

By C. A. Thomas and W. A. Harenberg



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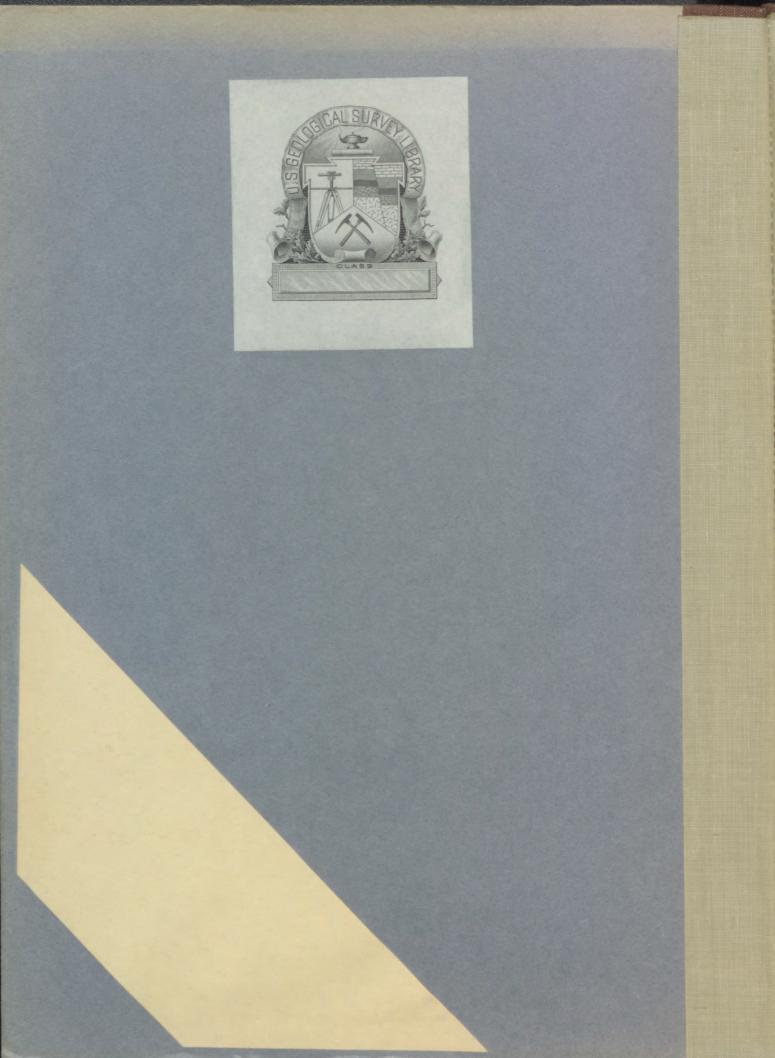
UNITED STATES DEPARTMENT OF THE INTERIORGEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Prepared in cooperation with the

IDAHO DEPARTMENT OF WATER ADMINISTRATION AND THE IDAHO DEPARTMENT OF HIGHWAYS

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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Water Resources Division

A PROPOSED STREAMFLOW-DATA PROGRAM FOR IDAHO

C. A. Thomas and W. A. Harenberg

224405

Prepared in cooperation with the Idaho Department of Water Administration and the Idaho Department of Highways

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A streamflow information system is proposed for Idaho. This proposal resulted from a study in which the basic steps were (1) definition of long-term program goals, (2) examination and evaluation of available data to determine which goals have been achieved, and (3) consideration of alternate programs and techniques for meeting the remaining goals.

resources of the State as well as for planning better utili-

The following conclusions are drawn from the study. Goals have been achieved on many of the principal unregulated streams; operation of 11 new or reactivated gages on principal streams are needed to satisfy needs. However, the goals cannot be met on unregulated minor streams with present data and analytical techniques. Few of the goals can be achieved with the available data for major or minor streams which are requlated, which are fed by springs or receive significant return flows, or which are affected by extensive channel losses. These streams will require river-systems studies which necessitate collection of complete records of diversions, return flows, upstream storage, and information relative to exchange between surface flow and ground water. Noteworthy inadequacies include data to define floods at long recurrence intervals, such as 100-year floods, and to define the low-flow characteristics, especially in small streams and in channels affected by springs, return flows, seepage, regulation, or diversions. bepraha wastorgreat to oselovenson parent

The proposed program consists of both data collection and analyses to efficiently provide the streamflow information required for (1) current water use and management, (2) planning and design, (3) determination of long-term trends, and (4) assessment of stream environment.

INTRODUCTION

Water is essential for life and for the economic wellbeing and enjoyment of the people. Expected future growth of the economy and the population will make unprecedented demands on the available water supply of the State.

The streamflow measurement program provides information which is basic for the inventory and management of the water resources of the State as well as for planning better utilization of the available supply. The streamflow data collection program in Idaho has evolved through the years as Federal and State interests in surface-water resources have increased and as funds have become available for operating stream-gaging stations.

Systematic collection of streamflow information began in 1889 when gaging stations were started on Bear River near Preston, Snake River at Idaho Falls, and Big Wood River at Hailey. Information needs for flood control, irrigation, hydroelectric power, fish studies, recreational appraisal, navigation, and waste disposal have resulted in operation of gaging stations at a great many sites for various lengths of time.

One notable program enlargement occurred about 1910 after enactment of the Carey Act, which was passed by Congress to encourage reclamation of the public domain by private enterprise. Many gaging stations were added after World War I, as the serious shortage of manpower was alleviated, and additional gages were added during the drought of the 1930's to investigate new water supplies. In 1943, an expanded streamgaging program in the Bear River basin resulted from a need to formulate and administer a tri-state compact between Idaho, Utah, and Wyoming.

During the early 1960's, the program enlarged in a different way when crest-stage gages were installed on several small streams. In contrast to the earlier gages, which produced a continuous record of water-surface stage (elevation) and discharge, the crest-stage gages provide data only on the maximum stage and discharge of floods.

The U.S. Geological Survey streamflow data program in Idaho as of 1969 was publishing daily records for streams, reservoirs, and major diversions at 252 continuous record sites and publishing annual flood-peak data at 80 crest-stage gage sites.

Table A-1 in the appendix lists sites in Idaho and adjacent areas along with the period of records for both continuous and crest-stage gages that have been published by the Geological Survey. Locations of these gages is shown in figure 1. In addition, more than 10,000 discharge measurements at miscellaneous sites have been made and published (Decker and others, 1970).

The existing network of stream gages and the wealth of available data have resulted more from a need for information at specific sites than from a planned, all-purpose, data collection system. At present, because of the increased gage operation costs, the restraint on funds and manpower, and the need for a greater variety of hydrologic data, it is imperative that the streamflow program be evaluated for the purpose of designing an optimum system to produce the types of hydrologic information required by State, Federal, and private interests.

The concepts and procedures used in this study have been presented in detail by Carter and Benson (1970) and are summarized only briefly in this report. The basic steps are (1) definition of the long-term objectives of the streamflow-data program in quantitative form, (2) examination and analysis of all available data to determine which objectives have already been met, (3) consideration of alternate means of meeting the remaining objectives, and (4) preparation of a proposed program of data collection and analysis.

CONCEPTS AND PROCEDURES USED IN THIS STUDY

The principal concept of this study is that streamflow information may be needed at any point on any stream in Idaho, and that the program must be designed to accommodate this need. This information can be provided by a combination of data collection and hydrologic studies that generalize the information obtained at gaging sites.

Another important concept is that the goals of the program, including accuracy goals, should be identified in quantitative form. In the initial phase of the study, program goals were established. This led to a comparison of existing data with the goals and to consideration of the elements that should be included in the future program to meet the goals not yet attained.

The procedures used in this study are presented with reference to the general framework shown by table 1. Streamflow data are classified into four types: (1) Data for current use, (2) data for planning and design, (3) data to define long-term trends, and (4) data on the stream environment. For the second type of data, streams are classified as natural or regulated, and each of these classifications is further subdivided into principal or minor, with the separation of the two occurring at a drainage area of 500 square miles.

The need for each type of data, and the methods of obtaining the data, are discussed in subsequent sections.

Data for Current Use

Current information on streamflow is needed at many sites for day-to-day decisions on water management, for assessment of current water availability, for the management of water quality, for forecast of water hazards, and for surveillance necessary to comply with legal requirements. Gaging stations in this classification are operated to fill needs for information on the actual flow at any moment, or during any specific day, month, or year. These data are used currently for a particular purpose, and the interest is in flows as they occur as well as in the historic records.

Data for current use are obtained by operating gaging stations to obtain the data specifically required for water-management systems. Current-purpose data stations are identified separately in this study because (1) justification can be related to specific needs, (2) the data may have little or no transfer value in a hydrologic sense, and (3) the locations of the stations, the accuracy requirements, and the period of operation are specified by the user of the data who usually provides the financing.

Table 1. Framework for design of data collection program.

	Type of data											
Program element	ALD C COMPANY OF THE	A TO LANGE	Planning ar	nd Design		Date Date Date Date Date Date Date Date	No. 15 CARLOR					
	Current use	Natur	al Flow	Regulate	ed Flow	Long-term trends	Stream environment					
	THE STEEL OF STREET	Minor streams	Principal streams	Minor streams	Principal streams	5 - 0 - 0 W	1 3 5 6					
Program	To provide current data on streamflow needed for day-by-day decisions on warer management as required.	specified accuracy.	To provide a long-term data base of homogene- ous records on natural- flow streams.	To describe the hydrologic environment of stream channels and drainage basins.								
Drainage area limits	Full range	Less than 500* sq mi.	Greater than 500* sq mi.	Less than 500* sq mi.	Greater than 500* sq mi	Full range	Full range					
Accuracy goal	As required	Equivalent to 10 years of record.	Equivalent to 25 years of record.	Equivalent to 10 years of record.	Equivalent to 25 years of record.	Highest obtainable	As required					
Approach	Operate gaging stations as required to provide specific information needed.	Relate flow characteris- tics to drainage basin characteristics using data for gaged basins.	Operate gaging stations to obtain 25 years of record (or the equivalent by correlation) at a network of points on principal streams; interpolate between points.	Develop generalized re- lations that account for the effect of storage, diversion or regulation on natural flow char- acteristics.	Utilize analytical model of stream system with observed data as input to compute homogeneous records for both natural flow conditions and present conditions of development.	Operate a number of carefully selected gag- ing stations indefinitely.	Observe and publish information on stream environment.					
Evaluate available data	Identify stations where data is used currently and code the specific use of data.	Develop relationship for each flow character- istic and compare standard error with accuracy goal. Evaluate sample.	Lay out network of points on principal streams and compare data available at these points with goal.	Appraise type of regula- tion, data available, and areas where relationships are needed.	that should be studied	Select two stations in each WRC subregion to operate indefinitely for this purpose.	Evalualte information available in relation to goals.					
Design future program		Identify goals that have Consider alternate mear Identify elements of fut	ns of attaining goals,				2 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					

May be varied with terrain and hydrologic conditions.

This part of the program is not subject to design, but changes in response to the needs for data in water management.

Data for Planning and Design

Streamflow records form the principal basis for the planning and design of water-related facilities. Past hydrologic experience, however, is never precisely duplicated in the future; the exact sequence of wet and dry years probably will not occur again. For this reason, designers and planners commonly utilize statistical characteristics of streamflow rather than the records of flow at specific times. It is assumed that the probability of occurrence of a flow of a given magnitude or other statistical parameter in the future can be approximated from the frequency of such occurrence in the past. Typical statistical characteristics are the mean flow, the flood of 50-year recurrence interval, and the standard deviation of annual mean flows.

A long record of streamflow at the specific site is desirable for defining statistical characteristics of streamflow at that site. Although it is not feasible to collect a long continuous streamflow record at every site where it may be needed, a number of such stations are required to provide information that can be transferred to ungaged sites or to sites where little streamflow information is available.

Natural-Flow Streams

The transfer of information on natural-flow streams is done by relating flow characteristics to basin characteristics such as drainage area, topography and climate; by relating a short record to a longer one; or by interpolating between gaged points on a stream channel.

To evaluate the statistical characteristics of stream-flow, the streams in Idaho were identified as having either natural or regulated flow conditions. For the purpose of this study, streams were also defined under each of the above categories as being minor streams (drainage area less than 500 square miles), or principal streams (drainage area greater than 500 square miles). The principal-stream network was defined by first identifying sites with drainage areas of about 500 square miles on the upstream segments of all streams,

and then identifying the next and following sites on each stream from that upstream site to the mouth at points where the drainage area has doubled, or more than doubled, due to large tributaries entering.

Regulated-Flow Streams

The natural flow regimen of many streams in Idaho is altered by diversion for irrigation and by storage in reservoirs. These alterations increase the amount of data collection and analysis that is required to define the flow characteristics.

To be useful in statistical predictions, streamflow data must be homogeneous in time. Frequently, however, it is not possible to obtain a long record under one condition of development before additional changes occur.

Definition of the flow characteristics at any point on any stream is also much more difficult under conditions of regulation. The procedures used for natural streams such as regression, correlation, and interpolation cannot be applied.

For regulated streams, a systems approach seems to be the most efficient way of providing meaningful information on the statistical characteristics of flow. This approach requires some sort of analytical model of the stream system. Such models are simple in concept and generally consist of water-budget equations and flow-storage equations. In many instances, the use of the digital computer is required to facilitate the handling of the large volumes of data or for complex computations. Generally, computer programs tailored to the individual system can be prepared.

Development of such a model requires information on stage-capacity curves of reservoirs, records of outflow at the outlets, operating-rule curves for the release of water, reservoir losses due to evaporation and seepage, records of diversions, consumptive use, and return flow. Information on streamflow at strategic locations is also necessary. Streamflow for previously ungaged subbasins in the system may be required to complete the input to the model. Fortunately, many of the stations operated to obtain current data are on regulated streams, and the records provide a base for a systems study. Frequently, aquifer characteristics and ground-water pumpage must be considered.

The model and the associated data can be used to derive homogeneous data for both the natural and the regulated conditions. All historical streamflow records for both natural and regulated flows can be used as input to the model.

Accuracy Goals

In using past hydrologic experience to appraise the probability of future occurrences, some error must be tolerated. Natural streamflow is not truly random, but the great variation in time and space makes the assumption that natural streamflow is random a reasonable one. Therefore, many characteristics of natural streamflow can be interpreted in terms of statistical distributions. Estimates of the magnitude and frequency of occurrence of events of interest to the planner can then be studied, and the probable accuracy of the estimates can be appraised.

The principal measure of the accuracy with which a particular streamflow characteristic can be estimated is the "standard error of estimate," expressed in this report as "standard error," a percentage of the average value of the characteristic. The standard error is the estimated limit, above and below the average, within which about 67 percent (that is, two in three) of future values of the characteristic are expected to fall, if all assumptions as to normality and randomness are sound. Conversely, there is one chance in three that any given future value of a characteristic will differ from the estimated value by more than one standard error.

In general, the longer the record the more reliable are the estimates of probable future occurrences. However, even with a long record, say 50 to 100 years or more, it is not possible to determine with great precision the probability of certain flow characteristics such as floods of a given magnitude, for example. The standard error of various streamflow parameters decreases with the years of available record, but at a decreasing rate. Examples typical of records in Idaho are shown by the two curves in figure 2. The incremental economic value of the additional years of record beyond a reasonable limit in the planning and design of projects is under continuing study, but no usable guidelines are available now. It can be seen from the two curves of figure 2 that a relatively small improvement in accuracy results from extending records beyond about 25 years.

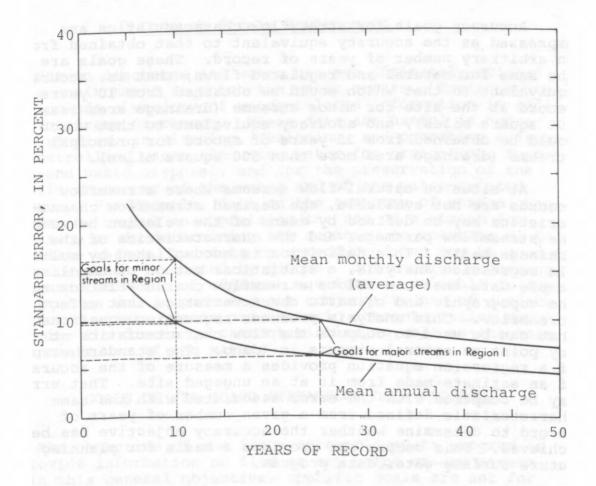


FIGURE 2.-- Curve showing relation of standard error to years of record for streams in Region 1 in Idaho.

if (2) as a reference or comparative base for noting that the tempting of attempting of attempting of streams whose basins or flows are developed to the control of the second state of the control of th

Accuracy goals for streamflow characteristics are expressed as the accuracy equivalent to that obtained from an arbitrary number of years of record. These goals are the same for natural and regulated flows; that is, accuracy equivalent to that which would be obtained from 10 years of record at the site for minor streams (drainage area less than 500 square miles), and accuracy equivalent to that which would be obtained from 25 years of record for principal streams (drainage area more than 500 square miles).

At sites on natural-flow streams where streamflow records are not available, the desired streamflow characteristics may be defined by means of the relation between the streamflow parameter and the characteristics of the drainage basin. This definition is accomplished by multiple regression analysis, a statistical method of handling sample data that can relate streamflow characteristics to the topographic and climatic characteristics that affect streamflow. This analysis produces regression equations that can be used to compute the flow characteristics at any point on natural streams in Idaho. The standard error of a regression equation provides a measure of the accuracy of an estimate made from it at an ungaged site. That error may be compared with the error associated with the same characteristic defined from a given number of years of record to determine whether the accuracy objective has been achieved. This comparison provides a basis for planning the future surface-water data program.

Data to Define Long-Term Trends

error to years of record for streams A long continuing series of consistent observations of natural streamflow is needed for two purposes: (1) To define changes in characteristics of natural flow with time and (2) as a reference or comparative base for noting changes in the regime of streams whose basins or flows are developed for use. Characteristics of streamflow defined from gagingstation records are used to estimate future flow characteristics, on the assumption that the observed record is a representative sample of the population of flows. To affirm this assumption, or to define better the ways in which the characteristics of flows change with time, selected gaging stations on natural streams should be operated indefinitely. The network of long term trend stations should gage streamflow from basins which are representative of the wide ranges of topography, climate, and other characteristics encountered in the State. The accuracy of gaging at these sites should be the highest that the state of the art permits.

Data on Stream Environment

Stream discharge and water use are intimately related to the environment in which the water occurs. Environmental data include a variety of water-related information in addition to stream discharge. These data are useful in hydrologic studies, in planning, designing, and operating systems for controlling water, in using water for irrigation, recreation and waste disposal, and for the preservation of the esthetic character of the water and of the water-related features. For example, data on the geometry of stream channels may be useful in appraising the use of a stream for recreation or in determining its capacity to reaerate or to assimilate wastes, and data on stream profiles may be used to determine areas inundated by floods. Information regarding the characteristics of adjacent aquifers is valuable in low flow studies and in planning the conjunctive use of surface and ground water. Basin and climatic characteristics may determine the discharge characteristics as well as the most appropriate use of the water.

GOALS OF THE IDAHO STREAMFLOW-DATA PROGRAM

The objective of the Idaho streamflow-data program is to provide information on flow at any point on any stream. Within this general objective, specific goals are set for each of the four types of data that represent the particular information that is needed. Acceptable accuracy levels govern the techniques used in providing the information and also provide a measure of specific goals.

Data for Current Use

The program goal for this type of data is to provide the particular information needed at specific sites for current use. Accuracy goals at a given site, as specified by the data user, can be met by intensive observation, or by more sophisticated instrumentation as needed.

Data for Planning and Design

The goal for this type of data is to define, within the given accuracy, the statistical characteristics of streamflow. This definition applies not only to all streams with natural flow, but also to those streams that are affected by regulation and diversion. The accuracy goals used in this report are equivalent to 10 years of record for minor streams and 25 years of record for principal streams. The standard errors were calculated from a theoretical relation of standard error to the index of variability and the number of years of record for streams in each of the four Idaho Regions (see fig. 1). Specific goals for two flow characteristics for Region 1 are shown in figure 2, and others are presented by regions in table 2.

In addition to these goals, definition of flood peaks for recurrence intervals as long as 100 years is needed for proposed flood insurance programs and for design of some water-related projects. Records of peak flows 50 years in length at selected sites are recommended for adequate definition of these floods.

Data to Define Long-Term Trends

The goal for this type of data is to operate indefinitely a small network of gaging stations on streams that
are expected to be relatively free from manmade changes.
One or two stations should be located in each major drainage area in the State, and stations should be located on
streams that differ in physical characteristics.

Data on Stream Environment

Environmental data describe the flow and the stream channel in terms that will be valuable in planning the use of the stream for any purpose such as recreation, fish and wild life enhancement, irrigation, hydroelectric power, waste disposal, conjunctive surface water-ground water supply, and guarding against water hazards. The long-range goals are to provide information related to the hydrologic environment of the basin and stream channel. Examples of specific projects are given below.

Table 2. Comparison of regression equation with accuracy goals for principal and minor streams with natural flow.

(Amanag) Yay'yaninangati	Standa	(percent)			
Streamflow characteristics	Accurac 10-year record	25-year record	Regression equation		
Rec	gion l				
Mean annual flow	9.6	6.1	35		
Standard deviation of annual flow	22	14	43		
Mean monthly flow (average)	16	9.9	38		
Standard deviation of monthly flow	22	14	61		
50-year peak flow	22	14	35		
25-year 7-day high flow	19	12	48		
2-year 7-day low flow	10	6.4	50		
20-year 7-day low flow	16	io	84		
Reg	ion 2				
Mean annual flow	8.3	5.3	23		
Standard deviation of annual flow	22	14	37		
Mean monthly flow (average)	13	8.1	47		
Standard deviation of monthly flow	22	14	68		
50-year peak flow	23	15	51		
25-year 7-day high flow	19	12	33		
2-year 7-day low flow	7.4	4.7	39		
20-year 7-day low flow	11	7.1	43		

14
Table 2. Comparison of regression equation with accuracy goals for principal and minor streams with natural flow--Continued.

courady dosing keerenging	Standa	(percent)				
Streamflow characteristics	10-year record	25-year record	ar equation			
Regi	on 3	he abour a	9 18			
Mean annual flow	6.2	3.9	39			
Standard deviation of annual flow	22	14	69			
Mean monthly flow (average)	8.0	5.1	146			
Standard deviation of monthly flow	22	14	109			
50-year peak flow	20	13	35			
25-year 7-day high flow	16	9.9	131			
2-year 7-day low flow	5.9	3.6	68			
20-year 7-day low flow	8.8	5.4	69			
Reg	ion 4					
Mean annual flow	13	8.4	48			
Standard deviation of annual flow	22	14	22			
Mean monthly flow (average)	14	8.9	72			
Standard deviation of monthly flow	22	14	wor lil name			
50-year peak flow	36	23	43			
25-year 7-day high flow	32	20	62			
2-year 7-day low flow	14	10	207			
20-year 7-day low flow	25	16	ear Teday le			

- 1. Hydrometric surveys of stream-aquifer systems.
 - a. Locations of springs, seeps and return flows, and gaining reaches.
 - b. Identification of channel reaches with decreasing discharge.
- 2. Surveys of time of travel of solutes and flood waves in stream channels.
- 3. Definition of flood profiles along stream channels.
- 4. Identification of flood plains of streams for floods of selected frequencies.
- 5. Reconnaissance of streamflow and stream channel parameters that are related to the use of the stream for recreation and fish and wildlife propagation, such as velocities, depths, bank vegetation, bed material, water temperature, water quality, and accessibility.
- 6. Research studies of the effects of manmade changes in the environment on the quantity and quality of streamflow.
- 7. Evaporation from water surfaces at various latitudes and altitudes.
- 8. Characteristics of drainage basins including vegetal cover, land and channel slopes, geology, topography, and retention properties of soils.
- 9. Climatic characteristics.
- 10. Channel geometry and its relation to streamflow characteristics.
- 11. Relations between stream environment and water quality.

EVALUATION OF EXISTING DATA IN IDAHO

In this evaluation, all data are considered and analyzed in relation to program objectives. A separate evaluation is made for each of the four types of data following the framework of table 1.

Data for Current Use

About 85 percent of the gaging stations in Idaho are operated to provide data for current use. It is assumed that the need for this type of data is being met, and that this part of the program can be modified as requirements change. A summary of the 214 gaging stations needed to provide data for specific uses is shown below (many stations provide data for more than one use).

	Use of data Number	of stations
1.	Current accounting of water and book availability	Identifica Elo alected liequen
2.	Operation of water-related projects	161 заделения
3.	Forecasting water supply and hazards	90
4.	Monitoring of effects of waste disposal	sality and Acc
5.	Management of water quality	5lamnoakena
6.	Compact or legal	139 TITLE TORNE
7.	Research or special study	29

Gaging stations that are operated to satisfy the need for current-purpose data are listed and coded according to the specific use of data in table 3. The brackets around C in this table indicate that a continuous record of discharge is no longer needed to supply current-purpose information. For example, flood forecasting may require only a record of stage and a current relation between stage and discharge. For some water-quality stations, only the discharge at the time the sample is taken is sufficient.

Data for Planning and Design

The statistical characteristics of streamflow can be defined by sample gaging, analytical methods of regionalization, systems studies, or any combination of the three. The following discussion of the evaluation of this type of data follows the framework shown in table 1.

Column 1: B, bench mark or long-term-trend station on unregulated stream.

Column 2: C, current-purpose station; [], station is no longer needed for the purpose indicated.

Columns 3-5: Purposes for which current-purpose station is operated: 1, accounting; 2, operation; 3, forecasting; 4, disposal; 5, water quality; 6, compact or legal; 7, research or special study.

Column 6: P, principal stream station; H, hydrologic station except when classified as P; R, regulated stream; [] station is no longer needed for purpose indicated.

Column 7: Effect of regulation on low flow and monthly flow: blank, no appreciable effect; 1, no appreciable effect on daily flow (diurnal fluctuation only); 2, no appreciable effect on weekly flow; 3, monthly flow not affected by more than 10 percent of natural conditions; 4, monthly flow affected but published data available to adjust to natural conditions with an

error of less than 10 percent; 5, effect of regulation has not been evaluated; 6, effect on daily flow is appreciable (more than 10 percent); 7, effect on weekly low flow is appreciable (more than 10 percent); 8, monthly flow is affected by more than 10 percent and data not available to adjust to natural conditions with an error less than 10 percent; 9, effect varies by month or season.

Column 8: Effect of regulation on peak flow: blank, no appreciable effect; 1, annual peak flow affected by less than 10 percent; 2, annual peak affected by more than 10 percent; 3, annual peak affected by undetermined amount.

Column 9: Financing of station: 1, U.S. Geological Survey; 2, cooperative program with Idaho Department of Water Administration or Idaho Department of Highways; 3, other Federal agency; 4, combination of 1 and 2; 5, combination of 1 and 3; 6, combination of 2 and 3; 7, combination of 1, 2, and 3; 8, paid by or furnished by private companies under F.P.C. licensing; 9, new proposed station.

