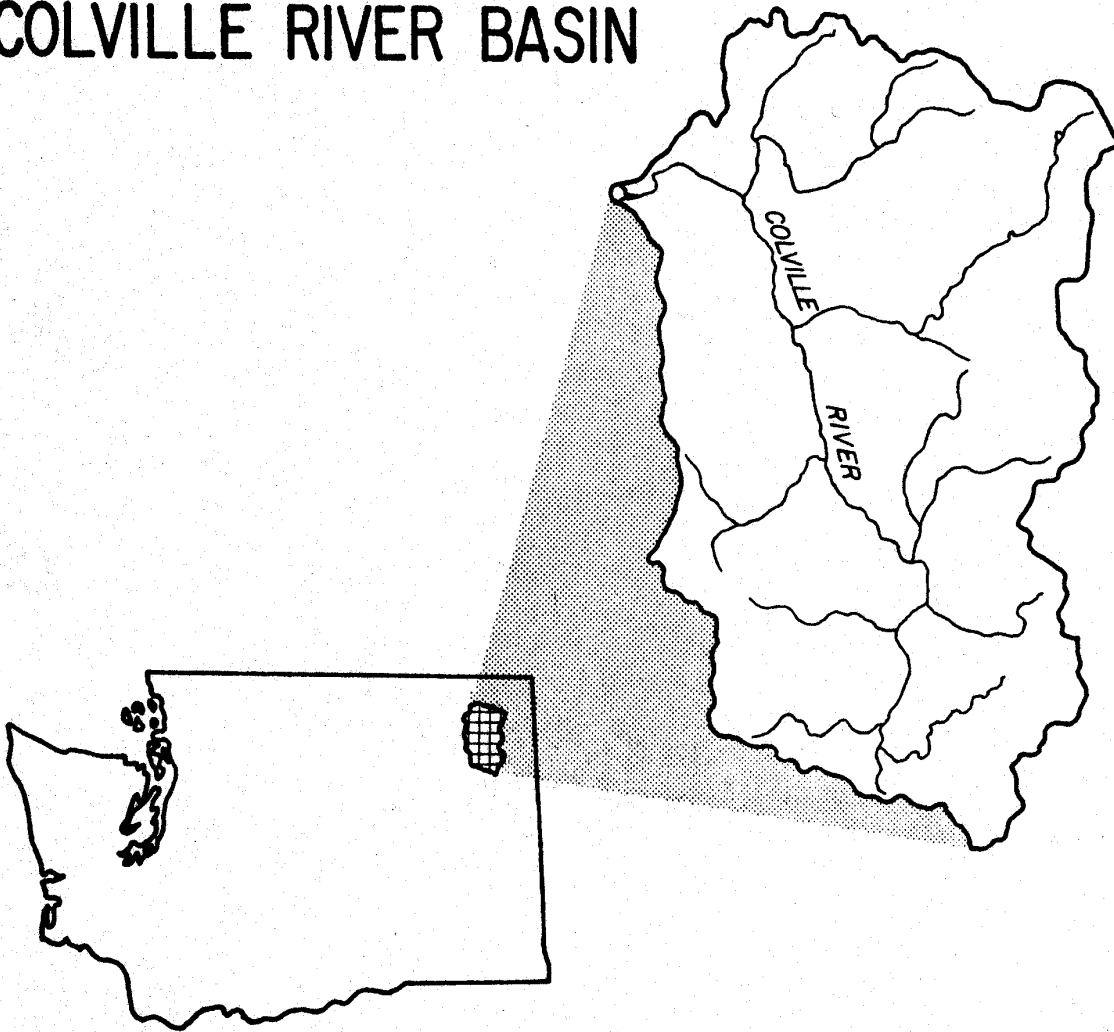


WATER RESOURCES MANAGEMENT PROGRAM



BASIN PROGRAM SERIES 5

COLVILLE RIVER BASIN



OLYMPIA, WASHINGTON

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DIRECTOR

BASIN PROGRAM SERIES NO. 5
WATER RESOURCES MANAGEMENT PROGRAM
COLVILLE RIVER BASIN
(WATER RESOURCES INVENTORY AREA NO. 59)

BY
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POLICY DEVELOPMENT SECTION
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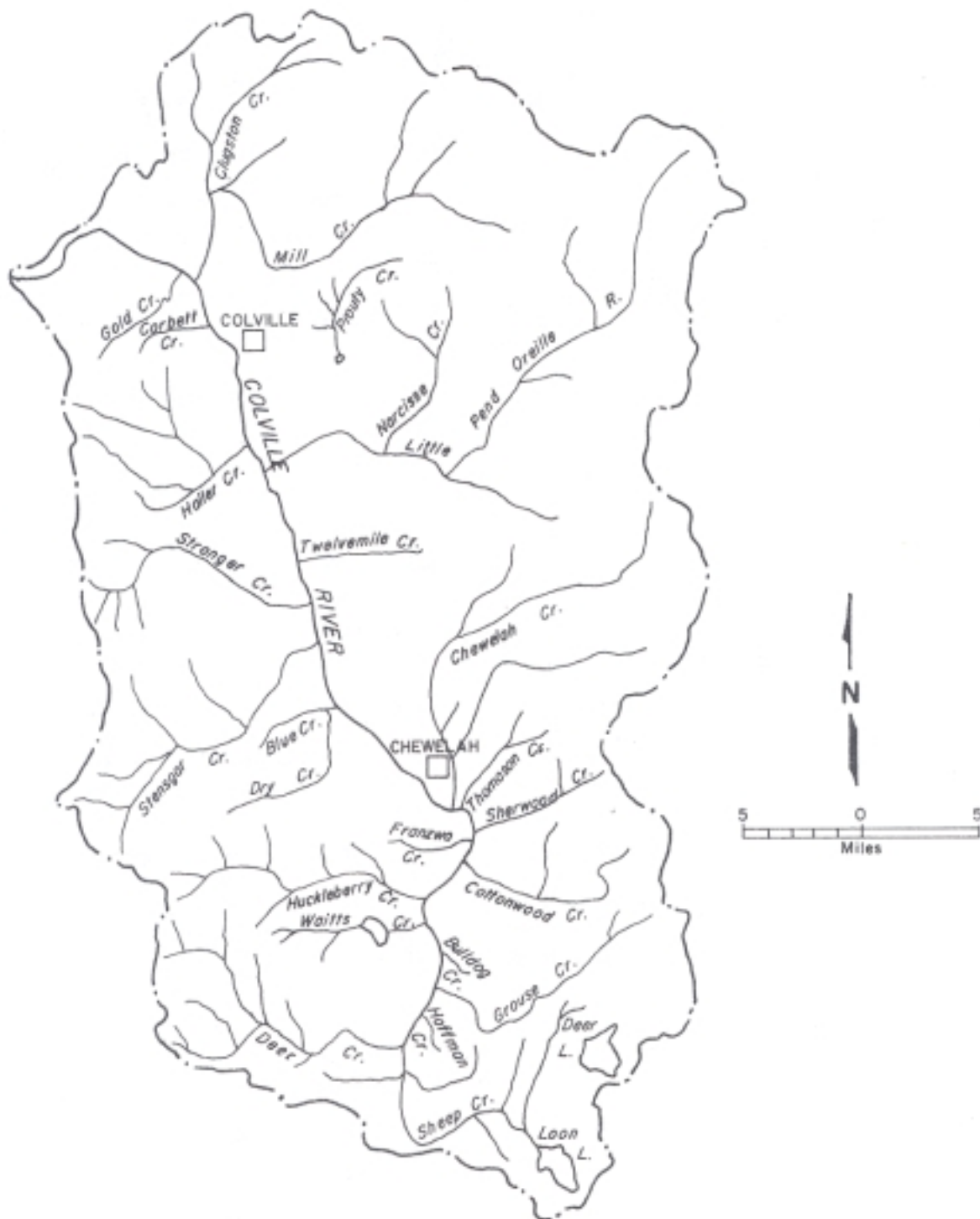


Figure 1
COLVILLE RIVER BASIN

SUMMARY

The Department of Ecology, under the direction of the Water Resources Act of 1971 (Chapter 90.54 RCW), has conducted a comprehensive investigation of the water resources of the Colville River Basin and has developed policies and procedures that will be used to manage the Basin's water resources. The Water Resources Management Program provides solutions to significant problems and issues that hamper efficient management of Basin water resources.

Goals -- The primary goal of the Water Resources Basin Management Program is to protect and fully utilize the Basin's water resources for the maximum public benefit. Secondary goals include:

Represent the desires of the residents of the Basin in the management of Basin water resources.

Provide clear direction to the Department of Ecology regional staff who have first-line responsibility to administer and manage water resources.

Principal Program Actions -- To accomplish these goals, the management program:

Declares that existing, valid water rights will be protected by the management program. Establishes base flows on all perennial streams for preserving instream values such as fish, wildlife, aesthetics, and environmental quality. Future surface water rights are subject to the maintenance of base flows. Inhouse domestic supply and stock use are exempt from the maintenance of base flows.

Finds that surface water is available for further appropriation only from the main stem of the Colville River from October 1 through July 15, and that all streams tributary to the Colville River are fully appropriated under existing water rights. Where public surface water is available, the program allocates quantities to beneficial uses.

Closes all streams tributary to the Colville River to further consumptive appropriation year round and closes the mainstem of the Colville River from July 16 to September 30. In-house single domestic water supply and stock use water rights, however, may be established on closed streams, subject to the protection of existing rights. Reservoirs are also permitted for storing water during high runoff periods for later application to beneficial use.

Allocates remaining available surface water in the main stem of the Colville River to the following beneficial use categories: a) inhouse domestic and stock use, b) base flow, and c) other consumptive uses.

