMONT         | 10.0                        | REQ   | 8.5 AVAIL AT 72418  |
| NO DIVERSION  | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.              | SEN DS DIV NOT FULLY MET AT | 72418 |                     |
| PART DIVERSN  | 73800   | 2340   | 422 1944          | 78.0                  | ALPO CREEK, SPOON DITCH  | 4.0                         | REQ   | 0.9 AVAIL AT 73800  |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 99.4                  | JOHN RESERVOIR           | 813.2                       | REQ   | 4.9 AVAIL AT 73232  |
| NO JPR NOSP   | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH | 2.0                         | REQ   | 0.0 AVAIL AT RES 30 |
| PART JPR RIV  | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH | 2.0                         | REQ   | 0.0 AVAIL AT 73232  |
| IFR NOT MET   | 72414   | 19154D | 115 2000          | 15.1                  | DEAD BIRD DITCH          | 10.0                        | REQ   | 8.5 AVAILABLE       |



. Table E-8

## CALLOUT LIST

YEAR 1 MONTH FEB BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84

|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION      | DETAILS (VALUES IN CFS)           |
|---------------|---------|--------|-------------------|-----------------------|--------------------------|-----------------------------------|
| PART DIVERSN  | 72418   | M768   | 318 1907          | 37.5                  | TOWN OF BEAUMONT         | 10.0 REQ 6.2 AVAIL AT 72418       |
| NO DIVERSION  | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.              | SEN DS DIV NOT FULLY MET AT 72418 |
| PART DIVERSN  | 73800   | 2340   | 422 1944          | 84.2                  | ALPO CREEK, SPOON DITCH  | 4.0 REQ 0.6 AVAIL AT 73800        |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 99.7                  | JOHN RESERVOIR           | 894.8 REQ 2.9 AVAIL AT 73232      |
| NO JPR NOSP   | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH | 2.0 REQ 0.0 AVAIL AT RES 30       |
| PART JPR RIV  | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH | 2.0 REQ 0.0 AVAIL AT 73232        |
| IFR NOT MET   | 72414   | 19154D | 115 2000          | 37.5                  | DEAD BIRD DITCH          | 10.0 REQ 6.2 AVAILABLE            |

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Table E-8  
CALLOUT LIST

YEAR 1 MONTH MAR BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84

|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION      | DETAILS (VALUES IN CFS)           |     |                     |
|---------------|---------|--------|-------------------|-----------------------|--------------------------|-----------------------------------|-----|---------------------|
| PART DIVERSN  | 72418   | M768   | 318 1907          | 15.1                  | TOWN OF BEAUMONT         | 10.0                              | REQ | 8.5 AVAIL AT 72418  |
| NO DIVERSION  | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.              | SEN DS DIV NOT FULLY MET AT 72418 |     |                     |
| PART DIVERSN  | 73800   | 2340   | 422 1944          | 78.0                  | ALPO CREEK, SPOON DITCH  | 4.0                               | REQ | 0.9 AVAIL AT 73800  |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 99.4                  | JOHN RESERVOIR           | 805.6                             | REQ | 4.9 AVAIL AT 73232  |
| NO JPR NOSP   | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH | 2.0                               | REQ | 0.0 AVAIL AT RES 30 |
| PART JPR RIV  | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH | 2.0                               | REQ | 0.0 AVAIL AT 73232  |
| IFR NOT MET   | 72414   | 19154D | 115 2000          | 15.1                  | DEAD BIRD DITCH          | 10.0                              | REQ | 8.5 AVAILABLE       |

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Table E-8  
CALLOUT LIST

YEAR 1 MONTH APR BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84

|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION             | DETAILS (VALUES IN CFS)           |
|---------------|---------|--------|-------------------|-----------------------|---------------------------------|-----------------------------------|
| PART DIVERSN  | 72204   | N1961  | 703 1941          | 77.6                  | SPEEDY P.L.                     | 2.0 REQ 0.4 AVAIL AT 72208        |
| PART DIVERSN  | 73800   | 2340   | 422 1944          | 55.9                  | ALPO CREEK, SPOON DITCH         | 4.0 REQ 1.8 AVAIL AT 73800        |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 97.6                  | JOHN RESERVOIR                  | 827.4 REQ 19.8 AVAIL AT 73232     |
| NO JPR NOSP   | 74000   | 2217   | 529 1961          | 100.0                 | BEAUMONT RIVER BELOW ALPO CREEK | 0.8 REQ 0.0 AVAIL AT RES 30       |
| NO JPR NOSP   | 74000   | 2239   | 422 1963          | 100.0                 | BEAUMONT RIVER BELOW ALPO CREEK | 0.5 REQ 0.0 AVAIL AT RES 30       |
| NO JPR NOSP   | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH        | 2.0 REQ 0.0 AVAIL AT RES 30       |
| PART PROJ RIV | 73232   | 2650   | 1010 1974         | 100.0                 | FISH #1 & #2 DITCHES            | 0.4 REQ 0.0 AVAIL AT 73232        |
| NO PROJ RES   | 73232   | 2650   | 1010 1974         | 100.0                 | FISH #1 & #2 DITCHES            | 0.4 REQ 0.0 AVAIL AT RES 30       |
| NO DIVERSION  | 71202   | 2576   | 310 1978          | 100.0                 | STARLING DITCH                  | SEN DS RES NOT FULLY MET AT 73226 |
| NO DIVERSION  | 71206   | 2577   | 310 1978          | 100.0                 | ASHLEY STOCK RESERVOIR          | SEN DS RES NOT FULLY MET AT 73226 |
| NO JPR RIV    | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH        | SEN DS DIV NOT FULLY MET AT 73232 |

Table E-8

## CALLOUT LIST

YEAR 1 MONTH MAY BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84

|                   | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION  | DETAILS (VALUES IN CFS)           |
|-------------------|---------|--------|-------------------|-----------------------|----------------------|-----------------------------------|
| PART DIVERSN      | 72208   | 1662   | 618 1923          | 29.6                  | S.D.P. DITCH         | 1.8 REQ 1.3 AVAIL AT 72208        |
| NO DIVERSION      | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.          | SEN DS DIV NOT FULLY MET AT 72208 |
| PART RES STOR     | 73226   | JOHN   | 1231 1960         | 87.6                  | JOHN RESERVOIR       | 781.6 REQ 96.6 AVAIL AT 73232     |
| PART PROJ RIV     | 73232   | 2650   | 1010 1974         | 93.1                  | FISH #1 & #2 DITCHES | 3.6 REQ 0.2 AVAIL AT 74000        |
| E-12 NO DIVERSION | 71202   | 2576   | 310 1978          | 100.0                 | STARLING DITCH       | SEN DS RES NOT FULLY MET AT 73226 |



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Table E-8  
CALLOUT LIST

YEAR 1 MONTH JUNE BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84

|               | STATION       | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION | DETAILS (VALUES IN CFS)           |                                   |
|---------------|---------------|--------|-------------------|-----------------------|---------------------|-----------------------------------|-----------------------------------|
| PART DIVERSN  | 72208         | 1662   | 618 1923          | 43.7                  | S.D.P. DITCH        | 4.0 REQ 2.3 AVAIL AT 72208        |                                   |
| NO DIVERSION  | 72204         | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.         | SEN DS DIV NOT FULLY MET AT 72208 |                                   |
| PART RES STOR | 73226         | JOHN   | 1231 1960         | 72.9                  | JOHN RESERVOIR      | 707.8 REQ 191.7 AVAIL AT 74000    |                                   |
| PART DIVERSN  | 73804         | 2717   | 529 1961          | 70.7                  | HAWKEYE DITCH       | 9.0 REQ 2.6 AVAIL AT 74000        |                                   |
| E-13          | PART PROJ RIV | 73232  | 2650              | 1010 1974             | 99.6                | FISH #1 & #2 DITCHES              | 8.0 REQ 0.0 AVAIL AT 74000        |
|               | NO DIVERSION  | 71202  | 2576              | 310 1978              | 100.0               | STARLING DITCH                    | SEN DS RES NOT FULLY MET AT 73226 |



Leonard Rice Consulting Water Engineers, Inc.

Table E-8  
CALLOUT LIST

YEAR 1 MONTH JULY BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84

|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION | DETAILS (VALUES IN CFS)           |
|---------------|---------|--------|-------------------|-----------------------|---------------------|-----------------------------------|
| PART DIVERSN  | 72208   | 1662   | 618 1923          | 64.2                  | S.D.P. DITCH        | 4.0 REQ 1.4 AVAIL AT 72208        |
| NO DIVERSION  | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.         | SEN DS DIV NOT FULLY MET AT 72208 |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 74.5                  | JOHN RESERVOIR      | 499.5 REQ 127.2 AVAIL AT 73226    |
| NO DIVERSION  | 71202   | 2576   | 310 1978          | 100.0                 | STARLING DITCH      | SEN DS RES NOT FULLY MET AT 73226 |

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Leonard Rice Consulting Water Engineers, Inc.