Station number	Station name	1	2	3	4	5	6	7	8	9
10-		319	100	1,19	6	(84)	Black:	AC.		TOL
0395.	Bear River at Border, Wyo.	21	C	6	5	2		0		111
0410.	Thomas Fork near Wyoming-Idaho State line	40	c	6	5	2	H	8	2	2
0435.	Diversions from Bear River between Border and Harer		C	6	2	2	R	4	-	2
	gaging stations				-	1117.5	R	4	2	8
0440.	Bear River at Harer	and the	C	6	3	2	R	8	2	8
0455.	Diversion from Bear River between Harer and Stewart Dam gaging stations	19.10	С	6	2	150	R	4	2	8
460.	Rainbow inlet canal near Dingle	-	C	6	5	2	R	4	2	8
0465.	Bear River below Stewart Dam, near Montpelier	-	C	6	1	2	R	8	2	8
0475.	Montpelier Creek at irrigators weir, near Montpelier	-	C	3	-	-	-	_	-	2
0555.	Bear Lake at Lifton, near St. Charles	-	C	2	6	3	R	-	-	8
0586.	Bloomington Creek at Bloomington	-	7	-	-	137	H	-	-	2
0595.	Bear Lake outlet canal near Paris	1 35	C	5	2	6	D		2	125
0685.	Bear River at Pescadero	31	C	6	7	-	R	4	2	8
728.	Eightmile Creek near Soda Springs	-	-	-	-	1	-	-	2	2
0750.	Bear River at Soda Springs		C	6	2	423	H R	-	-	2
0764.	Soda Creek at Fivemile Meadows, near Soda Springs	POAR	-	-	-			8	2	8
127	The state of the s		1774	192	10.	- bind	Н	10	-	2
0785.	Diversions from Bear River between Pescadero and Alexander gaging stations	7	C	6	2	-	R	4	2	8
0790.	Soda Reservoir at Alexander						20200			
0795.	Bear River at Alexander	7	-	-	-	3 70	R	-	-	8
0845.	Cottonwood Creek near Cleveland		C	6	5	2	- T.	8	2	8
0855.	Diversions from Bear River between Alexander and	7	-	4573	15	157	[H]	-	-	2
7055.	Oneida gaging stations	Han.	С	6	2	NAC.	R	4	2	8
0860.	Oneida Reservoir at Oneida	300	HEA	324	35	1207	R	1915		
0865.	Bear River below Utah Power and Light Co.'s tailrace at Oneida	pale 1	С	2	6	57.	R	8	2	8
0900.	Diversions from Bear River between Oneida and Preston gaging stations	151	С	6	2	-	R	4	2	8
0905.	Bear River near Preston	-	C	6	5	2	Н	4	2	8
912.	Deep Creek near Clifton	7.0	C	7	1	- 31	R	8	2	2
0930.	Cub River near Preston		-	-						
1255.	Malad River at Woodruff	В -	C	5	1	15	Н	8	2	2
12-							-		-	-
3050.	Kootenai River at Leonia	M. ELINO	C	2	3	5	[P]	-		1
055.	Boulder Creek near Leonia	-		53.0	-	_	[H]		-	3
065.	Moyie River at Eastport	В	c	6	_	500	[P]	3	-	
075.	Moyie River at Eileen	-	C	3	12	-	[P]	-	_	3
1095.	Kootenai River at Bonners Ferry	15	C	3	-	-	121	-	-	3
3110.	Deep Creek near Moravia	-	_	-			[u]			3
3140.	Kootenai River at Klockmann Ranch, near Bonners Ferry	10.2	C	6	3	10	[H]	-	-	
168.	Mission Creek near Copeland		C	6	3	1	3714	17	-	3
3185.	Kootenai River near Copeland	31171	C	6	5	3	1.530	0.0	-	3
3215.	Boundary Creek near Porthill	-	C	6	7	-	331	-	_	3
3220.	Kootenai River at Porthill	120	С	6	5	1				
3920.	Clark Fork at Whitehorse Rapids, near Cabinet		C	2	6		**	-	-	3
3923.	Pack River near Colburn	В	-	-	0	3	H	8	2	8
3925.	Pend Oreille Lake at Hope	В		-	-	1	Н	10	-	2
3930.	Priest Lake at outlet, near Coolin	- 27	C	2	3	6	R	-	-	1
		-	C	6	2	3	R	-	-	3

tation	Station name	1	2	3	4	5	6	7	8	9
2-	alls at we right to the second of most throughouse		sila					10	BL	Te
940.	Priest River near Coolin	-	C	2	3	-	R	9	1	0.5
950.	Priest River near Priest River	WHO.	CC	2 2	3	-	R	9	1	1
955. 110.	Pend Oreille River at Newport, Wash. Coeur d'Alene River above Shoshone Creek, near Prichard	(gr.		-	3	1	H	8	2	W :
130.	Coeur d'Alene River at Enaville	02A	C	3	2	1	[H]	2	002	
131.4	Placer Creek at Wallace	-	C	7	-	-	н		-	
131.5	South Fork Coeur d'Alene River at Silverton	150	C	7	- 200	-	H	3-	-	10
133.	South Fork Coeur d'Alene River at Smelterville		C	7	3	4	H	-	94 1	11
134.	West Fork Pine Creek near Pinehurst Coeur d'Alene River near Cataldo	-	CC	7	2		H	-	0120	
137.	Latour Creek near Cataldo	_	С	7	tea!		н			
140.	St. Joe River at Avery	14	_	1	-	dan	P	500/	-	
145.	St. Joe River at Calder	-	C	3	2	102	[H]	della	193	
149.	St. Maries River near Santa	913	C	2	04	-	Н	20.	12603	10
155.	Coeur d'Alene Lake at Coeur d'Alene	bac	С	6	3	2	R	120	4-1	8
160.	Hayden Creek below North Fork, near Hayden Lake	В	С	5	ne <u>u</u>	-	Н	rel.	40	13
170.	Hayden Lake at Hayden Lake	-	C	2	6	-	200	420	20	0
L80. L90.	Rathdrum Prairie Canal at Huetter Spokane River near Post Falls	-	C	2	3	1	[H]	4	2	8
Cur	Spokalie River hear Post Paris		104	mas.		-	[m]	4	1	
3-	Jackson Lake at Moran, Wyo.	-	C	2	3	-	R	17	- 25	o-di
10.	Snake River at Moran, Wyo.	-	C	2	3	-	R	4	2	-
115.	Pacific Creek near Moran, Wyo.	В	-	-	-	-	[H]	88.5	-	12
19.	Buffalo Fork above Lava Creek, near Moran, Wyo.	-	c	6	2	-	Н	100	-	. 0
25.	Snake River above reservoir, near Alpine, Wyo.	-	C	6	2	5	Н	4	2	. 0
230.	Greys River above reservoir, near Alpine, Wyo.	-	C	6	2	-	н		-	. 0
275.	Salt River above reservoir, near Etna, Wyo.	-	C	6	2	5	R	8	2	8
20.	Bear Creek above reservoir, near Irwin	-	C	2	-	-	[H]	-	-	1
24.5	Palisades Reservoir near Irwin Snake River near Irwin	120	CC	2	3	12	R	4	-	
	Tellectron tree (13/0/					4	2	18
375.	Snake River near Heise	200	C	1	2	3	H	4	2	15
390.	nentys bake hear bake	15.	C	2	-	-	R	-	-	18
395. 120.	Henrys Fork near Lake		C	2		-	R	-	-	
25.	Island Park Reservoir near Island Park Henrys Fork near Island Park	700	c	2 2	to Id		R	4	2	10
	and the second s	12 6		•				nás	-	12
60. 65.	Henrys Fork near Ashton	Tio.	C	2 2	3	20	H	4	2	
70.	Grassy Lake near Moran, Wyo. Diversions from Falls River above gaging station	obse		2	-	- 2	R R	4	2	10
175.	near Squirrel Falls River near Squirrel	Cae	C	2	3	1.00	[H]			
490.	Diversions from Falls River between Squirrel and	200	C	2	-	3	R	4	2	
	Chester gaging stations						13	203	2	· U
495.	Falls River near Chester	-	C	2		19	R	8		. 6
500.	Diversions from Henrys Fork between Ashton and St.	- 71	C	2	-	-	R	4	2 2	10
505.	Anthony gaging stations Henrys Fork at St. Anthony	-	C	2	3	-	u		- 5	
522.	Teton River above South Leigh Creek, near Driggs	100	-	2	3	:930	H	8	2	
550.	Teton River near St. Anthony	175	C	2	3	5	Н	8	2 2	. e
555.	Diversions from Teton River between St. Anthony	Co-	C	2	143		R	1		
60.	gaging station and mouth			-				1	2	
	Diversions from Henrys Fork between St. Anthony and Rexburg gaging stations	6	C	- 2	1300	9039	R	4	2	1
65.	Henrys Fork near Rexburg	-	CC	2 2	3 7	5	R	8	2	
573.	Grays Lake Diversion near Wayan Grays Lake near Wayan	-	CC	7	7	0	R	4	2	20
75			-	-	_				-	
575.	Grays Lake Outlet near Herman Willow Creek near Ririe		CC	7	5	427	R	8	2	
595.	Diversions from Snake River between Heise and Shelley	12	C	2	-	-	R R	8	2 2	. 00 00
	gaging stations							165	-	
	Snake River near Shelley Blackfoot River above reservoir, near Henry	В	C	2 5	3	103	R	8	2	
	and the same and t	_	-	mé			п	3	1	
30.	The care and the second control of the secon		C	2	-	57	R	-	-	
530.	Blackfoot River Reservoir near Henry	7.7			2	5	R	8	2	
530. 550. 585.	Blackfoot River near Blackfoot		C	2	3			0.00	2	
500. 530. 550. 585.			C	2	-	2	R	4	2	
530. 550. 585. 590.	Blackfoot River near Blackfoot Diversions from Snake River between Shelley and Blackfoot gaging stations Snake River near Blackfoot		С	2	3			4	2	
530. 550. 585. 590.	Blackfoot River near Blackfoot Diversions from Snake River between Shelley and Blackfoot gaging stations		000	2		11	R	0.00		
530. 550. 585. 590. 595. 720.	Blackfoot River near Blackfoot Diversions from Snake River between Shelley and Blackfoot gaying stations Snake River near Blackfoot Portneuf River near Pebble Portneuf River at Topaz		c	2 2 7 2	3 - 3	1986	R H R	8 8	2 2 2	
30. 50. 85. 90. 95. 220.	Blackfoot River near Blackfoot Diversions from Snake River between Shelley and Blackfoot gaging stations Snake River near Blackfoot Portneuf River near Pebble Portneuf River at Topaz Marsh Creek near McCammon	THE PROPERTY.	c	2 7 2 7	3 - 3 5	5	R H	4 8 8	2 2 2 2	
530. 550. 585. 590.	Blackfoot River near Blackfoot Diversions from Snake River between Shelley and Blackfoot gaying stations Snake River near Blackfoot Portneuf River near Pebble Portneuf River at Topaz	a or a district	С	2 2 7 2	3 - 3	1986	R H R	8 8	2 2 2	

Station number	Station name	1	2	3	4	5	6	7	8	9
13-	tradication of the control of the co						777			
764.	Michaud Canal at American Falls	-	C	2	-	-	R	4	2	2
765.	American Falls Reservoir at American Falls Snake River at Neeley	1	C	2 2	3	5	R	-	7	6
0770.	Rock Creek at mouth, near American Falls		-	- 4	3	5	H	8	2	2
777.	George Creek near Yost, Utah	-	100	I-Di	13	3	[H]	-	2	9
0780.	Raft River at Peterson Ranch, near Bridge	-	C	5	-	_	Н	8	2	3
790.	Clear Creek near Naf	-	-	-	-	-	[H]	2		*
791.	Cassia Creek above Stinson Creek, near Elba	-	-	-	-	-	H	-	-	2
0800. 0805.	North Side Minidoka Canal near Minidoka South Side Minidoka Canal near Minidoka	-	C	2 2	100	-	R	4	2	6
0810.	Lake Walcott near Minidoka		С	2	al gar	100	R			
815.	Snake Biver near Minidoka	-		2	_	-	R	8	2	6
823.	Marsh Creek near Albion	-	C	7	-	-	R	9	3	2
825.	Goose Creek above Trapper Creek, near Oakley	-	C	3	2	5	R	8	2	2
830.	Trapper Creek near Oakley	(Til	C	3	2	5	W.To	8	3	3
835.	Oakley Reservoir near Oakley	200	C		3	-	12	-	-	3
855.	Minidoka North Side Pump Canal near Burley	-	C	2	-	-	R	4	2	3 2
858.	P. A. lateral near Milner	-	C	2	-	-	R	4	2	2
860.	Milner low lift canal near Milner Gooding Canal at Milner	20	0	2 2	7.07	15	R R	4	2	2 2
070	Thomas Courts	20		1/05	7000			1793	2	
0870. 0875.	North Side Twin Falls Canal at Milner South Side Twin Falls Canal at Milner	0	C	2 2	, de	100	R	4	2	2
880.	Snake River at Milner	-	C	2	3	-	R	4	2	2
900.	Snake River near Kimberly	-	C	6	2	5	Н	8	2	2
910.	Blue Lakes Spring near Twin Falls	-	С	5	-	2 17	Н	105	-	2
920.	Rock Creek near Rock Creek	В	2	1	-	-	Н	3	1	2
930.	Rock Creek near Twin Falls	-	-	-	-	-	R	8	2	9
937. 940.	Niagara Springs near Buhl	-	C	1	-	-	H	-	-	2
955.	Snake River near Buhl Box Canyon Springs near Wendell	-	CC	1 5	-	10	R H	8	-	3
040.	Charles County and Con Taginto May array as something									2
050.	Shoshone Creek near San Jacinto, Nev. Salmon Falls Creek near San Jacinto, Nev.	_	c	2	-	300	Н	-	74	9
060.	Salmon River Canal Co. canal near Rogerson	_	C	2	3	10	R R	8	2	. 4
065.	Salmon River Canal Co. reservoir near Rogerson	-	C	2		127	_	-	2	2
081.5	Salmon Falls Creek near Hagerman	-	C	7	5	2	R	8	2	2
085.	Camas Creek at Eighteenmile shearing corral near Kilgore	0	C	7	10	-1	Н	8	1	2
120.	Camas Creek at Camas	-	C	2	5	-	R	8	2	2
130. 135.	Beaver Creek at Spencer	-	C	7	-	30	Н	2	1	2
140.	Beaver Creek at Dubois Beaver Creek at Camas	_	CC	2 2	1	-	[H]	8	2 2	2
150	LEADING TO THE REST OF THE PARTY OF THE PART							0	2	2
150. 170.2	Mud Lake near Terreton Birch Creek at Blue Dome Inn, near Reno	-	C	2	5	-	20	-	-	2
170.3	Birch Creek at Eight-Mile Canyon Road, near Reno	50	CC	7 7	-	-	R	8	2	6
173.	Sawmill Creek near Goldburg	Đ:	-		- 10	450	R H	8	2	6
187.	Little Lost River below Wet Creek, near Howe	-	C	2	-	-	R	8	2	2
190.	Little Lost River near Howe		С	2	3	5		8		
195.	Blaine County Investment Co.'s canal near Howe		C	2	-	5	R	4	2 2	2 2
200.	North Fork Big Lost River at Wild Horse, near Chilly	В	C		-	-	[H]	10	-	2
205. 260.	Big Lost River at Howell Ranch, near Chilly Mackay Reservoir near Mackay	t l	C	2 2 2	3	- 5	P	-	-	2
				2	3		R	-	-	2
270. 289.	Big Lost River below Mackay Reservoir, near Mackay	- 2	C	2	3	5	R	8	2	2
309.	Lower Cedar Creek above diversions, near Mackay Antelope Creek above Willow Creek, near Darlington	-	CC	7	-	-	H	-	-	2
325.	Big Lost River near Arco	2 7	c	2	4	5	H R	2	1	2
350.	Snake River below Lower Salmon Falls, near Hagerman	-	C	6	2	-	Н	8	2	2 2
355.	Big Wood River near Ketchum	LUg	nger			2.193	(11.1			
395.1	Big Wood River and Big Wood Slough combined discharge	10	C	2	3	49361	[H]	8	2	2 2
410.	at Hailey Big Wood River near Bellevue						3 198		-	-
115.	Camas Creek near Blaine	-	C	2	5	-	R	8	2	2
120.	Magic Reservoir near Richfield	_	C	2 2	3	-	R R	8	2	2
425.	Big Wood River below Magic Dam, near Richfield			1200				Page 1		2
170		_	CC	2	3	-	R	8	2	2
182.	Little Wood River above High Five Creek, near Carey Little Wood Reservoir near Carey Little Wood River near Carey	19.7	C	2 2	3		R R	4	2	2
485.	Little Wood River near Carey	-11	C	2	3	-	R	4	2	2 2 2
510.	Little Wood River near Richfield	-	C	2	-	-	R	8	2	2
525.	Big Wood River near Gooding		c	2.	5	0237	R	8	2	2
	King Hill Canal near Hagerman	110	C	2	6	HELD	R	4	2	2
	Alig hist canal heat nagerman		-							
545.	Snake River at King Hill		C	1	2	5	H	8	2	
545.	Snake River at King Hill Little Canyon Creek at Stout Crossing, near Glenns Ferry				2 3	5	H H	8 -		8

Station number	Station name	1	2	3	4	5	6	7	8	di
3-							70			
	Sheep Creek at mouth, near Grasmere	-		-	-	-	Н	-	-	
	Bruneau River above East Fork, near Grasmere	-	200	1	-	- 5	Н	-	-	
575. 585.	East Fork Bruneau River near Hot Spring Bruneau River near Hot Spring	-	c	2	3	-	R	8	2	
695.	Big Jacks Creek near Bruneau	В	c	5	-	-	R [H]	8	1	
725.	Cooks Division near Marchy	217	C	1	2	2				
60.	Snake River near Murphy Owyhee River above China diversion dam, near Owyhee, Nev.	-	č	2	-	3	R	8	2	1
	Deep Creek near Riddle	-	-	-	-	-	Н	3	1	
	Owyhee River at Crutcher's crossing, near Riddle South Fork Owyhee River at mouth, near Riddle	-	-	-	-	-	H	8	2	
80.	Jordan Creek above Lone Tree Creek, near Jordan Valley, Oreg.	-	С	3		1	P	8	1	
45.	Middle Fork Boise River near Twin Springs	-	-	-	1020	1	Н	-	-	
50.	Boise River near Twin Springs	-	C	2	3	-	P	-	-	
60. 90.	South Fork Boise River near Featherville Little Camas Canal at heading, near Bennett		C	2	3	-	P R	-	-	
						201		4	2	
00.	Anderson Ranch Reservoir at Anderson Ranch Dam South Fork Boise River at Anderson Ranch Dam	-	C	2 2	3		R R	4	-	
40.	Arrowrock Reservoir at Arrowrock	-	C	2	3	-	R	4	2	
65.	Bannock Creek near Idaho City	-	C. J.	15	-	-	[H]		-	
00.	Mores Creek above Robie Creek, near Arrowrock Dam	Ī	[c]	2	7	-	[H]	-	-	
05.	Robie Creek near Arrowrock Dam	-	-	2	3	-	[H]	-		
15.	Lucky Peak Reservoir near Boise Boise River near Boise		CC	2	3	5	R	8	-	
35.	Lake Lowell near Caldwell	-	C	2	-	-	-	8	2	
45.	Diversions from Boise River between near Boise and at Boise gaging stations	-	С	2	Ě		R	4	2	
)55.	Boise River at Boise	-	С	3	2	4	R	8	2	
70.	Spring Valley Creek near Eagle	-	-	-	-	-	H	8	2	
20.	Diversions from Boise River between at Boise and Notus gaging stations	ět.	C	2	1	-	R	4	2	
25.	Boise River at Notus	_	C	1	3	5	н	8	•	
	Snake River at Nyssa, Oreg.	-	-	-	-	-	R	8	2	
50.	South Fork Payette River at Lowman	В	440	-	12	- 64	P	128		
360.	Deadwood Reservoir near Lowman	-	C	2	3	-	R	-		
365.	Deadwood River below Deadwood Reservoir, near Lowman	-		2	3	-	R	4	2	
380. 385.	Payette River near Banks Payette Lake at McCall	-	CC	2 2	6	-	R R	4	2	
390.	Neuth Book Books Biron at Magall			-	14					
100.	North Fork Payette River at McCall Lake Fork Payette River above Jumbo Creek, near McCal	-	C	2 2	3	-	R [H]	8	1	
110.	Lake Fork Reservoir near McCall	-	C	2	-	_	R	-	-	
420.	Lake Irrigation District Canal near McCall	-	CC	2	-	-	R	4	2	
425.	Lake Fork Payette River below Lake Irrigation Distriction Canal	-	С	2	-	-	R	8	2	
435.	Gold Fork River near Roseberry	_	С	7	-	-	н	4		
445.	Cascade Reservoir at Cascade	-	C	2	3	-	R	-	-	
450. 460.	North Fork Payette River at Cascade North Fork Payette River near Banks	-	C	2 2	3	-	R	8	2	
475.	Payette River near Horseshoe Bend	1	[C]	2	3	-	R R	8	2 2	
495.	Payette River near Emmett	-	С	2	3	-	R	8	2	
506.	Big Willow Creek near Emmett	В		-	-	-	H	-	-	
510. 513.	Payette River near Payette West Branch Weiser River near Tamarack	-	CC	2 7	5	17	R	8	2	
515.	Weiser River at Tamarack	-	-	-	-	I	[H]	-	-	
85.	Weiser River near Cambridge	-	С	3	-	-	P			
510.	Little Weiser River near Indian Valley	-	-	2	-	-	[H]	-	1	
555.	Crane Creek at mouth, near Weiser	-	C	2	-	1	R	8	3	
670.5	Weiser River near Weiser Mann Creek below Mann Creek Dam, near Weiser	-	[c]	2 2	3	5	R [H]	8	1	
590.	Snake River at Weiser		c	2	2				175	
397.	Brownlee Reservoir at Brownlee Dam, Idaho-Oregon State	-	C	2	6	5	R R	8	2	
900.	Snake River at Oxbow, Oreg.	1	C	1	2	6	R	8	D.	
904.5	Snake River at Hells Canyon Dam, Idaho-Oregon State line Snake River near Joseph	-	C	2 2	6	-	R	8	2	
	AND THE STATE WAS AND THE THE STATE OF THE STATE OF	53				-	R	8	2	
950.	Valley Creek at Stanley Salmon River below Yankee Fork, near Clayton	5	150 500	25	-	-5	[H]	-	-	
980.	East Fork Salmon River near Clayton	1	WE-	0.2	10	-	[H]	3	-	
	Salmon River near Challis	-	C	3	-	-	[H]	3	1	
985.			[C]	7	-	-	[H]		-	
992.	Challis Creek below Jeffs Creek, near Challis	-	[0]				1	0.	-	

Station			_		-	-				
name	Station name	1	2	3	. 4	5	6	7	8	9
13-										
3020.	Pahsimeroi River near May	_	_	_			D			
3025.	Salmon River at Salmon	_	C	- 5	3		R	8	2	9
3050.	Lemhi River near Lemhi		C	2	1	W250	R	9	1	2
3055.	Lemhi River at Salmon	-	_	-			R	8	2	2
3065.	Panther Creek near Shoup	-	-	-	-	-	R [H]	8	2	3
3070.	Salmon River near Shoup	-11					1			1
085.	Middle Fork Salmon River near Cape Horn	311	35 - 3	CO.	934	00	R	9	1	3
	Middle Fork Salmon River below Marble Creek, near	-				-	[H]	-	-	2
	Landmark ranger station	-	849		67.1	912	P	1 50	1961	9
	Middle Fork Salmon River near Shoup	-	B.40	820	211	-	P	10	440	9
107.	South Fork Salmon River near Krassel Ranger station	I TO	C	7	10	-	Н	sta	1-1	3
130.	Johnson Creek at Yellow Pine	В	-	-	_	_	[H]			
	South Fork Salmon River at mouth, near Warren	-	-	-	-	_	P			2
165.	Little Salmon River at Riggins	947	C	3	19	1	P	0	7	3
168.	North Fork Skookumchuck Creek near White Bird			4-1	-	_	н	4	1	~
170.	Salmon River at White Bird	-	C	1	2	3	[P]	3	1	2
343.	Snake River near Anatone, Wash.	9. 1	C	2	2	-	W 31	120	93	6
	Selway River below White Cap Creek, near McGruder ranger station	10	2	20	TÔ.	-	R P	- 8	2	3
	Selway River above Moose Creek, at Moose Creek ranger station	i p		20	i di	TV.	P	, un	rīn	9
	Moose Creek at Moose Creek ranger station	_	-							
361.	Meadow Creek near Lowell	STI C	C	7	5	1	H	(In	C	3
365.	Selway River near Lowell		CI 0	10	SIL				one:	81
	Lochsa River below Warm Springs Creek, near Lowell	21	C	2	3	-	[P]	-	-	2
370.	Lochsa River near Lowell		-	-	-	-		-	14	2
375.	South Fork Clearwater River near Elk City	R		2	3	56	[P]	50	252	2
385.	South Fork Clearwater River at Stites	_	-	-	-	-	[H]	-		3
Acien			C	3		-	P	-	-	3
388.	Lawyer Creek near Nez Perce	-	C	7	-	-	Н	12.75	91	2
400.	Clearwater River at Orofino	7.	C	2	3		P	-		2
	North Fork Clearwater River below Kelly Creek, near Bungalow ranger station	7	-	Ser.) Lin	-	P	8,4	εŢ,	9
406.	North Fork Clearwater River at Canyon ranger station			u, s	THE P					
110.5	Clearwater River near Peck	ŒΒ.	C	2	3	5	P	T s	170	3
113.	Bloom Creek near Bovill	d'a	ge	681	do	BC	600	i de	it a	3
114.	East Fork Potlatch River near Bovill	31	-	-	-	-	H	-	-	2
25.		-	-	-11	5	-	[H]	9	040	2
450.	Clearwater River at Spalding Palouse River near Potlatch	1100	C	2	3	5	P	-	171	8
1 Town	ratouse kiver hear rottatth	-	C	7	-	-	H	- 1	141.	2

^{*} Operated and financed outside of the district.

The following 17 streamflow oneracteristics are those that way becaused for planning and designuss Encytwere comment puted for sach gasings stations on the bound to be bed by natural addangsvergebases as been years what were readent for the

in the regression analysis. endesivebroses regrees didpoint 1:00 ubiletsenasokuske

the off the Debivisewolf Isonak tops tows on the the land taken and number of annual flows. . . Bodsen Dispost ye benimings

the swering vitow the read of the remonther where the geb-me withed intromends to exected Depirtment addies again to this protection sch grid intersections and averaging, dasses black grativ gain rid spining was designed to give at least of interimental

Evaluation of the Natural-Flow System

The purpose of the evaluation is to determine how accurately the statistical characteristics that are listed as goals can be defined by regionalization of the data now available.

The most effective way now known for defining statistical streamflow characteristics on a broad scale is to relate the streamflow characteristics to basin characteristics in equations developed by use of multiple-regression techniques applied to past data.

Once the equations and their constants are defined, streamflow characteristics for a specific site in a given basin can be computed by substituting the appropriate values of the hydrologic variables in the formulas.

The total of 150 streamflow records used in the regression analysis are those with 10 or more years of unregulated flow or flow that can be adjusted to natural conditions. Both minor and principal streams are included. Records were not adjusted to a base period. Because of regulation, not all flow characteristics were defined for each gaging station. Only monthly and annual mean flows were used at some stations, and at a few stations, only monthly flows during the snowmelt season were used.

The following 37 streamflow characteristics are those that may be needed for planning and design. They were computed for each gaging station with natural or virtually natural adjusted flow and were used as dependent variables in the regression analysis.

Mean annual flow (Q_a) , in cubic feet per second, is the average of the annual flows.

Standard deviation of annual flow (SDa), in cubic feet per second, is the square root of the sum of the squares of the deviations from the average annual flow divided by the number of annual flows.

Average monthly flow (q_n) , in cubic feet per second, is the average flow for each of the 12 months, where the subscript, "n," refers to the numerical order of the month beginning with q_1 for January.

Standard deviation of monthly flow (SD_n) , in cubic feet per second, is the standard deviation of the average monthly flow for each of the 12 months. Subscript is as for q above.

Peak flow for n-year recurrence interval (Q_n) , in cubic feet per second, is the peak flow that would be exceeded, on the average, once in n years. Peaks were computed for 2, 5, 10, 25, and 50 year recurrence intervals.

Minimum 7-day flow for n-year recurrence interval (M7,n), in cubic feet per second, is the minimum average flow for 7 consecutive days below which the minimum average flow for 7 consecutive days would recede, on the average, once in n years. Minimum 7-day low flows were computed for 2, 10, and 20-year recurrence intervals.

High flow volume $(V_{m,n})$, in cubic feet per second, is the highest average flow for m consecutive days that would be exceeded, on the average, once in n years. High-flow 7-day volumes were computed for 2, 10, and 25 year recurrence intervals.

The following 22 physical and climatic characteristics of the drainage basins were determined for each gaging station for which records were used in the regression analysis.

Drainage area (A), in square miles, as shown in the latest Geological Survey streamflow reports.

Main channel length (L_C) , in miles, from the gaging station to the basin divide, as measured at intervals of a quarter of a mile with dividers using 1:250,000 Army Map Service maps or maps of larger scale where practicable.

Main channel slope (S), in feet per mile, determined from elevations at points 10 percent and 85 percent of the distance along the channel from the gaging station to the divide. This index was described by Benson (1962, 1964).

Area of lakes and ponds (La), expressed as the percentage of the drainage area covered by water plus 1 percent, determined by the grid method.

Mean basin elevation (E), in thousands of feet above mean sea level, measured on 1:250,000 Army Map Service maps by laying a grid over the map, determining the elevation at each grid intersection, and averaging those elevations. The grid spacing was designed to give at least 40 intersections within the basin boundary.

Forest cover (F), expressed as the percentage of the drainage area covered by forests as shown on the topographic maps plus 1 percent, determined by the grid method.

Aspect (D) is the resultant direction of downstream slope, or, in other words, the general direction in which the watershed area faces. Aspects were reckoned in degrees clockwise from south.

Soils index (Si) represents values of potential maximum infiltration, in inches, during an annual flood, under average soil moisture conditions. Values of the soils index were computed for each basin from data provided by the Soil Conservation Service.

Latitude (N), of the centroid of the basin as located by inspection on 1:250,000 Army Map Service maps, in degrees minus 40.

Longitude (W), of the centroid of the basin as located by inspection on 1:250,000 Army Map Service maps, in degrees minus 110.

Mean monthly temperature for January (T1), in degrees fahrenheit, adjusted to the mean elevation of the basin on the basis of weather records and lapse rates from nearby weather stations.

Mean monthly temperature for July (T_7) , in degrees fahrenheit, determined as for January.

Azimuth (Z) is the horizontal direction of the corridor into the basin reckoned in degrees clockwise from south. The corridor is defined as the route between the moisture source and the basin over which moisture-laden air can enter the basin with the least vertical rise. The corridor is arbitrarily of constant width and spans the extremities of the drainage basin. The principal source of moisture is the Pacific Ocean via the lowlands of the Walla Walla Plateau, the Payette Section of the Columbia Plateau, and the Snake River Plain (Fenneman, 1931). Therefore, only corridors with westerly components were used so that the azimuths were all between zero and 180 degrees. The corridors were defined from the 1:250,000 Army Map Service plastic relief maps.

Corridor width (M) is the width of the corridor as described in the preceding item measured in miles at right angles to the direction of flow.

The following three elevation parameters were computed by determining a weighted mean elevation of the highest ridges that collectively span the corridor at the appropriate points along the axis of the corridor.

Barrier elevation (E_b) is determined at the highest ridge or series of ridges between a point 8 miles upwind from the basin and the lowland source of moisture, and is measured in thousands of feet.

Entry elevation (E_r) , in thousands of feet, is measured along the upwind basin boundary.

Exit elevation (Ex) is measured along the downwind basin boundary and is reported in thousands of feet.

Approach (U), in thousands of feet, is an index of whether air masses are rising or falling in the corridor as they approach the basin. It is determined by subtracting the barrier elevation (Eb) from the entry elevation (Er) and adding 5,000 feet to avoid negative numbers.