Closes seven major lakes (Deer, Loon, Waitts, Jumpoff Joe, White Mud, Heritage, and Thomas Lakes) to further consumptive appropriations except for in-house domestic supply and stock use, from June 1 to October 31 of each year.

Encourages the development of multipurpose water storage projects of sound design, whether developed privately or by government, in order to increase surface water availability, mitigate flooding problems, and increase recreational opportunities.

Encourages prospective water right applicants to consider ground water as an alternative source to surface water, particularly where further appropriation of surface water is not possible, or where surface water supply is not reliable.

Administrative Procedures

Administrative procedures are outlined to guide the Department in its management of the Basin's water resources. Areas for which procedures are detailed are:

Administration of base flow regulations.

Future water rights and accounting procedures.

Appropriation of water for domestic supply.

Appropriation of water for irrigation.

Regulation of Loon Lake level.

Reservoir storage of water.

Support Documents

Technical Report -- Colville River Basin Water Resources Management Program Technical Report, was prepared by the Department to supply data and analysis of water and related resources in the basin.

Environmental Impact Statement -- An environmental impact statement was produced which outlines the potential impacts expected to occur as a result of adopting the Basin Management Program.

Regulation -- A regulation (chapter 173-559 WAC) has been adopted which provides the legal tool for implementing the policies and procedures proposed in the Basin Management Program. (See Appendix, page 53)

INTRODUCTION

"The Department, -- is directed, as a matter of high priority to insure that the waters of the State are utilized for the best interests of the people, to develop and implement -- a comprehensive State Water Resources Program which will provide a process for making decisions on future water resource allocation and use." (Water Resources Act of 2971)

Settlement in the Colville River Basin is generally confined to the Colville River Valley and narrow creek valleys where water is plentiful for living and for growing food. As the Basin developed, competition over water became more and more intense resulting in administrative closure of many tributary streams to further appropriation by the Department of Ecology and its predecessor agencies. Eight tributary streams in the Colville River Basin were adjudicated as early as the 1930s, and many administrative closures and low flow limits were established in the 1950s.

The Department, under the direction of the Water Resources Act of 1971, has conducted a comprehensive investigation of water resources in the Basin and has developed Basin water resources management policies. This report describes basin characteristics in Section I, outlines water resource issues and problems in Section II, and recommends basin water resource management policies and administrative procedures in Sections III and IV. Policies developed in this program have been adopted in the Colville River Basin Water Resources Management Regulation, Chapter 173-559 Washington Administrative Code. (See Appendix, Page 53)

Public involvement, in the process of formulating recommended policies, has been sought through public meetings and questionnaires. Constant guidance and review of the program was provided by a Citizen Advisory Committee, which was formed at the beginning of the program. The committee members include: Don Hopp, Ron McClellan, Gail McKellar, William Schumaker, and Cy Secor of Colville; George Oakshott, Kenneth Hafer, and Phil Skok of Chewelah; Curtis Ott of Addy; Leonard Fuhrman of Kettle Falls; and Leo Beck of Valley. As the adopted program is implemented, the Department will constantly monitor its effectiveness. If current conditions in the basin change significantly after adoption, the basin management program will be updated accordingly.

Even if conditions do not change significantly, a reevaluation will be conducted five years after adoption of the program.

PUBLIC PARTICIPATION

Public participation in the formulation and review of the Colville River Basin Water Resources Management Program has been fostered through public meetings, public hearings, and four formal meetings of a Citizen Advisory Committee.

The public participation effort began on December 6, 1976 at a public meeting held in Colville. Approximately 45 people attended the meeting and heard speakers explain the content and purpose of basin water resources planning. Water resource issues pertinent to the Colville River Basin were summarized, and numerous questions were fielded.

A questionnaire was distributed to attendees. Fifteen of these were returned by mail. Among the questionnaire results, it was made clear that Basin residents wanted to actively participate in formulation and review of the program.

To achieve this purpose, a Citizen Advisory Committee was organized during January, 1977 and first met on February 1, 1977. The Committee consists of 11 persons with varied backgrounds and who represent geographic locations throughout the Basin.

The Advisory Committee was involved in reviewing the proposed basin management program elements drafted by Department of Ecology staff. Close liaison was maintained between the Committee and the staff in order to incorporate Committee objectives into the program.

A public meeting was held at the Colville City Hall on June 23, 1977. An official public hearing immediately followed the public meeting in order to receive testimony concerning the proposed Colville River Basin Water Resource Management Program Regulation, chapter 175-559 WAC. Oral and written comments were helpful in finalizing the program document and regulation.

The Department then held an adoption hearing on July 21, 1977 at Department of Ecology Headquarters in Lacey, Washington. The department received no adverse testimony, and the management regulation was adopted.

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I. BASIN CHARACTERISTICS

SOCIOLOGICAL SETTING

The physiographic ruggedness of the Colville River Basin has served to confine settlement and development primarily to the Colville Valley, tributary stream valleys, and the terrace and bench areas along the main valley. The two primary incorporated cities, Colville and Chewelah are located in the main valley.

Stevens County has experienced rapid population growth in recent years. Table 1 summarizes data collected during the 1970 national census and the 1975 county census. County population grew 30.7 percent during the five-year period. Much of this growth occurred in the unincorporated areas of the county, which grew 41.6 percent in the five years.

Table 1 -- Population, Stevens County

	1970 Federal Census	1975 County Census	Percent Change
Stevens County	17,405	22,743	+30.7%
Incorporated	6,841	7,750	+13.3%
Unincorporated	10,564	14,985	+41.6%
<hr/>			
Colville Basin			
Incorporated	6,242	7,152	+14.6%
Colville	3,742	4,291	+14.7%
Chewelah	1,365	1,691	+23.9%
Springdale	215	244	+13.5%
Kettle Falls	920	926	+ 0.07%

Much of this rural growth is attributable to subdivision development in the Long Lake area (outside the Colville Basin). Some of the rural increase is the result of a land boom that began about 1968 in the Colville Valley. Some large tracts of land have been split into 10 and 20 acre tracts and sold for use as vacation or recreation lots. Young families and retirees are buying land and building homes, hoping to enjoy the aesthetic qualities of the Stevens County environment.

Several large commercial and industrial developments in the Colville River Basin have impacted population growth, e.g., the Northwest Alloys processing plant at Addy and Forty-Nine Degrees North Ski Area near Chewelah. Colville, traditionally, has been the commercial center of the county. Increasingly, Canadians are traveling to Colville to take advantage of lower priced goods. This spending adds significantly to the local economic base, stimulating both population and economic growth.

The most recent employment data available were collected during the 1970 Federal Census and are available only on a county basis. Table 2 provides a summary of employment data for 1970.

Table 2 -- Employment, Stevens County, 1970

Employment Sector	Number Employed	Percent of Total Employment
Primary (Agriculture, forestry, fishing, mining)	953	18.6%
Manufacturing	980	19.1%
Construction	345	6.7%
Services	2,843	55.5%
Total	5,121	100.0%

Source: U.S. Department of Commerce. 1970 Census of Population: General Social and Economic Characteristics, Washington.

ENVIRONMENTAL SETTING

The Colville River Basin (Water Resources Inventory Area 59) covers 1,007 square miles, almost entirely within Stevens County in northeastern Washington. About nine square miles along the eastern divide lie in Pend Oreille County. The Basin covers almost 40 percent of the land area of Stevens County and contains much of its arable land.

Geology - Topography

The Colville River is 53 miles long and is relatively flat graded in its upper reaches. It falls only 135 feet in the 48 miles above Kettle Falls. Below Kettle Falls, the valley is steep and narrow to its confluence with Lake Roosevelt.

Bedrock materials underlie the valley areas, form the cores of hills and upland areas, and outcrop at the surface in the mountainous areas. The stream valleys, lowland areas, and lower terraces are covered with undifferentiated glacial drift which may be as thick as several hundred feet. Recent valley alluvium, deposited by the river, occurs in much of the Colville River Valley and overlies glacial drift.

The Colville River Basin lies within the Okanogan Highlands physiographic province. The rugged Selkirk Mountains flank the agriculturally productive floodplain of the Colville River, and are dissected by numerous small streams. Elevation ranges from 1,300 feet at the mouth

of the Colville River to 6,837 feet on Calispell Peak. Upland areas average 3,000 to 4,000 feet above mean sea level.

Climate

Elevation is a major influence on climate in the basin. Annual precipitation ranges from 45 inches in the high mountains to 15 inches per year in the valley lowlands. Most precipitation is received during the six-month period from October through March, much of it occurring as snow in the higher elevations. Less than 20 percent of the precipitation falls during June, July, and August, the height of the growing season. Precipitation may vary greatly from year to year. Large variations occur for any given month; for example, with a 30-year December average of 2.73 inches, precipitation ranged from 0.77 inches in December, 1960 to 6.59 inches in December, 1933.

Temperatures reflect a continental climatic influence, with relatively cold winter and relatively warm summer temperatures. However, winter temperatures rarely go below 10°F and summer temperatures only occasionally reach 100°F. The agriculturally productive lowland and low bench areas have growing seasons (frost-free period) ranging from 90 to 130 days, depending on elevation.

Land Resources

Three basic soil associations characterize the soils of the Colville River Basin. The floodplain of the Colville River has loamy, silty soils derived from the alluvium deposited by the river and its tributaries. These soils, which cover about 15 percent of the basin, are productive croplands, especially with irrigation, but generally drain poorly. Similar soils occur on alluvial terraces situated above the valley proper. These soils drain faster, but require irrigation for intensive cropping.

Coarse, sandy, and gravelly soils occur on the higher terraces and outwash plains and cover about 25 percent of the basin. The source material for these soils is glacial till; therefore, they drain rapidly. These soils are suitable for mixed forest and range management, cropping, and irrigation.