Table E-8  
CALLOUT LIST

YEAR 1 MONTH AUG BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84

|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION | DETAILS (VALUES IN CFS)     |               |       |
|---------------|---------|--------|-------------------|-----------------------|---------------------|-----------------------------|---------------|-------|
| PART DIVERSN  | 72602   | 1211   | 1103 1913         | 51.7                  | FREEDOM #1 DITCH    | 3.2 REQ                     | 1.5 AVAIL AT  | 72602 |
| PART DIVERSN  | 72208   | 1662   | 618 1923          | 86.3                  | S.D.P. DITCH        | 3.2 REQ                     | 0.4 AVAIL AT  | 72208 |
| NO DIVERSION  | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.         | SEN DS DIV NOT FULLY MET AT | 72208         |       |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 90.1                  | JOHN RESERVOIR      | 372.3 REQ                   | 36.7 AVAIL AT | 73226 |
| PART DIVERSN  | 73804   | 2717   | 529 1961          | 50.0                  | HAWKEYE DITCH       | 7.2 REQ                     | 3.6 AVAIL AT  | 73804 |
| NO DIVERSION  | 71202   | 2576   | 310 1978          | 100.0                 | STARLING DITCH      | SEN DS RES NOT FULLY MET AT | 73226         |       |

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Table E-8  
CALLOUT LIST

YEAR 1 MONTH SEPT BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84

|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION     | DETAILS (VALUES IN CFS)     |               |       |
|---------------|---------|--------|-------------------|-----------------------|-------------------------|-----------------------------|---------------|-------|
| PART DIVERSN  | 72602   | 1211   | 1103 1913         | 61.1                  | FREEDOM #1 DITCH        | 1.6 REQ                     | 0.6 AVAIL AT  | 72602 |
| PART DIVERSN  | 72208   | 1662   | 618 1923          | 86.3                  | S.D.P. DITCH            | 1.6 REQ                     | 0.2 AVAIL AT  | 72208 |
| NO DIVERSION  | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.             | SEN DS DIV NOT FULLY MET AT |               | 72208 |
| PART DIVERSN  | 73800   | 2340   | 422 1944          | 55.9                  | ALPO CREEK, SPOON DITCH | 4.0 REQ                     | 1.8 AVAIL AT  | 73800 |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 95.3                  | JOHN RESERVOIR          | 346.8 REQ                   | 16.3 AVAIL AT | 73226 |
| PART DIVERSN  | 73804   | 2717   | 529 1961          | 55.9                  | HAWKEYE DITCH           | 3.6 REQ                     | 1.6 AVAIL AT  | 73804 |
| NO DIVERSION  | 71202   | 2576   | 310 1978          | 100.0                 | STARLING DITCH          | SEN DS RES NOT FULLY MET AT |               | 73226 |

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Leonard Rice Consulting Water Engineers, Inc.

Table E-8  
CALLOUT LIST

YEAR 1 MONTH OCT BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84

|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION     | DETAILS (VALUES IN CFS)           |
|---------------|---------|--------|-------------------|-----------------------|-------------------------|-----------------------------------|
| PART DIVERSN  | 72208   | 1662   | 618 1923          | 27.4                  | S.D.P. DITCH            | 0.2 REQ 0.1 AVAIL AT 72208        |
| NO DIVERSION  | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.             | SEN DS DIV NOT FULLY MET AT 72208 |
| PART DIVERSN  | 73800   | 2340   | 422 1944          | 58.1                  | ALPO CREEK, SPOON DITCH | 4.0 REQ 1.7 AVAIL AT 73800        |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 97.5                  | JOHN RESERVOIR          | 709.0 REQ 17.4 AVAIL AT 73226     |
| NO DIVERSION  | 71202   | 2576   | 310 1978          | 100.0                 | STARLING DITCH          | SEN DS RES NOT FULLY MET AT 73226 |

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Leonard Rice Consulting Water Engineers, Inc.

Table E-8

## CALLOUT LIST

YEAR 1 MONTH NOV BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84

| STATION       | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION          | DETAILS (VALUES IN CFS) |              |       |
|---------------|--------|-------------------|-----------------------|------------------------------|-------------------------|--------------|-------|
|               |        |                   |                       |                              | 2.0 REQ                 | 0.1 AVAIL AT | 72204 |
| PART DIVERSN  | 72204  | N1961             | 703 1941              | 93.3 SPEEDY P.L.             | 2.0 REQ                 | 0.1 AVAIL AT | 72204 |
| PART DIVERSN  | 73800  | 2340              | 422 1944              | 70.2 ALPO CREEK, SPOON DITCH | 4.0 REQ                 | 1.2 AVAIL AT | 73800 |
| PART RES STOR | 73226  | JOHN              | 1231 1960             | 98.6 JOHN RESERVOIR          | 714.6 REQ               | 9.8 AVAIL AT | 73232 |



Table E-8  
CALLOUT LIST

YEAR 1 MONTH DEC BEAUMONT RIVER BASIN - SAMPLE RUN #1 07:19:04 PST 11/07/84

| STATION       | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION          | DETAILS (VALUES IN CFS) |              |       |
|---------------|--------|-------------------|-----------------------|------------------------------|-------------------------|--------------|-------|
|               |        |                   |                       |                              | 2.0 REQ                 | 0.1 AVAIL AT | 72204 |
| PART DIVERSN  | 72204  | N1961             | 703 1941              | 92.7 SPEEDY P.L.             | 2.0 REQ                 | 0.1 AVAIL AT | 72204 |
| PART DIVERSN  | 73800  | 2340              | 422 1944              | 71.9 ALPO CREEK, SPOON DITCH | 4.0 REQ                 | 1.1 AVAIL AT | 73800 |
| PART RES STOR | 73226  | JOHN              | 1231 1960             | 98.6 JOHN RESERVOIR          | 682.1 REQ               | 9.4 AVAIL AT | 73232 |



Table E-9

## CHART OF CALLED OUT DIVERSIONS

## SAMPLE RUN #1 - BEAUMONT RIVER BASIN

YEAR = 1 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

|   |      |       |       |       |       |       |       |       |       |       |      |      |  |       |
|---|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|--|-------|
| M | 768  | .151  | .375  | .151  |       |       |       |       |       |       |      |      |  | 72418 |
|   | 1211 |       |       |       |       |       |       | .517  | .611  |       |      |      |  | 72602 |
| N | 1662 |       |       |       | .296  | .437  | .642  | .863  | .863  | .274  |      |      |  | 72208 |
| N | 1961 | 1.000 | 1.000 | 1.000 | .776  | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .933 | .927 |  | 72204 |
|   | 2340 | .780  | .842  | .780  | .559  |       |       |       | .559  | .581  | .702 | .719 |  | 73800 |
|   | 2576 |       |       |       |       | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |      |      |  | 71202 |
|   | 2577 |       |       |       |       |       | 1.000 |       |       |       |      |      |  | 71206 |
| N | 2647 |       | 1.000 | 1.000 | 1.000 |       |       |       |       |       |      |      |  | 73230 |
|   | 2650 |       |       |       |       | 1.000 |       |       |       |       |      |      |  | 73232 |
|   | 2717 |       |       |       |       |       | .707  |       | .500  | .559  |      |      |  | 73804 |



Table E-10

## CHART OF CALLED OUT DIVERSTIONS

## SAMPLE RUN #1 - BEAUMONT RIVER BASIN

YEAR = 2 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

|   |      |       |       |       |       |       |       |       |       |       |       |      |       |
|---|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|
| M | 768  | .130  | .354  | .130  |       |       |       |       |       |       |       |      | 72418 |
|   | 1211 |       |       |       |       |       |       | .517  | .611  |       |       |      | 72602 |
|   | 1662 |       |       |       | .989  | .296  | .437  | .642  | .863  | .863  | .274  |      | 72208 |
| N | 1961 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .933  | .927 | 72204 |
|   | 2340 | .780  | .842  | .780  | .559  |       |       |       | .559  | .581  | .702  | .719 | 73800 |
|   | 2576 |       |       |       |       | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |      | 71202 |
|   | 2577 |       |       |       |       | 1.000 |       |       |       |       |       |      | 71206 |
|   | 2717 |       |       |       |       |       | .707  |       | .500  | .559  |       |      | 73804 |

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Leonard Rice Consulting Water Engineers, Inc.

Table E-11

CHART OF CALLED OUT INSTREAM FLOWS  
SAMPLE RUN #1 - BEAUMONT RIVER BASIN

YEAR = 1 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

19154D .15 .37 .15 72414

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Table E-12

CHART OF CALLED OUT INSTREAM FLOWS  
SAMPLE RUN #1 - BEAUMONT RIVER BASIN

YEAR = 2 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

19154D .13 .36 .13 72414

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Table E-13

YEAR 1

INITIAL RUNOFF IN MONTHLY CFS  
BEAUMONT RIVER BASIN - SAMPLE RUN #2      17:30:11 PST 11/07/84

| STATION | ORD | JAN | FEB | MAR | APRIL | MAY   | JUNE  | JULY  | AUG  | SEPT | OCT  | NOV  | DEC  | TOTAL (AF) |
|---------|-----|-----|-----|-----|-------|-------|-------|-------|------|------|------|------|------|------------|
| 71200   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71202   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71206   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 72200   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72204   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72208   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72210   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72414   | 2   | 8.5 | 6.2 | 8.5 | 37.4  | 101.9 | 204.5 | 130.0 | 39.6 | 17.5 | 17.0 | 11.7 | 11.3 | 35957.     |
| 72418   | 2   | 8.5 | 6.2 | 8.5 | 37.4  | 101.9 | 204.5 | 130.0 | 39.6 | 17.5 | 17.0 | 11.7 | 11.3 | 35957.     |
| 72600   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 72602   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 72604   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 73226   | 2   | 8.8 | 6.5 | 8.8 | 38.0  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 37322.     |
| 73228   | 2   | 8.8 | 6.5 | 8.8 | 38.0  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 37322.     |
| 73230   | 2   | 8.8 | 6.5 | 8.8 | 38.0  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 37322.     |
| 73232   | 2   | 8.8 | 6.5 | 8.8 | 38.0  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 37322.     |
| 73800   | 3   | 0.9 | 0.6 | 0.9 | 1.8   | 10.3  | 20.7  | 13.2  | 4.0  | 1.8  | 1.7  | 1.2  | 1.1  | 3521.      |
| 73804   | 3   | 0.9 | 0.6 | 0.9 | 1.8   | 10.3  | 20.7  | 13.2  | 4.0  | 1.8  | 1.7  | 1.2  | 1.1  | 3521.      |
| 74000   | 2   | 9.7 | 7.1 | 9.7 | 39.8  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 40843.     |
| 74002   | 2   | 9.7 | 7.1 | 9.7 | 39.8  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 40843.     |
| 75000   | 1   | 9.7 | 7.1 | 9.7 | 39.8  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 40843.     |

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Leonard Rice Consulting Water Engineers, Inc.