Entry (R), in thousands of feet, is an index of whether air masses rise or fall as they enter the basin and is computed by subtracting the entry elevation (E_r) from the mean elevation (E) and adding 5,000 feet.

Exit (X), in thousands of feet, is an index of whether air masses rise or fall as they leave the basin. It is determined by subtracting the mean elevation (E) from the exit elevation (E_X) and adding 5,000 feet.

Across (G) is an index of whether air masses rise or fall while crossing the entire length of the basin. It is measured in thousands of feet and is computed by subtracting the entry elevation (E_r) from the exit elevation (E_x) and adding 5,000 feet.

Spillover (V) is an index of the percentage of the basin which is in a spillover area or area of increased precipitation on the lee side as the incoming air masses enter the basin over a ridge. The index was determined in percent of the basin by multiplying the corridor width in miles by 4 miles, dividing by the basin area, and multiplying the quotient by 100. A spillover effect was assumed and computed only when the topography was such that there was a rise between the barrier elevation and the entry elevation and a drop between the entry elevation and the mean elevation.

Five physical characteristics, channel length, elevation of barrier, entry, exit, and corridor width were computed and are listed in tables 8, 9, 10, and 11, but were not used in the multiple regression, because these five indices were very highly correlated with other basin indices. Channel length and corridor width were found to be highly correlated with drainage area, and barrier elevation, entry elevation, and exit elevation were highly correlated with mean elevation.

The next step was to relate each of the streamflow characteristics to basin and climatic characteristics in equations developed by using multiple regression techniques. A digital computer program performed the voluminous calculations for the step-backwards regression analysis. This program assumes that the form of the relation between a flow characteristic (Y) and the basin characteristics (A, S, F, Y = $a A^{b_1} S^{b_2} F^{b_3} ...$ etc.) is

$$Y = a A^{b_1} S^{b_2} F^{b_3} ...$$

where a, b₁, b₂ ... are constants determined by the analysis. As a first step, the program uses a single flow characteristic and the 17 selected basin characteristics to compute a regression equation, the standard error of estimate, and the significance of each basin characteristic. Automatically then the program omits the least significant basin characteristic and repeats the calculations. This process continues sequentially until a relation containing only one basin characteristic is computed.

After a set of 17 equations was computed for a selected flow characteristic, a new flow characteristic was used and the entire computation process repeated.

In applying the step-backwards regression analysis to the Idaho data, flow characteristics and basin characteristics for all 150 gages with more than 10 years of natural or adjusted-to-natural record were used. Study of the results of this statewide analysis showed that the errors from these relations had geographic groupings and indicated a need to divide the State into four regions as outlined in figure 1. The data for each of these four regions were then analyzed separately.

Results of the regression analyses are summarized in tables 4, 5, 6, and 7. For each flow characteristic in each of the four regions, 17 relations were defined. The tables show, however, only the one relation in which the basin characteristics are all significant at the five percent level.

Table 4. Summary of regression equations, Region 1.

Y = aA S La B b4 b5 b6 b7 b7 b8 b9 b10 b11 b12 b13 b14 b15 b16 b17

Dependent variable Y	Pagragaion	1 102-			3.537	Regres	sion co	effici	ents of	indica	ted inde	pendent	vari	ables	-	-	-		Standard error of
	Regression	A	S	La	2 8 7	P	т1	Т7	N	W	D	Z	si	U	R	X	G	V	estimate (percent)
Dia.	2 212	1 024			2.054	0.540								17.744		2.364	-		35
Q.	0.912	1.034	- ,248	-	-	0.562			. 837		171	- 17	-		- 7		- 13	6,0671	
SD_a	.0224	1.081	* 0.221		-	0.270			- 1009	- *	-0.0923	-	-	1.00	-	-		4.0724	43
91	.0155	1.159	.239	*0.186	-1.066	.448			-962	-	0990	*0.157	-	-	-		-	018	36
92	2.62	1.078	1520	-	-1.501	.289		-	1.065	-	112		-	-	1-	-	-	.084	38
q 3	.213	1.181	.192	-	-2.054	*.193	-	-	-0.729	1.558	0811	*.0677	321	1.320	-		-	7	28
94	5.13x10 ⁻¹¹	1.062	-	-	-1.684	.502	1.	5.376	.730			-	-	5 -627 -5 -228 +5	1.159	91 901	Cal man	-	38
95	.790	1.018	0.521	-1252	-	. 832	-	-	1-105	-	0.175		arn.		-	11,027	7 -	5.	42
96	1.59x10 ⁻¹³	.931	-		5.556	.377	-	-	2.890	3.190	-		-	*0.996	1736	3.502	-	-	37
97	3.02×10 ⁻⁹	.901	-	-	4.552	.691		-	2.508	2,024	-		-	2-925	-	2.778	- 1	-	42
98	1.82×10 ⁻¹¹	.948	-	-	4.613	. 685	*1.439	-	1.811	1.301	-		-		-	4.106	*-1.482	-	45
99	3.32×10 ⁻¹⁰	.976	-	*280	4.206	.566	*1.381	-	1.955	1.058	-		-	-	-	3.456	*-1.277	-	44
910	9.93×10 ⁻⁸	.981	-		3.785	.452	1.190	-	2.252	5 000	0,721	91	340	1 1-	-1	*1.133		-	36
911	1.94×10 ⁻⁵	.990	-	U-3.Fe	1.388	.493	30,	1961	1.611	-	*0757				-	*1.350	-	1	38
q12	.0163	1.162	*.196	-	839	.589	-		- 1		*891		617	1	-		-	-	37
SD_1	1.67×10 ³	1.165	12	10.	-2.961	É.	ď.:	32.	K-	14-	0 -	£ -	g1-	-2.743		E -	e -	6-	93
SD ₂	1.82×10 ³	1.169		1	3.824	pritage	lan cos	LF1c Le	er of a	ndtes:	of Andap	andent v	ar La	*-1.854	-			-	97
SD3	1.67	1.061	*.197	7	-3.712	35 VI	Il og	P. 40	Mpd-Dpt	971	aF _ n	plo clo	127	e 11-1	2.108	8 -		0.167	40
SD4	6.79×10 ⁻⁷	1.052			140	La P. 1	merken.	3.303	1.224	wines yo	sue - yes	(00 -) 0	O.F.	Janes -	-	-	1	-	62

Y = aA S La E P T1 b6 T7 N 8 W D D 10 Z 11 S1 U 13 R 14 X 15 G 16 V 17

Dependent variable Y	Regression constant	157.0		17 5 1	4 30	Regres	sion c	oeffici	ents of	indica	ted inde	epende	nt varia	ables	894	PR 103.75	. 24		Standard error of
		A	S	La	E	P	т1	т7	N	W	D	z	s _i	U	R	x	G	v	estimate (percent)
SD ₅	1.9x10 ⁻²⁸	1.014	16.	0.364	5.428	*0.227		11.341	3.747	3 -	- No. 1	-	2 4	77	8 - 3	1.1	-17	*0.0950	42
SD ₆	2.24×10 ⁻¹¹	.921		4	4.894	7725	200		2.741	2.998		-	*0.683	19.9	3 - 5	2.853	3.67		40
SD7	2.29×10 ⁻¹⁷	. 861	-1	-	7.960	0.200	J-10		4.015	4.560		-		3	1 - 2	5.130	-		65
SD8	2.50x10 ⁻⁹	.922		11	4.061	.457	21.0	2-3	2.158	0.00		-	-84	9 6- 9	4 . 8	2.827	-		55
SD9	6.84×10-8	.900	1 1 1	0.0	4.009	9 8	g- '	1.0	3.707			-	1	1		*1.726	-		51
SD ₁₀	5.97×10-7	1.023	12.	131	2.670	.427		8-5	3.227	F B					1.349	P.	- 0	OF T	48
SD ₁₁	2.73×10 ⁻⁵	1.214	0.531	*.375		-	9-0	8.5	1.782		-0.199		1.803		1		-13		61
SD ₁₂	2.88×10 ²⁰	1.244		2	-1.684	.436	-	3-54		5 -			100	-2.559	-20.573	-34 . 641	-29.030	-	77
Q ₂	0.197	1.006	.293	22	-2.50	7.10	-	7-	1.265	8-	147			100	0.8	3 4.5	10	.0980	41
Q ₅	1.49	.981	.254	1	5 E - A	- 190	9-	-	1.065		159	- 1	2.6	200	9 - 5	2 3	-	.0845	37
Q10	2.39	.967	.247	10 to 10	17 000	- 007	1	0.5	.982	1.	165	-	3.	8-1	6.5	1.5 1	10	. 07 85	34
Q ₂₅	3.89	.950	.241	24		0.276	-	5-8	.906	E in	173	- 4	i e		6 - 9	-	- 3	*.0724	34
Q50	4.99	.947	.248	71		0.582	1-	3.0	. 837	. 2	171	-	12.5	1.1	2 . 3	F A 9	5 7 7	*.0678	35
M7,2	6.44×10 ⁻⁷	1.093			2.058	1.380	-					-	18.7	5.5	100	2.304		-	50
M ₇ ,10	2.86×10 ⁻⁷	1.077	2	12	2.557	1.533	100	24	20	3.3-	-0	- 5	. al	8-6	*-3.238	389	3.697	14	71
M7,20	1.24×10 ⁻⁷	1.292		101	2.537	1.380	galon	-defin-	Trace-o	िरशुक्त	ated in	shield.	GOE ARL	OP E	5 - 1			-	84
v _{7,2}	3.58x10-4	1.100	.253	.378	1.370	Ford.	211	1) - H	1.492	2.122	il al	A DET	N. S. S.	7 .0	A.i.S	0 10 0	是學	10-	38
V7,10	.0762	1.038	*.186	.316	*.848	19918 7	grasse	EA OF L	1.062	*1.431		teg Lon	1. 4		-		-71	6-	33
V7,25	.00242	.806	-		1.188	-	-		1.258		*123	-	-		-	-	- 11 0	1	48
* Signifi	cant at .05	level; a	11 othe	ers are	signifi	icant at	.01 1	evel.				-							

Table 5. Summary of regression equations, Region 2.

Y = aA S La B b4 F b5 T1 b6 T7 b7 N b8 W b9 D b10 Z b11 S1 b12 U b13 R b14 X b15 G b16 V b17

Dependent	Regression	1 613				Regre	ssion c	oefficie	nts o	findica	ted inde	pend	ent variab	les					Standard error of
variable	constant	A	S	La	E	F	т1	т7	N	W	D	Z	si	U	R	x	G	V	estimate (percent)
Qa	5.81	1.026		-	-	0.375	-	-2.219	-	1.515	-	-	-	1.714	-	-		-	23
SDa	1.56 x 10 ⁵	1.080	1 Pag	-	3 201	-	F-031	-5.400	-	2.672		0.48		2.046			-	-	37
91	1.22	1.040	W 970	-	-0.866	-	5 018	-19:80		-	-	-	-	7	-		-	-	42
92	3.12	1.038	9.627	4-	-1.325	1-	Lines		-		-	-	-	Tions	-	- E.U.	-		43
q 3	2.06	1.048			-1.697	.304	57021	-13:00		-	-	-	*-1.398	*1.390		Libro.			34
94	3.11x10 ⁴	.812	*464	-	-1.611	.802	Can	-3.660	-	-	-	-	-	2.637	1.869	- 1	-		29
q 5	5.34x10 ⁻⁸	476		-	75 000	.966	13-	1	-	1	-	-	3-75	1.00	-	11.027	1.420	-	174
96	1.62×10 ⁻⁹	.990		-	2.456	.752	-	- Company	-	2.138	-		3.51	2.512		*2.390	-	-	33
97	1.31x10 ⁻⁹	1.058		-	3.210	.509	47	-2-335	-	2.024		-	10.174	2.025		1.803	-	-	23
98	6.53×10 ⁻⁵	1.097			3.043	.394	-		-	1.301	-	-	-	· Francis		-	-	-	35
99	2.66x10-5	1.091		-	2.642	.407	-	-		1.088			-	2.100		-	-	-	37
910	2.53	.993	*424	-	+ 5	.920	-1.149	div on	-		0.221	-	-1.346	9-120	-	-	-	-	32
911	.263	1.169	-	-		.604	624	REAL BROOM	-		-	-	*-1.241	2-400	. 3			-	37
912	.163	1.115		-		.340	-	-	-		-	-	-1.637	-5	-	-	-	-	38
SD ₁	3.08×10 ⁴		-1.781	-		- 3				1.		-	-	-	-	-		1	207
SD ₂	18.6	1.054	1	-	-3.178			-44					-45	15-	3-	*	-	-	60
SD3	.0145	.944		-	-2.716	.560	asiba .	og Felet.	ning s	f lugler	cod" kad	1	-1.678	2.165	1.901	and the same		-	39
SD4	6.31x10 ¹³	.877	3.2-	W-	-3.559	.707	2 H	-8.404	100	D 78-5	1 12 015	efect.	Sale Barr	3.401	013	-	-	-	47

Table 5. Summary of regression equations, Region 2--Continued.

Y = $_{aA}$ S $_{La}$ $_{B}$ $_{B}$ $_{C}$ $_{D}$ $_{C}$ $_{D}$ $_{D}$

Dependent	Regression	11-18810	Seater Hillian	-	-27.77	Regre	ssion c	oefficie	ents o	findica	ted ind	depende	nt varia	bles	1.001				Standard
variable	constant	A	S	La	E	P	т1	Т7	N	W	D	Z	si	U	R	x	G	v	error of estimate (percent)
SD ₅	0.0525	0.949	-	0.00		0.921	-	•		-	-		-F 533	-	-		-		120
SD ₆	6.92×10 ²⁶	1.384	1.031		h-abso	*.452	2.563	-15.023	-	-	7	-		3.886		-	-	70 085	56
SD7	2.57×10 ¹⁹	1.583	1.134			950	1.948	-16.484	-	- 100		-		4.350		1100			44
SD8	5.3x10-9	1.347	.604	-	2.468	dos				2.067				3.180		100			33
SD9	3.08×10 ⁵	1.085			3.043	.352		-4.512	-	1,301				1.910	-	1			40
SD ₁₀	3.06x10 ⁻³	1.116	-		2 810	.610		1.		2,024		-		1,002		*107.88			63
SD ₁₁	5.21x10 ⁵	1.124			-2.654	.614	1	-4.655		5 128		-		2.839	1.340	1 903			55
SD ₁₂	.0355	1.007			-2.448	. 644			-				*-1.860	3.951		42 300		*0.188	47
Q ₂	3.16x10 ²⁰	1.116	.627		-2.586	907	1.991	-13.46	7 -					2.984	9.10	21, 924	-17.3		43
Q ₅	2.57x10 ²¹	1.085	. 623		-2.712	204	2.031	- 13.836	5 -				# T 108	3.034	1, 500	-		John S.	47
Q10	3.9x10 ²¹	1.071	*.627		-2.818		1.988	-13.799	9 -				- 104	3.034			-	100	49
Q ₂₅	4.37x10 ²¹	1.062	*.650		-2.901		2.018	-13.806	5 -			-		3.126				0.6	51
Q50	4.9x10 ²¹	1.067	*.672		-2.941		2.073	-13.859	-	2.672				3.183	-	-	-	i Carta	51
M7,2	. 894	1.175				0.750	1.076			-2.707		0.483		-1.928	-	-		1,000	39
M7,10	.678	1.176					1.196		-	-3.259		.498		-2.168	-	7 3 36	-		42
M7,20	.521	1.174		P2	8.	1.5	1.232	3.		-3.412	-	.498	-1	-2.250	3-358		0		43
v _{7,2}	6.53×10 ²	1.013				Begree	.321	afffale	-2.927	füglder	3.364	the project	, Jacksb			-	-		20
V7,10	9.08x10 ²	1.230	.462	v - 2			17. 4	- R. B	-3.655	A. 170	3.981	0.7. 1	" IA X " IS	C To A			-	.0982	29
V7,25	1.83×10 ⁴	1.185	.453			10.01	remora A	01 100	4.126	odosev . odosev	3.724	A	- 912	23.5					33

^{*} Significant at .05 level; all others are significant at .01 level.

Table 6. Summary of regression equations, Region 3. $Y = aA \quad S \quad L_a \quad B^{b4} \quad F^{b5} \quad T_1 \quad T_7 \quad N^{b8} \quad W^{b9} \quad D^{b10} \quad Z^{b11} \quad S_1 \quad U^{b13} \quad R^{b14} \quad X^{b15} \quad G^{b16} \quad V^{b17}$

777	1 7181045	985			- 11	Regres	sion c	oefficie	ents of	indicat	ed in	dependent	variab	les					Standard error of
Dependent variable Y	Regression	A 873	S	La	E	F	т1	т7	N	W	D	Z	si	U	R	x	G	V	estimate (percent)
R7,10	0.0455			-		0.826							478						39
Qa	0.0455	1.073	3	-		0.826	-		5-3	1	-	1	6.793.0	-			-	10	
SD_a	1.72×10 ⁷	. 828		-	1.25	-710	1		-6.089	1.563	-	0.243	5 285	2.979			-	-	69
q 1	.0275	1.378	-	- 13		164			-	- 386					-		-	-	334
q 2	1.50x10 ⁴	1.642	-		-	726	-			Sixo		1.5	-	-		*-8.117	-	-	281
q3	2.57x10 ⁴	1.634	-		71.700	- 12			1.20		-	1		-		*-8.356		- '	276
94	.0103	1.024	-		-	.529	-		-	-0.612		-	1		-	-	-	-	58
9 5	4.89x10 ⁻⁷	.800		0.2			-	7-150	2 140		-	0.376	4.778	*1.512	5.5%	-1.00	1.610	-	36
96	1.26×10 ⁻⁸	.990	-		2.993	4: 220		17.253	1,058	-	-		3.847		2.29	2.406	-	-	37
97	65.0	.978	-			1.424	-	*-3.535	5 -	-		-	3.306	-	1	*2.456		-	45
98	1.18x10-3	1.127	-			. 884		1 2	3,754	-	-		7-		-	-		٠.	68
99	.0940	1.120	-	-		.790	-		4,421	-					-			-	81
910	.0702	1.121	-			*.701	-			-	-		8-810	-		13 00		-	86
q11	.634	1.170	-			1.60						-	F - 003		-	-		-	126
q12	.0225	1.347	-			1.72	- :		429	23-		1	57.000	-		-		-	322
SD ₁	.0532	1.183	-			-	-		-	7.72		but \$10.		11.1	-		-	-	239
SD ₂	9.93×10 ⁻³	1.148	- 0		- 1	-4	-37	4.49		9.44	- 5	*.733	- 37	-	.1	2	-	-	211
SD3	127	1.366	-			West.	100	due gran	Lenga o	e mass	icin.	*.650	at Poort	abtal	-	*-7.076		-	181
SD4	1.04×10 ⁻⁴	.982	-	4 1		1		10 pl a	9 %	100		*.257	2.746	12 710	jas		-		48

Table 6. Summary of regression equations, Region 3--Continued. $Y = AA \quad S \quad L_a \quad E^{b4} \quad F^{b5} \quad T_1^{b6} \quad T_7^{b7} \quad N^{b8} \quad W^{b9} \quad D^{b10} \quad Z^{b11} \quad S_1^{b12} \quad U^{b13} \quad R^{b14} \quad X^{b15} \quad G^{b16} \quad V^{b17}$

Dependent	Regression	14.168	- 11	47	- 1	Regres	sion	coeffici	ents of	indicat	ed in	depender	t varia	oles		A. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.			Standard
variable	constant	A	S	La	Е	F	т1	Т7	N	W	D	Z	si	U	R	х	G	V	error of estimate (percent
SD5	1.31x10 ⁻³	1.035	-		-	1.01	-	-	-	-	-	-	2.390					-	68
SD ₆	2.34x10 ⁻⁶	1.015		-	3.384	* 447	-	1 10 00		-	-	12	2.903	3	-	-	-	-	53
SD ₇	3.44×10 ⁶	.902	-	-	-	-	-	-6.391	-	-	-	-	2.810	4.339		*3.002		-	50
SD ₈	1.08x10 ⁹	.971	-		1 -10	701		-5.831	*0.910	1.00			-	1	-		-		39
SD9	3.45×10^3	. 983	-	-	-	1190	-	*-3.035	1.626		-	-		1.110	-		-	-	52
SD ₁₀	3.12×10 ⁶	.937	-			-		*-4.189	-	-	-		77308			42.450	-	-	64
SD ₁₁	.0182	1.048	-	-	A1 656	014	-	1.5	-	-	-		3.30	7.100	-	5 700	-		82
SD ₁₂	2.86×10 ³	1.594	-			-	-		-	-	-	0.376	4,178	1755	-	*-7.879	riem.		215
Q ₂	1.86	.792	20	*0.329	-336	0.466	1	21 - 29 - 40	-	-0.612	-	-		1.984	-	-			39
Q ₅	5.14×10^{-3}	.866	. 5	an'i	3.590	-	-	11 - 10.00	1.354	-	-	-	-	3 1036	-		-	-	44
Q ₁₀	5.73	.775	200	*.311	9.00	*.330		58 -13-79		520	-	-	-	3.034	-	- v III		-	37
Q ₂₅	30.1	.748	1	*.321	3 401	-	5.0	11-14-11		544		-		1		-	-		38
Q ₅₀	.0159	. 891	20		-3(94)		2.0			-	-	0,243	2.582	3.18	-	- 1	-		35
M ₇ ,2	6.88	. 849					1.0	76	6.089	- Palpa	-	9 483	*470			- 1	-		68
M7,10	5.84	. 842	-	-	-	0.826	-	76		79.232	-	9.95	*478	13,100		-	-		68
M7,20	5.41	. 843	-	12	-		1	-	*				*478	0 -	3-	1	e-	1	69
v _{7,2}	1.43×10 ⁻⁵	. 982	-		-	produces	(00)	CONFILCTO	ura of	Indicate	9.100	Seygen	.350	5.228					38 9
V7,10	1.84×10-4	.974	-	15 AN 25	F* 1		it i	17 - N "	4 0	10 ⁻² -01	24	U = R	.328	4.374	13	-	-	-09	37
V _{7,25}	3.67	1.028	. 4	TOPI - P	-	ba ba	PS	P. 20	E 12		3574		ald bis	Sec. and	-	1		-	131

^{*} Significant at .05 level; all others are significant at .01 level.

Table 7 . Summary of regression equations, Region 4. Y = AA S L_a E^{b_4} E^{b_5} E^{b_6} E^{b_7} E^{b_6} E^{b_7} E^{b_7} E^{b_8} E^{b_9} $E^{b_{10}}$ $E^{b_{11}}$ $E^{b_{12}}$ $E^{b_{13}}$ $E^{b_{14}}$ $E^{b_{15}}$ $E^{b_{16}}$ $E^{b_{17}}$

Dependent	Regression	D N 5	E .:	4 2 2	DI DI	Regres	sion	coeffici	ents of	indicat	ed i	ndependent	varia	bles	25. 8			. 1	Standard - error of
yariable Y	constant	A	S	La	E	F	т1	т ₇	N	W	D	Z	si	U	R	X	G	v	estimate (percent)
Qa	2.72×108	1.075	- 0	2 0 0	. 5	0.807		-5.675	1.0		3.5		1	-3.4	2-11-5	- 8	- 5	-	48
SDa	5.68x10-6	1.018	10.0	216	2.852	.700	-	A R 5.4	- 1	1.714	g- 1	-		*0.528	10 - E G	- 2		2	22
q_1	1.64x10-3	1.099		2 0 0	1	. 864	-			M.O. W	-	2 2 1		2 4	1-1-1	1	- E	6 9	41
q ₂	0.0872	1.110	10.2	862	1 1	.746	-	144.	19.5	NO YES	8-1	E .	Flore		ero-	- 1		2 ,	36
93	.0743	1.144		857	5-6	.731	-	85.		20 2 551	00-0	0 4	55 10	3 5 1		- 0	- 5		. 36
94 S	.0676	1.149	3.	12 to 14	0.0	.953	-	40.51	100	NO 573	9-8		1 1 10	- 1 0	9-3.5	17 21		B .	44
q 5	3.8x10 ¹⁰	1.150	9.	0.579	8:1	1.241	-	-7.140	-2.149	10.10.40	0.4	1 2 2			*1.674	-	- 8	. 0	45
96 DI	2.51x10 ²¹	1.169	7 6	. 813	0 5 4	1.230		-13.263	-3.098	0 0 0	-9	10 0.		P 8	2.290	1.0	- 19	7	47
97 ap 10	8.12×10 ²³	1.213	-0	*.514		1.434		-15.096	-3.539			23	15 01	2 -	*2.325		- 4	- 5	59
9.0	2.24×10 ²¹	1.288	12.00	19		1.707		-13.300	-3.799	44.	-	4.5			8-8- m	12.5	- 3	-	86
99	1.07×10 ¹⁴	1.327		# E C	-	2.227	. 0	*-9.608	-4.403	110		4.5	4.	4 5	8-8-3		- 0	-	119
9 ₁₀	6.45×10-4	1.308	E-8	0 1200	64 e 5 e	2.494	3	Sp.	-3.474		-	19 12		2 - 1	B-0 5	0.8	- 1	1.	128
911	1.12×10-5	1.366	800	3 3 4	Fag	2.681			-3.747	1	-		0.	4.0	E-sisp		- 4	-	127
q ₁₂	3.78x10 ⁻⁴	1.314	0-	F & F	95	2.203	-		-2.695		-	0.00	01	7.0.	8 0 4	9 0	- 5		100
SD ₁	1.24×10-4	1.002	3.5	194		.345	-		4.6	3.259	-	*-4.310		7 5	0.0	1		1	44
SD ₂	1.x10 ⁻¹²	1.081	1.3	0.00	S 20	.530	-	*4.402	13	1.744	-	00 1 2	- 81	2 780	F.Y	12	- 00	77 9	45
SD3	1.68x10-10	1.134			1	.460	1111	3.721	10013	or fedi-	21.00	independ	1.182	Links !	-		-	12 8	32
SD ₄	.0647	1.190		1 10		.686	-		No. Pol	0.00		pla pla	N ply X	ple fall	5714	-	-	Lon.	70

Dependent	Regression	3.138				Regre	ssion	coeffi	icients	of indica	ted i	ndepen	dent varia	bles		N.	Table of	-	Standard — error of
variable Y	constant	A	S	La	E	P	т1	T ₇	N	1.7 M	D	z	s _i	U	R	x	G	v	estimate (percent)
SD ₅	2.47×10-5	1.227			3.166	0.765			-5.1695				+1 1es		-		-		52
SD ₆	4.8x10 ¹⁷	1.098	-	0.719		.982		-11.	149 -2.6	21 -			5.7.816		2.260	- 50.00			41
SD7	22.0	1.144	-	*.276	5.624	.941		-5.2	276 -						1.694		-		35
SD8	3.20x10-9	.949			4.744	1.163		3 ² (05	Ne epa	*-1.383			1.			3.526			42
SD ₉	2.24×10-4	1.174		*.593		1.949		3 300	FB 1335			-	-2.554						88
SD ₁₀	3.12×10 ⁻⁴	1.178		.910		1.854		2.092	-3.539				-2.016		3.352				94
SD ₁₁	1.50×10 ⁻⁵	1.303	-	*1.001		2.364		13.262		40 -					s · sañ-				76
SD ₁₂	2.66x10-6	1.589		0.78574		3.367		-3 Teg		65 -			1		1.012				715
Q ₂	5.37x10-7	.948			4.849	-0.5				40 2.221			-1.204	1.410	-	-			26
Q ₅	1.42×10-6	.918		4.5	3.480	19500			2.83	30 2.189	-		-1.154	1.446					23
Q ₁₀	1.60x10 ⁻⁵	.898		1.52	2.810	100			2.5	36 2.097			-1.149	1.379		. 16	-		26
Q ₂₅	.600	. 880			-	864	-		1.5	76 -		-6.5	42 - 2 - 14	1.604	1-				42
Q ₅₀	.154	. 852		- 5 s	823	30ď			1.2	76 -			N-1470	1.266	-				43
M7,2	.0149	.955		1		205		5.672					4-1474				-		207
^M 7,10	.0308	*.931											-	_				-	532
M _{7,20}	(a)			P.W.		K	$r_{\rm I}$	T7	B.	И	0	8		n	E	Z (Δ	eskor lok
V7,2	3.4x10 ¹¹	1.094		-	. 8	egressi	0.695	FFIGT	*-6.92	2 -	Ande	beuqeu	t verfable				-	-	68
V7,10	.316	1.033	1	61 62 64 5	ra F	1 2 4	.705	63 PE	Apd D	10 To 1	p.75	n B	ole Tols e	pie Api				-	67
V7,25	.174	.995		Dero Bark	1,1991	F. (7 . 20	.652	DE-181	Leseron	ednotros	10 1 700	Sion .							62

^{*} Significant at .05 level; all others are significant at .01 level. a No equation with coefficients of at least .05 significance.

The standard errors of these relations may be compared with the accuracy goals to determine the adequacy of the relations for estimating planning and design characteristics (see table 2).

Adequacy of regression relations.—Comparison of the standard errors of estimate for the relations shown in tables 4, 5, 6, and 7 with the accuracy goals (table 2) indicates that the relations are of inadequate accuracy to meet the goals for planning and design data. To meet the goals, there is therefore a need either for additional streamflow data, or for an improved technique of estimating flow characteristics, or for both additional data and improved techniques.

Regression relations were defined in this analysis on the assumption that the relation between flow and basin characteristics is linear if all characteristics are transformed to logarithms. Alternate transformations or model forms may be more useful and may provide more reliable esti-Also, this regression study used as independent variables only those basin characteristics that could be obtained readily from maps or available data. A precipitation variable could be expected to improve significantly the accuracy of regression relations. To date, however, no reliable method is available for estimating precipitation on most ungaged basins, especially on small basins, and studies are needed to Additional or alternate basin characdefine this variable. teristics, including those which require a field measurement, such as channel size, channel shape, or soils characteristics might improve the estimating relations. Obviously, more detailed analysis offers promise of improved regression relations.