The third major soil type occurs on moderate and steep slopes at any elevation. These soils may be fine or coarse-grained, generally with good drainage. However, they are subject to severe erosion if the vegetative cover is disturbed. They are capable of supporting forest and range management activities and cover about 60 percent of the basin.

Table 3 summarizes land use in the Colville River Basin. Total acreage in the basin exceeds 650,000 acres. Seventy-nine percent of the basin is forested; 12.6 percent is cropland; 4.7 percent is range; and 3.9 percent is urban, surface water, or other categories. Irrigated agriculture is an important water use but currently covers only about 9,500 acres, or less than 2 percent of the total land area in the basin.

Irrigated acreage varies annually, depending on precipitation, flooding, and naturally-occurring subirrigation. According to the Soil Conservation Service, about 86,000 acres in the basin, or 13.3 percent of the total land area, have soils suitable for irrigation.

Table 3 -- Land Use, Colville River Basin, 1967

Land Use or Land Cover	Acres	Percent of Total Area of the Colville River Basin
Forest Land (Grazed)	193,700	29.7
Forest Land (Not Grazed)	321,100	49.2
Cropland		
Dryland	73,500	11.3
Irrigated	8,500	1.3
Rangeland	30,900	4.7
Other	25,200	3.9
Total	652,900	100.0

Source: U.S. Soil Conservation Service, Unpublished Report for the Columbia North Pacific Framework Study.

WATER RESOURCES

Stream Flow

Flow of the various streams in the Colville River Basin is measured by a system of stream gaging stations operated by the U.S. Geological Survey in cooperation with State Department of Ecology, and other agencies. The Colville River has been continuously gaged near Kettle Falls since 1922, and tributaries have been gaged for various periods.

Figure 2 depicts mean monthly discharge of the Colville River at Kettle Falls, Blue Creek, and Valley.

Mean annual discharge of the Colville River at Kettle Falls for the period of 1923-75 is 309 cubic feet per second (cfs), (223,900 acre-feet per year). Peak flows, generally occur in April during the spring runoff period, averaging over 850 cfs. Flows decline until August, the lowest month, with a measured mean monthly flow of 80 cfs. The lowest flow ever observed at Kettle Falls was 0.5 cfs on August 15, 1930. The largest observed discharge was 3,440 cfs on January 21, 1974.

Tributaries in the basin reflect the same patterns of seasonal fluctuation of stream flow. See the Department's publication, Colville River Basin Water Resources Management Programs, Technical Report, for a detailed analysis of stream flow characteristics in the basin.

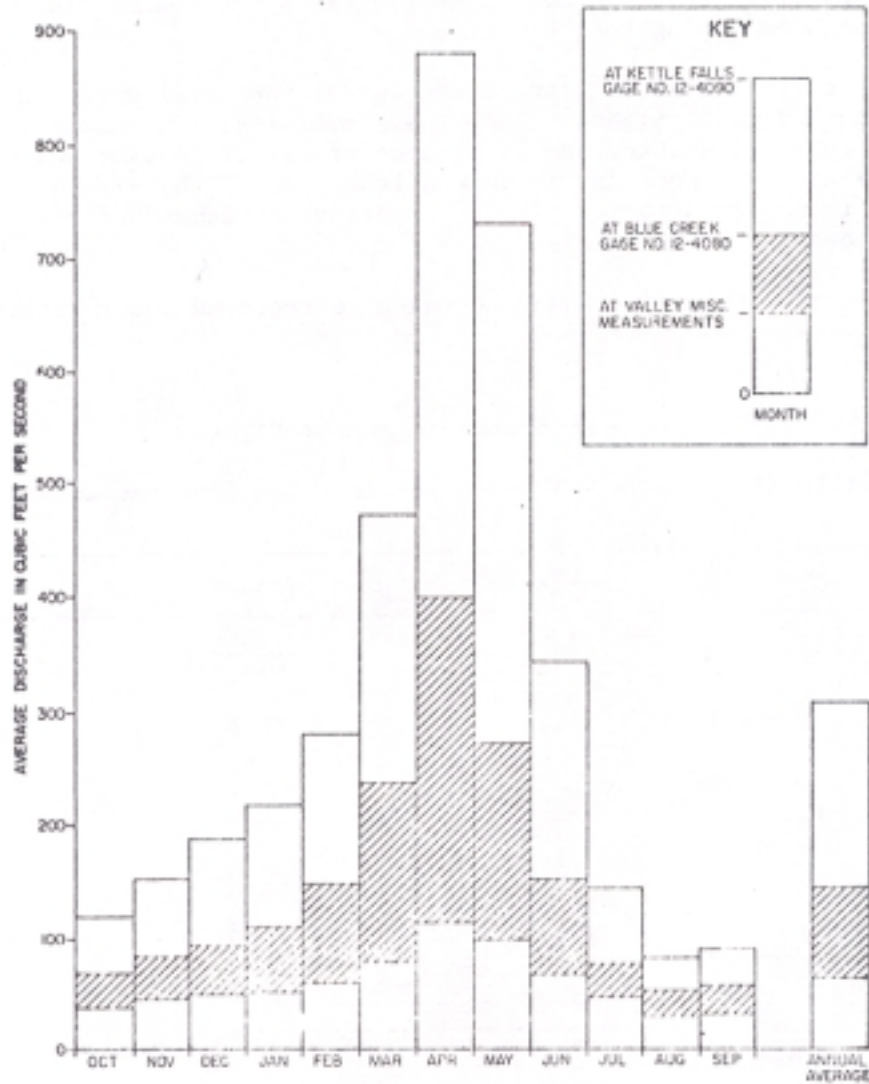


Figure 2 . DISCHARGE OF THE COLVILLE RIVER AT THREE LOCATIONS. PERIOD OF RECORD: GAGED OR ADJUSTED DISCHARGE FROM 1923 TO 1975.

Current Water Use

Domestic, stock watering, commercial, industrial, municipal, and irrigation are major consumptive water uses in the Colville River Basin. Nonconsumptive uses include fish propagation and hydroelectric power generation. The single largest use category is for irrigation which, according to water right records as of 1976, covers about 19,550 acres and would require the diversion of up to 285 cfs of ground and surface water during the irrigation season. Generation of hydroelectric power is the second largest water use. Washington Water Power Company has a recorded water right of 50 cfs at Kettle Falls and registered water right claims amounting to 150 cfs.

Ground water is the source for 16 percent of the total water supply under recorded water rights. Almost all municipal water supply is derived from ground water and 23 percent of all irrigation water, according to water right records, is pumped from wells. The ground water resource is expected to become more important as demands for surface water exceed available supply. The amount of water being used according to recorded water rights in the basin is summarized in Table 4.

Table 4 -- Summary of Water Rights

Colville River Basin - 1976 (Units in cubic feet per second)

Use	Surface	Ground	Total
Irrigation	220.5	64.7	285.2
Municipal & Domestic	11.5	30.3	41.8
Commercial, Industrial, Heat Exchange	5.9	9.5	15.4
Stock and Dairy	4.4	0.9	5.3
Instream Uses *	115.3	1.0	116.3
Total	357.6	106.4	464.0
Irrigated Acres	15,326	4,225	19,551

* Power generation, fish propagation, recreation, beautification, and wildlife.

In addition to these recorded water rights, there are approximately 2,600 "Water Right Claims" registered with the Department in accordance with the Water Right Claims Registration Act (Chapter 90.14 RCW) passed in 1967. The purpose of the registration is to provide a record of all claims to water rights not recorded under permits or certificates issued by the Department of Ecology or by predecessor agencies. Total irrigation acreage covered under registered claims amounts to nearly 12,000 acres.

The filing of a statement of claim does not constitute an adjudication of the claim to establish a right to the use of water. Validation of a claim by the Superior Court of the county in which the waters being claimed are situated is necessary before such claims can be considered a legal right to water.

Current Administrative Status of Streams

The Department of Ecology is required to consider placing special restrictions on appropriations from specific streams when such restrictions are recommended by the State Departments of Game and/or Fisheries (RCW 75.20). The purpose of these restrictions is to protect the habitat of fish residing or spawning in the streams. In addition, adjudication proceedings are carried out for specific streams to determine amounts and priority dates of water rights and vested claims.

The administrative actions performed to date in the Colville River Basin appear in Table 5 and Figure 3 (Map). For streams that are "closed," the Department of Ecology may not issue water rights for consumptive uses except for domestic supply and stockwatering. For streams that have low flow limits, the Department has conditioned all permits and certificates with a proviso that empowers the Department to cease the diversion of water for consumptive use when streamflow falls below a specified level. To date, 16 streams have been closed to further consumptive appropriation, eight streams have low flow limits and eight streams have been adjudicated.

Since 1970, all appropriation permits for surface water in the entire basin have been provisioned with a low flow limit of 60 cubic feet per second measured at Kettle Falls. When the flow at Kettle Falls drops below 60 cfs, water rights carrying this proviso may be regulated such as occurred in the summer of 1973.

Current Administrative Status of Lakes

Most lakes in the Colville River Basin are relatively small, but Deer Lake (1,162.8 acres), Loon Lake (1,118.5 acres) and Waitts Lake (455.5 acres) are notable exceptions. The Department's publication, "Lakes of Washington" lists 178 lakes for the Colville Basin, that range in size from less than an acre to over 1,000 acres (Deer Lake and Loon Lake). Table 6 shows the number of lakes within six acreage categories. Table 7 summarizes the characteristics of major lakes exceeding 50 surface acres.