Table E-14

YEAR 2

INITIAL RUNOFF IN MONTHLY CFS  
BEAUMONT RIVER BASIN - SAMPLE RUN #2      17:30:11 PST 11/07/84

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| STATION | ORD | JAN | FEB | MAR | APRIL | MAY   | JUNE  | JULY  | AUG  | SEPT | OCT  | NOV  | DEC  | TOTAL (AF) |
|---------|-----|-----|-----|-----|-------|-------|-------|-------|------|------|------|------|------|------------|
| 71200   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71202   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71206   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1 | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 72200   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 402.       |
| 72204   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 402.       |
| 72208   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 402.       |
| 72210   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 1.3   | 2.3   | 1.4   | 0.4  | 0.2  | 0.2  | 0.1  | 0.1  | 402.       |
| 72414   | 2   | 8.5 | 6.2 | 8.5 | 17.5  | 101.9 | 204.5 | 130.0 | 39.6 | 17.5 | 17.0 | 11.7 | 11.3 | 34777.     |
| 72418   | 2   | 8.5 | 6.2 | 8.5 | 17.5  | 101.9 | 204.5 | 130.0 | 39.6 | 17.5 | 17.0 | 11.7 | 11.3 | 34777.     |
| 72600   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 72602   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 72604   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5  | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 73226   | 2   | 8.8 | 6.5 | 8.8 | 18.2  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 36142.     |
| 73228   | 2   | 8.8 | 6.5 | 8.8 | 18.2  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 36142.     |
| 73230   | 2   | 8.8 | 6.5 | 8.8 | 18.2  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 36142.     |
| 73232   | 2   | 8.8 | 6.5 | 8.8 | 18.2  | 105.9 | 212.6 | 135.2 | 41.1 | 18.2 | 17.7 | 12.2 | 11.7 | 36142.     |
| 73800   | 3   | 0.9 | 0.6 | 0.9 | 1.8   | 10.3  | 20.7  | 13.2  | 4.0  | 1.8  | 1.7  | 1.2  | 1.1  | 3521.      |
| 73804   | 3   | 0.9 | 0.6 | 0.9 | 1.8   | 10.3  | 20.7  | 13.2  | 4.0  | 1.8  | 1.7  | 1.2  | 1.1  | 3521.      |
| 74000   | 2   | 9.7 | 7.1 | 9.7 | 20.0  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 39663.     |
| 74002   | 2   | 9.7 | 7.1 | 9.7 | 20.0  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 39663.     |
| 75000   | 1   | 9.7 | 7.1 | 9.7 | 20.0  | 116.2 | 233.3 | 148.4 | 45.1 | 20.0 | 19.3 | 13.3 | 12.8 | 39663.     |



Leonard Rice Consulting Water Engineers, Inc.

Table E-15

YEAR 1

FINAL RIVER SYSTEM STATUS MONTHLY CFS IN RIVER  
BEAUMONT RIVER BASIN - SAMPLE RUN #2    17:30:11 PST 11/07/84

| STATION | ORD | JAN | FEB | MAR | APRIL | MAY   | JUNE  | JULY  | AUG   | SEPT | OCT  | NOV  | DEC  | TOTAL (AF) |
|---------|-----|-----|-----|-----|-------|-------|-------|-------|-------|------|------|------|------|------------|
| 71200   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71202   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71206   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 72200   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72204   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3   | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.0  | 0.0  | 1565.      |
| 72208   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  | 0.2  | 0.1  | 0.1  | 1240.      |
| 72210   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 0.4   | 0.7   | 0.7   | 0.3   | 0.2  | 0.3  | 0.2  | 0.2  | 1385.      |
| 72414   | 2   | 8.5 | 6.2 | 8.5 | 37.4  | 99.7  | 200.1 | 126.4 | 37.1  | 16.3 | 17.1 | 11.7 | 11.3 | 35113.     |
| 72418   | 2   | 0.0 | 0.0 | 0.0 | 37.4  | 87.5  | 185.3 | 111.9 | 23.7  | 4.8  | 17.4 | 1.8  | 1.4  | 28516.     |
| 72600   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5   | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 72602   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 2.2   | 4.1   | 1.1   | 0.0   | 0.0  | 0.7  | 0.5  | 0.4  | 638.       |
| 72604   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 2.8   | 5.7   | 3.1   | 1.2   | 0.6  | 0.9  | 0.6  | 0.5  | 1023.      |
| 73226   | 2   | 3.0 | 3.0 | 3.0 | 38.0  | 51.4  | 52.9  | 23.1  | 0.0   | 0.0  | 18.8 | 2.8  | 2.6  | 12017.     |
| 73228   | 2   | 3.0 | 3.0 | 3.0 | 38.0  | 51.4  | 87.1  | 84.1  | 104.8 | 66.3 | 35.9 | 4.8  | 4.9  | 29498.     |
| 73230   | 2   | 3.0 | 3.0 | 3.0 | 38.0  | 46.9  | 75.1  | 72.1  | 94.8  | 60.3 | 35.9 | 2.8  | 2.9  | 26555.     |
| 73232   | 2   | 0.0 | 0.0 | 0.0 | 38.0  | 44.7  | 67.9  | 65.3  | 89.4  | 57.3 | 36.4 | 1.8  | 1.8  | 24432.     |
| 73800   | 3   | 0.0 | 0.0 | 0.0 | 1.8   | 6.3   | 16.7  | 9.2   | 0.0   | 0.0  | 1.7  | 0.0  | 0.0  | 2157.      |
| 73804   | 3   | 0.8 | 0.6 | 0.8 | 1.8   | 9.9   | 11.3  | 3.8   | 0.0   | 0.0  | 1.7  | 1.1  | 1.0  | 1980.      |
| 74000   | 2   | 3.5 | 3.3 | 3.5 | 39.8  | 46.0  | 36.5  | 29.5  | 58.6  | 44.1 | 39.8 | 6.1  | 5.9  | 19200.     |
| 74002   | 2   | 3.5 | 3.3 | 3.5 | 0.0   | 0.0   | 2.6   | 1.9   | 32.9  | 12.1 | 0.0  | 7.8  | 7.0  | 4526.      |
| 75000   | 1   | 3.5 | 3.3 | 3.5 | 13.2  | 22.5  | 27.6  | 27.6  | 58.9  | 38.4 | 25.2 | 17.5 | 10.0 | 15222.     |

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Leonard Rice Consulting Water Engineers, Inc.

Table E-16

YEAR 2

FINAL RIVER SYSTEM STATUS MONTHLY CFS IN RIVER  
BEAUMONT RIVER BASIN - SAMPLE RUN #2    17:30:11 PST 11/07/84

| STATION | ORD | JAN | FEB | MAR | APRIL | MAY   | JUNE  | JULY  | AUG   | SEPT | OCT  | NOV  | DEC  | TOTAL (AF) |
|---------|-----|-----|-----|-----|-------|-------|-------|-------|-------|------|------|------|------|------------|
| 71200   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71202   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 71206   | 2   | 8.4 | 6.2 | 8.4 | 17.3  | 100.6 | 202.2 | 128.6 | 39.1  | 17.3 | 16.8 | 11.5 | 11.2 | 34375.     |
| 72200   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 1.3   | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.1  | 0.1  | 402.       |
| 72204   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 1.3   | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.0  | 0.0  | 385.       |
| 72208   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0  | 0.2  | 0.1  | 0.1  | 60.        |
| 72210   | 3   | 0.1 | 0.1 | 0.1 | 0.2   | 0.4   | 0.8   | 0.7   | 0.3   | 0.2  | 0.3  | 0.2  | 0.2  | 213.       |
| 72414   | 2   | 8.5 | 6.3 | 8.5 | 17.6  | 99.7  | 200.1 | 126.4 | 37.1  | 16.3 | 17.1 | 11.7 | 11.3 | 33942.     |
| 72418   | 2   | 0.0 | 0.0 | 0.0 | 17.6  | 87.5  | 185.4 | 111.9 | 23.7  | 4.8  | 17.4 | 1.8  | 1.4  | 27351.     |
| 72600   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 4.0   | 8.1   | 5.1   | 1.5   | 0.7  | 0.7  | 0.5  | 0.4  | 1365.      |
| 72602   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 2.2   | 4.1   | 1.1   | 0.0   | 0.0  | 0.7  | 0.5  | 0.4  | 638.       |
| 72604   | 3   | 0.4 | 0.3 | 0.4 | 0.7   | 2.9   | 5.7   | 3.1   | 1.2   | 0.6  | 0.9  | 0.6  | 0.5  | 1045.      |
| 73226   | 2   | 2.3 | 2.0 | 2.0 | 18.5  | 50.0  | 47.9  | 0.0   | 0.0   | 0.0  | 18.8 | 2.8  | 2.6  | 8888.      |
| 73228   | 2   | 4.9 | 4.9 | 4.9 | 39.6  | 65.8  | 83.9  | 82.1  | 143.4 | 84.1 | 40.0 | 4.8  | 4.9  | 34186.     |
| 73230   | 2   | 2.9 | 2.9 | 2.9 | 39.6  | 59.3  | 71.9  | 70.1  | 133.4 | 78.1 | 39.7 | 2.8  | 2.9  | 30742.     |
| 73232   | 2   | 1.8 | 1.8 | 1.8 | 39.7  | 55.4  | 64.7  | 63.4  | 128.1 | 75.1 | 40.2 | 1.8  | 1.8  | 28871.     |
| 73800   | 3   | 0.0 | 0.0 | 0.0 | 1.8   | 6.3   | 16.7  | 9.2   | 0.0   | 0.0  | 1.7  | 0.0  | 0.0  | 2157.      |
| 73804   | 3   | 0.8 | 0.6 | 0.8 | 1.8   | 5.4   | 11.3  | 3.8   | 0.0   | 0.0  | 1.7  | 1.1  | 1.0  | 1703.      |
| 74000   | 2   | 5.7 | 5.4 | 5.7 | 41.9  | 44.0  | 34.8  | 27.8  | 97.4  | 62.0 | 43.6 | 6.2  | 6.0  | 23070.     |
| 74002   | 2   | 6.7 | 6.5 | 6.7 | 0.0   | 1.2   | 2.6   | 1.9   | 73.5  | 30.8 | 0.0  | 8.0  | 7.1  | 8794.      |
| 75000   | 1   | 8.8 | 8.3 | 8.6 | 15.8  | 25.5  | 28.7  | 28.4  | 100.1 | 57.4 | 26.6 | 18.3 | 10.2 | 20416.     |

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Leonard Rice Consulting Water Engineers, Inc.