Another consideration in the improvement of regression relations is the adequacy of the sample of flow records used in the analysis. Ideally, the sample will include long-term records (about 20 years or more) on areally distributed basins that sample the range of basin characteristics existing in Idaho. Inspection of tables 8, 9, 10, and 11 indicates that there are only a few records on basins of less than about 60 square miles, especially in Regions 2 and 3. About 10 records on small basins in each region should be available for a meaningful analysis. Records of 2- to 10-year length are available for 93 minor stream sites. Basin characteristics for these sites should be evaluated to determine a representative sample of small streams where additional years of record should be obtained for future regression analyses.

Table 8 . Selected physical and climatic characteristics of drainage basins for gaging stations used in regression analyses of Region 1. 6

Station	1 10.15	0.5		100	1	100 30	-	-	1000		-		100			121	5727	- 1			-	-
umber	A	S	Lc	La	Em	F	Tl	T7	N	W	D	Z	M	Eb	Er	Ex	Si	U	R	X	G	v
12-	5.1	10.1	0.151		100			1		O TO		J.E.	1 11 7		9		4 9	D 01 10				100
3045	766	23	71.0	1.04	5.05	96	17	56	8.83	5.70		40	25	4.6	5.7	5.6	7.5	6.1	4.35	5.55	4.9	14
3050	11,740	6	309.0	1.0	4.90	96	16	55	9.47	5.45		35	180	5.9	6.6	7.6	7.2	5.7	3.30	7.70	6.0	7
3055	53	152	13.0	1.0	4.98		15	55	8.57	6.17	235	30	9	3.1	5.5	4.5	6.7	7.4	4.48	4.52	4.0	69
3065	570	41	55.0	2.0	4.87	101	16	55	9.25	6.00	26	20	22	4.6	7.0	5.1	6.0	7.4	2.87	5.23	3.1	16
3075	755	21	76.0	2.0	4.71	101	16	55	9.08	6.00	16	20	22	4.6	6.4	5.3	6.0	6.8	3.31	5.59	3.9	13
3205	29	109	14.0	1.0	5.26	101	15	53	8.88	6.62	211	25	4	6.8	6.4	4.5	6.7	4.6	3.86	4.24	3.1	1
3210	70.	156	18.0	1.0	5.10	101	15	54	8.92	6.67	241	25	10	4.6	5.9	5.2	6.7	6.3	4.20	5.10	4.3	58
3215	97	164	18.8	1.0	4.65	101	16	56	9.02	5.75	261	25	15	5.6	6.5	5.8	6.7	5.9	3.15	6.15	4.3	63
3220	13,700	6	375.0	1.0	4.71	96	16	55	9.48	5.58	1	35	180	5.8	6.0	7.6	6.0	5.2	3.71	7.89	6.6	6
3907	182	101	22.0	1.0	4.35		19	56		5.53		90	12	5.0	6.1	5.7	7.2	6.1	3.25	6.35	4.6	27
3923	124	132	23.0	1.0	4.21	101	20	57	8.52	6.58	311	40	18	3.8	6.3	4.4	6.7	7.5	2.91	5.19	3.1	59
3935	572	50	47.0	7.5	4.23	96	20	57	8.82	6.92		20	29	4.3	4.2	6.3	6.2	4.9	5.03		7.1	1
3950	902	12	87.0		3.82	96	21	59	8.65	6.87		30	37	4.1	4.5	6.2	6.3	5.4		7.38	6.7	17
3960	68.3	12	13.3		3.65		24	59	8.27	7.43		35	12	3.1	4.8	3.9	6.2	6.7	3.85	5.25	4.1	71
4110	335	37		1.0	4.12	91	22	62	7.90	6.10		60	30	4.3	4.9	5.0	6.7	5.6	4.22			37
4130	895	24	73.0	1.0	3.61	96	24	64	7.70	5.98	1	60	43	3.8	4.5	5.5	6.5	5.7	4.11	6.89	6.0	20
4135	1,220	22	78.0		3.90	91	23	62	7.67	6.15		60	50	3.9	4.7	5.6	6.6	5.8	4.20			17
4145	1,030	64	53.0	1.0	4.21	96	22	61	7.23	5.70	101	90	34	4.5	4.7	6.5	6.7	5.2	4.51			14
4190	3,840	6	141.0	3.0	3.67		23	63	7.41	6.17	95	70	88	3.5	4.0	6.0	6.2	5.5	4.67			10
13-										-												
1200	114	83	20.0	1.0	8.54	41	8	52	3.92	4.25	246	15	16	7.9	10.5	9.4	5.0	7.6	3.04	5.86	3.9	57
1205	450	48	36.8	1.0	8.59		8	52	3.87	4.00		25	34	8.1	10.0	9.1	4.8	6.9	3.59			31
1415	648	12	50.0		5.60		14	63	3.33	4.83		30	36	4.1	6.0	7.1	3.9	6.9	4.60			23
1479	248	141	20.3		7.22		16	61	3.58	100		35	21	5.8	6.5	9.7	4.4	5.7				1
1480	267	115		1.0	7.16		16	61		4.00		35	21	5.8	6.8	9.7	4.4	6.0		7.54		1
1485	312	86	28.5	1.0	6.85	11	17	62	3.57	4.00	356	35	22	5.8	6.9	9.5	4.3	6.1	4.95	7.65	7.6	29
1540	140	105	27.5		4.70		23	69	3.13	4.93		50	16	3.7	4.5	5.6	1.9	5.8	5.20			1
1860	635	52	51.8		6.84		18	63	3.67	5.00		45	35	6.2	6.3	9.0	6.4	5.1	5.54			i
1865	131	133	21.2		6.14		19	66	3.45	5.13		60	12	5.8	6.0	8.3	3.0	5.2	5.14			i
1870	55.3	192	15.0		6.07		19	65	3.52			95	13	5.4	7.1	7.0	5.9	6.7		5.93		95
1910	1,090	35	89.6	1.0	6.27	26	19	65	3.58	5.08	56	65	32	4.7	6.2	9.1	5.6	6.5	5.07	7.83	7 0	1
2365	112	34	19.8		6.63	0.00	15	54	4.42	5.72		45	12	6.0	7.6	7.7	6.3	6.6	4.03	10 10 10 10 10 10 10 10 10 10 10 10 10 1		44
2390	144		75.73		6.52		14	57			100	40	Annual Control of	10.								
		54	26.0						5.08	6.00			15	6.3	6.5	7.8	6.3	5.2	5.02			1
2400	48.9	139	12.0			101	13	55	4.95	5.92		60	12	6.9	7.0	8.0	6.7	5.1	4.95	11 2 2 - 1		99
2405	54.6	135	12.8	2.0	6.95	101	13	55	4.95	5.92	11	60	12	6.9	7.0	8.0	6.7	5.1	4.95	6.05	6.0	89

Table 3. Selected physical and climatic characteristics of drainage basins for gaging stations used in regression analyses of Region 1--

40000				2						C	ontin	ied.										
Station number	A	S	Lc	La	Em	F	T1	T 7	N	W	D	Z	М	Eb	Er	Ex	si	U	R	X	G	V
13-																						
2513	3.96	366	4.3	1.0	4.94	96	19	65	5.03	6.45	351	10	2	5.5	5.6	5.1	6.7	5.1	4.34	5.16	4.5	203
2515	36.5	56	14.7	1.0	4.69	86	20	65	5.03	6.42	356	10	7	3.5	5.0	5.0	6.7	6.5	4.69	5.31	5.0	78
2525	2	391	3	1.0	6.90	56	14	58	4.75	6.27	201	35	1.5	3.7	7.7	6.5	6.7	9.0	4.20	4.60	3.8	301
2535	106	48	29	1.0	5.01	86	19	65	4.93	6.38	11	20	17	4.2	5.3	5.5	6.4	6.1	4.71	5.49	5.2	65
2560	390	34	45	1.0	4.68	61	20	65	4.83	6.42	6	15	25	3.7	5.2	5.7	5.8	6.5	4.48	6.02	5.5	27
2570	86.5	151	22.5	1.0	5.43	71	18	63	4.67	6.23	76	50	10	3.6	5.9	6.9	6.2	7.3	4.53	6.47	6.0	47
2585	605	32	59	1.0	4.65	56	20	66	4.75	6.47		20	30	4.0	4.8	5.8	5.8	5.8	4.85	6.15	6.0	21
2600	54	14	13.9	1.0	4.73		17	66	4.65	6.82		110	13	4.2	5.6	5.6	4.6	6.4	4.13	5.87	5.0	97
2610	81.9	215			5.30		15	64	4.55	6.23		60	12	3.7	4.7	6.8	5.5	6.0	5.60	6.50		1
2635	1,160	22	92.0		4.28		21	68	4.65			30	38	3.6	4.4	6.0		5.8	4.88	100		14
2670	56	174	18.2	1.0	4.86	41	20	65	4.50	6.97	341	135	11	3.7	5.9	4.8	4.4	7.2	3.96	4.94	3.9	80
2925	94.7	60	14.2	1.0	8.14	51	11	52	3.92	4.75	166	35	10	8.6	9.3	8.8	6.2	5.7	3.84	5.66	4.5	43
2930	35.7	130	11.9	7.0	8.11	76	11	52	3.92	4.95	231	75	8	7.4	9.4	8.8	5.9	7.0	3.71	5.69	4.4	91
2950	147	60	22.2	2.0	7.40	76	13	55	4.27	5.03	316	80	18	7.9	8.6	7.7	5.1	5.7	3.80	5.30	4.1	50
2955	501	40	36.4		7.80		12	53		4.75		80	44	8.3	9.1	8.9	4.9	5.8		6.10		36
3085	138	95	16.8	1.1	7.37	96	13	54	4.42	5.08	96	85	15	7.9	8.1	8.3	4.6	5.2	4.27	5.93	5.2	44
3090	180	33	22.0	1.0	7.04	91	14	55	4.40	5.40	251	85	20	7.6	7.8	7.9	6.6	5.2	4.24	5.86	5.1	45
3105	92	92	15.6		6.63	91	14	57	4.58	5.70	191	45	12	6.2	7.2	6.9	6.7	6.0	4.43	5.27	4.7	53
3130	213	71	34.5		7.17		13	55		5.50		35	19	7.4	8.0	7.9	5.6	5.6		5.73		37
3140	1,160	69			6.71		14	57		5.63		50	59	6.9	7.7	8.0	5.9	5.8				21
3155	15.8	130	10.3	1.0	4.66	91	20	66	5.08	6.47	346	15	5	5.2	4.8	5.0	6.7	4.6	4.86	5.34	5.2	1
3165	576	61	48.2	1.2	5.43	81	25	60	5.17	6.33	176	45	41	5.4	6.4	6.6	6.4	6.0	4.03			29
3365	1,910	39	92	1.0	5.64	96	18	56	6.00			115	58	5.8	6.6	7.9	6.0	5.8	4.04	7.26	6.3	13
3369	89.2	134	18.6	1.0	4.47	101	21	60	6.37	5.45	276	110	10	4.2	5.4	4.8	6.7	6.2	4.07	5.33	4.4	46
3370	1,180	44	98	1.0	5.25		17	55	6.47	5.00	66	95	48	4.9	6.0	7.8	6.0	6.1	4.25	7.55	6.8	17
3405	996	40	50	1.0	4.93	101	19	59 :	6.75	5.23	81	85	42	4.6	5.8	6.7	6.5	6.2	4.13	6.77	5.9	18
3410	2,440	23	133	1.0	4.22	96	22	61	6.87	5.75	71	90	50	3.4	4.6	6.6	6.6	6.2	4.62	7.38	7.0	9

Table 7. Selected physical and climatic characteristics of drainage basins for gaging stations used in regression analyses of Region 2. &

Station	A	S	Lc	La	Em	F	TI	T 7	N	W	D	Z	М	Eb	Er	Ex	Si	U	R	X	G	v
2-				17.16					-				-							7.77		
110	133	19	14.0	1.0	3.40	96	20	59	8.57	6.42	201	15	16	3.2	3.9	4.1	6.0	5.7	4.50	5.70	5.2	49
168	23	288		1.0	4.80	96	16	55	9.00	6.35	341	2	5	3.2	4.8	4.9	6.7	6.6	.5.00	5.10	5.1	1
150	437	19	42.0		3.56		24	63	7.12	6.40	126	90	25	3.7	4.0	4.8	5.7	5.3	4.56	6.24	5.8	24
13-				7																		
085	210	96	24.2	1.0	6.97	56	14	64	4.45	1.90	331	25	25	5.6	7.3	8.1	5.6	6.7	4.67	6.13	5.8	49
130	120	85		1.0	7.11	26	13	63	4.47	2.23	341	20	13	5.3	7.7	7.6	5.4	7.4	4.41	5.49	4.9	44
160	165	86	24.2	1.0		21	12	62	4.40	2.67	321	10	15	7.5	8.7	8.8	4.8	6.2	3.82	6.28	5.1	37
170	320	30	24.8	1.0	7.58	21	12	61	4.33		326	140	19	8.5	8.7	8.6	5.0	5.2	3.88	6.02	4.9	25
355	137	76	19.0	1.0	8.12	51	8	49	3.78	4.58	281	20	16	7.9	9.1	9.4	5.8	6.2	4.02	6.28	5.3	48
365	96	87	19.0	1.0	7.56	56	8	53	3.65	4.53	251	35	11	8.1	8.6	8.4		5.5	3.96	5.84	4.8	47
395.1	640	54	40.3	1.0	7.62	36	8	53	3.70	4.42	316	20	34	6.8	8.0	10.1	5.6	6.2	4.62	7.48	7.1	22
960	195	91	26.2	1.0	7.98	91	11	53	4.40	4.70	16	90	19	8.8	8.9	9.0	4.8	5.1	4.08	6.02	5.1	40
965	802	37	47.2	2.0	7.79	71	12	53	4.17	4.83	216	80	51	8.4	9.2	9.2	4.9	5.8	3.59	6.41	5.0	26
980	497	63	35	1.1	8.10	31	11	52	4.22	4.62	211	140	38	9.5	8.9	9.8	5.7	4.4	4.2	6.70	5.9	1
985	1,800	28	80.5	1.5	7.82	56	12	53	4.25	4.58	216	80	51	8.4	9.2	9.0	5.2	5.8	3.62	6.18	4.8	12
990	85	219	15.0	1.1	7.83	71	12	58	4.58	4.42	271	105	16	8.8	9.3	7.6	6.1	5.5	3.53	4.77	3.3	76
025	3,760	22	150	1.3	7.38	41	13	58	4.48	4.03	196	90	100	8.7	9.0	9.1	5.3	5.3	3.38	6.72	5.1	12
3030		138	17.4	1.0	7.70		8	54			171	140	8	8.8	8.1	7.9	4.8	4.3	4.60		4.8	1
3060	214	84	22.5	1.0	6.22	91	12	59	5.53	3.95	6	100	20	7.8	7.9	7.6	5.9	5.1	3.32	6.38	4.7	38
065	529	99	42.2	1.0	7.03	96	15	56	5.12	4.27	166	145	29	8.4	7.5	8.7	6.4	4.1	4.53	6.67	6.2	1
070	6,270	20	198	1.2	7.14	41	15	56	4.58	4.07	181	90	134	8.6	8.5	8.9	5.4	4.9	3.64	6.76	5.4	1
100	470	41	34.4	1.0	7.00	86	15	54	5.12	5.15	241	160	33	7.6	8.0	7.9	5.4	5.4	4.00		4.9	29
3119	19.5	312	4.9	1.0	7.78	91	11	53	4.88	5.32	176	50	5	8.0	8.4	8.3	4.0	5.4	4.38	5.52	4.9	104
115	42.5	238	7.2	1.0	7.64	96	12	53	4.92	5.30	141	40	6	7.7	7.6	8.6	4.0	4.9	5.04	5.96	6.0	1
120	104	184	14.7	1.0	7.42	91	12	54	4.95		116	40	15	8.0	8.0	8.5	4.0	5.0	4.42			1
170	13,550	16	346	1.2	6.72		15	57	4.92		161	90	144	7.2	7.6	8.7	5.5	5.4	4.12			5
1375	261	34	30	1.0	5.15	101	23	61	5.78		96	145	21	5.5	6.0	6.3	6.3	5.5	4.15		5.3	33
380	865	47	66	1.0	5.16	101	23	61	5.82	5.65	91		42	4.0	5.1	7.0	6.1	6.1	5.06		6.9	1
390	4,850	26	130	1.0	5.01	96	20	58	6.08	5.50	91	115	98	4.5	5.4	7.7	5.7	5.9	4.61	7.69	7.3	9
415	425	50	43	1.0	2.98	76	26	66	6.77	6.47	11	90	28	2.9	3.2	3.8	4.2	5.3	4.78		5.6	27
425	9,640	17	185	1.0	4.36	71	22	61	6.13	5.75	91	115	108	3.6	4.1	7.5	5.5	5.5	5.26		8.4	1
1480	132	31	22.5	1.0	2.73	6	29	67	6.72	6.97	71	90	14	2.6	2.6	3.2	3.5	5.0	5.13	5.47	5.6	1
3485	27.1	30			2.67	1	29	67	6.77	7.10	61	90	5	2.5	2.6	2.8	3.5	5.1	5.07	5.13	5.2	1

sales of the feet of forthe characteristics of drafting builds for puglic alacters used in registration residence of degree of the contraction of

Table 10. Selected physical and climatic characteristics of drainage basins for gaging stations used in regression analyses of Region 3.

Station	A	S	Lc	La	Em	F	Tı	T 7	N	W	D	Z	М	Eb	Er	Ex	Si	U	R	x	G	V	
3-				9.19	MAG					- 4		The plant								E. (
0100	485	53	36.0	5.0	8.22	81	7	52	4.68	0.52		90	32	7.9	8.4	8.7	8.1	5.5	4.82		5.3	27	
0110	824	25	65.2	8.0	8.04	71	7	53	4.08	.57		90	48	7.1	8.8	8.4	7.1	6.7	4.24	5.36	4.6	24	
0115	160	69	31.0	3.0	8.16	81	7	53	4.00	.32		130	26	9.0	8.6	8.7	7.4	4.6		5.54	5.1	1	
0120	378	58	45.0	1.0	8.85	61	5	50	3.90	.13		130	28	9.2	8.9	9.8	6.7	4.7			5.9	1	
0145	622	50	53.8	1.0	8.85	61	5	50	3.53	.22	101	70	33	9.8	10.0	9.9	6.6	5.2	3.85	6.05	4.9	22	
195	564	59	43.8	1.0	8.00	66	7	53	3.20	.47	121	90	35	9.1	9.2	9.6	6.7	5.1	3.80	6.60	5.4	26	
225	3,465	13	138	3.5	8.15	66	7	53	3.58	.42	26	90	106	7.9	9.1	9.5	6.1	6.2	4.05	6.35	5.4	13	
230	448	46	55.2	1.0	8.08	76	7	53	2.88	.72	171	100	44	8.3	9.8	10.0	6.7	6.5	3.28	6.92	5.2	40	
235	3,940	13	146	3.0	8.08	66	7	53	2.50	.42	31	90	136	7.9	9.3	9.7	6.2	6.4	3.78	6.62	5.4	15	
0255	115	76	20.9	1.0	7.42	36	15	59	2.60	1.13	211	150	16	7.8	8.3	7.9	5.5	5.5	4.12	5.48	4.6	57	
275	829	38	56.2	1.0	8.47	51	6	51	2.83	1.00	171	115	44	7.6	8.1	9.4	5.2	5.5	5.37	5.93	6.3	1	
295	108	64	17.5	1.0	6.96	66	15	60	3.17	1.25	271	120	11	7.0	7.5	7.2	6.1	5.5	4.46	5.24	4.7	42	
300	36.8	336	9.8	1.0	7.79	66	13	57	3.37	1.00	86	85	7	7.7	7.5	9.5	6.3	4.8	5.29	6.71	7.0	1	
305	59.2	149	12.5	1.0	7.67	71	13	57	3.37	1.02	51	85	9	7.9	8.6	8.5	6.2	5.7	4.07	5.83	4.9	62	
320	77.1	106	15.2	1.0	7.13	71	14	59	3.27	1.32	256	110	9	6.7	7.5	7.8	5.6	5.8	4.63	5.67	5.3	48	
375	5,752	12	201	2.5	7.77	61	11	56	3.42	.62	36	90	140	7.1	8.3	9.6	6.0	6.2	4.47	6.83	6.3	11	
395	99.3	179	16.0	9.5	7.47	46	11	56	4.65	1.39	331	30	14	7.2	7.9	8.3	5.3	5.7	4.57	5.82	5.4	57	
425	481	27	39.5	5.0	7.08	66	12	58	4.52	1.40	301	45	34	6.3	7.1	8.2	6.0	5.8	4.98	6.12	6.1	29	
440	656	25	72.8	4.0	6.86	86	12	58	4.43	1.42	321	45	37	4.9	6.9	8.1	6.2	7.0	4.96	6.24	6.2	24	
1445	178	90	29.2	1.0	6.83	76	12	58	4.25	1.25	1	45	14	6.1	6.2	7.2	6.7	5.1	5.63	5.37	6.0	1	
455	129	102	25.5	1.0	6.45	96	13	60	4.17	1.12	61	45	12	5.7	6.2	7.0	6.7	5.5	5.25	5.55	5.8	1	
460	1.040	20	83.0	3.0	6.71	81	12	59	4.43	1.37	251	45	47	5.7	6.5	7.9	6.3	5.8	5.21	6.19	6.4	1	
475	351	80	41.2	2.0	7.52	81	10	56	4.22	.92	46	55	26	6.0	7.0	8.5	6.7	6.0	5.52	5.98	6.5	1	
550	890	27	64.0		6.90	46	14	60	3.80	1.13	126	115	35	5.2	6.1	10.0	4.5	5.9	5.80	8.10	8.9	1	
580	627	22	73.8	7.0	6.39	16	15	63	3.25	1.63	156	140	24	5.0	6.2	7.0	5.2	6.2	5.19	5.61	5.8	1	
630	360	24	37.8	1.0	6.94	46	12	59 =	2.75	1.32	96	150	23	6.8	7.0	7.9	5.5	5.2	4.94	5.96	5.9	27	
635	38.8	58	10.5	1.0	6.60	11	13	60	2.97	1.47	86	160	9	7.0	6.8	7.0	4.8	4.8	4.80	5.40	5.2	1	
730	570	17	48.0	1.0	6.08	16	19	65	2.77	2.47	16	110	41	6.2	7.2	6.6	4.7	6.0	3.88	5.52	4.4	30	
740	6.56	424	4.5	1.0	7.24	91	19	61	2.35	2.30	251	140	4	6.7	7.8	7.4	6.2	6.1	4.44	5.16	4.6	245	
750	355	21	37.5	1.0	5.63	16	22	66	2.50	2.18	156	140	21	6.2	6.8	6.5	4.2	5.6	3.83	5.87	4.7	25	

Table 11. Selected physical and climatic characteristics of drainage basins for gaging stations used in regression analyses of Region 4.

Station	A	S	Lc	La	Em	F	T1	T 7	N	W	D	Z	M	Eb	Er	Ex	Si	U	R	x	G	v
3-																	-			-		
777	7.84	464	4.8	1.0	8.57	26	15	58	1.92	3.45	91	15	5	4.2	9.1	8.6	2.1	9.9	4.47	5.03	4.5	256
790	20.2	409	3.8	1.0	7.87	36	16	60		3.33		25	6	4.2	9.6	7.3	1.9	10.4	3.27	4.43	2.7	120
792	84	120	12.8	1.0	6.56	36	19	64	2.25	3.60		120	10	4.3	7.8	7.1	3.1	8.5	3.76	5.54	4.3	49
825	633	34	50.8	1.0	6.03	11	24	66	1.93	4.07		140	37	6.5	6.7	7.2	3.3	5.2	4.33	6.17	5.5	24
0830	53.7	168	13.0	1.0	6.36	16	23	65	2.15	4.10		115	10	7.3	7.4	6.4	3.0	5.1		5.04	4.0	75
920	80	160	17.8	1.0	6.33	21	22	65	2.25	4.25	156	125	11	3.8	6.3	7.0	3.2	7.5	5.03	5.67	5.7	1
960	461	27	32.5	1.0	6.76	6	21	63	1.80	5.02	286	150	35	5.1	8.4	7.1	3.3	8.3	3.36	5.34	3.7	31
1625	84.6	131	22.1	1.0	7.60	26	19	61	1.90	5.32	176	155	9	3.8	7.4	9.4	3.2	8.6	5.20	6.80	7.0	1
1685	2,630	32	121	1.0	5.60	6	25	69	2.22	5.57	181	160	53	4.2	4.6	7.8	4.1	5.4	6.00	7.20	8.2	1
695	253	77	44.2	1.0	5.15	1	26	70	2.53	6.07	191	160	21	4.6	5.1	5.4	4.9	5.5	5.05	5.25	5.3	1
700	100	117	31.4	1.0	5.02	1	26	71	2.65	6.13		160	21	4.2	4.8	5.1	3.7	5.6	5.22	5.08	5.3	1
780	440	33	40.6	1.0	5.78	31	24	68	2.85	6.75	5.7	105	28	5.2	5.9	6.3	4.3	5.7	4.88	5:52	5.4	26
850	830	62	54.8	1.0	6.35	76	19	58	3.90	5.87		70	31	5.8	6.6	9.0	5.9	5.8	4.75	7.65	7.4	16
965	5.75	96	4.5	1.0	5.20	71	20	62		5.75		50	4	5.6	5.6	5.6	6.7	5.0	4.60	5.40	5.0	1
000	399	92	45.0	1.0	4.96	86	20	63	3.83	5.92	26	50	24	2.8	5.8	6.6	6.4	8.0	4.16	6.64	5.8	25
005	15.8	356	8.1	1.0	4.96	81	24	67	3.67	6.50	321	60	7	2.8	5.6	5.4	6.3	7.8	4.36	5.44	4.8	178
020	2,680	29	119	1.4	5.91	51	18	61	3.75	5.25	50	60	63	3.5	5.6	8.6	5.7	7.1	5.31	7.69	8.0	1
070	20.9	221	9.5	1.0	3.99	6	26	71	3.78	6.23	61	55	6	2.6	3.9	5.1	3.0	6.3	5.09	6.11	6.2	1
075	59.4	177	15.3	1.0	4.05	11	26	71	3.73	6.20	91	60	11	2.6	3.6	5.5	3.4	6.0	5.45	6.45	6.9	1
345	59.6	174	19.2	1.0	6.34	101	15	55	4.18	5.85	36	70	9	5.6	6.6	7.1	6.7	6.0	4.74	5.76	5.5	61
350	456	79	45.9	1.0	6.78		14	54	4.17	5.00		50	33	7.5	- 7.6	9.0	4.4	5.1	4.18	7.22	6.4	30
370	230	52	38.8	3.0	6.25	96	16	56	4.33	5.72		45	20	6.0	7.4	7.7	6.5	6.4	3.85	6.45	5.3	36
375	779	54	63.9	1.5	6.40	91	15	55	4.17	5.50	81	50	50	6.9	7.5	8.5	5.4	5.6	3.90	7.10	6.0	27
380	1,200	41	76.7	1.0	6.02	91	16	56	4.25	5.58		50	60	6.2	7.2	8.3	5.8	6.0	3.82	7.28	6.1	21
450	626	12	66.2	8.0	5.96	76	16	59	4.83	6.00	1	40	34	4.7	7.0	7.9	6.2	7.3	3.96	6.94	5.9	23
460	933	11	100	5.5	5.80	81	16	60	4.67	6.00		40	50	4.6	6.7	7.6	6.4	7.1	4.10	6.80	5.9	22
475	2,230	38	90.2	3.0	5.85	86	16	59	4.33	5.75	41	65	102	5.5	6.8	8.2	6.1	6.3	4.05	7.35	6.4	19

As an alternative to regression analyses, other methods should be considered for estimating planning and design data. Most alternate methods will require collection of some information at the design point. For example, Riggs (1969) proposed a method for defining mean annual flows from mid-month discharge measurements over a period of time. Moore (1968) suggested methods of estimating mean flows from runoff-altitude relations, or from channel width and depth measurements. The flow information needed to define these estimating relations is the same as required for regression analyses.

Another alternative to regression relation estimates is to estimate planning and design data by interpolation between adequately gaged points. An interpolation scheme is particularly adapted to principal streams, those draining more than 500 square miles, because there are only a limited number of sites, the information on larger streams is needed for many purposes in addition to planning and design, and many records currently exist on larger streams. Adequate basic information on natural-flow, principal streams is considered to be 25 years of record at all sites of about 500 square miles and at each downstream site where the drainage area about doubles; that is at 1,000 square miles, 2,000 square miles, and so forth. The available information on principal streams in Idaho only partially meets this goal. Although several sites have records exceeding 25 years, 9 sites have less than 25 years record and no record is available for 10 sites.

Evaluation of the Regulated Flow Data

The planning and design goals for regulated streams are more difficult to obtain because the techniques of regionalization by regression does not apply, the flow characteristics are not necessarily stationary in time, and a meaningful correlation between two sites seldom exists if one site is regulated. A systems approach, which requires a mathematical basin model, may be used to define flow characteristics for different patterns of regulation or for natural conditions. System or model studies of all regulated flow systems in Idaho will require a major effort. Therefore, the present evaluation is limited to identifying the regulated stream systems that should be studied and the amount of data available.