Table 5 -- Current Administrative Status of Streams and Lakes, Colville Basin

STREAM	TRIBUTARY TO	ACTION	DATE(S)
Amazon Creek	Little Pend Oreille River	Closed	10-22-69
Bulldog Creek	Colville River	Adjudicated	1938
Cedar Creek	Little Pend Oreille River	Closed	7-24-64, etc.
Chewelah Creek	Colville River	Adjudicated/Closed	1932, 8-16-54, etc.
Clugston Creek	Mill Creek	Closed	12-31-70
Cole Creek	Haller Creek	Closed	9-26-52
Colville River	Columbia River	Low Flow (60 cfs)	12-31-70, etc.
Corbett Creek	Colville River	Low Flow (0.5 cfs)	--
Deer Creek	Colville River	Adjudicated	1932
Dry Creek	Blue Creek	Closed	10-5-72
Dunn Creek	Stensgar Creek	Closed	1-23-51
Franzwa Creek	Colville River	Closed	11-6-51
Haller (Reider) Creek	Colville River	Low Flow (bypass 1/2 flow)	3-22-56
Gillette Creek	Mill Creek	Closed	1-12-46
Huckleberry Creek	Colville River	Low Flow (1.0cfs)	--
Jump Off Joe Creek and Lake	Colville River	Closed/Adjudicated	12-31-70, etc. 7-25-75
Little Pend Oreille River	Colville River	Closed	9-22-67, etc.
Mill Creek	Colville River	Closed	1-12-46, etc.
Narcisse Creek	Colville River	Closed	4-12-51
Prouty Creek	Little Pend Oreille River	Low Flow (bypass 1/2 flow)	10-24-50
Sheep Creek	White Mud Lake	Low Flow (5.0 cfs)	5-26-52
Sherwood Creek	Colville River	Adjudicated	1930
Spratt Creek	Colville River	Closed	3-22-56
Stensgar (Mill) (Smith) Creek	Haller Creek	Closed	1-23-51, etc.
Stranger Creek	Colville River	Closed	1-23-51, etc.
Thomson Creek	Colville River	Adjudicated	1936
Twelvemile Creek	Colville River	Low Flow (0.25 cfs)	--
Unnamed Stream (Hoffman Creek)	Colville River	Adjudicated	1933
Unnamed Stream (Waitts Lake Inlet)			
Unnamed Spring	N. Fk. Chewelah Creek	Low Flow (2.0cfs)	--
Lake Levels Established		Closed	8-16-54
Keogh (Keough) Lake			
Loon Lake	Sheep Creek		5-19-51
			9-21-50

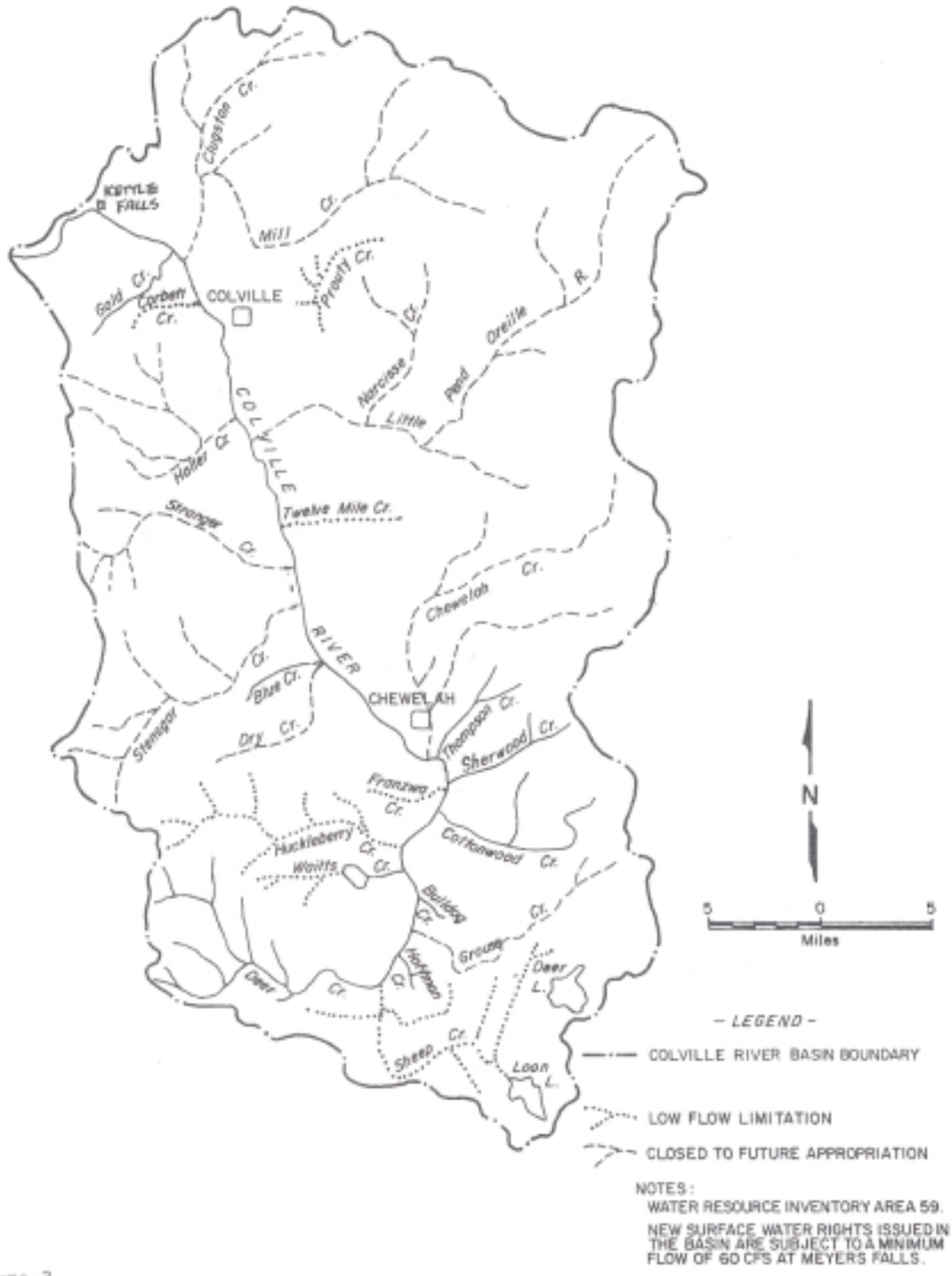


Figure 3

CURRENT ADMINISTRATIVE STATUS - COLVILLE RIVER BASIN

Table 6 -- Size of Lakes - Colville River Basin

Size of Lakes in Surface Acres	0-2	2-5	5-10	10-20	20-50	Over 50	Total
Number of Lakes	58	49	28	19	13	8	178

Table 7 -- Characteristics of Major Lakes Exceeding 50 Acres in Surface Area

Lake	Surface Area (acres)	Volume (acre-ft)	Location
Deer Lake	1,135	62,397	T. 30 N., R. 41 E. Secs. 1, 11, 12, 14.
Loon Lake*	1,114	50,919	T. 30 N., R. 41 E. Secs. 33 - 34. T. 29 N., R. 41 E. Secs. 2, 3, 4, 10, 11.
Waits Lake	471.9	18,784	T. 31 N., R. 40 E. Secs. 17, 20.
Jumpoff Joe Lake	132	---	T. 35 N., R. 40 E. Sec. 36 at outlet.
White Mud Lake	59.2	1,540	T. 35 N., R. 40 E. Sec. 19.
Heritage and Thomas Lakes	H 71.1 T 245.3	5,306 Secs. 8, 9, 17, 18.	T. 36 N., R. 42 E.
Black Lake	62.7	1,863	T. 35 N., R. 42 E. . Sec. 3.

*Maximum Lake Level Established 1950.

Lakes are major attractions for recreational activities, provide fish and wildlife habitat, attract recreational and permanent residences and may be important water supply sources.

Lake levels have been established on three lakes in the basin. A maximum lake level of 2,381.25 feet was established for Loon Lake by Court decree in 1950. A lake tender maintains the lake level with a gate at the outlet end (see Section IV., Regulation of Loon Lake Level on page 39). Lake levels have also been established on Keogh Lake (18.4 acres) Sec. 19, T. 35 N., R. 40 E. and Nelson lake (20.4 acres) Sec. 24, T. 31 N., R. 41 E. Jumpoff Joe Lake has been closed to further consumptive water appropriation.

Ground Water

Ground water appears to be an underutilized source of water in the Colville River Basin. Ground water rights in the basin amount to 86.2 cubic feet per second. About half of this quantity is for irrigation water and one-fourth is for municipal use. Because of stream closures, low flow limits, and the practical matter of limited surface water supplies, much of the future growth of water resource development will likely use ground water as a source.

The availability of ground water and yield of wells varies greatly from place to place, and is determined by the underlying geologic structures and the amount of aquifer recharge. Generally, the Colville River valley is the most significant area of concern for ground water availability, because the valley is where settlement and development have historically occurred.

In the Colville Valley, unconsolidated glacial drift and alluvial deposits overlay bedrock. These materials range in size from fine clay deposits to coarse sands and gravels. The tightly packed clays and silts yield little water, but wells drilled in sands and gravels may have high productivity. These unconsolidated materials are not consistent in depth and thickness throughout the valley. In places, thick sections of clear sand and gravel yield large amounts of ground water, and a short distance away they may change to fine silts and clays. Test drilling may be necessary to locate a good well site.

In most parts of the Colville Valley, ground water occurs under water table conditions, that is, it is not under artesian pressure. In a few locations where aquifers are capped by till or clay, the water may flow under artesian conditions. Recharge occurs from precipitation falling on the area, subsurface inflow from the Colville River, and inflow from adjacent upland areas. The total annual yield from the valley aquifer is considered to be large.