Table E-17

YEAR 1

FINAL RIVER SYSTEM STATUS MONTHLY CFS AVAILABLE IN RIVER  
 BEAUMONT RIVER BASIN - SAMPLE RUN #2 17:30:11 PST 11/07/84  
 (WATER AVAILABLE FOR DIVERSIONS MAY BE CONTROLLED  
 BY DOWNSTREAM FLOWS. WATER AVAILABLE FOR INSTREAM  
 FLOWS IS CONTROLLED BY FLOW AT INTERESTED STATION ONLY.)

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| STATION | ORD | JAN | FEB | MAR | APRIL | MAY  | JUNE  | JULY  | AUG   | SEPT | OCT  | NOV  | DEC  | TOTAL (AF) |
|---------|-----|-----|-----|-----|-------|------|-------|-------|-------|------|------|------|------|------------|
| 71200   | 2   | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5 | 13.9 | 9.7  | 9.4  | 28706.     |
| 71202   | 2   | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5 | 13.9 | 9.7  | 9.4  | 28706.     |
| 71206   | 2   | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5 | 13.9 | 9.7  | 9.4  | 28706.     |
| 72200   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3  | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.1  | 0.1  | 1582.      |
| 72204   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 1.3  | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.0  | 0.0  | 1565.      |
| 72208   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  | 0.2  | 0.1  | 0.1  | 1240.      |
| 72210   | 3   | 0.1 | 0.1 | 0.1 | 20.0  | 0.4  | 0.7   | 0.7   | 0.3   | 0.2  | 0.3  | 0.2  | 0.2  | 1385.      |
| 72414   | 2   | 0.0 | 0.0 | 0.0 | 27.4  | 89.7 | 190.1 | 116.4 | 27.1  | 6.3  | 7.1  | 1.7  | 1.3  | 28267.     |
| 72418   | 2   | 0.0 | 0.0 | 0.0 | 37.4  | 87.5 | 185.3 | 111.9 | 23.7  | 4.8  | 17.4 | 1.8  | 1.4  | 28516.     |
| 72600   | 3   | 0.2 | 0.1 | 0.2 | 0.5   | 2.6  | 5.3   | 4.7   | 1.2   | 0.5  | 0.5  | 0.3  | 0.3  | 997.       |
| 72602   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 2.2  | 4.1   | 1.1   | 0.0   | 0.0  | 0.7  | 0.5  | 0.4  | 638.       |
| 72604   | 3   | 0.3 | 0.2 | 0.3 | 0.7   | 2.8  | 5.7   | 3.1   | 1.2   | 0.6  | 0.9  | 0.6  | 0.5  | 1023.      |
| 73226   | 2   | 3.0 | 3.0 | 3.0 | 38.0  | 51.4 | 52.9  | 23.1  | 0.0   | 0.0  | 18.8 | 2.8  | 2.6  | 12017.     |
| 73228   | 2   | 3.0 | 3.0 | 3.0 | 38.0  | 51.4 | 87.1  | 84.1  | 104.8 | 66.3 | 35.9 | 4.8  | 4.9  | 29498.     |
| 73230   | 2   | 3.0 | 3.0 | 3.0 | 38.0  | 46.9 | 75.1  | 72.1  | 94.8  | 60.3 | 35.9 | 2.8  | 2.9  | 26555.     |
| 73232   | 2   | 0.0 | 0.0 | 0.0 | 38.0  | 44.7 | 67.9  | 65.3  | 89.4  | 57.3 | 36.4 | 1.8  | 1.8  | 24432.     |
| 73800   | 3   | 0.0 | 0.0 | 0.0 | 1.8   | 6.3  | 16.7  | 9.2   | 0.0   | 0.0  | 1.7  | 0.0  | 0.0  | 2157.      |
| 73804   | 3   | 0.8 | 0.6 | 0.8 | 1.8   | 9.9  | 11.3  | 3.8   | 0.0   | 0.0  | 1.7  | 1.1  | 1.0  | 1980.      |
| 74000   | 2   | 3.5 | 3.3 | 3.5 | 39.8  | 46.0 | 36.5  | 29.5  | 58.6  | 44.1 | 39.8 | 6.1  | 5.9  | 19200.     |
| 74002   | 2   | 3.5 | 3.3 | 3.5 | 0.0   | 0.0  | 2.6   | 2.6   | 34.5  | 12.9 | 0.0  | 7.8  | 7.0  | 4714.      |
| 75000   | 1   | 3.5 | 3.3 | 3.5 | 13.2  | 22.5 | 27.6  | 28.3  | 60.5  | 39.1 | 25.2 | 17.5 | 10.0 | 15409.     |



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Table E-18

YEAR 2

FINAL RIVER SYSTEM STATUS MONTHLY CFS AVAILABLE IN RIVER  
 BEAUMONT RIVER BASIN - SAMPLE RUN #2 17:30:11 PST 11/07/84  
 (WATER AVAILABLE FOR DIVERSIONS MAY BE CONTROLLED  
 BY DOWNSTREAM FLOWS. WATER AVAILABLE FOR INSTREAM  
 FLOWS IS CONTROLLED BY FLOW AT INTERESTED STATION ONLY.)

| STATION ORD | JAN | FEB | MAR | APRIL | MAY  | JUNE  | JULY  | AUG   | SEPT | OCT  | NOV  | DEC  | TOTAL (AF) |
|-------------|-----|-----|-----|-------|------|-------|-------|-------|------|------|------|------|------------|
| 71200 2     | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5 | 13.9 | 9.7  | 9.4  | 28706.     |
| 71202 2     | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5 | 13.9 | 9.7  | 9.4  | 28706.     |
| 71206 2     | 5.5 | 4.1 | 5.5 | 14.5  | 65.4 | 169.5 | 125.7 | 36.2  | 14.5 | 13.9 | 9.7  | 9.4  | 28706.     |
| 72200 3     | 0.1 | 0.1 | 0.1 | 0.2   | 1.3  | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.1  | 0.1  | 402.       |
| 72204 3     | 0.1 | 0.1 | 0.1 | 0.2   | 1.3  | 2.3   | 1.4   | 0.4   | 0.2  | 0.2  | 0.0  | 0.0  | 385.       |
| 72208 3     | 0.1 | 0.1 | 0.1 | 0.2   | 0.0  | 0.0   | 0.0   | 0.0   | 0.0  | 0.2  | 0.1  | 0.1  | 60.        |
| 72210 3     | 0.1 | 0.1 | 0.1 | 0.2   | 0.4  | 0.8   | 0.7   | 0.3   | 0.2  | 0.3  | 0.2  | 0.2  | 213.       |
| 72414 2     | 0.0 | 0.0 | 0.0 | 7.6   | 89.7 | 190.1 | 116.4 | 27.1  | 6.3  | 7.1  | 1.7  | 1.3  | 27091.     |
| 72418 2     | 0.0 | 0.0 | 0.0 | 17.6  | 87.5 | 185.4 | 111.9 | 23.7  | 4.8  | 17.4 | 1.8  | 1.4  | 27351.     |
| 72600 3     | 0.2 | 0.1 | 0.2 | 0.5   | 2.6  | 5.3   | 4.7   | 1.2   | 0.5  | 0.5  | 0.3  | 0.3  | 997.       |
| 72602 3     | 0.3 | 0.2 | 0.3 | 0.7   | 2.2  | 4.1   | 1.1   | 0.0   | 0.0  | 0.7  | 0.5  | 0.4  | 638.       |
| 72604 3     | 0.4 | 0.3 | 0.4 | 0.7   | 2.9  | 5.7   | 3.1   | 1.2   | 0.6  | 0.9  | 0.6  | 0.5  | 1045.      |
| 73226 2     | 2.3 | 2.0 | 2.0 | 18.5  | 50.0 | 47.9  | 0.0   | 0.0   | 0.0  | 18.8 | 2.8  | 2.6  | 8888.      |
| 73228 2     | 4.9 | 4.9 | 4.9 | 39.6  | 65.8 | 83.9  | 82.1  | 143.4 | 84.1 | 40.0 | 4.8  | 4.9  | 34186.     |
| 73230 2     | 2.9 | 2.9 | 2.9 | 39.6  | 59.3 | 71.9  | 70.1  | 133.4 | 78.1 | 39.7 | 2.8  | 2.9  | 30742.     |
| 73232 2     | 1.8 | 1.8 | 1.8 | 39.7  | 55.4 | 64.7  | 63.4  | 128.1 | 75.1 | 40.2 | 1.8  | 1.8  | 28871.     |
| 73800 3     | 0.0 | 0.0 | 0.0 | 1.8   | 6.3  | 16.7  | 9.2   | 0.0   | 0.0  | 1.7  | 0.0  | 0.0  | 2157.      |
| 73804 3     | 0.8 | 0.6 | 0.8 | 1.8   | 5.4  | 11.3  | 3.8   | 0.0   | 0.0  | 1.7  | 1.1  | 1.0  | 1703.      |
| 74000 2     | 5.7 | 5.4 | 5.7 | 41.9  | 44.0 | 34.8  | 27.8  | 97.4  | 62.0 | 43.6 | 6.2  | 6.0  | 23070.     |
| 74002 2     | 6.7 | 6.5 | 6.7 | 0.0   | 1.2  | 2.6   | 2.6   | 75.1  | 31.5 | 0.0  | 8.0  | 7.1  | 8983.      |
| 75000 1     | 8.8 | 8.3 | 8.6 | 15.8  | 25.6 | 28.8  | 29.1  | 101.6 | 58.1 | 26.6 | 18.3 | 10.2 | 20604.     |



Leonard Rice Consulting Water Engineers, Inc.