Table 12 lists the Idaho stream systems materially affected by regulation. Of these streams, Bear River, Pend Oreille River, Spokane River, Snake River, Bruneau River, and Owyhee River are major interstate streams and the systems should be modeled to include more than the Idaho reach.

Streamflow records are available for sites in each of the regulated flow systems and daily records of reservoir contents and major diversions are also available. It is emphasized, however, that in most regulated basins there are available, at most, only scanty records of some of the diversions, return flows, and storage records. Collection of sufficient water-use information in regulated systems to construct basin models will require considerable future effort.

Evaluation of Long-Term Trend Data

aily adapted to principal streams, those what sing more thin

At present, two stations are designated as long-term trend stations and are to be operated indefinitely. The variable climatic and topographic conditions of Idaho will require that additional records be obtained to define long-term trends. Several existing gages that have a long period of accurate record on natural streamflow from basins that are expected to remain in a natural condition in the future would qualify for selection as long-term trend stations.

Evaluation of Stream Environmental Data

Many environmental factors were determined for the drainage basins used in the regression study, specifically those variables listed in tables 8, 9, 10, and 11. Additional information on stream environment is available from a number of ground-water reports such as Crosthwaite and others (1970), Mundorff and others (1963), Stearns and others (1938), Walker and others (1970), and Thomas (1969). In general, however, data are inadequate to define the hydrologic environment of stream channels and drainage basins in Idaho.

Table 12. River segments for systems studies of regulated flow.

_	acipe8	Region
1.	Bear River from Wyoming to Utah line	3
2.	Malad River from headwaters to Utah line	3
3.	Pend Oreille River from Montana to Washington line	1,2
4.	Priest River from Priest Lake to Pend Oreille River	ing 1
5.	Spokane River below Coeur d'Alene Lake	2
6.	Snake River from Jackson Lake to Washington line including Snake Plain aquifer	3,4
7.	Henrys Fork from Henrys Lake to mouth	3,4
8.	Falls River from Squirrel to mouth	3,4
9.	Teton River from headwaters to mouth	3,4
0.	Blackfoot River from Blackfoot Reservoir to mouth	3,4
1.	Portneuf River from Portneuf-Marsh Valley Reservoir to mouth	3,4
2.	Raft River from headwaters to mouth	4
3.	Goose Creek from headwaters to Oakley Reservoir	4
4.	Salmon Falls Creek from headwaters to mouth	4
5.	Mud Lake basin	2,4
5.	Little Lost River from headwaters to Snake Plain	2,4
7.	Big Lost River from Howell Ranch to Snake Plain	2,4
3.	Big Wood River from Ketchum to mouth	1,2
	Little Wood River from Carey Reservoir to mouth	1
).	Bruneau River from Nevada line to mouth	4

Table 12. River segments for systems studies of regulated flow--Continued.

	ect Low Loss, Spokese Alvet, Saske River, Office	Region
21.	Owyhee River from Nevada to Oregon line including Jordan Creek	A A A A A A A A A A A A A A A A A A A
22.	Boise River from Anderson Ranch Reservoir to mouth	1,4
23.	Payette River below Deadwood Reservoir	1,4
24.		1,4
25.	Salmon River from headwaters to mouth	1,2
26.	Pahsimeroi River from headwater to mouth	pelon2
27.	Lemhi River from headwaters to mouth	NTO 2 PV
28.	Little Salmon River from headwaters to mouth	1001

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theuf River from Portheuf-Marsh Valley 1.4

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tle Wood River from Carey Reservoir to

Wood River from Ketchum to mouth

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t River from headwaters to mouth

THE PROPOSED PROGRAM

The information developed in different segments of this study has been merged to plan a program that will eventually attain as many of the remaining goals as possible within the limits of available funds. For the optimum program, a balance must be maintained between data collection and data analysis. Continuous interaction between the two is needed, not only to gain a better understanding of the hydrologic system, but also to guide future evaluation of the program in meeting everchanging needs and in adapting to changing technology.

Data Collection Cap Data Collection

Data for Current Use

The operation of the 214 stations identified as meeting the requirements for current-purpose data in table 3 will be continued as long as specific needs dictate. The changing needs will be assessed continuously, cooperators will be consulted, and the data collection network will be modified by adding or discontinuing stations as required. The data requirements for each site will be examined to determine whether a continuous record of discharge is needed or whether measurement of specific flow characteristics such as peak flow or instantaneous flow will suffice.

Data for Planning and Design

The objective of providing the desired information on any stream in Idaho has been only partially attained. This evaluation has indicated the need for continued operation of certain stations to obtain continuous-record and partial-record data. The need for some additional gaging stations is also apparent.

Although the regression analyses include only the 50year flood for both minor and principal streams, it is desirable to collect 50 years of flood-peak data at selected sites to define the 100-year flood. When a continuous-record station is to be discontinued, consideration will be given to continuing the collection of peak-discharge data. Thus, by operating a partial-record station, needed data can be obtained at a low cost. Low-flow studies should be instituted and low-flow measurements made beginning in streams where low flows are most critical because of problems related to quality control, passage or maintenance of fish, irrigation or municipal uses, or others. Low-flow data, especially in drought years, are useful in planning and design in major and minor streams, whether regulated or unregulated. Sites where measurements should be made have not been evaluated for this report.

Other requirements needed in the future data-collection program to achieve as many of the remaining goals as practicable are proposed in the following sections.

Minor streams with natural flow .-- Some method of regionalization or of estimating discharge characteristics at ungaged sites is required to define streamflow characteristics for minor streams since it is impractical to gage all of them. To provide an adequate basis for these determinations, the data collection program must sample data from streams representing the full range of characteristics that affect streamflow. More records are needed on streams below about 60 square miles especially in Regions 2 and 3. A total of 93 sites on minor streams have been gaged for periods between 2 and 10 years. It is proposed that physical and climatic characteristics be determined for all of these basins. After these characteristics are available, representative gaging and sites can be chosen, possibly many of them from this group, and operated at least 10 years to extend the geographical coverage on small streams. A minimum of 10 gaging stations in each of the four regions at sites on streams draining less than 60 square miles operating for at least 10 years is recommended. These gages would also be useful as index stations for low-flow studies in Idaho.

Records of crest-stage gages will be analyzed in a study scheduled for 1972 fiscal year, at which time more than 80 crest-stage gages will have been operated at least 10 years. More definite recommendations for peak-flow data from small basins will be deferred until after this analysis is made. Operation of all crest-stage gages should continue until at least 10 and preferably 15 years of record are available, and operation of selected gages should continue until 25 years or more of record are available. Locations of crest gages are shown in figure 1.

For the purposes of defining 100-year recurrence interval flood peaks on minor streams, the following stations should be operated as partial-record stations to collect peak flows.

Station	Station name	Previous record (annual peaks)
12-3110	Deep Creek at Moravia	H 901 43 06 14-5
12-4110	Coeur d'Alene River above Shoshone Creek, near Prichard	TOT SIDE 21 SIST-E
13-1355	Big Wood River near Ketchum	
13-1870	Fall Creek near Anderson Ranch Dam	13 Middle For
13-2000	Moore Creek above Robie Creek, near Arrowrock Dam	
13-2515	Weiser River at Tamarack	34
13-2610	Little Weiser River near Indian Valley	38
13-2950	Valley Creek at Stanley	49
13-3085	Middle Fork Salmon River near Cape Horn	
13-3369	Fish Creek near Lochsa ranger station	10
13-3414	East Fork Potlatch near Bovill	sort ago 11
13-3415	Potlatch River at Kendrick	25

Principal streams with natural flow. -- The objectives for principal streams are to be attained by sampling progressively doubled increments of drainage area beginning with the upstream 500 square miles. The objective of 25 years of record has already been achieved at a number of principal streams stations. However, most of these stations now in operation are required for the collection of current-purpose data. Additional stations required at natural flow sites to meet the objectives are listed in table 3 and are as follows:

Station number	Station name	area	Previous record R (full yrs.)	egion
12-4140	St. Joe River at Avery	594	9 Q 2 0 0 0 f	12-3
13-1845	Middle Fork Boise River near Twin Springs	382	Chamie Dinerold	4
13-2980	East Fork Salmon River near Clayton	497	boow little Car	2
	Middle Fork Salmon River below Marble Creek, near Landmark R.S.	1,050	msG - Dam thoc of region Constant (00)	1 Systi
	Middle Fork Salmon River near Shoup	2,850	allog them. homestely slade	2
	South Fork Salmon River at mouth, near Warren	1,315	vadibaiki statis sibrizost 60	11
	Selway River below White Cap Creek, near McGrude R.S.	520 er	organ Lavovage and crimation ladible /880	1 1 -2
	Selway River above Moose Creek, at Moose Creek R.S.	976	n this groups minister 28 dada stationa	13-3
	Moose Creek at Moose Creek R.S.	371	at index	1-1-3 13-3
Terrord	Lochsa River below Warm Spring Creek, near Lowell	588	yzed in a	1
edd dd iv	North Fork Clearwater	578	one fieldming	ig <u>r</u>

Big Creek near Big Creek (13-3100) has been operated 14 years and discontinued. It is accessible only by airplane and is not recommended for reactivation at this time.

record have a tready been achieved at a humber of priently a but

For the purpose of defining 100-year-recurrence flood peaks on principal streams, the following stations should be operated as partial-record stations to collect peak flows:

Station name	Previous record (annual peaks)
South Fork Payette River at Garden Valley	37
near Clayton works Thamban	49 49 ABS (18)
Panther Creek near Shoup	26 103 803
North Fork Clearwater River at Bungalow ranger station	nolaravib bas wold
	Station name South Fork Payette River at Garden Valley Salmon River below Yankee Fork, near Clayton Panther Creek near Shoup North Fork Clearwater River at

Regulated streams. -- It is beyond the scope of this report to propose specific analyses needed to meet goals on regulated streams. However, gaging stations on regulated streams proposed in order that minimal streamflow data will be available when system studies are made are as follows:

Station number	List an interest Name to another pare	Region
be be	Bannock Creek at mouth, near Pocatello	unregulated at
	Rock Creek at mouth, near American Falls	4 slandawni tes 4 sando well
	Rock Creek at mouth, near Twin Falls	Tasad Badsilding
13-1040	Shoshone Creek near San Jacinto, Nev.	4
	Sheep Creek at mouth, near Grasmere	4
	Deep Creek near Riddle	4
North for werly	Owyhee River at Crutchers Crossing, near Riddle	4 18001805
	South Fork Owyhee River at Crutchers Crossing, near Riddle	Wickahoney 4
	Pahsimeroi River below Patterson Creek, near May	2 reg ed
13-3020	Pahsimeroi River near May	2
	Lemhi River at Salmon	2

Locations of these sites are shown in figure 1.

Systems studies on regulated streams will vary in complexity, and will involve both surface water and ground water. Changes caused by regulation and diversion in some systems are far reaching, and some of the models required for the analyses will be complex.

Adjustments to natural flow conditions or to the present or some future development condition will require considerable data for adjusting the recorded flows for effects of regulation and diversion. The future data program should include provisions to continue the collection of records of inflow, outflow, reservoir contents, and other pertinent data at major reservoirs in the regulated streams system. The relation between lake and reservoir evaporation and pan evaporation has not been defined for the physical and climatic conditions existing in Idaho and should be investigated. Diversions, return flows, and changes in irrigated acreages should be assessed. More data on diversions are needed in some basins. Effects of ground-water pumpage on streamflow should be evaluated. Because of the continual, significant increases in development of the regulated-stream systems, it is recommended that gaging stations defining regulated as well as damage unregulated streamflow be continued until no further changes in regulation are expected. Irrigated acreages should be inventoried often in order to evaluate their impact on streamflow characteristics. Contents of some sizable reservoirs including Deadwood and Crane Creek Reservoirs have not been published because of inadequate capacity tables. Others are of questionable accuracy because of sediment. These should be resurveyed or checked.

Data to Define Long-Term Trends

The two gaging stations that have been previously designated as bench-mark stations, Hayden Creek below North Fork, near Hayden Lake (12-4160) and Big Jacks Creek (formerly Wickahoney Creek) near Bruneau (13-1695), should be continued in operation indefinitely. As a part of this study, 11 additional stations, one of them in Wyoming, have been designated from the present network as long-term trend stations and should be operated indefinitely to meet the need for this type of station. The additional stations were selected to provide a long-term sample reflecting areal coverage of the State and

a variety of climatic and physiographic characteristics. Not all of the various climatic and physiographic regimes are defined by these gages, but other stations in the network serve this need in addition to other needs. Before any of these other gages are discontinued, their value for long-term definitions should be assessed. The 13 stations designated for indefinite operation are coded with a "B" in column 1 of table 3. The 11 newly proposed long-term trend stations are listed below:

Station	tion of each listed gaging station is shown in figure
number	Station name
10-0930	Cub River near Preston
12-3065	Moyie River at Eastport
12-3923	Pack River near Colburn
13-0115	Pacific Creek near Moran, Wyo.
13-0630	Blackfoot River above reservoir, near Henry
13-0920	Rock Creek near Rock Creek
13-1200	North Fork Big Lost River at Wild Horse, near Chilly
13-2350	South Fork Payette River at Lowman
13-2506	Big Willow Creek near Emmett
13-3130	Johnson Creek at Yellow Pine
13-3375	South Fork Clearwater River near Elk City

Data on Stream Environment

Environmental data should be included in future programming to satisfy the needs for such data in research, planning, design, and operation of water-related facilities. Effects of man's activities on environment and effects of environmental changes on the quality and quantity of streamflow are pressing problems of the age. All of the proposed environmental projects listed on page 15 have value and the required data should be collected in future programs.

Summary

Table 3 summarizes the proposed program for collection of daily discharge records. The table includes all streamflow stations currently operating and those proposed for future operation. Each station is identified as to type of data that it provides and recommendations are indicated as to whether the station should be continued in the future program or whether it has already provided the data needed to meet the program goals and could be discontinued. Location of each listed gaging station is shown in figure 1.

Data Analysis

The proposed program of data analyses of Idaho streams may be classed in two phases--those based on streamflow data collected to date and those for which additional or specialized data are required.

The streamflow-data network operated through the years supplies the basic data for analysis to provide information needed by designers of water projects and for water management. Analytical studies based on available streamflow data should begin when sufficient data become available and should be updated periodically to include recent streamflow data. The analysis by regression techniques presented in this report will provide a basis for designing future generalization studies. Limitations of time and manpower limited the variable used in this regression. Other alternatives should be investigated, and other forms of regression equations should also be explored. Data analyses and appropriate reports should be scheduled in future programs as finances permit. These include the following:

1. Magnitude and frequency of peak flows—an update of the reports "Magnitude and frequency of floods", published in U.S. Geological Survey water—supply papers for the major basin designations for the United States. Water—Supply Paper 1688 for part 13 was published in 1963 and was based on data collected through 1957. A new study of floods from small basins in Idaho is scheduled for 1972 fiscal year, when the records from the crest—stage gage program will average about 10 years in length.

- 2. Flood-volume frequency analysis of annual maximum average flows for selected periods of time.
- 3. Statistics of mean annual and mean monthly flows.
- 4. Short-term records should be extended by correlation with long-term records. Multiple regressions should be run which include data from these short-term records because of the increased coverage they would provide. Further analyses to determine the value of short-term records at a greater number of sites as compared with longer records at fewer sites is justified.
- 5. Continuing studies of new or revised methods of regionalization or generalization to estimate discharge at ungaged sites.

The second type of data analysis needed is for studies that require the collection of specialized data in addition to that provided by the stream-gaging network. The following studies are proposed:

- 1. Investigation of methods for extension of short-term records and for use of miscellaneous measurements to compute flow characteristics.
- 2. Low-flow characteristics of Idaho streams. A continuing program of base-flow measurements to define low-flow characteristics should be started in a concentrated area. After a report is assembled for each specific study area, available funds and manpower can be applied to an adjacent area.
- 3. Time of travel of peak flows and time of travel and dispersion of solutes in streams, giving priority to streams subject to industrial pollution or hazards from radioactive wastes, and to streams that furnish water for municipal uses.
- 4. Definition of flood profiles for floods of different frequencies to provide guidelines for flood-plain zoning of lands under Federal jurisdiction or to meet local requirements.
- 5. Systems analyses to develop flow characteristics of regulated streams.
- 6. Hydraulic geometry of streams.
- 7. Relation of flow characteristics including mean annual flow and peak flows to channel geometry.

- 8. Hydrometric surveys of stream-aquifer systems.
 - a. Locations of springs, seeps, and return flows.
- b. Identification of channel reaches with decreasing discharge.
- c. Impact of development on surface and ground water systems.
- 9. Reconnaissance of streamflow and stream channel parameters that are related to the use of the stream for recreation and fish and wildlife propagation, such as velocities, depths, bank configuration and vegetation, bed material, water temperature, water quality, and accessibility.
- 10. Precipitation data at high and intermediate elevations supplemented with analyses to define variability of precipitation in mountainous areas.
- 11. Extension of present knowledge of the effect of geology and soil types on streamflow characteristics.

These are only a few of the data analysis and hydrologic studies that should be made. Changing needs for streamflow and related information as well as changes in technology must be evaluated frequently.

REFERENCES DATE TO THE PROPERTY OF THE PROPERT

- Benson, M. A., 1962, Factors influencing the occurrence of floods in a humid region of diverse terrain: U.S. Geol. Survey Water-Supply Paper 1580-B, 64 p.
- _____1964, Factors affecting the occurrence of floods in the southwest: U.S. Geol. Survey Water-Supply Paper 1580-D, 70 p.
- Carter, R. W., and Benson, M. A., 1970, Concepts for the design of streamflow data programs: U.S. Geol. Survey open-file report.
- Crosthwaite, E. G., Thomas, C. A., and Dyer, K. L., 1970, Water Resources in the Big Lost River basin, southcentral Idaho: U.S. Geol. Survey open-file report, 109 p., 31 figs.

- Decker, S. O., Hammond, R. E., Kjelstrom, L. C., and others, 1970, Miscellaneous streamflow measurements in Idaho, 1894-1967: U.S. Geol. Survey basic-data report, 310 p.
- Fenneman, N. M., 1931, Physiography of Western United States: McGraw-Hill Book Co., p. 225-272.
- Moore, D. O., 1968, Estimating mean runoff in ungaged semiarid areas: State of Nevada Water Res. Bull. 36.
- Mundorff, M. J., Broom, H. C., and Kilburn, Chabot, 1963, Reconnaissance of the hydrology of the Little Lost River basin, Idaho: U.S. Geol. Survey Water-Supply Paper 1539-Q, 49 p.
- Reynolds, Warren, 1970, New land development continues in Idaho: Idaho Water Resource Board News Release, April 14, 1970, Boise, Idaho.
- Riggs, H. C., 1969, Mean streamflow from discharge measurements: Inter. Assoc. of Scientific Hydrology Bull. XIV., no. 4, p. 95-110.
- Thomas, C. A., 1969, Inflow to the Snake River between Milner and King Hill, Idaho: Idaho Dept. Reclamation Water Information Bull. No. 9, 39 p., 15 figs.
- Walker, E. H., Dutcher, L. C., Decker, S. O., and Dyer, K. L., 1970, The Raft River basin, Idaho-Utah, as of 1966: A reappraisal of the water resources and effects of ground-water development: U.S. Geol. Survey openfile report, 116 p., 23 figs.

Eydremetric servers of stream-acuifus systems.

Decker, S. O., Hammond, R. E., Kjelsfrom, L. C., and others, 1970, Middellaneous streamflow deasurements in Eldaho 1984-1967; U.S. Geol. Survey basid-data report, 310 p. ballocate the contraction of the

Penneman, N. M., 1931, Physiography of Western Maited States: McGraw-Hill Book Co., p. 225-272. resew brucke bus bostons no teamsoleses to toaget.

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Walker E. H., Dutcher, L. C., Decker, S. O., and Dyer,

K. L., 1970, The Raft River basing Idaho-Utah, as of
1966: A reappraisal of the water resources and effects
of ground-water development: U.S. Geol. Survey openfile reportpolicip; pi23 figs. - cottat. 1861.
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Testhwaite, F. Gi, Thomas, C. Ars and Dyer, K. L., 1976 Note: Paschiege in the Big Dost River Dasin, southcentral Idaho: U.S. dael. Survey open-file report.

	The state of the s	Drainage	Period of Record	
Station	Station name	area	Daily or monthly	Annua1
number	To perture significance and off body for an every bridge	(sq mi)	figures	neaks
I don't	Cat Alice to records features stability (4)		(calendar years)	(water years
0-	(9189) (200) (0)			
	and the state of t	a 2,490	1937-	
0395	Bear River at Border, Wvo.			
0400	Thomas Fork near Geneva, Idaho	45.3	1939-51.	
0405	Salt Creek near Geneva, Idaho	37.6	1939-51.	- 0680
0410	Thomas Fork near Wyoming-Idaho State line, Idaho	113	1949-	
0415	Thomas Fork above diversions, near Geneva, Idaho	3.70(20.2)	1944-46ь.	
		. medigined the .		
0420	Preuss Creek near Geneva, Idaho	3.3	1943-44.	
0425	Thomas Fork near Raymond, Idaho	202	1942-52.	
0430	Diversions from Thomas Fork, Idaho	-	1944-45b.	
0433	Sheep Creek tributary near Border, Wyo.	. 13		1961-64
0433.5	Sheep Creek tributary No. 2 near Border, Wyo.	. 34		
0433.3	Sheep creek cribacary no. 2			1965-
2630	Programme Born Branch Studen Border and	and other	1931-44c; 1944-56b; 1957b;	
0435	Diversions from Bear River between Border and		1958-d.	
2//0	Harer gaging stations, Idaho	a2,780	1012	
0440	Bear River at Harer, Idaho			
0445	Bear River at Dingle, Idaho	a2,810	2202 14.	
0450	Bear (Mud) Lake inlet canal near Dingle, Idaho	4317	1911-13.	
0455	Diversion from Bear River between Harer and	****	1925-c; 1944-56b; 1957c; 1958-d.	
	Stewart Dam gaging stations, Idaho	Har Dade Springer,	disabeless in wated warm selles	
	100,000 (100,000) (100,000) (100,000)		1922-	
460	Rainbow inlet canal near Dingle, Idaho	-13.5	1922-	
1465	Bear River below Stewart Dam, near Montpelier, Idaho	a2,820	1922-	
470	Montpelier Creek near Montpelier, Idaho		1939-44.	
	Montpeller Creek near Honcpeller, Idans	50.9	1942-	
475	Montpelier Creek at irrigators weir, near	30.7		
	Montpelier, Idaho	Abritot shall no	10// /**	
480	Diversions from Montpelier Creek, Idaho		1944-45b.	
	Colon CITE ACCESS AND THE TAX AND AND AND		these from an interest, class the	
485	Montpelier Creek below diversions at Montpelier, Idaho	213.	1944-476.	
535	Fish Haven Creek above diversions, near Fish Haven,	-	1944-45b.	
	Idaho		other areas true fods creeks swith	
540	Diversions from Fish Haven Creek, Idaho	print / emirable spoot	1944-45b.	
545	Fish Haven Creek below diversions, at Fish Haven, Idaho	hav propped on	1944-45b,	
546	St. Charles Creek above diversions, near	17.4	1944-45b; 1961-66	0.762
346	St. Charles Creek above diversions, near	200	2344-430, 1901-66	1967-
	St. Charles, Idaho		"12 , represent to themself - If	
	- Charles Carely Idaho		1944-45b.	
547	Diversions from St. Charles Creek, Idaho	DISAL GRAND	1744-430.	
548	St. Charles Creek below diversions, near	And the last of th	telle " and annual series should see he	_ DEC .
	St. Charles, Idaho		1944-45b.	
549	Spring Creek Canal near St. Charles, Idaho	The section of the second	1944-45b.	
549.1	Spring Creek below Spring Creek Canal, near			
	St. Charles, Idaho	-	1944-45b.	
550	Little Creek at St. Charles, Idaho		1944-45b.	
	Breeze orden de ser sange	of(6)		
555	Bear Lake at Lifton, near St. Charles (at Fish			
		a435	1903-6*; 1921-	
585	Haven), Idaho		1942-47.	
202	Bloomington Creek near Bloomington, Idaho	24.4	1960-	
586	Bloomington Creek at Bloomington, Idaho	24.4		
590	Diversions from Bloomington Creek, Idaho	sav. Clewiand, in	1944-45b.	
595	Bear Lake outlet canal near Paris, Idaho	Marie and America	1922-	
500	Paris power canal near Paris, Idaho	15.1	1943-47.	
605	Paris Creek near Paris, Idaho	18.6	1943-47.	
510	Diversions from Paris Creek, Idaho	ADEL DE STEEL	1944-45b.	
515	Paris Creek below diversions, near Paris, Idaho		1944-456.	
620	Slight Canyon Creek near Paris, Idaho	6.81	1943-45.	
020	Slight Canyon Creek hear rails, Idano	0.01	1743-43.	
	Thesty Tiebo	10 4	1044 47	
525	Mill Creek above West Fork, near Liberty, Idaho	18.4	1944-47.	
	Mill Creek near Liberty, Idaho		1943-47.	
530		120H - 140H	1944-45b.	
530 535	Diversions from Mill Creek, Idaho	_	2744 430,	
530	Diversions from Mill Creek, Idaho Mill Creek at Liberty Bridge, near Liberty, Idaho	de f	1945b.	
530 535 540	Mill Creek at Liberty Bridge, near Liberty, Idaho	de f	1945b.	
630 635 640 645	Mill Creek at Liberty Bridge, near Liberty, Idaho North Creek near Liberty, Idaho	10.9	1945b. 1943-44.	
530 535 540 545 647	Mill Creek at Liberty Bridge, near Liberty, Idaho North Creek near Liberty, Idaho Emigration Creek near Liberty, Idaho	10.9	1945b. 1943-44. 1943-44.	
530 535 540 545 647	Mill Creek at Liberty Bridge, near Liberty, Idaho North Creek near Liberty, Idaho	10.9 9.18	1945b. 1943-44. 1943-44.	
535 540 545 547 549	Mill Creek at Liberty Bridge, near Liberty, Idaho North Creek near Liberty, Idaho Emigration Creek near Liberty, Idaho Diversions from Emigration Creek, Idaho	10.9 9.18	1945b. 1943-44. 1943-44. 1944-45b.	
530 535 540 545 647 649	Mill Creek at Liberty Bridge, near Liberty, Idaho North Creek near Liberty, Idaho Emigration Creek near Liberty, Idaho Diversions from Emigration Creek, Idaho North Creek below Emigration Creek, near Liberty, Idaho	10.9 9.18	1945b. 1943-44. 1943-44. 1944-45b.	
530 535 540 545 647 649	Mill Creek at Liberty Bridge, near Liberty, Idaho North Creek near Liberty, Idaho Emigration Creek near Liberty, Idaho Diversions from Emigration Creek, Idaho North Creek below Emigration Creek, near Liberty, Idaho Diversions from North Creek, Idaho	10.9 9.18	1945-b. 1943-44. 1943-44. 1944-45b.	
530 535 540 545 647 649	Mill Creek at Liberty Bridge, near Liberty, Idaho North Creek near Liberty, Idaho Emigration Creek near Liberty, Idaho Diversions from Emigration Creek, Idaho North Creek below Emigration Creek, near Liberty, Idaho Diversions from North Creek, Idaho	10.9 9.18 26.5	1945b. 1943-44. 1943-44. 1944-45b. 1946-47. 1944-45b.	
530 535 540 545 647 649	Mill Creek at Liberty Bridge, near Liberty, Idaho North Creek near Liberty, Idaho Emigration Creek near Liberty, Idaho Diversions from Emigration Creek, Idaho North Creek below Emigration Creek, near Liberty, Idaho	10.9 9.18	1945-b. 1943-44. 1943-44. 1944-45b.	
630 635 640 645 647 649 650 655	Mill Creek at Liberty Bridge, near Liberty, Idaho North Creek near Liberty, Idaho Emigration Creek near Liberty, Idaho Diversions from Emigration Creek, Idaho North Creek below Emigration Creek, near Liberty, Idaho Diversions from North Creek, Idaho North Creek at Liberty Bridge, near Liberty, Idaho	10.9 9.18 26.5	1945b. 1943-44. 1943-45b. 1944-45b. 1946-47. 1944-45b.	
630 635 640 645 647 649 650 655	Mill Creek at Liberty Bridge, near Liberty, Idaho North Creek near Liberty, Idaho Emigration Creek near Liberty, Idaho Diversions from Emigration Creek, Idaho North Creek below Emigration Creek, near Liberty, Idaho Diversions from North Creek, Idaho North Creek at Liberty Bridge, near Liberty, Idaho Mill Creek (Old Bear Lake Outlet) at Bern Road,	10.9 9.18 26.5	1945b. 1943-44. 1943-45b. 1946-47. 1946-47. 1946-45b.	
630 635 640 645 647 649 650 655	Mill Creek at Liberty Bridge, near Liberty, Idaho North Creek near Liberty, Idaho Emigration Creek near Liberty, Idaho Diversions from Emigration Creek, Idaho North Creek below Emigration Creek, near Liberty, Idaho Diversions from North Creek, Idaho North Creek at Liberty Bridge, near Liberty, Idaho	10.9 9.18 26.5	1945b. 1943-44. 1943-45b. 1944-45b. 1946-47. 1944-45b.	