Ground water also occurs on the terraces above the valley in stratified clay, silt, sand, and gravel deposits. Yields for large bore wells may exceed 2,000, gallons per minute. In some locations such as in the Chewelah area, two distinct aquifers are penetrated. The shallow

aquifer is less than 30 feet under the land surface, while the deep aquifer may be found from 80 to 360 feet below land surface. The sustainable yield of these aquifers is not known, but like the aquifers in the adjacent valley areas, it is thought to be large.

Wells in upland areas generally do not yield as well as those in the lowlands, particularly where unconsolidated materials are very shallow, and the well penetrates primarily bedrock. Yields may be sufficient to support small domestic systems. Moderate yields may be achieved in valleys or depressions in the mountainous areas.

To date, the Colville Basin does not have a water level decline problem and annual recharge potential far exceeds present development. Basinwide, aquifer recharge is thought to be over 70,000 acre-feet per year. Local well interference problems may occur where wells are too closely grouped.

II. ISSUES CONCERNING MANAGEMENT OF BASIN WATER RESOURCES

A number of issues have been identified by the Department and the Colville River Basin Citizen Advisory Committee. These issues define problem areas requiring alternative solutions and policy direction in order that the future allocation of waters of the Basin results in maximum benefit to the people of the Basin and the state.

Water resource issues revolve around six primary areas of concern; existing water rights, protecting instream flow levels, water use preferences and future allocation of public waters, closing or restricting appropriations from specific streams and lakes, ground-water appropriation review standards, and potential surface water storage project development.

EXISTING WATER RIGHTS

The 1917 Water Code stipulated that "nothing contained in this chapter (1917 Act) shall be construed to lessen, enlarge, or modify the existing rights of any riparian owner, or any existing right acquired by appropriation, or otherwise." This same principle also applies to this program.

Therefore, no provision in this program and subsequent regulation will adversely affect existing water rights. Existing rights are, however, subject to rights with earlier priority, and may be restricted as stated in the specific permit or water right certificate. This is based on the premise that as between appropriations, first in time shall be first in right.

Base flows established through this program may be less restrictive than existing low flows. However, these less restrictive base flows will not impair existing rights because the existing rights, with higher low flow conditions, will not be regulated until newer rights issued after adoption of this program have been regulated.

PROTECTION OF INSTREAM FLOW LEVELS

Historically, instream flows have been protected by actions of the Department of Ecology or its predecessor agencies by ceasing or restricting further appropriations of surface waters according to recommendations made by the Departments of Game and Fisheries in the interest of providing sufficient flows to continue support of the fishery resource (RCW 75.20.050). Under this provision, numerous streams in the Basin have been closed to further appropriation, and for others, appropriations have been provisioned to specific flow levels that must be maintained in the stream. (See Table 5 page 8)

Broader provisions for protecting instream flows are provided by the Water Resources Act of 1971, RCW 90.54.020(3)(a). Not only must fishery interests be protected, but base flows must be established and retained for all perennial streams for the preservation of wildlife, fish,

scenic, aesthetic, and other environmental values, and navigational values. When a base flow level is adopted for a stream, subsequent appropriations are conditional to the maintenance of that level at a specific monitoring site. Users with such conditioned rights are required to cease diversion in the interest of retaining the base flow, when flows fall to the specified level.

Base flows are established for the Colville River and all major perennial tributary streams in the Basin through a stream rating system in which various agencies grade the stream according to their particular interest and expertise in instream values. A base flow hydrograph is constructed using the ratings and historical flow levels.

Base flows are established by this program on page 22. Upon adoption of the basin management program, the management and allocation of surface waters in the Basin will be accomplished in accordance with these base flow levels. Instream interests such as fish, wildlife, scenic, aesthetic, water quality, navigation and other environmental values will be protected to the extent supportable with the established base flow.

ALLOCATION OF BASIN WATER RESOURCES

The Washington State Legislature in its Water Resources Act of 1971, declared certain uses of water to be beneficial (see page 21). It further specified that allocation of waters among potential uses and users shall be based generally on the securing of the maximum net benefit for the people of the state.

There are two major areas to consider :in future allocation of water. One is the determination of the available water resource, and the other is allocation of those waters to such specific use categories as domestic, industrial and irrigation. The following discussion is a summary of the methods used to determine water availability. For a detailed treatment of these methods, see the Department's publication, Colville River Basin Water Resources Management Program Technical Report.

Tables 14 through 25 outline water availability in the stream management units. The available water resource is equal to a selected firm water supply level, minus the existing commitments to instream uses and the impact of out-of-stream consumptive uses. Analysis of hydrologic data gives levels of flow that can be expected with a specified frequency. Because flows vary considerably from year to year, a frequency of occurrence level is chosen to represent firm water supply in the stream.

Net water consumption under existing water rights is estimated for all major stream management reaches. The net consumption and the state commitments for preservation of instream values (base flow) are subtracted from firm water supply.

It is estimated that approximately 9,500 acres are irrigated currently under existing water rights. This represents about 50% of present total recorded water rights. However, economic factors such as increased demand for agricultural products and higher commodity prices could lead to an increased utilization of existing water rights above the present level.

In addition, the amount of irrigation varies annually due in part to variation in the amount of precipitation received. Dry years are particularly critical, because more irrigation takes place, and less water is available to satisfy water users. Therefore, an additional 10% is added to the present estimation of 9,500 acres in order to account for renovated uses, giving a total of 10,500 acres of potential utilization, or about 54% of recorded water right acreage.

Diversion and depletion rates are estimated for all months of the year for consumptive uses. Water used by these existing rights, in addition to instream flow requirements, is subtracted from firm water supply to determine the amount remaining available for further appropriations. Tables 14 through 25 indicate that there is little or no water available for further appropriation from the 12 stream management units in the Colville River Basin during the summer and early fall. Existing water rights and base flow levels use all of the water in the streams during this period.

Industrial and municipal water users require uninterrupted water supplies all year round, and irrigation requires water during the critical dry period. It may be unwise and against the public interest to continue appropriating water for these consumptive uses if there is no assurance of a continuous, reliable water supply.

Because there are no specific criteria to determine "maximum net benefit" in the allocation of available surface water, public input through public meetings, questionnaires, and the citizen advisory committee have been utilized for establishing water use preferences.

The water use preferences of Basin residents for the main stem of the Colville River and Mill Creek are, in order of preference: domestic; stock watering; irrigation; instream uses, such as fish, wildlife and aesthetic use; industrial; and hydropower. In tributary streams, domestic and stock use are the highest preferences, instream uses and irrigation follow, and industrial and power generation are the lowest preferences of use.

EVALUATION OF CURRENT ADMINISTRATIVE STATUS

All current administrative measures in the Colville River Basin have been reviewed with respect to fundamental water resource management policies set forth in the Water Resources Act of 1971, and in view of basinwide consistency.

Most of the existing administrative actions, such as closures and low flow conditions have been made in accordance with the recommendations of the Game Department to provide adequate instream flow for fish and wildlife. Laws governing the issuance of water rights, direct that the Department of Ecology notify the Director of Fisheries and the Director of Game upon receipt of an application for diversion of surface water (RCW 90.03.280).

Denial of an application or conditioning a permit with a low flow requirement becomes an administrative action applied to all subsequent water right applications for that stream. Currently, these closures and low flows apply throughout the year, and because these actions have been taken on a piecemeal basis, basin wide consistency has been lacking.

Although flows in the summer are generally low in all tributaries in the basin, water is available in the spring, which can be stored or used during the critical dry season. Emphasis in this program is to identify the period when water can be diverted without adversely affecting existing rights and instream values.

Water can be made available for storage from presently closed streams during noncritical months, provided that water is available in excess of the recommended base flow level and the level of consumption under existing rights. Water rights issued under this provision would permit reservoir storage of a specified quantity of water during a specified period of the year. Diversion of water for storage would be conditioned to existing water rights and the base flow level for the stream. Therefore, existing rights and instream values would not be impaired. Permitting this type of development and use of water will enlarge the water use opportunities of basin residents.

LAKES AND PONDS

The Water Resource Act of 1971 declares that "lakes and ponds shall be retained substantially in their natural condition." Large appropriations for consumptive use, which would be detrimental to the natural condition of lakes and ponds, should be considered carefully in order to protect existing rights and maintain reasonable levels in lakes.

Many large lakes in the Basin are used extensively for recreational purposes and there are many summer homes around these lakes, especially Loon Lake and Deer Lake. Lakes in the Little Pend Oreille River system are in forested uplands and are very important to wildlife in the Little Pend Oreille National Wildlife Refuge. Lakes such as these may warrant closure to further consumptive appropriation in order to protect these values. Some lakes, such as Jumpoff Joe Lake, have been closed previously to protect existing water rights downstream.

ACTUAL WATER USE VERSUS RECORDED WATER RIGHTS

Water right quantities are useful in providing a picture of the total potential withdrawal of water from the hydrologic system. It must be recognized, however, that water rights do not equal actual use quantities. Generally, actual use is much less than water right totals.

This occurs because many persons, who at an earlier date perfected a water right, either do not use their legal appropriation to the full extent or have abandoned their use of water completely. Although not all water rights are exercised, they are perpetual unless relinquished. Further, the quantity expressed in the water right is the maximum possible instantaneous quantity to be withdrawn. Actual diversion quantities from the source vary seasonally.

The large number of recorded water rights not being exercised hamper effective management of water resources. Administration of water rights is further complicated by the fact that there are many diversions in the Basin under pre-1917 vested rights which have been registered but have not yet been adjudicated as to their validity or extent of right.

The Department recognizes the necessity of early implementation of the relinquishment clause of chapter 90.14 RCW and initiation of a strong adjudication program. Results of an opinion survey indicate that the majority of respondents expressed the need for relinquishment of abandoned or unused water rights after five successive years of nonuse.