Table E-19

30 JOHN RESERVOIR (MAX CAP 50000. AF)  
 (MIN CAP 5000. AF)

RESERVOIR STATUS REPORT  
 BEAUMONT RIVER BASIN - SAMPLE RUN #2

17:30:11 PST 11/07/84

| MONTH             | YEAR | STORAGE ADDED | DOWNSTREAM FLOW AT RESERVOIR | POWER RELEASE REQUESTED | ACTUAL POWER RELEASE | NON-PROJECT RELEASE REQUESTED | ACTUAL NON-PROJECT RELEASE | RELEASE FOR PROJECT RIGHTS |            | EVAPORATION LOSS | END OF MONTH VOLUME | ALL RES RIGHTS MET |
|-------------------|------|---------------|------------------------------|-------------------------|----------------------|-------------------------------|----------------------------|----------------------------|------------|------------------|---------------------|--------------------|
|                   |      |               |                              |                         |                      |                               |                            | CFS                        | AF         |                  |                     |                    |
| JAN               | 1    | 304.          | 3.0                          | 0.                      | 0.                   | 0.                            | 0.                         | 0.0                        | 0.         | 304.             | NO                  |                    |
| FEB               | 1    | 159.          | 3.0                          | 0.                      | 0.                   | 0.                            | 0.                         | 0.0                        | 0.         | 463.             | NO                  |                    |
| MAR               | 1    | 304.          | 3.0                          | 0.                      | 0.                   | 0.                            | 0.                         | 0.0                        | 0.         | 767.             | NO                  |                    |
| APR               | 1    | 0.            | 38.0                         | 0.                      | 0.                   | 0.                            | 0.                         | 0.0                        | 0.         | 767.             | NO                  |                    |
| MAY               | 1    | 2997.         | 51.4                         | 0.                      | 0.                   | 0.                            | 0.                         | 0.0                        | 0.         | 3764.            | NO                  |                    |
| JUNE              | 1    | 8895.         | 87.1                         | 0.                      | 0.                   | 0.                            | 0.                         | 34.2                       | 5.         | 10623.           | NO                  |                    |
| JULY              | 1    | 6386.         | 84.1                         | 62.                     | 62.                  | 1668.                         | 1668.                      | 32.8                       | 16.        | 13246.           | NO                  |                    |
| AUG               | 1    | 2249.         | 104.8                        | 361.                    | 361.                 | 4731.                         | 4731.                      | 22.0                       | 16.        | 9038.            | NO                  |                    |
| SEPT              | 1    | 962.          | 66.3                         | 0.                      | 0.                   | 3230.                         | 3230.                      | 12.0                       | 7.         | 6048.            | NO                  |                    |
| OCT               | 1    | 0.            | 35.9                         | 0.                      | 0.                   | 944.                          | 944.                       | 1.7                        | 0.         | 5000.            | NO                  |                    |
| NOV               | 1    | 518.          | 4.8                          | 0.                      | 0.                   | 0.                            | 0.                         | 2.0                        | 0.         | 5399.            | NO                  |                    |
| DEC               | 1    | 520.          | 4.9                          | 0.                      | 0.                   | 20.                           | 20.                        | 2.0                        | 0.         | 5777.            | NO                  |                    |
| <b>TOTALS(AF)</b> |      | <b>23294.</b> | <b>29494.8</b>               | <b>423.</b>             | <b>423.</b>          | <b>10593.</b>                 | <b>10593.</b>              | <b>6465.2</b>              | <b>44.</b> |                  |                     |                    |
| JAN               | 2    | 366.          | 4.9                          | 0.                      | 0.                   | 39.                           | 39.                        | 2.0                        | 0.         | 5982.            | NO                  |                    |
| FEB               | 2    | 229.          | 4.9                          | 0.                      | 0.                   | 49.                           | 49.                        | 2.0                        | 0.         | 6051.            | NO                  |                    |
| MAR               | 2    | 380.          | 4.9                          | 0.                      | 0.                   | 53.                           | 53.                        | 2.0                        | 0.         | 6256.            | NO                  |                    |
| APR               | 2    | 0.            | 39.6                         | 0.                      | 0.                   | 63.                           | 63.                        | 20.1                       | 0.         | 5000.            | NO                  |                    |
| MAY               | 2    | 3098.         | 65.8                         | 0.                      | 0.                   | 0.                            | 0.                         | 15.8                       | 2.         | 7127.            | NO                  |                    |
| JUNE              | 2    | 9203.         | 83.9                         | 0.                      | 0.                   | 106.                          | 106.                       | 34.2                       | 9.         | 14182.           | NO                  |                    |
| JULY              | 2    | 7812.         | 82.1                         | 418.                    | 418.                 | 2629.                         | 2629.                      | 32.5                       | 16.        | 16931.           | NO                  |                    |
| AUG               | 2    | 2251.         | 143.4                        | 770.                    | 770.                 | 6697.                         | 6697.                      | 22.0                       | 16.        | 10349.           | NO                  |                    |
| SEPT              | 2    | 962.          | 84.1                         | 44.                     | 44.                  | 4244.                         | 4244.                      | 12.0                       | 7.         | 6302.            | NO                  |                    |
| OCT               | 2    | 0.            | 40.0                         | 0.                      | 0.                   | 1172.                         | 1172.                      | 2.1                        | 0.         | 5000.            | NO                  |                    |
| NOV               | 2    | 519.          | 4.8                          | 0.                      | 0.                   | 0.                            | 0.                         | 2.0                        | 0.         | 5400.            | NO                  |                    |
| DEC               | 2    | 520.          | 4.9                          | 0.                      | 0.                   | 20.                           | 20.                        | 2.0                        | 0.         | 5779.            | NO                  |                    |
| <b>TOTALS(AF)</b> |      | <b>25340.</b> | <b>34186.0</b>               | <b>1232.</b>            | <b>1232.</b>         | <b>15072.</b>                 | <b>15072.</b>              | <b>8996.0</b>              | <b>50.</b> |                  |                     |                    |



Leonard Rice Consulting Water Engineers, Inc.

Table E-20

## CALLOUT LIST

YEAR 1 MONTH JAN BEAUMONT RIVER BASIN - SAMPLE RUN #2 17:30:11 PST 11/07/84

|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION      | DETAILS (VALUES IN CFS)           |
|---------------|---------|--------|-------------------|-----------------------|--------------------------|-----------------------------------|
| PART DIVERSN  | 72418   | M768   | 318 1907          | 15.1                  | TOWN OF BEAUMONT         | 10.0 REQ 8.5 AVAIL AT 72418       |
| NO DIVERSION  | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.              | SEN DS DIV NOT FULLY MET AT 72418 |
| PART DIVERSN  | 73800   | 2340   | 422 1944          | 78.0                  | ALPO CREEK, SPOON DITCH  | 4.0 REQ 0.9 AVAIL AT 73800        |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 99.4                  | JOHN RESERVOIR           | 813.2 REQ 4.9 AVAIL AT 73232      |
| NO JPR NOSP   | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH | 2.0 REQ 0.0 AVAIL AT RES 30       |
| PART JPR RIV  | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH | 2.0 REQ 0.0 AVAIL AT 73232        |
| IFR NOT MET   | 72414   | 19154D | 115 2000          | 15.1                  | DEAD BIRD DITCH          | 10.0 REQ 8.5 AVAILABLE            |

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Leonard Rice Consulting Water Engineers, Inc.

Table E-20

## CALLOUT LIST

YEAR 1 MONTH FEB BEAUMONT RIVER BASIN - SAMPLE RUN #2 17:30:11 PST 11/07/84

|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION      | DETAILS (VALUES IN CFS)           |
|---------------|---------|--------|-------------------|-----------------------|--------------------------|-----------------------------------|
| PART DIVERSN  | 72418   | M768   | 318 1907          | 37.5                  | TOWN OF BEAUMONT         | 10.0 REQ 6.2 AVAIL AT 72418       |
| NO DIVERSION  | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.              | SEN DS DIV NOT FULLY MET AT 72418 |
| PART DIVERSN  | 73800   | 2340   | 422 1944          | 84.2                  | ALPO CREEK, SPOON DITCH  | 4.0 REQ 0.6 AVAIL AT 73800        |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 99.7                  | JOHN RESERVOIR           | 894.8 REQ 2.9 AVAIL AT 73232      |
| NO JPR NOSP   | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH | 2.0 REQ 0.0 AVAIL AT RES 30       |
| PART JPR RIV  | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH | 2.0 REQ 0.0 AVAIL AT 73232        |
| IFR NOT MET   | 72414   | 19154D | 115 2000          | 37.5                  | DEAD BIRD DITCH          | 10.0 REQ 6.2 AVAILABLE            |



Table E-20

## CALLOUT LIST

YEAR 1 MONTH MAR BEAUMONT RIVER BASIN - SAMPLE RUN #2 17:30:11 PST 11/07/84

|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION      | DETAILS (VALUES IN CFS)           |
|---------------|---------|--------|-------------------|-----------------------|--------------------------|-----------------------------------|
| PART DIVERSN  | 72418   | M768   | 318 1907          | 15.1                  | TOWN OF BEAUMONT         | 10.0 REQ 8.5 AVAIL AT 72418       |
| NO DIVERSION  | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.              | SEN DS DIV NOT FULLY MET AT 72418 |
| PART DIVERSN  | 73800   | 2340   | 422 1944          | 78.0                  | ALPO CREEK, SPOON DITCH  | 4.0 REQ 0.9 AVAIL AT 73800        |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 99.4                  | JOHN RESERVOIR           | 805.6 REQ 4.9 AVAIL AT 73232      |
| NO JPR NOSP   | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH | 2.0 REQ 0.0 AVAIL AT RES 30       |
| PART JPR RIV  | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH | 2.0 REQ 0.0 AVAIL AT 73232        |
| IFR NOT MET   | 72414   | 19154D | 115 2000          | 15.1                  | DEAD BIRD DITCH          | 10.0 REQ 8.5 AVAILABLE            |

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Leonard Rice Consulting Water Engineers, Inc.