Station		Drainage	Period of Record	N. H. D. L. P. S.
number	Station name	area	Daily or monthly	Annua 1
		(sq mi)	figures (calendar years)	peaks
			(Calendal years)	(water year
0-	-7.09 007.		The court of the party of the court of the c	
685	Bear River at Pescadero, Idaho	a3,680	1921-54.	
690	Georgetown Creek near Georgetown, Idaho	22.2	1911-14; 1939-56.	7000
695	West Fork near Georgetown, Idaho	Tate (Ion, Toll)	1944-45b.	
700	Diverions from Georgetown Creek, Idaho	or establing miscose his	1944-45b.	
705	Georgetown Creek below diversions, at Georgetown,		1944-47b.	
	Idaho AA-EABA 1.E.		Present Creek near Gaucus, Lophy	
	202 1942-52		Thomas Fork rear Revenue Links	
710	Co-Op Creek near Nounan, Idaho	- 01	1944-45b.	
715	Skinner Creek at Nounan, Idaho	5.41	1939-45.	
720	Stauffer Creek near Nounan, Idaho	NowYes, New York	1939-44.	5 5599
725	Stauffer Creek at mouth, near Georgetown, Idaho		1946-47b.	
728	Eightmile Creek near Soda Springs, Idaho	23.2	1960-	
			Mare's paging man Long Target	
730	Diversions from Eightmile Creek, Idaho		1944-450.	
735	Eightmile Creek below diversions, near Soda		1944-47b.	
	Springs, Idaho		Sear (Mud) Lake total comet near	
740	Diversions from Bailey Creek, Idaho	bus tured o	1944-45b.	2745
745	Bailey Creek below diversions, near Soda Springs, Idaho	Telego.	1945 b.	
750	Bear River at Soda Springs, Idaho	a 3,970	1896; 1898; 1925-44c; 1944-49;	
	Sour Maron de Sour Optings, Italio	nd sho	1951-53b; 1953-	
	v2.020 1622-	ar Bestpellier, Less	their Tiller in low Brassers on the out	
755	Ledger Creek near Soda Springs, Idaho		1944-45b.	
760	Diversions from Formation Springs, near Soda	7886 .718		
	Springs, Idaho	S. Same Trans	1944-45b.	0.450
764	Soda Creek at Fivemile Meadow, near Soda Springs, Idaho	a49	1964-	
765	Soda Creek at Lau Ranch, near Soda Springs, Idaho	a49	1923-26.	0.90
770	Sode Creek near Sode Springe Ideha	a 52	1913-26; 1928-29.	
	(24-110)		activities in some white the state of	< 606
775	Diversions from Soda Creek, Idaho	a des Elex Saven,	1944-45b.	
780	Soda Creek below diversions, at Soda Springs, Idaho	odall .	1945-47b.	
785	Diversions from Bear River between Pescadero and		MANAGE STOCKED BEEN BOOKS TO CONTRACT TO STATE OF STREET STATE OF STREET STATE OF STREET STREET, STREET STREET, STREET	
1962-	Alexander gaging stations, Idaho	T thanks dill in 's	1925-44c; 1944-b.	
790	Soda Reservoir at Alexander, Idaho	xaen , an	BEEN TOO DO TOO TOO ON BUILDING WAS AND THE TOO TO SHEET OF THE PARTY	
795	Bear River at Alexander, Idaho	a 4,050	1944-b. 1911-	
	boar navor we manager, reality			
800	Bear River below Grace Dam, near Grace, Idaho	0059034	1944-50b; 1945-46.	
805	Diversions from Whiskey Creek, Idaho	13, 1982		D426
810	Diverions from Trout Creek, Idaho		1044-45h	
815	Trout Creek at falls, near Thatcher, Idaho	let idelp	10/71	
320	Diversions from Warm Creek, Idaho	The Page Types	1044 AEL	1-6460
	Diversion and state of ear, Idano			
925	Diversions from Williams Creek, Idaho		1944-45b.	
930	Williams Creek below diversions, near Cleveland, Idaho	-	10456	
835	Treasureton Canal near Swan Lake, Idaho	1.0075, 287 Mallan	1020-46	
840	Cottonwood Creek near Swan Lake, Idaho	42.6	1030-46	
945	Cottonwood Creek near Cleveland, Idaho	61.7	1020	
343	cottonwood creek hear cleveland, idano	61.7		
850	Clausland Irrigation Co. Carel ages Clausland Idaha	contract of	1044-45h	
855	Cleveland Irrigation Co. Canal near Cleveland, Idaho	n telephone	1944-45b.	
000	Diversions from Bear River between Alexander and		1005 //- 10//- b	
260	Oneida gaging stations, Idaho	of the country of the	1925-44c; 1944-b.	0080
860	Oneida Reservoir at Oneida, Idaho	The second second	1944- b.	7000
365	Bear River below Utah Power & Light Co's tailrace,		This seathfull, ding far he front, 164	
	at Oneida, Idaho	a4,400	1921-	
370	Mink Creek Canal near Mink Creek, Idaho	offshill.	1949-52.	
875	Mink Creek below Dry Fork, near Mink Creek, Idaho	19.3	1947-52; 1955-62.	7530
880	Twin Lakes Canal near Mink Creek, Idaho	7	1943-52.	
885	Preston-Riverdale & Mink Creek Canal near			
	Mink Creek, Idaho	mint 1 to division	1943-52.	
890	Diversions from Mink Creek, Idaho		1944-45 0.	7.465
895	Mink Creek near Mink Creek, Idaho	58.7	1943-52.	Tale
900	Diversions from Bear River between Oneida and	Trends	New York Least Malatanage and	
	Preston gaging stations, Idaho		1925-44c; 1944-b.	
	The state of the s	a4 500	1000 1011 10124 1011	
905	bear River hear rescon (at pattrecreek), Idano	44,500	1889-1916; 1917*; 1944-	
908	Battle Creek tributary near Treasureton, Idaho	a4.5	*******************	1961-
910	Battle Creek near Treasureton, Idaho	23.1	1943-44.	
912	Deep Creek near Clifton, Idaho	a119	1966-	
		"papit 1(386)"28 (
915	Bear River near Weston, Idaho		1919-44.	
920	Weston Creek at Weston, Idaho	a63	1942-44.	
925	Cub River Irrigation Co.'s pump canal (Cub River			
	Pumps) near Weston, Idaho		1934-44c; 1944-b.	
930	Cub River near Preston, Idaho	10.4	1940-52; 1955-	

Stat	Charle	Drainag	Period of Reco	rd
numb	970 MAC 11 BANGE - CO. N.	area	61	Annua1
	Lateral Communication of the C	(sq mi)	(calendar years)	peaks
10-	ARANG MINISTER CONTRACTOR OF THE PARTY OF TH		(cure)	(water years
0935	de marer mora oreen danar at mead, mear riescon, Idano		1944-45b.	
0940	de River- Hotel Creek Canal Hear Frescon, Idano	-	1943-52.	
0945	Mapleton Canal near Preston, Idaho	and the same of	1944-45b.	
0950	Treston miletie, canal meet freeton, taano	old oversel states, the	1944-45 b; 1946-52.	
0955	Cub River Canal near Preston, Idaho	edate totalized	1944-45b; 1946-52.	
0054	Specifical district specific reason, subface bill to the second			
0956	Cub River Canal above sugar factory, near			
0057	Preston, Idaho	-	1962-63.	
0957	Cub River Canal below Worm Creek, near Preston, Idaho	while the takes and	1962-63.	
0958	West Branch Cub River Canal near Fairview, Idaho	- select , 15607	1962-63.	
0959	East Branch Cub River Canal near Lewiston, Utah	A STATE OF THE PARTY OF	1962-63.	
0960	Cub River above Maple Creek, near Franklin, Idaho	53.7	1740-32.	
0965	Maple Creek near Franklin, Idaho	21.2		
0970		21.2	1946-52.	
0975	Diversions from Maple Creek, Idaho	4535	1944-45 b.	
0980	Maple Creek below diversions, near Franklin, Idaho	47.1		
0985	Cub River at Franklin, Idaho			
0985	Worm Creek near Preston, Idaho	11.0	1343-40,	
0986	United States and the States and Breaker Idaha	a24		wiend duty
	Worm Creek above treatment plant, near Preston, Idaho	a24	1702-03.	
0987	Worm Creek below sugar factory, near Preston, Idaho		1962-63	2001 Fold
0988	Worm Creek near Fairview, Idaho	246	1702-03.	
0990	High Creek near Richmond, Utah	16.2	1944-37.	
1182	Malad River below springs, near Malad City, Idaho	a3.3	1931-32; 1940-47; 1947-61*.	
1100	the section of the se	200		
1183	Warm Springs Canal near Samaria, Idaho	a31	1940-45.	
1184	Malad River near Samaria, Idaho	a73	1021 22	
1185	Wright Creek near Daniels, Idaho	a120	1931-32.	
1190	Little Malad River above Elkhorn Reservoir, near	4120	1911-13; 1931-32; 1940-	
1105	Malad City, Idaho	153	1940-53.	
1195	Elkhorn Reservoir near Malad City, Idaho	155	TO STATE OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF	
200	Little Malad River below Elkhorn Reservoir, near	153	12222775 THEFT WHERE THE BUILDING S	
200	Malad City, Idaho		1940-53.	YOUR PROP
205	Little Malad River below Sand Ridge Dam site, near	223		
203	Malad City, Idaho			
225	Devil Creek above Campbell Creek, near Malad City, Idaho	a13	Total Co.	
230	Devil Creek above Evans dividers, near Malad City, Idaho	a36	1938-61.	
235	Devil Creek near Malad City, Idaho	a39	1940-33.	
233	Devil Creek Heat Halad City, 18810		1931-40.	
240	Deep Creek above Third Creek, near Malad City, Idaho	a3.9	1001 00	
245	Third Creek near Malad City, Idaho	a13		
250	Deep Creek below First Creek, near Malad City, Idaho	a32	1931-32. 1931-48.	
255	Malad River at Woodruff, Idaho	a485	1020	
729.7	Rock Creek near Holbrook, Idaho	a42		
, 2 , . ,	Nock Office harring			
			A Actor Tala All Market In the	rand dada
			Elitari . Medi Manageli	
45	Yaak River near Troy, Mont.	766	1910-16; 1956-	
50	Kootenai River at Leonia, Idaho			
55	Boulder Creek near Leonia, Idaho	a53	1928-	
60	Kootenai River at Katka, Idaho	al1,860	1928-33.	
65	Moyie River at Eastport, Idaho (at Kingsgate,		make the second of the second	
	British Columbia)	a570	1915-16e: (1014: 1014:	
			1915-16e; (1914; 1917) *e;1929-	1115.5 710
70	Moyie River at Snyder, Idaho	656	1911-16: 1010 22	
75	Moyie River at Eileen, Idaho	755	1911-16; 1919-23. 1925-	
80	Kootenai River at Crossport, Idaho	WLDlerie Load		
85	Kootenai River at Boom Camp, near Bonners Ferry, Idaho	a12,950	1904 * 1925-27 *e: 1927-60 *	
90	Cow Creek near Bonners Ferry, Idaho	14.7	1925-27*e; 1927-60*,	
	married that the control of the cont		1928-34.	
95	Kootenai River at (near) Bonners Ferry, Idaho	a13,000	1904 * 1905 27 *6	
			1904*; 1905-27*f; 1928-60;	net story or
00	Kootenai River near Bonners Ferry, Idaho			
)5	Kootenai River at Deep Creek, near Bonners Ferry, Idaho			
8	Trail Creek at Naples, Idaho	a16	20-30	
0	Deep Creek at Moravia, Idaho	133		1961-
	Later transfer to the second state of the seco			
5	Snow Creek near Moravia, Idaho	10 5	97.8-34	
0	Caribou Creek near Moravia, Idaho	19.5		
	Kootenai River at Myrtle Creek, near Bonners Ferry, Idaho			
5		The state of the s	020 204	
0. 1	Mrytle Creek near Bonners Ferry, Idaho		749-30 *	
0. 1	Mrytle Creek near Bonners Ferry, Idaho Ball Creek near Bonners Ferry, Idaho	a37	929-30 *. 928-34. 928-34.	40

27 000	3010912 (80.73)	Drainage	Period of Record Daily or monthly	Angual
tation	Station name	area	figures	Annual peaks
ımber	(61-14F) - (191-13F)	(sq mi)	(calendar years)	(water years
24-1	3 Calcall) d2 L AM17	MARKET 277	many the control of t	TO THE REAL PROPERTY.
140	Kootenai River at Klockman Ranch, near Bonners Ferry, Idaho	a13,300	1928-★	
150	Kootenai River at Spurling Ranch, near Copeland, Idaho	-13,500	1928-30* .	
152	Rock Creek near Copeland, Idaho	14.3	1928-34.	
154	Trout Creek near Copeland, Idaho	a20	1928-34.	
	D-3397			
155	Kootenai River at Des Voigne Ranch, near Copeland, Idaho	all measure in	1929*.	
160	Kootenai River at Krause Ranch, near Copeland, Idaho	MINE THE LAKE		
165	Kootenai River at Ashby Ranch, near Copeland, Idaho	9873 389 0	1929*. 1958-	
168	Mission Creek near Copeland, Idaho Mission Creek at Copeland, Idaho	a23	1958-	
170	Mission Creek at Copeland, Idano	a31	creat cost franklin Significant	stuck too
3175	Brush Creek near Copeland, Idaho	a7.2	1928-34.	STAKES DES
3185	Kootenai River near (at) Copeland, Idaho	a13,400	1925-27 *e:1927-28*:1929-	77 0625 276
190	Kootenai River at Jerome Slough, near Copeland, Idaho		1929-30*.	
195	Parker Creek near Copeland, Idaho	16.5	1928-34.	
200	Kootenai River at Lucas Creek, near Porthill, Idaho	At . marin 5	(1928-30;1932-35;1937-39) *	Desire She
205	Long Canyon Creek near Porthill, Idaho	a29	1928_59	
3210	Smith Creek near Porthill, Idaho	a70	1928-60.	1962 -
3215	Boundary Creek near Porthill, Idaho	a97	1928-	7-257H - GPG
3220	Kootenai River at (near) Porthill, Idaho	a13,700		
			1928-	
3225	Kootenay Lake at Kuskonook, British Columbia		1936-*	
2020	Clark Tark at 15 feet B. Clark		Cres ceal Decision forting	
3920	Clark Fork at Whitehorse Rapids, near Cabinet,	** ***	1928-	
3921	Idaho (near Heron, Mont.). Trapper Creek near Clark Fork, Idaho	22,067	1926-	
3923	Pack River near Colburn, Idaho	1.12	1958-	1962-
3924	Rapid Lightning Creek near Samuels, Idaho	45.0	1963-68.	
3925	Pend Oreille Lake at Hope (Sandpoint), Idaho	a22,900	1914-	
	Table Prints and Charles for large control of		Chicago (Mangalatical States States)	
3928	Dover Creek near Dover, Idaho	a2.2		1961-
3930	Priest Lake at outlet, near Coolin, Idaho	572	(1911-19;1928-49)*;1950-	
3935	Priest River at outlet of Priest Lake, near Coolin, Idaho	572	1911*;1912-48.	
3936 3940	Binarch Creek near Coolin, Idaho Priest River near Coolin, Idaho	10.4	1948-	1962-
3945	Priest River at Falk's ranch, near Priest River	792	1911-12.	
3950	Priest River near (at) Priest River, Idaho	902	1903-5;1910-11;1923;1929-	
3955	Pend Oreille River (Clark Fork) at Newport, Wash.	a24,200	1903-41:1952-	
4110	Coeur d'Alene River (head of Spokane River) above		THE PERSON OF THE PERSON OF THE PERSON	
4115	Shoshone Creek, near Prichard, Idaho Coeur d'Alene (North Fork Coeur d'Alene) River at	335	1950-	
	Prichard, Idaho	441	1911-14.	
4120 4125	Coeur d'Alene River near Prichard, Idaho North Fork Coeur d'Alene (Little North Fork Coeur	583	1944-53.	
22.24.90	d'Alene) River near Enaville, Idaho	a170	1911-12.	
4130	Coeur d'Alene (North Fork Coeur d'Alene) River at			
	Enaville, Idaho	895	1911-13;1939-	
4131	Boulder Creek at Mullan, Idaho	3.13	1911-13;1939-	1961-
4131.4	Placer Creek at Wallace, Idaho	14.9	1968-	
4131.5	South Pork Comer d'alana bisser de citamen Tita	163	1908- Odebl sabbed to take	
4131.5	South Fork Coeur d'alene kiver at Silverton, Idaho Montgomery Creek near Kellogg, Idaho	4.53		1962-
4133	South Fork Coeur d'Alene River near Smelterville	202	COLDER TO THE ROTT OF THE PROPERTY AND	
4134	West Fork Pine Creek near Pinehurst, Idaho	10.8		PATE TO
4135	Coeur d'Alene River near Cataldo, Idaho	a1,220	1966- 1911-12;1920-	
	And the second process of the second process		1966-	
4137	Latour Creek near Cataldo, Idaho	594	1966-	
4140	St. Joe River at Avery, Idaho St. Joe River at (near) Calder, Idaho	a1,030	1911-12:1920-	
4145	St. Maries River near Santa, Idaho	275	1965-	
4150	St. Maries River at Lotus, Idaho	437	1911-12;1920-66.	
	article beauty many let on Thronto A 1881a.		to the total transfer to free	
4151	Cherry Creek near St. Maries, Idaho	7.07		1961 -
4152	Plummer Creek tributary at Plummer, Idaho	2.10	1903-	
4155	Coeur d'Alene Lake at Coeur d'Alene, Idaho	a 3,700	1948-53;1958-59;1965-	
4160	Hayden Creek below North Fork, near Hayden Lake Hayden Creek near Hayden Lake, Idaho	22.0 26.0	1946-48.	ATTENNA DE
4165	Arabit	20.0	select the region of the first	
4170	Hayden Lake at Hayden Lake, Idaho	62.3	1920- *	
4170	Hayden Lake Irrigation District diversion near			
41/3	Hayden Lake, Idaho	-	1945-53.	
4180	Rathdrum Prairie Canal at Huetter, Idaho	- 14	1945-	
4185	Spokane Valley Farms Co.'s canal (Spokane Valley		1911-17; 1919-66.	
	Land and Water Co.'s canal) at Post Falls, Idaho	. 3 9/0	1911-17; 1919-66.	
4190	Spokane River near (at) Post Falls, Idaho	g 3,840	A CONTRACTOR OF THE PARTY OF TH	
		41.2	1958- 68.	

ation	Money To be of the control of the control	Drainage	Period of Record Daily or monthly	
ımber	Station name	area (sq mi)	figures	Annual peaks
			(calendar years) (w	ater years
-				
100	Snake River at south boundary of Yellowatone National Park	485	1913-25.	
105	Jackson Lake at Moran, Wyo.	824	1913-25. 1908-	113 18
110	(South Fork) Snake River at Moran, Wyo.	824	1903-	
115	Pacific Creek near Moran, Wyo.	160	1906*; 1917-18; 1944-	
120	Buffalo Fork near Moran, Wyo.	378	1006*: 1017-18: 1044-	
127	bullato rolk hear moran, wyo.	370	1906*; 1917-18; 1944-60.	
145	Gros Ventre River at Kelly, Wyo.	622	1918; 1944-58.	
95	Hoback River near Jackson, Wyo.	564	1917-18; 1944-58.	
25	Snake River above reservoir, near Alpine, Wyo.	3,465	1937-39; 1953-	191 07
30	Greys River above reservoir, near Alpine, Wyo.	448	1917-18: 1937 30: 1052	
35	Snake River below Greys River, at Alpine, Idaho	3,940	1917-18; 1937-39; 1953- 1944-54.	767 02
	Shake River below Greys River, at Ripline, Isamo	STATE OF STATE OF		
55	Crow Creek near Fairview, Wyo.	a115	1946-49; 1961-67.	
72	Bear Canyon near Freedom, Wyo.	23.3		
75		829	1052	1961-
80	Salt River above reservoir, near Etna, Wyo	878	1017 10	
00	Salt River near Alpine, Idaho	0,0		
0.	Difference and the control of the co	890	1933-55.	
85	Salt River at Wyoming-Idaho State line	4,841	1916-18;1934.	
90	Snake River near (at) Alpine, Wyo (Idaho)	108	1917-18:1034:1052 (1	
95	McCoy Creek above reservoir, near Alpine, Idaho	100	1917-18;1934;1953-61	1962-
	(near Alpine, Wyo)			
00	Indian Creek above reservoir, near Alpine (near	36.8	1017 19.1052 (1	100
	Blowout), Idaho	30.0	1917-18;1953-61	1962-
)5	(Big) Elk Creek above reservoir, near Irwin (Blow-	50.0		
	out), Idaho	59.2	1917-18;1934;1953-61	1962-
		AT . gradegayres	F Charliff bedand freet at month of the form	
0	Little Elk Creek near Blowout, Idaho	11.4	1711.	
5	Snake River at Calamity Point, near Irwin, Idaho	5,124	1734-30;1739-41.	
0	Bear Creek above reservoir, near Irwin, Idaho	77.1	1917-18;1934-36;1953-	
4.5	Palisades Reservoir near Irwin, Idaho	5,208	1955-	
5	Snake River near Irwin, Idaho	5,225	1935-36;1949-	
-	SHARE RIVEL HEAT AFFECT OF			(8)
0	Palisades Canal near Irwin, Idaho	A Line of Street, or	1935-36.	
5	Palisades Creek near Irwin, Idaho	60.8	1917-18;1934-36.	
o	Fall Creek near Swan Valley, Idaho	77.6	1917-18;1934-36.	
5	Rainy Creek near (at) Swan Valley, Idaho	56.3	1917-18:1934-36	
0	(South Fork) Snake River near Swan Valley (Lyon), Idaho	5,488	1903-11;1934.	
U	(South Fork) Shake River hear Swall valle) (2)	717	the property of the party of th	
	Di a la company Walley Ideho	63.2	1917-18;1934-36. 1934-36.	
5	Pine Creek near Swan Valley, Idaho Snake River at Dry Canyon, near Swan Valley, Idaho	5,616	1934-36.	22 - 250
0	Snake River at Dry Canyon, hear Swall valley, Land	21.1	1917:102/. 24	
5	Burns Creek near Chokecherry (Heise), Idaho Snake River below Burns Creek, near Chokecherry, Idaho	5,659	1935.	
0	Snake River below burns creek, hear chokensty,	5,752	1910-	
5	(South Fork) Snake River near Heise, Idaho		THE RESERVED AND THE PROPERTY OF THE PROPERTY	NE -110
J	- I de continue Pirio Idebo	at a delivery		
)	Great Feeder Canal near Ririe, Idaho	5,810		
5	Snake River at Lorenzo, Idaho	a20		
9	Targhee Creek near Macks Inn, Idaho	99.3	1923-	
)	Henrys Lake near Lake, Idaho		1000	
	Henrys Fork near Lake, Idaho	99.3	1920- Joseph and their junior	
	the transfer of the court of the plant of the state of th			
)	Henrys Fork near Big Springs, Idaho	166		
,	Big Corings Creek at Rig Springs, Idaho	Albert Control 9	1924-25, 1935-40.	
)	Henrys Fork at Coffee Pot Rapids, near Island Park, Idaho	261		
	Charidan Creek near Island Park, Idaho	82.1		11 700
1	Island Park Reservoir near Island Park, Idaho	481	1938-	
		1300		
	Henrys Fork near Island Park, Idaho	481	1933-	
	- cc 1 - pi rear Teland Park Idaho	36.7	1025 / 1	
	not at De Winere Ranch, near Island Park, Idano	523	1935-40.	
	Henrys Fork (North Fork Snake River) at warm River, Idano	656	1935-40. 1910-15:1918-52	
)	Warm River at Warm River, Idaho	178	1910-15;1918-52. 1912-15;1918-32.	
			A STATE OF THE PARTY OF THE PAR	
	Wyoming Creek near Squirrel, Idaho	4.7	1931-32.	10 1004
	- 14 Crook at Warm River, Idaho	129	1912-15;1918-32.	
	rest (in canyon, above rail kiver) (North			
	Fork Snake River) near Ashton (Ora), Idaho	1,040	1890-91:1902-9:1920	
	a Take near Moran. Wyo.		1000	
	Diversions from Falls River above gaging			
	station, near Squirrel, Idaho	minul Blading	1919-	
			.7.7.	
	Falls (Fall) River near Squirrel (at Wilson's	351	1902 3*.1004 0.1014	
	Falls (Fall) River near Squirrer (at witson a mill, near Marysville) (near Marysville)	331	1702-3";1904-9;1918-	
	Mill, near marysville, (near marysville)			
	(at Fremont), Idaho			
	wast Fork Squirrel Creek near Squirrel, Idaho	2.40	1961-67. 1932.	
	Creek near Squirrel, Idaho	a17	1932.	
	- 11- (Fall) Piver in Canvon, Idaho	510	1890-91.	
	pinersions from Falls River between Squirrel, Idaho			
	and Chester gaging stations, Idaho		1919-	

Station	arra Palls or montally call	Drainage	Period of Record Daily or monthly	Annual
number		area	figures	peaks
(adage	rnine) (stare rabenias)	(sq mi)	(calendar years)	(water year
	Market Table Nil 6-15 le	a 520	1920-	
495	Falle (Fall) River near Chester, Idano	100	THE RESERVE OF THE PARTY OF THE PARTY OF	
00	Diversions from Henrys Fork between Ashton and St. Anthony gaging stations, Idaho	4 .4	1919-	
	St. Anthony gaging stations, idaho	a1,770	1919-	
505	Henrys Fork at St. Anthony, Idaho Mail Cabin Creek near Victor, Idaho	3.27		
0.7	Moose Creek near Victor, Idaho	21.4		1962-
808	moose creek hear victor, roams		THE WAY IN THE SECOND	
10	Teton River near Victor, Idaho	47.6	1946-52.	
15	Teton Creek near Driggs, Idaho	33.8	1946-52	
20	Teton River near Driggs, Idaho	303	1935-40.	
22	Teton River above South Leigh Creek, near Driggs, Idaho	a 335	1961-	
25	Horseshoe Creek near Driggs, Idaho	11.7	1946-52 .	
	Passerial diverse or a service of the service of th	T1073-406-1-	THE RESIDENCE CONTRACTOR CONTRACTOR	
30	Packsaddle Creek near Tetonia, Idaho	a 5.7	1946-50.	
35	Spring Creek near Tetonia, Idaho	1.5	1946-50.	
40	Teton River near Tetonia, Idaho	471	1929-32;1934-37;1940-57.	
44	Milk Creek near Tetonia, Idaho	14.1	1000 07 1000 20	1962-
45	Canyon Creek near Newdale, Idaho	a 68	1920-25;1938-39.	
50	Teton River near St. Anthony (Wilford) (at Chases	onidi , edi	gla Transfer of the course of the August	
50	Ranch), Idaho	a 890	1890-93;1903-9;1920-	
55	Diversions from Teton River between St. Anthony, Idaho	2030	TV - EDING STATES A LABOR A LABORATOR AND STATES	
-52	gaging station and mouth, Idaho	-	1919-	
60	Diversions from Henrys Fork between St. Anthony, Idaho	Moles (Ston.	THE CLOSES OF STREET BEING HE	
51	and Rexburg gaging stations, Idaho		1919-	
65	Henrys Fork (North Fork Snake River) near Rexburg , Idaho	a 2,920	1909-	
70	Snake River near Menan, Idaho	8,820	1923.	
	APPENDING TO SELECT TO SELECT THE	-country for a	I have an or relief to make	
73	Grays Lake Diversion to Blackfoot River Basin, near Wayan, Idaho	970	1927-43;1945;1947;1949-50;196	6-
74	Grays Lake near Wayan, Idaho	137	1966-	
75	Grays Lake Outlet near Herman, Idaho	137	1916-25;1966-	
76	Homer Creek near Herman, Idaho	24.6		1963-
80	Willow Creek near Ririe (Prospect), Idaho	627	1903-4;1916-25;1928;1962-	
85	Willow Creek near Iona, Idaho	111-	1916-25.	
	Starret Cross Appropriate Section 2 April 1985		1889-94.	
90	Snake River at Idaho Falls, Idaho	9,760	1889-94.	
95	Diversions from Snake River between Heise and		1919-	
00	Shelley gaging stations, Idaho	a 9,790	1915-	
00	Snake River near Shelley, Idaho Idaho (Government) Canal near Shelley, Idaho	89,790	1912-18.	Stant
10	Idaho (Government) Canal near Firth, Idaho	101 720 00181	1914-18	
	Table (Soveriment) canal near rates, radio	olucherry, Ide	\$2. \$6.865 \Line\$27 \uniter \$45 \uniter \$100.00 \uniter \$100.00	
11	Snake River tributary near Osgood, Idaho	7.64	Ports Screen Floor many Nelson,	1961-
15	SnakeRiver at Firth, Idaho	a9,890	1914-15.	
20	Snake River at Porterville Bridge, near Blackfoot, Idaho	a9,940	1016-1019-23	
25	Snake River below Blackfoot Bridge, near Blackfoot, Idaho	9,950	1924-32	
27 -	Angus Creek near Henry, Idaho	13.9		1963-
	The state of the s		The state of the s	
30	Blackfoot River above reservoir, near Henry, Idaho	a346	1914-25;1967-	
35	Little Blackfoot River at Henry, Idaho	38.8	1914-25.	
45	Meadow Creek near Henry, Idaho	75.2	1914-25.	
50	Blackfoot River (Marsh) Reservoir near Henry, Idaho	581	1912-25;1929-	
55	Blackfoot River near Henry (Rossford), Idaho	5 83	1908-25.	
14.3	the Part Spect County County with a party to a thought about		Terk Reservoir mean latered Persi	
60	Blackfoot River near Shelley, Idaho	909	1909-45;1947-50.	
65	Blackfoot River near Presto, Idaho	926	1903-9-	
70	Sand Creek near Firth Idaho	44.14	1917-24.	
75	Port Hall Hoper Canal near Blackfoot Idaho	Windshield I	1912-50	
80	Fort Hall Lower Canal near Blackfoot, Idaho	Cherty Breek	1912-50	
	A SECTION OF THE PERSON OF THE		your at them wered, he does	No. of Concession,
85	Blackfoot River near Blackfoot, Idaho	1,295	1913-	
90	Diversions from Snake River between Shelley and	1905		
	Blackfoot (Bridge) (Porterville) (Clough	1 march 1	The same of the sa	
	Ranch) gaging stations	er) (Nerch	1919-	
95	Snake River (at Clough Ranch) near Blackfoot, Idaho	al1,310	1910-	
00	Portneuf River above reservoir, near Chesterfield, Idaho	a68	1912-14.	
05	Portneuf diversion channel near Chesterfield, Idaho	4.1,176.	1914.	
90	the Handwood on North Perg, Shire Styles Life.	F 71.		
10	Portneuf River below reservoir, near Chesterfield, Idaho	a92	1912-15.	
15	Topons Creek near Chesterfield, Idaho	45.7	1912-14. 1910-13; 1968-	195
20	Portneuf River near Peeble, Idaho	261		
25 30	Pebble Creek near Pebble, Idaho	27.2	1911-14. 1913-15;1919-	
	Portneuf River at Topaz, Idaho	h570	1713-17;1717-	