FLOODING

Flooding is a recurrent problem that results primarily from large volumes of snowmelt runoff that occur during the spring. Major floods occurred in 1938, 1948, 1952, 1956, 1961, and 1974. The April 1938 flood inundated 7,600 acres of mostly agricultural land, destroying crops, roads, bridges, fences, and livestock. Some flooding occurs about one out of every two years along the 48-mile reach from Deer Creek to Kettle Falls. Fortunately, nearly all farm buildings and communities are above flood level. Flood damages are expected to increase as population growth and development increase exposure of property to damage in the floodplain (Columbia North Pacific Framework Study V. 7.).

Flood control consists of structural and nonstructural means of preventing and mitigating flood damages. Structural measures include impoundments, pumped storage, levees, and channel improvements. Nonstructural means include maintaining adequate land cover to slow runoff, floodplain zoning, limiting impervious surface area and retention and protection of natural ponding and storage areas (ponds, lakes, marshes). Floodplain zoning would prevent the encroachment of urban development and other intensive development into flood-prone areas, thus avoiding increases in flood damage.

Colville River Basin participants in this management program have expressed much interest in the possibility of developing multiple-use storage impoundments on tributary streams. Potential benefits include flood control, low flow augmentation, recreational enhancement, fish and wildlife habitat enhancement, and increased water supply for various uses, particularly irrigation.

The U.S. Army Corps of Engineers made a preliminary determination of the feasibility of a flood control project for the Colville River Basin in 1975. Some of the findings of the study were:

1. The Colville River periodically exceeds its channel capacity and floods lands that are primarily agricultural.
2. Flooding (ponding) of parts of the valley is the natural response to excess runoff.

3. The large volumes of sediment in the runoff waters make levees undesirable (due to bed silting and elevation).
4. Flooding appears to be, in part, the result of channel restrictions such as brush, log jams, bridge abutments, and sharp turns in the channel.
5. Storage sites do exist on several tributaries, including the Little Pend Oreille River.
6. Dredging of the channel in several locations, especially mouths of tributary streams', could increase channel capacity and stream velocity, reducing overbank flooding. However, it is probable that increased erosion in the tributary streams would eventually refill dredged areas, negating the benefits of the effort.
7. Structural solutions would be expensive and benefits would be limited to protection of farm lands.

Project funds for the study were cut off for fiscal year 1976 by the Congress. As a result, a detailed benefit cost analysis was not conducted to determine project feasibility. However, a preliminary analysis by the Corps of Engineers indicated that the benefit cost ratio would not be favorable. As of this date, the project remains inactive.

WATER STORAGE

Water storage projects could achieve several objectives, including flood control, water supply, augmentation of low flow, recreational development, and increases in fish habitat. Even though an average of over 200,000 acre-feet of water is available on an annual basis, the firm and dependable supply of water for irrigation is considerably smaller when it is needed during summer.

Storing water in impoundments during the spring runoff period makes that water available for use during the dry summer period for irrigation. In addition, capturing some of the high runoff water decreases the likelihood of flooding downstream from the impoundment while it augments summer low flow. Fish propagation programs further increase recreational opportunities.

Persons intending to store water within a reservoir must first obtain from the Department of Ecology, a permit to store public waters. The reservoir permit allows the permittee to construct a reservoir and divert water into that reservoir for the purpose of filling it. The reservoir permit also entitles the permittee to apply to specific beneficial uses the amount of one filling of the reservoir. Diversion of more than the amount of one filling, or diversion by parties other than the reservoir owner requires a secondary permit to cover such amount.

Dam safety is a major issue for any proposed storage project. Sponsors of impoundment projects, in addition to obtaining a permit to store public waters (reservoir permit) from the Department of Ecology, must

submit engineering plans and specifications prepared by a professional engineer licensed in the State of Washington to the Department for approval of the safety of the proposed structure if the storage capacity of the facility exceeds 10 acre-feet (RCW 90.03.350).

Past investigations of potential reservoir sites indicate several possible large storage projects. Table 8 is a list of potential reservoir sites identified by U.S.D.A. Soil Conservation Service.

TABLE 8
POTENTIAL LARGE RESERVOIR SITES

AREA WATERSHED	LOCATION SECTION-TOWNSHIP-RANGE	DAM HEIGHT FEET	STORAGE ACRE-FEET	SURFACE ACRES
South Fork Mill Creek ¹	26-36N-40E	30-50	515-2000	53-110
Mill Creek	35-36N-39E	25	3000	200
Little Pend Oreille River	10-34N-40E Variable	Variable Max.-60	Variable Max.-8300 Max.-250	

1. Dam site may have geologic characteristics unsuitable for dam construction.

GROUND WATER

Ground water is a major potential source of water supply for a variety of uses, and could become even more significant in the future. Potential problems include competition among ground-water users, the over-pumping of aquifers, and the reduction of ground-water discharge to surface water bodies.

User conflicts are not a significant problem at the present time because of the low level of ground-water development. Large areawide, groundwater problems often require special regulatory procedures, but problems of such a magnitude are not foreseen in the Colville River Basin. Annual ground-water recharge in the basin is estimated to be at least 70,000 acre-feet, and current ground water withdrawals are only five to ten percent of the recharge rate. Even assuming fairly rapid growth in ground-water development, the recharge rate of the Basin as a whole should insure that adequate water will remain available.

Wells may tap shallow aquifers which substantially contribute to the base flow of a stream, thus reducing surface-water availability for existing and future rights. The policy under state

regulations (Chapter 508-12-240 WAC) is to make the best possible determination of "hydraulic continuity," and then apply base flow provisions at an appropriate control station, if hydraulic continuity is thought to occur.

Investigations are conducted for individual ground water applications. A minimum distance from the surface-water body may be required, and well casing may have to be installed in order to insure that shallow ground waters are protected.

III. MANAGEMENT OF BASIN WATER RESOURCES

INTRODUCTION

"The legislature finds that proper utilization of the water resources of this state is necessary to the promotion of public health and the economic well-being of the state and the preservation of its natural resources and aesthetic values." (RCW 90.54.010, Water Resources Act of 1971.)

The primary purpose of this basin management program is to protect and utilize the Colville River Basin's water resources in order to provide the greatest possible benefit to the people of the State of Washington. The program should not be viewed as the ultimate answer for water resource management. Social values and economics are subject to change. Therefore, the management of water resources must be a dynamic process, reflecting these changing values. This management policy section provides for the protection of existing rights; establishes base flows at flow control stations along the Colville River and tributaries; and indicates preference among uses.

It also sets forth stream and lake closures to further appropriation and other pertinent restrictions relating to the appropriation of surface water, with exceptions for in-house domestic and live-stock uses. In areas where hydraulic continuity between surface and ground-water sources is probable, these restrictions will also apply to ground-water appropriations.

All appropriation permits acted upon after implementation of this program shall be subject to this Colville River Basin Water Resources Management Program, or modifications thereof.

DECLARATION OF BENEFICIAL USE

The State Water Resources Act of 1971 declares the following uses of water to be beneficial: domestic, stock watering, industrial, commercial, agricultural, irrigation, hydroelectric power production, mining, fish and wildlife maintenance and enhancement, recreational, and thermal power production purposes, and preservation of environmental and aesthetic values, and all other uses compatible with the enjoyment of the public waters of the state (RCW 90.54.020(1)).

WATER RESOURCE MANAGEMENT POLICIES

Policy 1

Preservation of Existing Rights. Existing water rights are not ,subject to or affected by the management policy and .regulations adopted under this program.

Nothing in this management policy will lessen, or modify existing water rights acquired by appropriation or by other means. Existing rights consist of all legal rights to the use of public waters as of the date of adoption of the management regulation, Chapter 173-359 WAC. (July 21, 1977)

Existing rights are those certified rights to use water under the administrative process provided in the 1917 Water Code (Chapter 90.03 RCW, effective June 6, 1917) and the 1945 Ground Water Code (Chapter 90.44 RCW, effective June 6, 1945) or under court decree (adjudication) under RCW 90.03.200 and 90.03.240. Quantities of water rights established by these procedures are well documented.

Other existing rights may be vested in nature and may be represented by claims registered under the Water Right Claims Registration Act of 1967, RCW 90.14.050. Quantities under claims for vested water rights are less certain because not all claims represent valid water rights. In many cases, claims do not accurately reflect the actual extent of right. Until all rights for water for a particular stream are confirmed through an adjudication process, it is difficult to regulate either for or against rights associated with claims. As a matter of policy, some claimed uses may be regulated against if, in the opinion of the Department, there is conflict with other uses and there is no apparent substance to the claim.

Policy 2

Establishment of Base Flow. Base flows shall be established and maintained in streams for the preservation of wildlife, fish, scenic, aesthetic, and other environmental values including recreation.

It is a fundamental policy of this state that perennial rivers and streams be retained with base flows necessary to provide for preservation of instream values (Water Resources Act of 1971).

In accordance with this policy, base flows for the Colville River and its tributaries are established as part of this management program. In the development of the proposed base flows, flow characteristics and current uses of the surface-water resources of the basin were recognized.

In order to manage the waters of the Colville River Basin, the drainage system has been divided into stream management units. (See Table 13, page 32.) Each unit contains a stream flow monitoring station which will be used for administration of water rights in the stream management unit. All future water rights will be subject to base flows set forth in Table 9, pages 24-25, except for in-house domestic use and normal stockwatering as specified under policy numbers 3, 5 and 6.

Base flows for any specific day for the mainstem of the Colville River may be obtained from the base flow hydrograph appearing in Figure 5, page 34. Enforcement and maintenance of base flows will be in accordance with the administrative procedures established as part of this program (pages 31-36) and with existing laws.