Table E-20  
CALLOUT LIST

YEAR 1 MONTH APR BEAUMONT RIVER BASIN - SAMPLE RUN #2 17:30:11 PST 11/07/84

|              |      | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION             | DETAILS (VALUES IN CFS)           |
|--------------|------|---------|--------|-------------------|-----------------------|---------------------------------|-----------------------------------|
| PART PROJ    | RIV  | 74002   | INDC   | 702 1868          | 20.4                  | LAST POINT BEAUMONT RIVER       | 50.0 REQ 39.8 AVAIL AT 74002      |
| NO PROJ      | RES  | 74002   | INDC   | 702 1868          | 100.0                 | LAST POINT BEAUMONT RIVER       | 10.2 REQ 0.0 AVAIL AT RES 30      |
| NO DIVERSION |      | 72418   | 2832   | 921 1900          | 100.0                 | TOWN OF BEAUMONT                | SEN DS DIV NOT FULLY MET AT 74002 |
| NO DIVERSION |      | 72418   | M768   | 318 1907          | 100.0                 | TOWN OF BEAUMONT                | SEN DS DIV NOT FULLY MET AT 72418 |
| NO DIVERSION |      | 72602   | 1211   | 1103 1913         | 100.0                 | FREEDOM #1 DITCH                | SEN DS DIV NOT FULLY MET AT 74002 |
| NO PROJ      | RIV  | 73230   | 1520   | 228 1918          | 100.0                 | FREEDOM #2, S.P.R. DITCH        | SEN DS DIV NOT FULLY MET AT 74002 |
| NO PROJ      | RES  | 73230   | 1520   | 228 1918          | 100.0                 | FREEDOM #2, S.P.R. DITCH        | 0.5 REQ 0.0 AVAIL AT RES 30       |
| NO DIVERSION |      | 72414   | 1519   | 820 1918          | 100.0                 | DEAD BIRD DITCH                 | SEN DS DIV NOT FULLY MET AT 72418 |
| NO DIVERSION |      | 72208   | 1662   | 618 1923          | 100.0                 | S.D.P. DITCH                    | SEN DS DIV NOT FULLY MET AT 72414 |
| NO PROJ      | RIV  | 74000   | 2525   | 924 1936          | 100.0                 | BEAUMONT RIVER BELOW ALPO CREEK | SEN DS DIV NOT FULLY MET AT 74002 |
| NO PROJ      | RES  | 74000   | 2525   | 924 1936          | 100.0                 | BEAUMONT RIVER BELOW ALPO CREEK | 1.4 REQ 0.0 AVAIL AT RES 30       |
| NO PROJ      | RIV  | 73232   | 4627   | 405 1938          | 100.0                 | FISH #1 & #2 DITCHES            | SEN DS DIV NOT FULLY MET AT 74000 |
| NO PROJ      | RES  | 73232   | 4627   | 405 1938          | 100.0                 | FISH #1 & #2 DITCHES            | 3.0 REQ 0.0 AVAIL AT RES 30       |
| NO DIVERSION |      | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.                     | SEN DS DIV NOT FULLY MET AT 72208 |
| NO DIVERSION |      | 73800   | 2340   | 422 1944          | 100.0                 | ALPO CREEK, SPOON DITCH         | SEN DS DIV NOT FULLY MET AT 74000 |
| NO RES       | STOR | 73226   | JOHN   | 1231 1960         | 100.0                 | JOHN RESERVOIR                  | SEN DS DIV NOT FULLY MET AT 73230 |
| NO JPR       | NOSP | 74000   | 2217   | 529 1961          | 100.0                 | BEAUMONT RIVER BELOW ALPO CREEK | 0.8 REQ 0.0 AVAIL AT RES 30       |
| NO JPR       | NOSP | 74000   | 2239   | 422 1963          | 100.0                 | BEAUMONT RIVER BELOW ALPO CREEK | 0.5 REQ 0.0 AVAIL AT RES 30       |
| NO JPR       | NOSP | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH        | 2.0 REQ 0.0 AVAIL AT RES 30       |
| NO DIVERSION |      | 73804   | 2717   | 529 1961          | 100.0                 | HAWKEYE DITCH                   | SEN DS DIV NOT FULLY MET AT 74000 |
| NO JPR       | RIV  | 74000   | 2217   | 529 1961          | 100.0                 | BEAUMONT RIVER BELOW ALPO CREEK | SEN DS DIV NOT FULLY MET AT 74000 |
| NO JPR       | RIV  | 74000   | 2239   | 422 1963          | 100.0                 | BEAUMONT RIVER BELOW ALPO CREEK | SEN DS DIV NOT FULLY MET AT 74000 |
| NO PROJ      | RIV  | 73232   | 2650   | 1010 1974         | 100.0                 | FISH #1 & #2 DITCHES            | SEN DS DIV NOT FULLY MET AT 73232 |
| NO PROJ      | RES  | 73232   | 2650   | 1010 1974         | 100.0                 | FISH #1 & #2 DITCHES            | 0.4 REQ 0.0 AVAIL AT RES 30       |
| NO DIVERSION |      | 71202   | 2576   | 310 1978          | 100.0                 | STARLING DITCH                  | SEN DS DIV NOT FULLY MET AT 72414 |
| NO DIVERSION |      | 71206   | 2577   | 310 1978          | 100.0                 | ASHLEY STOCK RESERVOIR          | SEN DS DIV NOT FULLY MET AT 72414 |
| NO JPR       | RIV  | 73230   | N2647  | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH        | SEN DS DIV NOT FULLY MET AT 73230 |

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Table E-20

## CALLOUT LIST

YEAR 1 MONTH MAY BEAUMONT RIVER BASIN - SAMPLE RUN #2 17:30:11 PST 11/07/84

|               |       |       | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION             | DETAILS (VALUES IN CFS)           |
|---------------|-------|-------|-------------------|-----------------------|---------------------------------|-----------------------------------|
| PART DIVERSN  | 72208 | 1662  | 618 1923          | 29.6                  | S.D.P. DITCH                    | 1.8 REQ 1.3 AVAIL AT 72208        |
| NO DIVERSION  | 72204 | N1961 | 703 1941          | 100.0                 | SPEEDY P.L.                     | SEN DS DIV NOT FULLY MET AT 72208 |
| PART RES STOR | 73226 | JOHN  | 1231 1960         | 93.9                  | JOHN RESERVOIR                  | 800.7 REQ 48.7 AVAIL AT 74002     |
| NO JPR NOSP   | 74000 | 2217  | 529 1961          | 100.0                 | BEAUMONT RIVER BELOW ALPO CREEK | 6.7 REQ 0.0 AVAIL AT RES 30       |
| NO JPR NOSP   | 74000 | 2239  | 422 1963          | 100.0                 | BEAUMONT RIVER BELOW ALPO CREEK | 4.5 REQ 0.0 AVAIL AT RES 30       |
| NO JPR NOSP   | 73230 | N2647 | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH        | 2.0 REQ 0.0 AVAIL AT RES 30       |
| NO DIVERSION  | 73804 | 2717  | 529 1961          | 100.0                 | HAWKEYE DITCH                   | 4.5 REQ 0.0 AVAIL AT 74002        |
| PART JPR RIV  | 74000 | 2217  | 529 1961          | 100.0                 | BEAUMONT RIVER BELOW ALPO CREEK | 6.7 REQ 0.0 AVAIL AT 74002        |
| NO JPR RIV    | 74000 | 2239  | 422 1963          | 100.0                 | BEAUMONT RIVER BELOW ALPO CREEK | SEN DS DIV NOT FULLY MET AT 74000 |
| NO PROJ RIV   | 73232 | 2650  | 1010 1974         | 100.0                 | FISH #1 & #2 DITCHES            | SEN DS DIV NOT FULLY MET AT 74000 |
| NO PROJ RES   | 73232 | 2650  | 1010 1974         | 100.0                 | FISH #1 & #2 DITCHES            | 3.6 REQ 0.0 AVAIL AT RES 30       |
| NO DIVERSION  | 71202 | 2576  | 310 1978          | 100.0                 | STARLING DITCH                  | SEN DS RES NOT FULLY MET AT 73226 |
| NO JPR RIV    | 73230 | N2647 | 1010 1978         | 100.0                 | FREEDOM #2, S.P.R. DITCH        | SEN DS DIV NOT FULLY MET AT 73232 |



Table E-20

## CALLOUT LIST

YEAR 1 MONTH JUNE      BEAUMONT RIVER BASIN - SAMPLE RUN #2      17:30:11 PST 11/07/84

| STATION       | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION | DETAILS (VALUES IN CFS) |                                     |
|---------------|--------|-------------------|-----------------------|---------------------|-------------------------|-------------------------------------|
| PART DIVERSN  | 72208  | 1662              | 618 1923              | 43.7                | S.D.P. DITCH            | 4.0 REQ      2.3 AVAIL AT 72208     |
| NO DIVERSION  | 72204  | N1961             | 703 1941              | 100.0               | SPEEDY P.L.             | SEN DS DIV NOT FULLY MET AT 72208   |
| PART RES STOR | 73226  | JOHN              | 1231 1960             | 80.8                | JOHN RESERVOIR          | 777.0 REQ      149.5 AVAIL AT 74002 |
| PART PROJ RIV | 73232  | 2650              | 1010 1974             | 89.5                | FISH #1 & #2 DITCHES    | 8.0 REQ      0.8 AVAIL AT 74002     |
| NO DIVERSION  | 71202  | 2576              | 310 1978              | 100.0               | STARLING DITCH          | SEN DS RES NOT FULLY MET AT 73226   |

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Table E-20

## CALLOUT LIST

YEAR 1 MONTH JULY                  BEAUMONT RIVER BASIN - SAMPLE RUN #2    17:30:11 PST 11/07/84

|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION  | DETAILS (VALUES IN CFS)           |
|---------------|---------|--------|-------------------|-----------------------|----------------------|-----------------------------------|
| PART DIVERSN  | 72208   | 1662   | 618 1923          | 64.2                  | S.D.P. DITCH         | 4.0 REQ      1.4 AVAIL AT 72208   |
| NO DIVERSION  | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.          | SEN DS DIV NOT FULLY MET AT 72208 |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 82.9                  | JOHN RESERVOIR       | 607.3 REQ    103.9 AVAIL AT 74002 |
| PART PROJ RIV | 73232   | 2650   | 1010 1974         | 72.7                  | FISH #1 & #2 DITCHES | 8.0 REQ      2.2 AVAIL AT 74002   |
| NO DIVERSION  | 71202   | 2576   | 310 1978          | 100.0                 | STARLING DITCH       | SEN DS RES NOT FULLY MET AT 73226 |

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Leonard Rice Consulting Water Engineers, Inc.