Station		Drainage	Period of Record	
number	Station name	area	Daily or monthly	Annual
	and a second of the second of	(sq mi)	figures (calendar years)	peaks (water years)
	91			(Hater Jears)
3-				
0735	Portneuf River at McCammon, Idaho	a595	1896.	
0737	Robbers Roost Creek near McCammon, Idaho	a5.7		1961-
0740	Birch Creek near Downey, Idaho	6.56	1911-14;1937-49.	1901-
0745	Birch Creek powerplant tailrace near Malad City, Idaho	- 1	1928.	
0750	Marsh Creek near McCammon, Idaho	355	1954-	
0753	East Fork Mink Creek near Pocatello, Idaho	14.7		10/2
0755	Portneuf River at Pocatello, Idaho	1,250	1897-99;1911-	
0756	North Fork Pocatello Creek near Pocatello, Idaho	14.0		
0757	South Fork Pocatello Creek near Pocatello, Idaho	4.3	1960-70.	1961-
0759	Fort Hall Michaud Canal near Pocatello, Idaho	2711	1964-	
0760	Bannock Creek near Pocatello, Idaho	230	1955-58	
0764	Michaud Canal at American Falls, Idaho	minks of rations	1957-	
0765	American Falls Reservoir at American Falls, Idaho	13,580	1926-	
0770	Snake River at Neeley, Idaho	a 13,600	1906-	
0775	Rock Creek near Rockland, Idaho	182	1955-60.	
	A COLUMN TO THE REAL PROPERTY AND A COLU		Annual Annual Street Street, S	
0776	East Fork Rock Creek near Rockland, Idaho	13.7	1960-64.	
0776.59	Raft River near Yost, Utah	146	STATE OF THE PARTY AND ASSESSED.	1965-67.
0777	George Creek near Yost, Utah	7.84	1959-	
0780	Raft River at Peterson Ranch, near Bridge, Idaho	412	1946-53;1955-	
0785	Raft River near Bridge, Idaho	505	1909-15.	
			" , Laborator Heldill 100 - Face House)	
0790	Clear Creek near Naf, Idaho	20.2	1910-11;1912*;1944-	
0790.7	Meadow Creek near Sublett, Idaho		THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, IN	1965-
0791	Cassia Creek above Stinson Creek, near Elba, Idaho	a7.2	1965-	
0792	Cassia Creek near Elba, Idaho	a 84	1956-62	1963-67.
0795	Cassia Creek near Conant, Idaho	104	1909-12.	
0796	Sublett Creek at Sublett campground, near Sublett, Idaho	a 24	1965-67.	
0798	Heglar Canyon tributary near Rockland, Idaho	7.72		
0800	North Side Minidoka Canal near Minidoka, Idaho		1908-	1958;1962
0805	South Side Minidoka Canal near Minidoka, Idaho		1908-	
0810	Lake Walcott near Minidoka, Idaho	a 15,700	1909-	
0815	Snake River near Minidoka, Idaho	a 15,700	1910-	
0820	Snake River (at Montgomery Ferry) near Minidoka, Idaho	a 15,730	1895-1910.	
0823	Marsh Creek near Albion, Idaho	a 86	1966-	
0825	Goose Creek above Trapper Creek, near Oakley, Idaho	633	1911-16;1919-	
0830	Trapper Creek near Oakley, Idaho	53.7	1911-16;1919-	
	DOLD THE REAL PART OF ALL ARRESTS LINES BETTER			
0835	Oakley Reservoir near Oakley, Idaho	729	1912-	
0840	Goose Creek near Oakley, Idaho	a 670	1909-11.	
0845	Birch Creek near Oakley, Idaho	a 37	1912-16.	
1855	Minidoka North Side Pump Canal near Burley, Idaho		1956-	
0858	P. A. lateral near Milner, Idaho	and the committee of	1915-	
			AND THE PERSON OF THE PERSON OF THE PERSON OF	
860	Milner low-lift canal (Murtaugh Canal) near Milner, Idaho		1919-	
0865	Gooding Canal at Milner, Idaho North Side Twin Falls Canal at Milner, Idaho	-	1929-	
0870	South Side Twin Falls Canal at Milner, Idaho	-	1909-	
0875	Lake Milner at Milner, Idaho	amily and the	1909-	
1879	Lake miller at miller, Idano	many the same	1911-27;1927- i	
	Snake River at Milner, Idaho	17 100		
0880	Big Cottonwood Creek near Oakley, Idaho		1909-	
885	Dry Creek near Artesian City, Idaho		1909-15.	
0890	Devils Washbowl Spring near Kimberly, Idaho	a 42	1912.	
0895		otal to seed years	1950-59.	
900		THE PART CHARGE	1923-	
905	Snake River near Twin Falls, Idaho	mbal giling	1011 17-1010 47	
910	m / m / m / m / m / m / m / m / m / m /	and reffine ton	1911-17;1919-47.	
915	Blue Lakes Outlet near Twin Falls, Idaho	prints, current	1950-	
1920	Rock Creek near Rock Creek, Idaho		1913-16 *; 1917-20; 1921-47 *.	
1920	McMullen Creek near Rock Creek, Idaho	a 80	1909-13;1938-39;1943-	
723		22.7	1910;1912	
930	Rock Creek near Twin Falls, Idaho	277		
935	Cedar Draw near Filer, Idaho	2//		
937	Niagara Springs near Buhl, Idaho		1955-58.	
940	Snake River near Buhl, Idaho	W.C. 10	1958-	
740	Clear Lakes Outlet near Buhl, Idaho	50	1946- 1917-20.	
1945				

(3235)	races (France approximate Lin (M)	Drainage	Period of Record	Annua1
tation	Station name	area	figure	peaks
umber		(sq mi)	(calendar years)	(water years
	2001 1006		of Mint at Noteman, I have	Portus
180			1955-58.	
0950	Deep Creek near Buhl, Idaho	No. Contract	1000	
0955	Box Canyon Springs near Wendell, Idaho	Manage City	AND COMPANY OF THE PARTY OF THE	
0960	Salmon Falls Creek above upper Vineyard ditch, near	461	1914-15;1948-62.	
1040	Contact. Nev. Shoshone Creek near San Jacinto, Nev.	309	1914-15.	
1050	Salmon Falls Creek near San Jacinto, Nev.	al,450	1909 *; 1910-16; 1918-	
	I STATE OF THE PARTY OF THE PAR	swille, Idebe		
1053	Salmon Falls Creek tributary near Rogerson, Idaho	adaby 84 Tap		
1055	Salmon Falls Creek near Twin Falls, Idaho	a1,560	1909-10.	
1060	Salmon River Canal Co. canal near Rogerson, Idaho Salmon River Canal Co. reservoir near Rogerson, Idaho	al,610	1937-	
066	Cedar Creek above reservoir, near Roseworth, Idaho	a36	1922-	
1000	Cedar Creek above reservoir, hear Roseworth, Idano		HEAT SHEET OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE	
1066.5	House Creek near Roseworth, Idaho	a40	1961-68.	
1067	Cedar Creek Reservoir near Roseworth, Idaho	128	1957-65.	
1070	Cedar Creek near Roseworth, Idaho	a130	1909-14;1916;1957-67.	
1075	Devil Creek near Three Creek, Idaho	11.5	1912-14;1916.	
1080	Salmon Falls Creek near Buhl, Idaho	a2,100	1955-58;1960-61.	
1081.5	Salmon Falls Creek near Hagerman, Idaho	a2,120	1970- 4630 5467 3864 4865	
1085	Camas Creek at Eighteenmile shearing corral,	prints, agains	Lyber of Peterson Labor, news J	
	near Kilgore, Idaho	210	1937-53; 1968-	7.65 RAET S
1090	Camas Creek near Kilgore (Dubois), Idaho	215	1921-27;1930.	
1095	Woods No. 1 ditch near Kilgore, Idaho	-	1930. orlability 1930.	
1100	Woods Woodie ditch near Kilgore, Idaho	ment course to		
1105	Lone Tree Reservoir near Kilgore, Idaho	40.070-	1930*.	
1110	Camas Creek below Lone Tree Reservoir, near			Day Charle
	Kilgore, Idaho	a220	1930.	
1115	Camas Creek near Camas, Idaho	2.85	1921-26.	
1120	Camas Creek at Camas, Idaho	a400	1925-	
1125	Beaver Creek near Spencer, Idaho	115	1938-40.	
	Santa Street Laker Street, 15-5s 2001		biets meet laser adobtes while	
1129	Huntley Canyon at Spencer, Idaho	3.91	10/0 52 10/0	1962-
1130	Beaver Creek at Spencer, Idaho	a120 a220	1940-52; 1968-	
1135 1140	Beaver Creek at Dubois, Idaho Beaver Creek at Camas, Idaho	a5 10	1921-	
1145	Beaver Creek at Camas, Idaho Camas Creek near Hamer, Idaho	a880	1912-13.	
1145	Canas Creek near namer, 19910		Creek shows Transport Creeks Sheep	
1150	Mud Lake near Terreton, Idaho	al, 130	1921-	
1155	Medicine Lodge Creek near Argora, Idaho	a160	1938-43.	
1160	Medicine Lodge Creek at Ellis Ranch, near Argora, Idaho	165	1940-	
1165	Medicine Lodge Creek near Small, Idaho	a270	1921-23;1940-49.	
1170	Birch Creek near Reno (Kaufman), Idaho	a320	1910-12;1921-23;1950-63.	
	Stocketters of Albert Control (1994)	-200	The Capal graff abile street al	
1170.2	Birch Creek at Blue Dome Inn, near Reno, Idaho	a380 a400	1967- 1967-	
1170.3 1172	Birch Creek at Eight-Mile Canyon Road, near Reno, Idaho Main Fork near Goldburg, Idaho	15.6	1907-	1962-
1173	Main Fork near Goldburg, Idaho Sawmill Creek near Goldburg, Idaho	74.3	1960-	
1175	Little Lost River near Clyde, Idaho		1910-13.	
	Diction bost Naver Hear Cayoe, addition	1 (6486)	tide Tele Palls Carol and other	
1180	Little Lost River at Raymond Ranch, near Howe, Idaho	305	1921-24.	
1184	Wet Creek below Coal Creek, near Mackay, Idaho	11.2		1962-
1185	Wet Creek at Clyde School, near Howe, Idaho	115	1921-22;1923*.	
1187	Little Lost River below Wet Creek near Howe, Idaho	a440	1958-	
1190	Little Lost River near Howe, Idaho	703	1921- very warmer to yaso des	
	Blackway force out mattergades	yester.	stranger, reen Perris Language	
1195	Blaine County Investment Co's canal near Howe, Idaho	114	1924-57 (1994) 78 4 1993	
1200	North Fork Big Lost River at Wild Horse, near Chilly, Idaho	114	1944-	
1205	Big Lost River at Howell Ranch, near Chilly, Idaho	450 493	1904-14;1920- 1921-22.	
1210	Big Lost River below Chilly Canal, near Chilly, Idaho Big Lost River at Chilly Bridge, near Chilly, Idaho	502	1921-22.	
	big Lost River at Chilly bridge, hear Chilly, Idano	302	resh mean fock Great Liabel	
1220	Thousand Springs Creek near Chilly, Idaho		1912-14;1921-22.	
1225	Big Lost River below Chilly Sinks, near Chilly, Idaho	145		
1230	Big Lost River (back channel) below Chilly Sinks,		1921-22.	D Rose OCK
	near Chilly, Idaho	A17/216	1921.	
235	Big Lost River (east channel) above Mackay	10 5 (6.7)	Treatment from your sandard a	
10/0	Reservoir, near Mackay, Idaho	1 -	1919-59.	Start Die
1240	Big Lost River (west channel) above Mackay		mind . True . near . Total	TENTO CAN
	Reservoir, near Mackay, Idaho			

tation	Station name	Drainage	Period of Recor	Annual
umber	length 14 Holist carried	(sq mi)	figures	peaks
	and aldered as alled	(04 mz)	(calendar years)	(water year
-	Delta Service Control			A
245	Warm Spring Creek (east channel) near Mackay, Idaho		1919-59.	
250	Warm Spring Creek (west channel) near Mackay, Idaho		1919-59.	
255	Surface inflow to Mackay Reservoir, near Mackay, Idaho	766	1919-59.	
260	Mackay Reservoir near Mackay, Idaho	788	1919-	
265	Sharp ditch near Mackay, Idaho	4 mm 1 200 mm	1912-14;1919-69.	
			man farest, Didne	
270	Big Lost River below Mackay Reservoir, near		MA ARRESTS AND ATTOMISED THE	
1731	Mackay (near Mackay), Idaho	813	1903-6;1912-15;1919-	
275	Streeter ditch near Mackay, Idaho		1913-14.	
280	Cedar Creek above forks, near Mackay, Idaho Cedar Creek below forks, near Mackay, Idaho	a4.1	1911-13.	
285 289	Lower Cedar Creek (Cedar Creek) above diversions,	a6.1	1911-13.	
209	near Mackay, Idaho	8.26	1966	
		0.20	1966-	
290	Clark ditch near Mackay, Idaho	of 1, 1041	1920-22.	
295	Cedar Creek (below powerplant) near Mackay, Idaho	a8.4	1920-22.	
298	Alder Creek below South Fork, near Mackay, Ideho	27.6		
300	Alder Creek near Mackay, Idaho	a37	1920-22.	Tall I
305	Big Lost River at Leslie, Idaho	a1,020	1919-22.	
309	Antelope Creek above Willow Creek, near			
	Darlington, Idaho	93.4	1966-	
310	Antelope Creek near Darlington, Idaho	210	1913-16;1920-22.	
315	Pass Creek near Leslie, Idaho	23.6	1920-22.	
320	Big Lost River near Moore, Idaho	a1,310	1919-26.	
325	Big Lost River near Arco, Idaho	a1,410	1946-61;1966-	
-11			or Salar and Committee of the contract of the	
330	Riley Creek Springs near Hagerman, Idaho	-	1950-51.	
35	Brailsford ditch near Hagerman, Idaho	STATES TO MINE	1951-59.	
40	Riley Creek below Lewis Spring, near Hagerman, Idaho		1951-59.	
145	Snake River near Hagerman, Idaho	41 mil-main	1912-41.	
350	Snake River below Lower Salmon Falls, near Hagerman, Idaho	COLUMN TO THE PARTY NAMED IN	1937-	
	Bundada Casak asan Katakum Idaha	a18	archide (in) som design might b	Blill
352 355	Prairie Creek near Ketchum, Idaho Big Wood River near Ketchum, Idaho	137	104.9	1962-
358	Adams Gulch near Ketchum, Idaho	10.9	1948-	
360	Big Wood River at Ketchum, Idaho	240	1020 21	
365	Warm Springs Creek at Guyer Hot Springs, near	240	1920-21.	
	Ketchum, Idaho	a96	1940-59.	
	And in the Control of		Williams Take The Thirty and	
170	Warm Springs Creek near Ketchum, Idaho	a97	1920-21.	
175	Trail Creek at Ketchum, Idaho	a67	1920-21.	
80	East Fork Big Wood River at Gimlet, Idaho	A 1	1920-21.	
85	Big Wood River at Gimlet, Idaho	438	1904-5*;1920-21.	
90	Big Wood Slough at Hailey, Idaho	other some black	1915-67.	
	PULL CONTROL SERVICE STATE		billion billing and to request south the	
195	Big Wood (Wood) River at Hailey, Idaho	a 640	1889;1915-67.	
95.1	Big Wood River and Big Wood Slough combined		The same of the sa	
30-10	discharge, at Hailey, Idaho	a640	1889;1915-	
05	Big Wood River at Glendale Bridge, near Bellevue, Idaho	665	1920-21.	
10	Big Wood River near Bellevue, Idaho	823	1911-	
14	Deer Creek near Fairfield, Idaho	13.2		1961-
16	Camas Creek (Malad River) near Blaine, Idaho	***		
15	Magic Reservoir near Richfield, Idaho	648	1912-21;1923-	
20	Big Wood River below Magic Dam, near Richfield, Idaho	al,600	1909-	
25 30	Lincoln Canal near Richfield, Idaho	a1,600	1911-	
35	Lincoln Canal near Shoshone, Idaho	-	1925-48.	
33	Dillouin dallar hear anomala, real		1925-48.	
40	Big Wood River above North Gooding Canal, near			
	Shoshone, Idaho	a1,770	1921-39.	
45	Big Wood River below North Gooding Canal, near	-1,770		
	Shoshone, Idaho	a 1,780	1911-39.	
50	Big Wood River near Shoshone, Idaho	a 1,860		
55	Big Wood River above Thorn Creek, near Gooding, Idaho	a 1,940	1905-6;1908-13.	
57	Schooler Creek near Gooding, Idaho		1926-27 .	1061
	The state of the s	2.22	1928-48.	1961-
60	Thorn Creek Spillway near Gooding, Idaho		1928-48.	
65	Big Wood (Malade) River at Gooding (Toponis), Idaho	a2,190	1896-99;1921-48.	
70	Dry Creek near Blanche, Idaho Muldoon Creek near Garfield guard station, Idaho	a34	1911-14.	
73	Muldoon Creek near Garriera guard station, Idaho Muldoon Creek near Muldoon, Idaho	12.2	1911-14.	1963-
75		124		

250	the gall	Drainage	Period of Record	11
tation	Station name	area	Daily or monthly figures	Annual
umber		(sq mi)	(calendar years)	peaks (water years)
	165-681	PRICES, Ideas	the Classical State Name Ambb	157.000
-	ALAIN COLUMN TO ME STATE COLUMN		lucton Creek (west strongs) sense to total and the control of	
479	Little Wood River above High Five Creek, near Carey, Idaho	248	1958-	
480	Little Wood River at Campbell Ranch, near Carey	240	All of Survey Bellery Livery Belle	
	(near Carey), Idaho	267	1920-26;1941-42;1944-58.	
482	Little Wood Reservoir near Carey, Idaho	279	1955-	
484	Little Wood River below reservoir, near Carey, Idaho	280	1955-58.	
485	Little Wood River near Carey, Idaho	312	1904-5*;1926-	
100	Tit Contains to the Titale	a32	1920-39.	
490	Fish Creek above dam, near Carey, Idaho	13.8	1920-29:	
495 500	West Fork Fish Creek near Carey, Idaho Fish Creek near Carey, Idaho	62.9	1919-20;1923-39.	
504	Loving Creek near Gannett, Idaho	-	1962-63	
505	Silver Creek near Picabo, Idaho	a 88	1920-62.	
	Contract Con			
510	Little Wood River near Richfield, Idaho	a570	1911-	
515	Little Wood River at Shoshone, Idaho	a 620	1922-59.	
520	Little Wood River at Toponis (Gooding), Idaho	a 680	1896-97;1899.	to got the
525	Big Wood (Malad) River near Gooding, Idaho	a2,990	1916- 1930-	
530	King Hill Canal near Hagerman, Idaho		1930-	
535	Malad (Malade) River near Bliss, Idaho	a3,000	1899	
540	Clover Creek near Bliss, Idaho	140	1938-43:1957-62	1963-
545	Snake River at King Hill, Idaho	a 35,800	1000	
550	King Hill Creek near King Hill, Idaho	83.6	1913;1938-41.	
552	Burns Gulch near Glenns Ferry, Idaho	.76		1961-
			Crest Springs hear Separage Labor.	white the
553	Little Canyon Creek at Stout Crossing near Glenns			
	Ferry, Idaho	14.2	1965- 1962-65.	1961-65.
553.5	Morrow Reservoir feeder canal near Glenns Ferry	26.9	1962-65.	
554	Little Canyon Creek at Berry Ranch, near Glenns Ferry, Idaho Little Canyon Creek near (at) Glenns Ferry, Idaho	52.4	1909-13;1939-43.	
555 560	Cold Springs Creek near Hammett, Idaho	a65	1909-13.	PORTS Trailed
.360	cold Springs creek hear hammett, Idano	200	supplied to the same that the same that the same	
565	Bennett Creek near Bennett, Idaho	21.3	1938-45.	
570	Bennett Creek near Hammett (Medbury), Idaho	68.6	1909-13.	
1575	Rattlesnake Creek near Mountain Home, Idaho	a27	1917.	
15 80	Willowdale Creek near Bennett, Idaho	5.04	1917.	
15 85	Long Tom Reservoir near Bennett, Idaho	10.00	1924-25*.	
	Control of the State of Control of the Control of Artifall Control		1917;1924-26.	
590	Long Tom Creek below Long Tom Reservoir, near Bennett, Idaho	18.6 32.6	1917;1924-26.	
1595 1600	Syrup Creek near Mountain Home, Idaho	90.9	1917	
605	Canyon Creek near Mountain Home, Idaho Mountain Home feeder canal near Mountain Home, Idaho	50.5	1924-29;1931-69.	
610	Mountain Home cooperative canal near Mountain	- 1310		
	Home, Idaho	9400 1	1924-29;1930-47.	
	To be the second of the second	200	1913-18;1967-	
615	Bruneau River near Rowland, Nev.	a 380	1913-18;196/-	1962-66. 1963-
616	McDonald Creek near Rowland, Nev. Bruneau River near Tindall, Idaho	a 440	1910-12.	
623	Jarbidge River near Murphy Hot Springs, Idaho	-		
	an artist of the control of the cont			
624	Buck Creek near Jarbidge, Nev.	a 14		1963-
1625	East Fork Jarbidge River near Three Creek, Idaho	84.6	1928-33;1953-	
626	Columbet Creek near Jarbidge, Nev.	a3.4		
1627	Bruneau River near Grasmere, Idaho	- 100	1010 12	1963-65.
1630	Sheep Creek near Tindall, Idaho	a 180	1910-13.	
631	Cat Crack saar Berland New	2020-070-0		1963-66
1632	Cat Creek near Rowland, Nev. Sheep Creek near Grasmere, Idaho			
1635	Marys Creek near Owyhee, Nev.	a 27	1913-15.	160 Place 15 March
1640	Marys Creek at Tindall, Idaho	a 110	1910-13.	
1641	Marys Creek near Grasmere, Idaho	*100		1962-65.
	The State of the Colon C		the little profit when south to	
1645	Louse Creek near Wickahoney, Idaho	a 76	1911.	
	Big Flat Creek (published as East Fork Bruneau	a62	1912-14; 1916.	
	River) near Three Creek, Idaho	offent, talente		1062 66
1650				1042 45
1650	Big Flat Creek near Three Creek, Idaho			1963-65.
1650 1652	Big Flat Creek near Three Creek, Idaho Deer Creek near Three Creek, Idaho	midd field	**************************************	
1650 1652 1653	Deer Creek near Three Creek, Idaho		Creek, year hutdoontilling	
1650 1652 1653	Deer Creek near Three Creek, Idaho Three Creek near Three Creek, Idaho	a45	1912-14;1916.	
1650 1652 1653 1655 1660	Deer Creek near Three Creek, Idaho Three Creek near Three Creek, Idaho Cherry Creek near Three Creek, Idaho	a45 a22	1912-14;1916. 1912-14;1916.	rockLift (Se
1650 1652 1653 1655 1660 1665	Deer Creek near Three Creek, Idaho Three Creek near Three Creek, Idaho Cherry Creek near Three Creek, Idaho Deadwood Creek near Three Creek, Idaho	a45	1912-14;1916.	
1650 1652 1653 1655 1660	Deer Creek near Three Creek, Idaho Three Creek near Three Creek, Idaho Cherry Creek near Three Creek, Idaho	a45 a22	1912-14;1916. 1912-14;1916.	

	Could be Miles	Drainage	Period of Record	
tation	Station name	area	Daily or monthly figures	Annual
umber	APPOLIT	(sq mi)	(calendar years)	peaks (water years
CORC YES	TANK TAPAS (NIS			7
3-	East Fork Bruneau River near Hot Spring, Idaho	-100		
1675	Bruneau River near Winter Camp Ranch, Idaho	a620	1910-15;1948-	
1680	Bruneau River near Hot Spring, Idaho	al,890	1946-51.	
1685	Buckaroo ditch at Hot Spring, Idaho	a2,630	1909-15;1943-	
690	Big Jacks Creek near Bruneau, Idaho	mail and age	1912-14.	
695	big Jacks of the state of the s	253	1938-49;1965-	
700	Little Jacks Creek near Bruneau, Idaho	100	1938-49.	
701	Sugar Creek tributary near Grasmere, Idaho	4.73		1961-
705	Grandview Canal near Grand View, Idaho		1912-15.	
710	Bruneau River near Grand View, Idaho C. J. Strike Reservoir near Grandview, Idaho	a3,270	1895-1903;1909-16;1945-49	
715	C. J. Strike Reservoir hear Grandview, Idaho	dahi natut dani	1952-67.	
720	Castle Creek near Castle Creek, Idaho	al50	1910-11.	
722	Fossil Creek near Oreana, Idaho	19.7		1961-
725	Snake River near Murphy, Idaho	a41,900	1912-	1701-
728	Little Squaw Creek tributary near Marsing, Idaho	1.81		1961-
730	Sucker Creek near Homedale, Idaho	342	1919-23.	1901-
	Control (Constant of the Constant of the Const			
735 780	Sucker (Succor) Creek at mouth, near Homedale, Idaho Jordan Creek above Lone Tree Creek, near Jordan	413	1903-10.	
	Valley, Oreg.	a440	1945-53;1955-	
842	Roaring River near Rocky Bar, Idaho	a24	1949-93,1999-	1062
845	Middle Fork Boise River near Twin Springs, Idaho	382	1946-50.	1963-
848	Beaver Creek near Lowman, Idaho	a9.3	:::::	1962-
850	Boise River near Twin Springs, Idaho	a830	1911-	
855	Cottonwood Creek at (near) Arrowrock Reservoir, Idaho	21.4	1914-18;1939-41.	
860	South Fork Boise River near Featherville, Idaho	635	1945-	
865	Lime Creek near Bennett, Idaho	131	1945-56.	
870		55.3	1945-56.	er, mil
875	Fall Creek near Anderson Ranch Dam, Idaho Little Camas Creek at Little Camas Store, Idaho	33.3	1896*.	
0/5	Little Camas Creek at Little Camas Store, Idano			
880	Little Camas Reservoir near Bennett, Idaho	31.8	1924-39*.	
885	Little Camas Creek below reservoir, near Bennett, Idaho	31.8	1917.	
890	Little Camas Canal at heading, near Bennett, Idaho		1917:1923-	
895	Little Camas Canal below (above) Tunnel No. 9,			
	near Bennett, Idaho	7.2	1917;1923-26.	
900	Anderson Ranch Reservoir at Anderson Ranch Dam , Idaho	a 980	1945-	no - Date o
			TARREST PRINTED THE PRINTED AND ADDRESS.	2000
905	South Fork Boise River at Anderson Ranch Dam, Idaho	982	1943-	
910	South Fork Boise River near Lenox (Prairie), Idaho	a1,090	1911-47.	
915	Smith Creek near Lenox, Idaho	50.3	1916-17.	
920	Long Gulch Creek near Lenox, Idaho	10.5	1916.	
925	Rattlesnake Creek near Lenox, Idaho	46.0	1915-17.	
930	Willow Creek near Lenox, Idaho	55.1	1916-17	
935	Grouse Creek near Arrowrock, Idaho	8.0	1916-17. 1939-41.	
940	Arrowrock Reservoir at Arrowrock, Idaho	a2,210	1917-	
	The second secon		TOTAL THAT PER BOARD TO	
945	Boise River at Dowling Ranch, near Arrowrock, Idaho	a2,220	1911-55.	
950	Gold Hill placer diversion from Moore Creek,	100000	The party of the state of the state of the	
	near Idaho City, Idaho	from the country of	1939-41.	
955	Moore Creek above Granite Creek, near Idaho City, Idaho	37.0	1939-41.	
960	Granite Creek near Idaho City, Idaho	a4.8	1939-41.	
965	Bannock Creek near Idaho City, Idaho	5.75	1939-41;1950-	
970	Pine Creek above Barry placer diversion, near			
970	Idaho City, Idaho	6.1	1940-41.	
975	Pine Creek near Idaho City, Idaho		1940-41.	
980	Elk Creek above Gold Hill placer diversion, near	a6.5	1939-40.	
100	Idaho City, Idaho	13.1	1940-41.	
985	Elk Creek near Idaho City, Idaho	22.3	1939-40.	
703	Moore Creek above Thorn Creek, near Idaho City, Idaho	119	1939-41.	
	Grimes Creek near New Centerville (Centerville),	mine (there's	THE REAL PROPERTY AND ASSESSMENT ASSESSMENT	1000
990	Idaho			
990	The state of the s	a140	1909-10 *; 1966.	
990	Mores (Moore) Creek above Robie Creek, near		AND PERSON IN THE PARTY NAMED IN	
990	Mores (Moore) Creek above Robie Creek, near Arrowrock Dam (Arrowrock), Idaho	399		
990	Arrowrock Dam (Arrowrock), Idaho	399	1950-	
990	Arrowrock Dam (Arrowrock), Idaho Robie Creek near Arrowrock Dam (Arrowrock), Idaho	399 15.8		
90	Arrowrock Dam (Arrowrock), Idaho Robie Creek near Arrowrock Dam (Arrowrock), Idaho Mores (Moore) Creek near Arrowrock, Idaho		1950-	
990	Arrowrock Dam (Arrowrock), Idaho Robie Creek near Arrowrock Dam (Arrowrock), Idaho Mores (Moore) Creek near Arrowrock, Idaho Lucky Peak Reservoir near Boise, Idaho	15.8		
90	Arrowrock Dam (Arrowrock), Idaho Robie Creek near Arrowrock Dam (Arrowrock), Idaho Mores (Moore) Creek near Arrowrock, Idaho	15.8 426	1950- 1914 *; 1915-55.	