Policy 3

In-house Domestic and Stock Use Exception. Surface rights established for in-house domestic and stock use will not be subject to base flows of mainstem Colville River.

Generally, domestic use includes water used by a household for inhouse water supply and the irrigation of a lawn and garden not to exceed one-half acre. For water sources where availability of water is marginal, and where water is available from another source, domestic water rights will be denied; however, if water is not available from another source, a water right will be issued only for domestic in-house use.

Use of water for basic maintenance of human and stock life is considered superior to instream uses, and therefore is not subject to base flow. Livestock use for the purposes of this policy includes all such uses with the exception of feedlot operations.

Domestic water rights will consist of water use for in-house domestic use (which will not be subject to base flow) and domestic lawn and garden irrigation (which is subject to base flow).

Although in-house domestic and stock uses are not subject to base flows, they are subject to prior rights. In some watersheds, there may not be water available for additional rights for those purposes because of existing appropriations. Administrative procedures in Section IV should be referred to for a complete explanation of the implementation of this policy.

Policy 4

Future Consumptive Water Rights. Future surface water rights established for consumptive uses (except for in-house domestic and stock use) shall be subject to the maintenance of base flows.

Consumptive use of surface water is defined as a diversion of water from a surface water source the full amount of which, neglecting losses due to seepage and evaporation, is not returned to the original source. It includes such uses as: domestic, industrial, and irrigation water supply.

Table 9
Base Flows in the Colville River Basin
(in cubic feet per second)

Month	Day	Sheep Creek (12,4075.00)	Deer Creek (12,4075.20)	Huckleberry Creek (12,4075.60)	Cottonwood Creek (12,4075.80)	Chewelah Creek (12,4077.00)	Upper Colville (12,4080.00)
JAN	1	6.0	4.0	1.5	5.0	7.5	30
	15	6.0	4.0	1.5	5.0	7.5	30
FEB	1	6.0	4.0	1.5	4.5	7.5	30
	15	6.5	6.0	1.5	6.0	9.0	38
MAR	1	7.0	7.5	3.0	7.0	10.5	47
	15	7.5	10.0	6.0	9.0	12.5	59
APR	1	8.0	14.0	12.0	11.5	15.5	76
	15	7.5	14.0	12.0	11.5	19.0	76
MAY	1	7.0	14.0	12.0	11.5	19.0	49
	15	6.5	10.0	6.5	8.5	15.0	32
JUN	1	6.0	8.0	3.0	6.0	12.5	20
	15	5.5	6.0	1.5	4.5	9.0	17
JUL	1	5.0	3.5	1.0	4.0	6.0	15
	15	5.0	3.5	1.0	3.5	4.5	13
AUG	1	4.5	2.5	1.0	3.0	3.0	11
	15	4.5	2.5	1.0	3.5	3.0	11
SEP	1	4.5	3.0	1.0	3.5	4.0	14
	15	5.0	3.0	1.0	4.0	6.0	18
OCT	1	5.5	3.5	1.0	4.0	8.5	22
	15	6.5	4.0	1.0	4.5	9.0	27
NOV	1	7.0	4.5	1.0	4.5	9.5	35
	15	7.0	4.5	1.5	5.0	10.0	43
DEC	1	7.0	5.0	1.5	5.5	11.0	43
	15	6.5	4.5	1.5	5.0	9.0	36

Table 9 Base Flows in the Colville River Basin (continued)
(continued)
(in cubic feet per second)

Month	Day	Stensgar Creek (12.4075.00)	Stranger Creek (12.4081.20)	Little Pend Oreille River (12.4084.10)	Haller Creek (12.4084.20)	Mill Creek (12.4087.00)	Lower Colville (12.4090.00)
JAN	1	2.0	2.0	12	1.0	12	80
	15	1.5	1.5	12	1.0	12	80
FEB	1	1.5	1.5	13	1.0	12	80
	15	2.0	2.0	14	1.0	13	100
MAR	1	2.0	2.0	15	1.0	14	124
	15	2.5	2.5	16	1.0	17	157
APR	1	8.5	7.5	18	5.0	21	200
	15	8.5	7.5	44	5.0	45	200
MAY	1	6.0	5.5	44	3.5	45	200
	15	4.0	4.0	35	2.5	30	135
JUN	1	3.0	2.5	27	1.5	19	90
	15	2.5	2.0	21	1.0	14	70
JUL	1	1.0	1.5	17	1.0	10	55
	15	1.0	1.0	13	1.0	7	43
AUG	1	1.0	1.0	10	1.0	5	33
	15	1.0	1.0	10	1.0	5	33
SEP	1	1.0	1.0	10	1.0	5	40
	15	1.0	1.0	10	1.0	7	49
OCT	1	1.0	1.0	10	1.0	8	60
	15	1.5	1.5	11	1.0	10	70
NOV	1	2.0	2.0	13	1.0	12	84
	15	2.5	2.5	15	1.5	15	100
DEC	1	2.5	2.5	15	1.5	15	100
	15	2.0	2.0	12	1.0	13	90

Policy 5

Stream Closures. All streams tributary to the Colville River are closed to further consumptive appropriation except to applications for single, in-house domestic supply, reservoir permits, secondary permits, and stockwatering. The main stem of the Colville River is closed to further consumptive appropriation for the period from July 16, to September 30, except to applications for single inhouse domestic supply and stockwatering.

As a result of an investigation of water availability, all streams tributary to the Colville River will be closed to further diversion for direct consumptive use purposes. The main stem of the Colville River does not have water available for further consumptive appropriation from July 16 to September 30, and is also closed during that period. However, diversion for environmentally sound storage projects may be allowed between November 1, through May 31, provided that the reservoir diversion will not impair prior rights and base flows. Exceptions to the closures may be granted for single inhouse domestic use and normal stockwatering excluding feedlot operations provided existing rights are not adversely affected and an alternate source of water supply is not available. The remaining public waters in those streams, if any, are necessary to maintain instream values.

This policy encourages development of storage facilities on tributary streams so that water use opportunities can be enlarged. Surface waters may be captured by impoundments prior to the established closure date, and then utilized beneficially during the dry summer period.

Policy 6

Lake Closures. Natural lakes specified in Table ZO are closed to further consumptive appropriation, except for in-house domestic and stock use, for the period between June 1, and October 31.

The Water Resources Act of 1971 requires that "Lakes and ponds shall be retained substantially in their natural condition." (RCW 90.54.020(3)(a)). The closure of these lakes is to preserve aesthetic and other values and to protect existing water rights downstream from these lakes. Appropriation of water from other lakes in the basin will be made only when the field investigation indicates that the appropriation is in the best interest of the public.

Table 10 Lakes Closed to Further Consumptive Appropriations

Lake	Tributary to	Location	Period of Closure
Deer Lake	Sheep Creek	T. 30 N., R. 41 E. Secs. 1,11,12,14.	June 1-Oct. 31
Loon Lake	Sheep Creek	T. 30 N., R. 41 E. Secs. 33 - 34 T.29 N., R. 41 E. Secs. 2,3,4, 10,11.	June 1-Oct. 31
Waitts Lake Secs. 17-20.	Waitts Creek	T. 31 N., -R. 40 E.	June 1-Oct. 31
Jumpoff Joe Lake	Colville River	T. 31 N., - R. 40 E. Sec. 36.	June 1-Oct. 31
White Mud Lake Sec. 19.		T. 35 N., - R. 40 E.	June 1-Oct. 31
Heritage and Thomas Lakes	Little Pend Oreille River	T. 36 N., - R. 42 E. Secs. 8,9,17,18.	June 1-Oct. 31

Policy 7

Allocation. Remaining available surface water in the mainstem of the Colville River is allocated quantitatively to specific stream management units as indicated in Tables 21 and 12, pages 28-29.

Review of stream discharge, base flow, and water use data indicates that a limited amount of surface water is available, between October 1 through July 15, for further appropriation from the mainstem of the Colville River. (See Tables 19 and 25.)

Unappropriated public water in the Upper Colville River and Lower Colville River Stream Management Units is allocated to the following categories. Within the same category, first in time will be first in right.

Category No. 1 - In-house domestic use and livestock watering which meet qualifications specified in Policy No. 3 as determined by district supervisor of the Department of Ecology.

Category No. 2 - Base flow for instream uses and maintenance of base flow as specified in Policy No. 2.

Category No. 3 - Consumptive uses, except for in-house domestic and livestock uses, and nonconsumptive uses in excess of the amount provided as base flow.

Tables 11 and 12 allocate available surface water to these use categories.

Table 11 Allocation of Surface Water from the Lower y
Colville River Management Unit

(Units in Cubic Feet Per Second)

Month	In-House Domestic And Stock Use	Base Flow	Other Consumptive Uses
Jan.	*	80	47
Feb.	*	100	68
Mar.	*	157	129
April	*	200	256
May	*	135	256
June	*	70	94
July			
1-15	*	43	18
16-31	*	43	0
Aug.	*	33	0
Sept.	*	49	0
Oct.	*	70	17
Nov.	*	100	21
Dec.	*	90	37

* No specific quantity is allocated to these uses.

Table 12 Allocation of Public Surface Water from the Upper Colville River Stream Management Unit

Units in Cubic Feet Per Second)

Month	In-House Domestic And Stock Use	Base Flow	Other Consumptive Uses
Jan.	*	30	47
Feb.	*	41	68
Mar.	*	61	129
April	*	44	256
May	*	20	192
June	*	13	93
July			
1-15	*	12	18
16-31	*	12	0
Aug.	*	11	0
Sept.	*	17	0
Oct.	*	27	16
Nov.	*	43	21
Dec.	*	36	37

* No specific quantity is allocated to these uses.

Appropriation of public surface water for domestic supply and stockwatering uses shall be guided by the administrative procedures set forth in Section IV.