Table E-20

## CALLOUT LIST

YEAR 1 MONTH AUG BEAUMONT RIVER BASIN - SAMPLE RUN #2 17:30:11 PST 11/07/84

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|               | STATION | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION | DETAILS (VALUES IN CFS)           |
|---------------|---------|--------|-------------------|-----------------------|---------------------|-----------------------------------|
| PART DIVERSN  | 72602   | 1211   | 1103 1913         | 51.7                  | FREEDOM #1 DITCH    | 3.2 REQ 1.5 AVAIL AT 72602        |
| PART DIVERSN  | 72208   | 1662   | 618 1923          | 86.3                  | S.D.P. DITCH        | 3.2 REQ 0.4 AVAIL AT 72208        |
| NO DIVERSION  | 72204   | N1961  | 703 1941          | 100.0                 | SPEEDY P.L.         | SEN DS DIV NOT FULLY MET AT 72208 |
| PART RES STOR | 73226   | JOHN   | 1231 1960         | 92.7                  | JOHN RESERVOIR      | 503.4 REQ 36.6 AVAIL AT 73226     |
| PART DIVERSN  | 73804   | 2717   | 529 1961          | 50.0                  | HAWKEYE DITCH       | 7.2 REQ 3.6 AVAIL AT 73804        |
| NO DIVERSION  | 71202   | 2576   | 310 1978          | 100.0                 | STARLING DITCH      | SEN DS RES NOT FULLY MET AT 73226 |



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Table E-20

## CALLOUT LIST

YEAR 1 MONTH SEPT                  BEAUMONT RIVER BASIN - SAMPLE RUN #2                  17:30:11 PST 11/07/84

| STATION       | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION     | DETAILS (VALUES IN CFS)            |
|---------------|--------|-------------------|-----------------------|-------------------------|------------------------------------|
| PART DIVERSN  | 72602  | 1211 1103 1913    | 61.1                  | FREEDOM #1 DITCH        | 1.6 REQ      0.6 AVAIL AT 72602    |
| PART DIVERSN  | 72208  | 1662 618 1923     | 86.3                  | S.D.P. DITCH            | 1.6 REQ      0.2 AVAIL AT 72208    |
| NO DIVERSION  | 72204  | N1961 703 1941    | 100.0                 | SPEEDY P.L.             | SEN DS DIV NOT FULLY MET AT 72208  |
| PART DIVERSN  | 73800  | 2340 422 1944     | 55.9                  | ALPO CREEK, SPOON DITCH | 4.0 REQ      1.8 AVAIL AT 73800    |
| PART RES STOR | 73226  | JOHN 1231 1960    | 96.6                  | JOHN RESERVOIR          | 482.4 REQ      16.2 AVAIL AT 73226 |
| PART DIVERSN  | 73804  | 2717 529 1961     | 55.9                  | HAWKEYE DITCH           | 3.6 REQ      1.6 AVAIL AT 73804    |
| NO DIVERSION  | 71202  | 2576 310 1978     | 100.0                 | STARLING DITCH          | SEN DS RES NOT FULLY MET AT 73226  |



Table E-20

## CALLOUT LIST

YEAR 1 MONTH OCT BEAUMONT RIVER BASIN - SAMPLE RUN #2 17:30:11 PST 11/07/84

| STATION       | PERMIT | DATE<br>MMD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION | DETAILS (VALUES IN CFS)         |
|---------------|--------|------------------|-----------------------|---------------------|---------------------------------|
| PART PROJ RIV | 74002  | INDC             | 702 1868              | 11.7                | LAST POINT BEAUMONT RIVER       |
| PART PROJ RES | 74002  | INDC             | 702 1868              | 70.8                | LAST POINT BEAUMONT RIVER       |
| NO DIVERSION  | 72418  | 2832             | 921 1900              | 100.0               | TOWN OF BEAUMONT                |
| NO DIVERSION  | 72418  | M768             | 318 1907              | 100.0               | TOWN OF BEAUMONT                |
| NO DIVERSION  | 72602  | 1211             | 1103 1913             | 100.0               | FREEDOM #1 DITCH                |
| NO PROJ RIV   | 73230  | 1520             | 228 1918              | 100.0               | FREEDOM #2, S.P.R. DITCH        |
| PART PROJ RES | 73230  | 1520             | 228 1918              | 100.0               | FREEDOM #2, S.P.R. DITCH        |
| NO DIVERSION  | 72414  | 1519             | 820 1918              | 100.0               | DEAD BIRD DITCH                 |
| NO DIVERSION  | 72208  | 1662             | 618 1923              | 100.0               | S.D.P. DITCH                    |
| NO PROJ RIV   | 74000  | 2525             | 924 1936              | 100.0               | BEAUMONT RIVER BELOW ALPO CREEK |
| PART PROJ RES | 74000  | 2525             | 924 1936              | 100.0               | BEAUMONT RIVER BELOW ALPO CREEK |
| NO PROJ RIV   | 73232  | 4627             | 405 1938              | 100.0               | FISH #1 & #2 DITCHES            |
| PART PROJ RES | 73232  | 4627             | 405 1938              | 100.0               | FISH #1 & #2 DITCHES            |
| NO DIVERSION  | 72204  | N1961            | 703 1941              | 100.0               | SPEEDY P.L.                     |
| NO DIVERSION  | 73800  | 2340             | 422 1944              | 100.0               | ALPO CREEK, SPOON DITCH         |
| NO RES STOR   | 73226  | JOHN             | 1231 1960             | 100.0               | JOHN RESERVOIR                  |
| PART JPR NOSP | 74000  | 2217             | 529 1961              | 100.0               | BEAUMONT RIVER BELOW ALPO CREEK |
| PART JPR NOSP | 74000  | 2239             | 422 1963              | 100.0               | BEAUMONT RIVER BELOW ALPO CREEK |
| PART JPR NOSP | 73230  | N2647            | 1010 1978             | 100.0               | FREEDOM #2, S.P.R. DITCH        |
| NO DIVERSION  | 73804  | 2717             | 529 1961              | 100.0               | HAWKEYE DITCH                   |
| NO JPR RIV    | 74000  | 2217             | 529 1961              | 100.0               | BEAUMONT RIVER BELOW ALPO CREEK |
| NO JPR RIV    | 74000  | 2239             | 422 1963              | 100.0               | BEAUMONT RIVER BELOW ALPO CREEK |
| NO PROJ RIV   | 73232  | 2650             | 1010 1974             | 100.0               | FISH #1 & #2 DITCHES            |
| PART PROJ RES | 73232  | 2650             | 1010 1974             | 100.0               | FISH #1 & #2 DITCHES            |
| NO DIVERSION  | 71202  | 2576             | 310 1978              | 100.0               | STARLING DITCH                  |
| NO JPR RIV    | 73230  | N2647            | 1010 1978             | 100.0               | FREEDOM #2, S.P.R. DITCH        |



Table E-20

## CALLOUT LIST

YEAR 1 MONTH NOV                  BEAUMONT RIVER BASIN - SAMPLE RUN #2    17:30:11 PST 11/07/84

| STATION       | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION | DETAILS (VALUES IN CFS) |           |                    |
|---------------|--------|-------------------|-----------------------|---------------------|-------------------------|-----------|--------------------|
|               |        |                   |                       |                     |                         |           |                    |
| PART DIVERSN  | 72204  | N1961             | 703 1941              | 93.3                | SPEEDY P.L.             | 2.0 REQ   | 0.1 AVAIL AT 72204 |
| PART DIVERSN  | 73800  | 2340              | 422 1944              | 70.2                | ALPO CREEK, SPOON DITCH | 4.0 REQ   | 1.2 AVAIL AT 73800 |
| PART RES STOR | 73226  | JOHN              | 1231 1960             | 98.8                | JOHN RESERVOIR          | 738.6 REQ | 8.7 AVAIL AT 73232 |

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Leonard Rice Consulting Water Engineers, Inc.

Table E-20

## CALLOUT LIST

YEAR 1 MONTH DEC                    BEAUMONT RIVER BASIN - SAMPLE RUN #2    17:30:11 PST 11/07/84

| STATION       | PERMIT | DATE<br>MMDD YEAR | PERCENT<br>CALLED OUT | STATION DESCRIPTION          | DETAILS (VALUES IN CFS) |              |       |
|---------------|--------|-------------------|-----------------------|------------------------------|-------------------------|--------------|-------|
|               |        |                   |                       |                              | 2.0 REQ                 | 0.1 AVAIL AT | 72204 |
| PART DIVERSN  | 72204  | N1961             | 703 1941              | 92.7 SPEEDY P.L.             | 2.0 REQ                 | 0.1 AVAIL AT | 72204 |
| PART DIVERSN  | 73800  | 2340              | 422 1944              | 71.9 ALPO CREEK, SPOON DITCH | 4.0 REQ                 | 1.1 AVAIL AT | 73800 |
| PART RES STOR | 73226  | JOHN              | 1231 1960             | 98.8 JOHN RESERVOIR          | 706.4 REQ               | 8.5 AVAIL AT | 73232 |

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Leonard Rice Consulting Water Engineers, Inc.