tation	estuals Con	Drainage	Period of Record Daily or monthly	Annual
umber		area (sq mi)	figures	peaks
		(34 111)	(calendar years)	water years
-	-0101;21-0101 0104	COLD WAY		
035	Lake Lowell (Deer Flat Reservoir) near Caldwell, Idaho	b, Tation	1917- Salada vede reels etentr	
037	Boise River at Barber, Idaho	a 2,690	1936:1937*	
040	Boise River below Ridenbaugh Canal, at Barber, Idaho		1938-39*.	
045	Diversions from Boise River between near Boise	0	the Justic week been brought, likely	
0.13	(Dowling Ranch) and at Boise gaging stations, Idaho	247	1919-	
050	Cottonwood Gulch at Boise, Idaho	16.0	1939-41.	
11981	Control of the Contro		NUMBER TOTAL STREET, SECTION OF STREET	
055	Boise River at Boise, Idaho	2,760	1938-39*;1940-	
060	Boise River at Strawberry Glen Bridge, near Boise, Idaho	a 2,800	1938-40.	
065	Spring Valley Creek (Spring Creek) near Boise, Idaho	a 20	1911-12.	5127
070	Spring Valley Creek near Eagle, Idaho	20.9	1954-	
075	Dry Creek near Eagle, Idaho	59.4	1954-68	
-30-1	School Crash orn. The Lane of one was		code (Carrier Trian Harry Line)	
080	Dry Creek at Eagle, Idaho	66.4	1954-57.	
185	Boise River (north channel) near Eagle, Idaho	manus 1861427	1933-30.	
190	Boise River (north channel) at Linder Bridge, near		South alvertil that settle settle	
	Eagle, Idaho	and the same of the same of	1938-39*.	
195	Boise River (south channel) near Eagle, Idaho	eroll alaboration	1935-38.	
00	Boise River at Star, Idaho	479,307, 2401	1938-39*.	
7201				10/1
03	Bryans Run near Boise, Idaho	7.03		
05	Boise River at Middleton, Idaho	digramment and	1938-39*.	1802
10	Boise River near (at) Caldwell, Idaho	a3,220	1895 ; 1938-39*.	1398 1301
15	Drains crossing Phyllis canal to Boise River, Idaho	- A ROTE - 19	1935-38.	
20	Diversions from Boise River between at Boise and	COLUMN TRANSPORT AND ADDRESS OF THE PARTY OF		
	Notus gaging stations, Idaho	energ 'stokening as	1919- (1984) 35 (5513) 90000 1763	
	SENSE CONTROL CONTROL OF THE PROPERTY OF THE P		Seekh For toller hiver year You're	0351
25	Boise River at Notus, Idaho	a3,820	1920-	
30	Boise River near Parma, Idaho	1000	1938-39*.	
43	Five Mile Creek near Lowman, Idaho	a7.8		1962-
+5	Clear Creek at Lowman, Idaho	59.6	1941-49.	
50	South Fork Payette River at Lowman, Idaho	456	1941-	
	01	near hanours, hear	Minches color dated water establi	- 255
51	Rock Creek at Lowman, Idaho	14.6	*	1962-
55	Deadwood River near Bernard, Idaho	10.4	1929-32.	(587)
60	Deadwood Reservoir near Lowman, Idaho	112		
55	Deadwood River below Deadwood Reservoir (at Beaver	MADE , MARRIAGONE NO	Anterior from Seasons of Indian	0.065
	Creek ranger station), near Lowman, Idaho	112	1926- 1921-53.	
70	Deadwood River near Lowman, Idaho	a230		
(u	to Constrary before the rest to the same of the Million of the	(vittle), losbe	within their party series which against	
73	Danskin Creek near Grimes Pass, Idaho	10.1	1921_60	1962-
15	South Fork Payette River near Garden Valley, Idaho	779	1721-00.	1925
6	Cabin Creek near Smiths Ferry, Idaho	.42	1700-07.	
7	Control Creek near Smiths Ferry, Idaho	.59	1963-67.	0091
10	(South Fork) Payette River near Banks, Idaho	a 1,200	1921-	1935
	1781 016.64	-		
3	Deep Creek near McCall, Idaho	a4.0		1962-
5	Payette Lake at McCall (Lardo), Idaho	144	1921-	
0	North Fork Payette River at McCall (Lardo), Idaho	144	1908-17;1919-	
5	Fish hatchery diversion at McCall, Idaho	10.000027 0700	1942-53.	
0	Lake Fork Payette River above Jumbo Creek, near	of the second second	AND A STREET OF STREET STREET STREET AND ASSESSED.	
	McCall, Idaho	48.9	1945-	
	TA-YEST R. A. A. S.		SI 1711 odel 1880 lest elloch Si 1811 odel van Amir Socoel	
5	Lake Fork Payette River above reservoir, near			
	McCall, Idaho	54.6	1926-45.	
0	Lake Fork Reservoir near McCall, Idaho	a 64	1720-	
5	Lake Fork Payette River near McCall, Idaho	a 64	1909-14.	
0	Lake Irrigation District Canal near McCall, Idaho	Anna California	1926-	
5	Lake Fork Payette River below Lake Irrigation	THEN - HOLDY SYNTO		
	District Canal, near McCall, Idaho	a 64	1940-	
	THE SHARE IT THAT I WASHING AND THE	The same along		
0	Cluzen Canal at Lake Fork, Idano	MA TODOLITMA TOM	1938-48.	
5	Gold Fork River (Gold Fork Payette River) near	A STATE OF THE PARTY OF	The second secon	7000
	Roseberry, Idaho	143	1920-21;1961-	
0	North Fork Payette River at VanWyck, Idaho	608	1912-16;1919*;1920-24.	
5	Cascade Reservoir at Cascade, Idaho	620	1948-	
)	North Fork Payette River at Cascade, Idaho	620	1941-	
	Control of the Contro			
	Tripod Creek at Smiths Ferry, Idaho	8.63		1962-
	North Fork Payette River near Smiths Ferry, Idaho	893	1941-47.	5107
)	North Fork Payette River near Banks, Idaho	933	1947-	
5	Payette River at Banks, Idaho	a2,120		
	Porter Creek near Gardena, Idaho	21.2	1938-45.	

ation	Station name	Drainage	Period of Record Daily or monthly figures	Annual peaks
	ALADAY!	(sq mi)		water years
-				nerth.
475	Payette River near Horseshoe Bend, Idaho	-2 220	1006 16-1010	
480	Shafer Creek near Horseshoe Bend, Idaho	a2,230	1906-16;1919-	
485	Harris Creek near Horseshoe Bend, Idaho	a28	1911-12.	
489	Cottonwood Creek near Horseshoe Bend, Idaho	a17	1911-12.	10/1
490	Squaw Creek near Gross, Idaho	6.53		1961-
,,,	Squaw Creek Hear Gross, Idano	a21	1925-27.	
495	Payette River near Emmett, Idaho	-2 600	1925-	
00	Payette River near Letha, Idaho	a2,680	1952-53.	
05		a2,760	1772-33.	
506	Payette River near New Plymouth, Idaho Big Willow Creek near Emmett. Idaho	a2,850	1952-53. 1961-	
06.5	Fourmile Creek near Emmett, Idaho	47.4 a6.5	1901-	1962-
00.5	Todimile Creek Hear Blanett, Idallo	80.5	white against the mark that	1902-
07	Langley Gulch near New Plymouth, Idaho	a3.9	TO CASE TO THE LAW POSSESS TO SEE STORY	1961-
10	Payette River near Payette, Idaho	a3,240	1935-	1901-
13	West Branch Weiser River near Tamarack, Idaho	3.96	1959-	
15	Weiser River at Tamarack, Idaho	36.5	1936-	
		66.6	1937-39.	
20	Weiser River near Starkey, Idaho	00.0	1937-39.	
25	Fort Book Materia Bloom area Council Idaha	a2.0	1932-43.	
25	East Fork Weiser River near Council, Idaho	31.6	1732-43.	
30	East Fork Weiser River near Starkey, Idaho		1757-571	
35	Weiser River at Starkey, Idaho	106	1920*;1939-49.	
40	Lost Valley Reservoir near Tamarack, Idaho	29.4	1924;1926-66.	
45	Lost Creek near Tamarack, Idaho	29.4	1910-14;1920-21;1924-69.	
		-70	1010 12 1010 05 1000 10	
50	West Fork Weiser River near Fruitvale, Idaho	a78	1910-13;1919-25;1937-49.	
55	Hornet Creek near Council, Idaho	107	1937-43.	
60	Weiser River near Council, Idaho	390	1937-53.	
65	Mesa Orchards Canal near Mesa, Idaho	10.0	1924;1928-55.	
70	Middle Fork Weiser River near Mesa (at Middle		The second second second second	
	Fork), Idaho	86.5	1910-13;1919-21;1937-49.	
	and the second s		1449-145	
75	Johnson Creek below Johnson Park, near Council, Idaho	a5	1941-49.	
80	Bacon Creek near Mesa, Idaho	.71	1944-49.	
85	Weiser River near Cambridge, Idaho	605	1939-	
90	Rush Creek powerplant tailrace near Cambridge, Idaho		1929-30.	
95	Rush Creek at Cambridge, Idaho	a32	1938-43.	
00 05	Pine Creek near Cambridge, Idaho Little Weiser River at Ruby Ranch, near Indian	a54	1938-62.	
	Valley, Idaho	80.3	1923.	
10	Little Weiser River near Indian Valley, Idaho	81.9	1920-21;1923-27;1938-	7.01
15	Little Weiser River near Cambridge, Idaho	187	1920-26.	
20	Sage Creek near Midvale, Idaho	5.56	1913.	
	The state of the s	11		
25	Sommercamp Creek near Midvale, Idaho	a2.5	1913.	
30	Miller Creek near Midvale, Idaho	.96	1913.	
35	Weiser River above Crane Creek, near Weiser, Idaho	a1,160	. 1920-52.	
0	Crane Creek Reservoir near Midvale, Idaho	242	1923-69.	
+5	Crane Creek near Midvale, Idaho	242	1910-16;1924-69.	
			while true will distill the most while	
0	Crane Creek Irrigation District Canal near Weiser, Idaho		1920-26.	
55	Crane Creek at mouth, near Weiser, Idaho	288	1920-	
60	Weiser River near (at) Weiser, Idaho	a1,460	1890-91;1894-1904;1910-14;1952-	
65	Galloway Canal (Weiser Irrigation District Canal)	1000		
	near Weiser, Idaho	V 11	1920-	
	Consolar Resemble near Medican Title	a56	1967-	
59	Spangler Reservoir near Weiser, Idaho		1707-	
59	Spangler Reservoir near weiser, Idano			
	Mann Creek near Weiser, Idaho	856	1911-13:1920:1937 62	1062 66
0		a56	1911-13;1920;1937-62	1962-66.
70	Mann Creek near Weiser, Idaho Mann Creek helow Spangler Dam, near Weiser, Idaho Deer Creek near Midvale, Idaho	a56	1967-	
70.5	Mann Creek near Weiser, Idaho Mann Creek helow Spangler Dam, near Weiser, Idaho Deer Creek near Midvale, Idaho Monroe Creek (upper station) near Weiser, Idaho	a56 4.60	1967-	
0.5	Mann Creek near Weiser, Idaho Mann Creek below Spangler Dam, near Weiser, Idaho	a56 4.60 a7.2	1967-	1962-
70 70.5 71	Mann Creek near Weiser, Idaho Mann Creek below Spangler Dam, near Weiser, Idaho Deer Creek near Midvale, Idaho Monroe Creek (upper station) near Weiser, Idaho Monroe Creek (lower station) near Weiser, Idaho	a56 4.60	1967-	1962-
70 70.5 71 75	Mann Creek near Weiser, Idaho Mann Creek helow Spangler Dam, near Weiser, Idaho Deer Creek near Midvale, Idaho Monroe Creek (upper station) near Weiser, Idaho Monroe Creek (lower station) near Weiser, Idaho Monroe Creek above Sheep Creek, near Weiser, Idaho	a56 4.60 a7.2 29.1	1911-12. 1911-13.	1962-
70.5 71.5 80.85	Mann Creek near Weiser, Idaho Mann Creek helow Spangler Dam, near Weiser, Idaho Deer Creek near Midvale, Idaho Monroe Creek (upper station) near Weiser, Idaho Monroe Creek (lower station) near Weiser, Idaho Monroe Creek above Sheep Creek, near Weiser, Idaho Snake River at Weiser, Idaho	a56 4.60 a7.2 29.1	1911-12. 1911-13.	1962-
70 70.5 71 75 80	Mann Creek near Weiser, Idaho Mann Creek helow Spangler Dam, near Weiser, Idaho Deer Creek near Midvale, Idaho Monroe Creek (upper station) near Weiser, Idaho Monroe Creek (lower station) near Weiser, Idaho Monroe Creek above Sheep Creek, near Weiser, Idaho Snake River at Weiser, Idaho East Brownlee Creek (Brownlee Creek) near Brownlee	a56 4.60 a7.2 29.1	1911-12. 1911-13.	1962-
70 70.5 71 75 80 85	Mann Creek near Weiser, Idaho Mann Creek helow Spangler Dam, near Weiser, Idaho Deer Creek near Midvale, Idaho Monroe Creek (upper station) near Weiser, Idaho Monroe Creek (lower station) near Weiser, Idaho Monroe Creek above Sheep Creek, near Weiser, Idaho Snake River at Weiser, Idaho East Brownlee Creek (Brownlee Creek) near Brownlee ranger station, Idaho	a56 4.60 a7.2 29.1 a32 a69,200	1967- 1911-12. 1911-13. 1945-49. 1895-*f;1910-	1962-
70.5 71.5 80 85 90	Mann Creek near Weiser, Idaho Mann Creek helow Spangler Dam, near Weiser, Idaho Deer Creek near Midvale, Idaho Monroe Creek (upper station) near Weiser, Idaho Monroe Creek (lower station) near Weiser, Idaho Monroe Creek above Sheep Creek, near Weiser, Idaho Snake River at Weiser, Idaho East Brownlee Creek (Brownlee Creek) near Brownlee ranger station, Idaho	a56 4.60 a7.2 29.1 a32 a69,200	1967- 1911-12. 1911-13. 1945-49. 1895-*f;1910-	1962-
70.5 71.75 80 85 96	Mann Creek near Weiser, Idaho Mann Creek helow Spangler Dam, near Weiser, Idaho Deer Creek near Midvale, Idaho Monroe Creek (upper station) near Weiser, Idaho Monroe Creek (lower station) near Weiser, Idaho Monroe Creek above Sheep Creek, near Weiser, Idaho Snake River at Weiser, Idaho East Brownlee Creek (Brownlee Creek) near Brownlee ranger station, Idaho Brownlee Reservoir at Brownlee Dam, Idaho-Oregon State line	a56 4.60 a7.2 29.1 a32 a69,200	1911-12. 1911-13. 1945-49. 1895-*f;1910-	1962-
0.5 11 5 5 85 60 66	Mann Creek near Weiser, Idaho Mann Creek below Spangler Dam, near Weiser, Idaho Deer Creek near Midvale, Idaho Monroe Creek (upper station) near Weiser, Idaho Monroe Creek (lower station) near Weiser, Idaho Monroe Creek above Sheep Creek, near Weiser, Idaho Snake River at Weiser, Idaho East Brownlee Creek (Brownlee Creek) near Brownlee ranger station, Idaho Brownlee Reservoir at Brownlee Dam, Idaho-Oregon State line Snake River at Oxbow, Oreg	a56 4.60 a7.2 29.1 a32 a69,200 7.97 a72,590	1967- 1911-12. 1911-13. 1945-49. 1895-*f;1910- 	1962-
70.5 71.5 75.80 75.80 77.7	Mann Creek near Weiser, Idaho Mann Creek helow Spangler Dam, near Weiser, Idaho Deer Creek near Midvale, Idaho Monroe Creek (upper station) near Weiser, Idaho Monroe Creek (lower station) near Weiser, Idaho Monroe Creek above Sheep Creek, near Weiser, Idaho Snake River at Weiser, Idaho East Brownlee Creek (Brownlee Creek) near Brownlee ranger station, Idaho Brownlee Reservoir at Brownlee Dam, Idaho-Oregon State line Snake River at Oxbow, Oreg. pine Creek near Oxbow, Oreg.	a56 4.60 a7.2 29.1 a32 a69,200 7.97 a72,590	1967- 1911-12. 1911-13. 1945-49. 1895-*f;1910- 	1962-
70.5 71 75 80 85 990 996	Mann Creek near Weiser, Idaho Mann Creek helow Spangler Dam, near Weiser, Idaho Deer Creek near Midvale, Idaho Monroe Creek (upper station) near Weiser, Idaho Monroe Creek (lower station) near Weiser, Idaho Monroe Creek above Sheep Creek, near Weiser, Idaho Snake River at Weiser, Idaho East Brownlee Creek (Brownlee Creek) near Brownlee ranger station, Idaho Brownlee Reservoir at Brownlee Dam, Idaho-Oregon State line Snake River at Oxbow, Oreg. Pine Creek near Oxbow, Oreg. Snake River below Pine Creek, at Oxbow. Oreg.	a56 4.60 a7.2 29.1 a32 a69,200 7.97 a72,590 a72,800 a230	1967- 1911-12. 1911-13. 1945-49. 1895-*f;1910- 	1962-
69 70 70.5 71 75 80 85 90 96 97 00 01.9	Mann Creek near Weiser, Idaho Mann Creek below Spangler Dam, near Weiser, Idaho Deer Creek near Midvale, Idaho Monroe Creek (upper station) near Weiser, Idaho Monroe Creek (lower station) near Weiser, Idaho Monroe Creek above Sheep Creek, near Weiser, Idaho Snake River at Weiser, Idaho East Brownlee Creek (Brownlee Creek) near Brownlee ranger station, Idaho Brownlee Reservoir at Brownlee Dam, Idaho-Oregon State line Snake River at Oxbow, Oreg	a56 4.60 a7.2 29.1 a32 a69,200 7.97 a72,590	1967- 1911-12. 1911-13. 1945-49. 1895-*f;1910- 	1962-

tation		Drainage	Period of Record Daily or monthly	Annua1
umber	Station name	area (sq mi)	figures	peaks
	2001-01-0001	(sq mi)	(calendar years)	(water years)
				1912 0530
905	Snake River near Joseph, Idaho	a73,800	1955-	
924	Beaver Creek near Stanley, Idaho	13.9		1963-
925	Salmon River near Obsidian, Idaho	94.7	1940-53.	1703-
930		35.7	10/0 53	
35	Alturua Lake Creek near Obsidian, Idaho Salmon River near Pierson, Idaho	235	1911-13.	
	Andrew School of the Control of Co. Co.	No. West	the drongers will read their att.	
940	Lake Creek near Stanley, Idaho	44	1911-13	
145	Salmon River at Stanley, Idaho	355	1921-25.	
950	Valley Creek at Stanley, Idaho	147	1910*;1911-13;1921-	
60	Salmon River below Valley Creek, at Stanley, Idaho Yankee Fork Salmon River near Clayton, Idaho	501 195	1925-60.	
00	Tankee Fork Salmon River hear Glaycon, Idano	193	1921-49.	
65	Salmon River below Yankee Fork, near Clayton, Idaho	802	1921-	
70	Warm Springs Creek at Robinson Bar, near Clayton, Idaho	a81	1921-23.	
71	Peach Creek near Clayton, Idaho	a8.2		1962-
73	Holman Creek near Clayton, Idaho	a6.1		1962-
75	Big Boulder Creek near Clayton, Idaho	a27	1926-29.	
80	East Fork Salmon River near Clayton, Idaho	497	1928-39.	
83	Malm Gulch near Clayton, Idaho	10.0		1962-
85	Salmon River near Challis, Idaho	al,800	1928-	1.0
90	Challis Creek near Challis, Idaho	a85	1943-63.	
92	Challis Creek below Jeff's Creek, near Challis, Idaho	91.2	1963-	
	Market printing a least page 1200 per 1000			
995	Pahsimeroi River near Goldburg, Idaho	a65	1910-13.	
000	Pahsimeroi River below sinks, near Goldburg, Idaho	176	1913.	
005	Goldburg Creek near Goldburg, Idaho	a54	1910.	
10	Goldburg Creek at mouth, near Goldburg, Idaho	a69	1913.	
15	Big Creek near Patterson, Idaho	a70	1910-13.	
17	Morse Creek above diversions, near May, Idaho	18.0	a Creat west these payments	
18	Marra Crack near Man Idaha	19.9		1962-
020	Pahsimeroi River near May, Idaho	a845	1929-59.	
022	Twelvemile Creek near Salmon, Idaho	a23		1964-
25	Salmon River at Salmon, Idaho	a3,760	1912-16;1919-	
030	Texas Creek near Leadore, Idaho	71.4	1938-39;1955-63.	
031		7.09		1962-
35	Timber Creek near Leadore, Idaho	a57	1912;1938-39.	
040	West Fork Timber Creek near Leadore, Idaho	16.5	1912.	
042	Big Springs Creek near Leadore, Idaho	-	1959-61.	
	Control Cross and Judges Street, Thinking	a20	often Creek were blowning reals	
045	Eightmile Creek near Leadore, Idaho		1912.	1011 11
050	Lemhi River near Lemhi, Idaho	a890	1938-39;1955-63;1967-	1964-66.
)55	Lemhi River at Salmon, Idaho	a1,270		
)57	Dahlonega Creek at Gibbonsville, Idaho	a32 15.7		1962- 1962-
)58	Hughes Creek near North Fork, Idaho	THE DESIGNATION OF THE PARTY OF	a Creek Tryingles, Blackett Care	
060	North Fork Salmon River at (near) North Fork, Idaho	214	1913*;1929-39.	
065	Panther Creek near Shoup, Idaho	529	1944-	
070	Salmon River near Shoup, Idaho	a6,270	1944-	
75	Marsh Creek near Cape Horn, Idaho	a73	1922;1924.	
080	Beaver Creek at Cape Horn, Idaho	a54	1922;1924.	
105	Wille Bank Colons Bives ages Cons Here Ticks	138		
085	Middle Fork Salmon River near Cape Horn, Idaho			
090	Bear Valley Creek near Cape Horn, Idaho	a180	1921-60.	
095	Middle Fork Salmon River near Meyers Cove, Idaho	a2,020	1931-39.	
100	Big Creek near Big Creek, Idaho South Fork Salmon River near Knox, Idaho	a470 a92	1944-58. 1928-60.	
	TOTAL TOTAL NEW HEAT MICK, INGH			
107	South Fork Salmon River, near Krassel ranger	mishi Tonian	1066	
110	station, Idaho	a330	1966-	
110	East Fork (of) South Fork Salmon River at Stibnite, Idaho	19.5	1928-42.	
115	East Fork (of) South Fork Salmon River near	of wayyou billion		more * traff
	Stibnite, Idaho	42.5	1928-41.	
120	East Fork (of) South Fork Salmon River near	104	1928-43.	
	Yellow Pine, Idaho	104	1928-43.	
	The second secon	54.7	1942-49.	
25	Johnson Creek near Landmark ranger station, Idaho	34./		
	Johnson Creek of Velley Dine Ticks	212		
30		213	1928-	
25 30 35 38	Johnson Creek at Yellow Pine, Idaho	212		

Station		Drainage	Period of Record	
number	Station name	area	Daily or monthly	Annual
umber		(sq mi)	figures	peaks
			(calendar years)	(water years)
3-				
3145	Warren Creek near Warren, Idaho	a37	1943-49.	
3150	Salmon River near French Creek, Idaho	a12,270	1944-56.	
3155	Mud Creek near Tamarack, Idaho	15.8	1937-38;1939-43*;1945-59	1962-
3160	Boulder Creek near Tamarack, Idaho	a6.5	1938-45.	1702-
3163	Indian Creek near Pollock, Idaho	a2.7		1962-
21/6				
3165	Little Salmon River at Riggins, Idaho	576	1951-	
3168	North Fork Shookumchuck Creek near White Bird, Idaho	15.6	1959-	
3170	Salmon River at White Bird, Idaho	a13,550	1910-17;1919-	
3172	Johns Creek near Grangeville, Idaho	6.55		1961-
3175	Deer Creek near Winchester, Idaho	19.1	1951-56.	
3343	Snake River near Anatone, Wash.	a92,960	1958-	
3353	Snake River at Lewiston, Idaho	4,700	1894*f;1910*.	
3360	Selway River (head of Clearwater River) above	4111	1074 1,1710 .	
3300		a1,550	1944-49.	
2261	Meadow Creek, near Lowell, Idaho	241	1963-	
3361	Meadow Creek near Lowell, Idaho	a1,910	1911;1912 ;1929-	
3365	Selway (Selwa) River near Lowell, Idaho	a1,510	1911,1912 ,1929-	
3366	Swiftwater Creek near Lowell, Idaho	a5.7		1962-
3366.5	East Fork Papoose Creek near Powell ranger			
	station, Idaho	a3.8		1962-
3368	Warm Spring Creek near Powell ranger station, Idaho	74.7	1956-59.	
3368.5	Weir Creek near Powell ranger station, Idaho	a13		1962-
3369	Fish Creek near Lochsa ranger station, Idaho	89.2	1957-67.	
	Todaya Biran and Laughi Idaya	a1,180	1910-12;1929-	
3370	Lochsa River near Lowell, Idaho	a1,100 a100	1910-12;1929-	
3371	Clear Creek near Kooskia, Idaho	a9.2		4000
3372	Red Horse Creek near Elk City, Idaho	261	1944-	1962-
33 7 5 3377	South Fork Clearwater River near Elk City, Idaho Peasley Creek near Golden, Idaho	14.5	1944-	1962-
3377	readily offer hour parties, readily			1962-
3380	South Fork Clearwater River near Grangeville, Idaho	865	1910-16;1923-63.	
3382	Sally Ann Creek near Stites, Idaho	a15		1961-
3385	South Fork Clearwater River at Stites (Kooskia), Idaho	al,150	1910-12;1964-	.,,,
3388	Lawyer Creek near Nezperce, Idaho	a150	1967-	
3390	Clearwater River at Kamiah, Idaho	a4,850	1910-65.	
	Tidaha	2/2		
3395	Lolo Creek near Greer, Idaho	243	1911-12.	
3397	Canal Gulch Creek at Pierce ranger station, Idaho	a6.0		1962-
3399	Deer Creek near Orofino, Idaho	86.8		1962-
3400	Clearwater River at Orofino, Idaho	a5,580	1930-38;1964-	
3405	North Fork Clearwater River at Bungalow ranger station, Idaho	996	10/4 60	
	Station, Idano	990	1944-69.	
3406	North Fork Clearwater River at Canyon ranger			
	station, Idaho	a1,360	1967-	
3410	North Fork Clearwater River near Ahsahka, Idaho	a2,440	1926-65.	
3410.5	Clearwater River near Peck, Idaho	8,040	1964-	
3411	Cold Springs Creek (Big Canyon Creek) near	. 0	.,,,,	
	Craigmont, Idaho	8.07		1961-
3412	East Fork Potlatch River (Creek) below Mallory			777
	Creek, near Bovill, Idaho	18.2	1959-60.	
3413	Bloom Creek near Bovill, Idaho	3.66	1959-	
3414	East Fork Potlatch River (Creek) near Bovill, Idaho	42.5	1959-	
3415	Potlatch River (Creek) at Kendrick, Idaho	425		1011
3416	Arrow Gulch near Arrow, Idaho		1946-60	1961-
3420	Mission Creek near Winchester, Idaho	2.80 al6	1940-45.	1961-65.
757			100	
3422	Twenty One Ranch Spring near Waha, Idaho		1958-60.	
3425	Clearwater River at Spalding, Idaho	a9,570	1926-	
3430	Clearwater River near Lewiston, Idaho	a9,640	1910-13;1924-27.	
3447	Deep Creek tributary near Potlatch, Idaho	2.90		1961-
3448	Deep Creek near Potlatch, Idaho	36.6		1961-
3450	Palouse River near Potlatch, Idaho	317	1914-19;1966-	

^{*} Gare heights, or gage heights and discharge measurements only.

^{*} Gare heights, or gage heights and discharge measurements only.

a Approximately.

b In reports of Bear River Hydrometric Data (U.S. Geological Survey open-file report).

In reports of Water District 5, Idaho.

d In reports of Bear River Commission.

e In reports of Department of Energy, Mines and Resources, Canada.

f In reports of U.S. Weather Bureau.

Approximately, about 122 sq mi in vicinity of Hayden Lake is noncontributing.

h Approximately, includes Bob Smith Creek.

i In reports of Water District 36, Idaho.

POCKET CONTAINS

(200)

rd number

CHET