Table E-21

## CHART OF CALLED OUT DIVERSIONS

## SAMPLE RUN #2 - BEAUMONT RIVER BASIN

YEAR = 1 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

|   | INDC | .204  |       | .083  |       |       |       |       |       |       |       |      |       |
|---|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|
| M | 768  | .151  | .375  | .151  | 1.000 |       |       |       | 1.000 |       |       |      | 74002 |
|   | 1211 |       |       |       | 1.000 |       |       | .517  | .611  | 1.000 |       |      | 72418 |
|   | 1519 |       |       |       | 1.000 |       |       |       |       | 1.000 |       |      | 72602 |
|   | 1520 |       |       |       | 1.000 |       |       |       |       | 1.000 |       |      | 72414 |
|   | 1662 |       |       |       | 1.000 | .296  | .437  | .642  | .863  | .863  | 1.000 |      | 73230 |
| N | 1961 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .933  | .927 | 72208 |
|   | 2217 |       |       |       | 1.000 | 1.000 |       |       |       | 1.000 |       |      | 72204 |
|   | 2239 |       |       |       | 1.000 | 1.000 |       |       |       | 1.000 |       |      | 74000 |
|   | 2340 | .780  | .842  | .780  | 1.000 |       |       |       | .559  | 1.000 | .702  | .719 | 74000 |
|   | 2525 |       |       |       | 1.000 |       |       |       |       | 1.000 |       |      | 73800 |
|   | 2576 |       |       |       | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |       |      | 71202 |
|   | 2577 |       |       |       | 1.000 |       |       |       |       |       |       |      | 71206 |
| N | 2647 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |       |       |       | 1.000 |       |      | 73230 |
|   | 2650 |       |       |       | 1.000 | 1.000 |       |       |       | 1.000 |       |      | 73232 |
|   | 2717 |       |       |       | 1.000 | 1.000 |       | .500  | .559  | 1.000 |       |      | 73804 |
|   | 2832 |       |       |       | 1.000 |       |       |       |       | 1.000 |       |      | 72418 |
|   | 4627 |       |       |       | 1.000 |       |       |       |       | 1.000 |       |      | 73232 |

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Leonard Rice Consulting Water Engineers, Inc.

Table E-22

CHART OF CALLED OUT DIVERSIONS  
 SAMPLE RUN #2 - BEAUMONT RIVER BASIN

YEAR = 2 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

|   | INDC |       |       |       |       |       |       |       |       |       |       |       |       |       |
|---|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| M | 768  |       | .142  | .366  | .142  | 1.000 |       |       |       |       |       |       | 74002 |       |
|   | 1211 |       |       |       |       | 1.000 |       |       |       |       |       |       | 72418 |       |
|   | 1519 |       |       |       |       | 1.000 |       |       |       |       |       |       | 72602 |       |
|   | 1520 |       |       |       |       | 1.000 |       |       |       |       |       |       | 72414 |       |
|   | 1662 |       |       |       |       | 1.000 | .296  | .437  | .642  | .863  | .863  | 1.000 | 73230 |       |
| N | 1961 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | .933  | .927  | 72208 |
|   | 2217 |       |       |       |       | 1.000 |       |       |       |       |       |       |       | 72204 |
|   | 2239 |       |       |       |       | 1.000 |       |       |       |       |       |       |       | 74000 |
|   | 2340 |       | .780  | .842  | .780  | 1.000 |       |       |       | .559  | 1.000 | .702  | .719  | 73800 |
|   | 2525 |       |       |       |       | 1.000 |       |       |       |       |       |       |       | 74000 |
|   | 2576 |       |       |       |       | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |       | 71202 |
|   | 2577 |       |       |       |       | 1.000 |       |       |       |       |       |       |       | 71206 |
| N | 2647 |       |       |       |       | 1.000 |       |       |       |       | 1.000 |       |       | 73230 |
|   | 2650 |       |       |       |       | 1.000 |       |       |       |       | 1.000 |       |       | 73232 |
|   | 2717 |       |       |       |       | 1.000 |       |       |       | .500  | .559  | 1.000 |       | 73804 |
|   | 2832 |       |       |       |       | 1.000 |       |       |       |       |       | 1.000 |       | 72418 |
|   | 4627 |       |       |       |       | 1.000 |       |       |       |       |       | 1.000 |       | 73232 |

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Leonard Rice Consulting Water Engineers, Inc.

Table E-23

CHART OF CALLED OUT INSTREAM FLOWS  
SAMPLE RUN #2 - BEAUMONT RIVER BASIN

YEAR = 1 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

19154D .15 .37 .15 72414

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Leonard Rice Consulting Water Engineers, Inc.

Table E-24

CHART OF CALLED OUT INSTREAM FLOWS

SAMPLE RUN #2 - BEAUMONT RIVER BASIN

YEAR = 2 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

19154D .14 .37 .14 72414

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Leonard Rice Consulting Water Engineers, Inc.

Table E-25

## AFFECTION CHART FOR DIVERSIONS - NEGATIVE

SAMPLE RUN #1 V. SAMPLE RUN #2 - BEAUMONT RIVER BASIN

YEAR = 1 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

|   | INDC | .204        | .083  | 74002 |
|---|------|-------------|-------|-------|
| M | 768  | 1.000       | 1.000 | 72418 |
|   | 1211 | 1.000       | 1.000 | 72602 |
|   | 1519 | 1.000       | 1.000 | 72414 |
|   | 1520 | 1.000       | 1.000 | 73230 |
|   | 1662 | 1.000       | .726  | 72208 |
| N | 1961 | .224        |       | 72204 |
|   | 2217 | 1.000 1.000 | 1.000 | 74000 |
|   | 2239 | 1.000 1.000 | 1.000 | 74000 |
|   | 2340 | .441        | .419  | 73800 |
|   | 2525 | 1.000       | 1.000 | 74000 |
| N | 2647 | 1.000       | 1.000 | 73230 |
|   | 2650 | 1.000       | 1.000 | 73232 |
|   | 2717 | 1.000 1.000 | 1.000 | 73804 |
|   | 2832 | 1.000       | 1.000 | 72418 |
|   | 4627 | 1.000       | 1.000 | 73232 |

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Table E-26

## AFFECTED CHART FOR DIVERSIONS - NEGATIVE

SAMPLE RUN #1 V. SAMPLE RUN #2 - BEAUMONT RIVER BASIN

YEAR = 2 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

|   | INDC | .143 |      |      |       |  |  |       |  |  |       |  |
|---|------|------|------|------|-------|--|--|-------|--|--|-------|--|
| M | 768  | .012 | .012 | .012 | 1.000 |  |  | 1.000 |  |  | 74002 |  |
|   | 1211 |      |      |      | 1.000 |  |  | 1.000 |  |  | 72418 |  |
|   | 1519 |      |      |      | 1.000 |  |  | 1.000 |  |  | 72602 |  |
|   | 1520 |      |      |      | 1.000 |  |  | .319  |  |  | 72414 |  |
|   | 1662 |      |      |      | .011  |  |  | .726  |  |  | 73230 |  |
|   | 2217 |      |      |      | 1.000 |  |  | 1.000 |  |  | 72208 |  |
|   | 2239 |      |      |      | 1.000 |  |  | 1.000 |  |  | 74000 |  |
|   | 2340 |      |      |      | .441  |  |  | .419  |  |  | 73800 |  |
|   | 2525 |      |      |      | 1.000 |  |  | .920  |  |  | 74000 |  |
| N | 2647 |      |      |      | 1.000 |  |  | 1.000 |  |  | 73230 |  |
|   | 2650 |      |      |      | 1.000 |  |  | 1.000 |  |  | 73232 |  |
|   | 2717 |      |      |      | 1.000 |  |  | 1.000 |  |  | 73804 |  |
|   | 2832 |      |      |      | 1.000 |  |  | 1.000 |  |  | 72418 |  |
|   | 4627 |      |      |      | 1.000 |  |  | 1.000 |  |  | 73232 |  |

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Table E-27

FFECTED CHART FOR DIVERSIONS - POSITIVE

SAMPLE RUN #1 V. SAMPLE RUN #2 - BEAUMONT RIVER BASIN

YEAR = 1 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

2717 .707 73804

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Table E-28

AFFECTED CHART FOR DIVERSIONS - POSITIVE

SAMPLE RUN #1 V. SAMPLE RUN #2 - BEAUMONT RIVER BASIN

YEAR = 2 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

2717 .707 73804

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Table E-29

AFFECTED CHART FOR INSTREAM FLOWS - NEGATIVE

SAMPLE RUN #1 V. SAMPLE RUN #2 - BEAUMONT RIVER BASIN

YEAR = 1 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

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Table E-30

FFECTED CHART FOR INSTREAM FLOWS - NEGATIVE

SAMPLE RUN #1 V. SAMPLE RUN #2 - BEAUMONT RIVER BASIN

YEAR = 2 JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

19154D .01 .01 .01 72414

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Table E-31  
 BEAUMONT RIVER BASIN  
 ANALYSIS OF IMPACT DUE TO IMPOSED CLAIM  
 AFFECTED STATE RIGHTS - ACRES  
 ALTERNATIVE-SAMPLE RUN #1 V. SAMPLE RUN #2

| MONTH     | 1970  | 1971  | 1972  | 1973  | 1974  | 1975 | 1976 | 1977 | 1978 | 1979 | AVE   |
|-----------|-------|-------|-------|-------|-------|------|------|------|------|------|-------|
| JANUARY   | 0.    | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 0.    |
| FEBRUARY  | 0.    | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 0.    |
| MARCH     | 0.    | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 0.    |
| APRIL     | 6230. | 6513. | 6513. | 6300. | 6513. | 0.   | 0.   | 0.   | 0.   | 0.   | 3207. |
| MAY       | 2940. | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 294.  |
| JUNE      | 0.    | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 0.    |
| JULY      | 0.    | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 0.    |
| AUGUST    | 0.    | 0.    | 0.    | 0.    | 350.  | 0.   | 0.   | 0.   | 0.   | 0.   | 35.   |
| SEPTEMBER | 0.    | 0.    | 0.    | 0.    | 350.  | 0.   | 0.   | 0.   | 0.   | 0.   | 35.   |
| OCTOBER   | 6713. | 6080. | 6599. | 560.  | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 1995. |
| NOVEMBER  | 0.    | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 0.    |
| DECEMBER  | 0.    | 0.    | 0.    | 0.    | 0.    | 0.   | 0.   | 0.   | 0.   | 0.   | 0.    |



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