Policy 8

Ground Water Development. Persons seeking to develop water rights in the future are encouraged to consider ground water as an alternate source, particularly where further appropriation of surface water either is not possible (due to stream or lake closures) or where water supply is not reliable (subject to periodic regulation in order to maintain base flows or to protect prior established rights).

Although the availability of ground water varies geographically within the basin, ground water may represent a much more reliable, high quality source of water supply than surface water. Applications for the appropriation of ground water are reviewed against the following criteria:

1. Potential for interfering with existing wells,
2. Aquifer recharge ability,
3. Hydraulic continuity of the source aquifer with nearby surface waters, and

4. Other statutory criteria as provided in Chapters 90.03 and 90.44 RCW.

If reasonable cause exists to suspect that a problem related to the above criteria may be created, the proposed appropriation may be denied, or modified as to point of withdrawal or quantity. Where the source aquifer is known to be in hydraulic continuity with surface water, the appropriation may be denied or appropriately provisioned in accordance with provisions applicable to the surface water body in question.

Policy 9

Multipurpose Water Storage. Multipurpose water storage projects of sound design are encouraged, whether developed privately, or through the action of governmental agencies.

Impoundments which capture excess spring runoff for utilization during drier periods are permitted by this program subject to the protection of prior rights and base flows. Diversion of surface water for storage will be allowed normally between November 1 through May 31. However, water stored by such facilities can be diverted during the entire year subject to the specific terms and conditions stated in the reservoir permit issued for the project.

Policy 10

Overriding Exception. Any exceptions to the closures or basic flows established by this management policy shall be authorized only in situations where it is clear that overriding considerations of the public interest will be served.

IV. ADMINISTRATIVE PROCEDURES

REGULATION OF BASE FLOW

All future consumptive water rights, except single domestic and stock water supply (excluding commercial feedlots), will be subject to base flows at a designated control station. Therefore, each surface water appropriation permit and certificate issued by the Department of Ecology will carry a provision that the holder shall cease diverting from the stream when the flow falls below the base flows described in Table 9 and Figure 5.

Early prediction of summer flow is required for effective management. Predictions will be guided by the stream flow forecasts provided by the U.S. Soil Conservation Service, the U. S. National Weather Service and the U.S. Geological Survey. The forecasts are based principally on measurements of the water-content of snowpack. Snow surveys are made monthly or bimonthly from January to June. When a drought water year is anticipated based on these forecasts, stream flow monitoring will be initiated no later than May 15.

Administration of base flow will include the following procedures:

1. Inform water right holders with base flow provisions of potential regulation. This may be done by letter, personal conversation, and/or public meeting and will generally be initiated before May.
2. Monitor the Colville River system at control stations 12.4080.00 and 12.4090.00 and other control stations in the basin as appropriate.
3. Prepare letters and notify the water users by certified mail of the required regulation.
4. Assess user compliance with the regulation as required.
5. Issue an administrative order to violators to cease and desist from diversion, or post the diversion depending on the situation.

If, after the stages outlined above, the violators do not comply with the Department's policy, the state may initiate legal action against violators and seek judgement through Superior Court action.

NOTE: The Water Code - 1917 Act, Sections 90.03.400 and 90.03.410, stipulates that unauthorized use of water and wrongful use of water is a misdemeanor.

If it is determined that development of a well affects surface water, any withdrawal of water therefrom will be subject to those existing surface water rights and base flow.

Water Right Regulation. The foundation for base flow management is an adequate flow measurement network for controlling out-of-stream water diversions. Table 13 summarizes control stations, locations, and

Table 13

Stream Management Units

Stream Management Unit, Control Station Number	Control Station Location		Stream Management Reach
	River Mile	Section, Township and Range	
Sheep Creek No. 12.4075.15	0.3	Sec. 9, T. 30 N., R. 40 E.W.M.	Sheep Creek from confluence with Deer Creek to the headwaters.
Deer Creek No. 12.4075.20	2.0	Sec. 6, T. 30 N., R. 40 E.W.M.	Deer Creek from confluence with Sheep Creek to the headwaters.
Huckleberry Creek No. 12.4075.60	1.5	Sec. 9, T. 31 N., R. 40 E.W.M.	Huckleberry Creek from confluence with Colville River to headwaters.
Cottonwood Creek No. 12.4075.80	1.2	Sec. 1, T. 31 N., R. 40 E.W.M.	Cottonwood Creek from confluence with Colville River to headwaters.
Chewelah Creek No. 12.4077.00	2.0	Sec. 12, T. 32 N., R. 40 E.W.M.	Chewelah Creek from confluence with Colville River to headwaters.
Upper Colville River No. 12.4080.00	32.1	Sec. 31, T. 33 N., R. 40 E.W.M.	Colville River from confluence with Stensgar Creek to confluence of Sheep Creek and Deer Creek.
Stensgar Creek No. 12.4081.00	0.8	Sec. 23, T. 33 N., R. 39 E.W.M.	Stensgar Creek from confluence with Colville River to headwaters.
Stranger Creek No. 12.4081.20	0.8	Sec. 11, T. 33 N., R. 39 E.W.M.	Stranger Creek from confluence with Colville River to headwaters.
Little Pend Oreille River No. 12.4084.10	0.5	Sec. 10, T. 34 N., R. 39 E.W.M.	Little Pend Oreille River from confluence with Colville River to headwaters.
Haller Creek No. 12.4084.20	0.8	Sec. 4, T. 34 N., R. 39 E.W.M.	Haller Creek from confluence with Colville River to headwaters.
Mill Creek No. 12.4087.00	0.4	Sec. 31, T. 36 N., R. 39 E.W.M.	Mill Creek from confluence with Colville River to headwaters.
Lower Colville River No. 12.4090.00	5.0	Sec. 29, T. 36 N., R. 38 E.W.M.	Colville River from confluence with Lake Roosevelt to confluence with Stensgar Creek

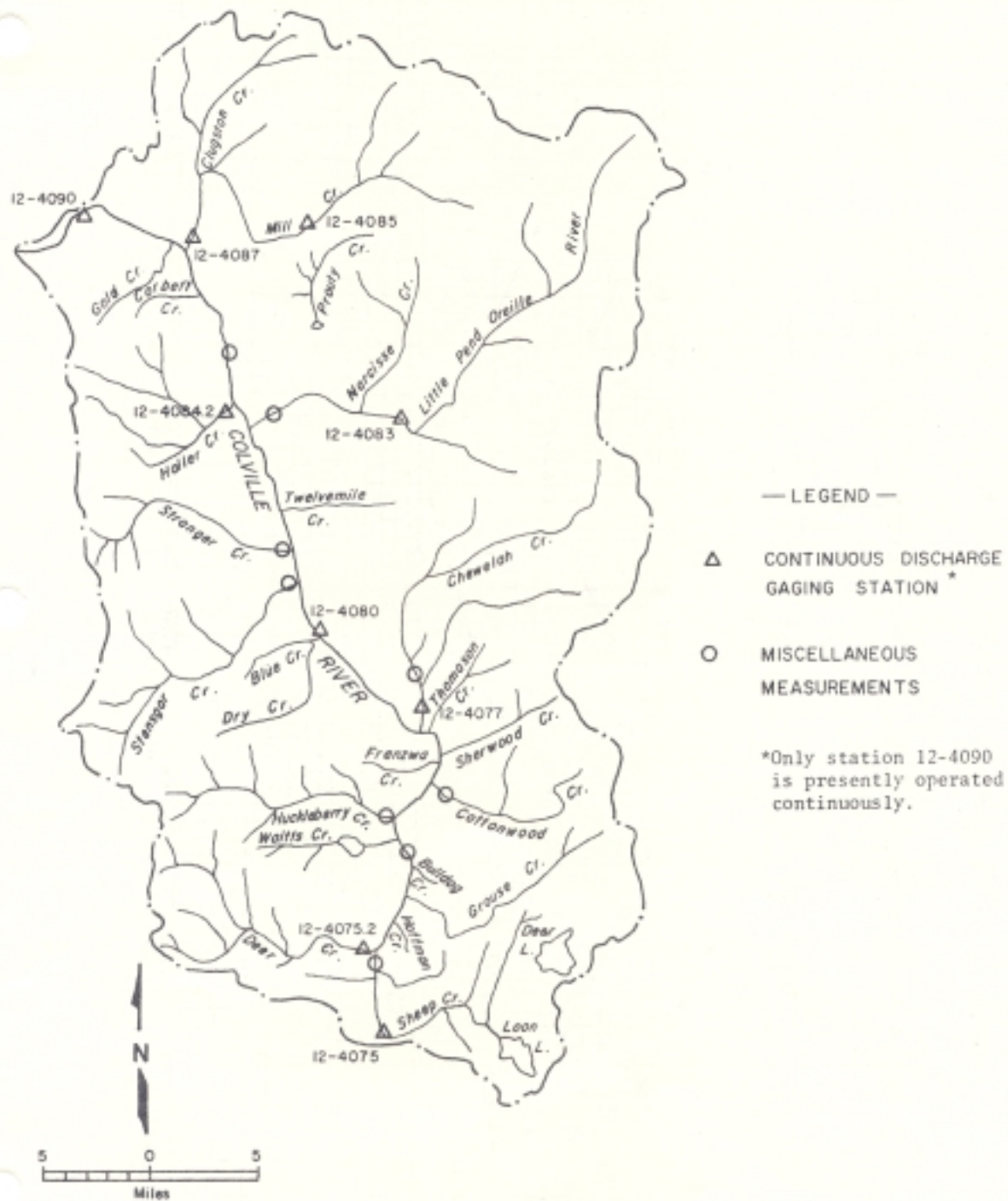
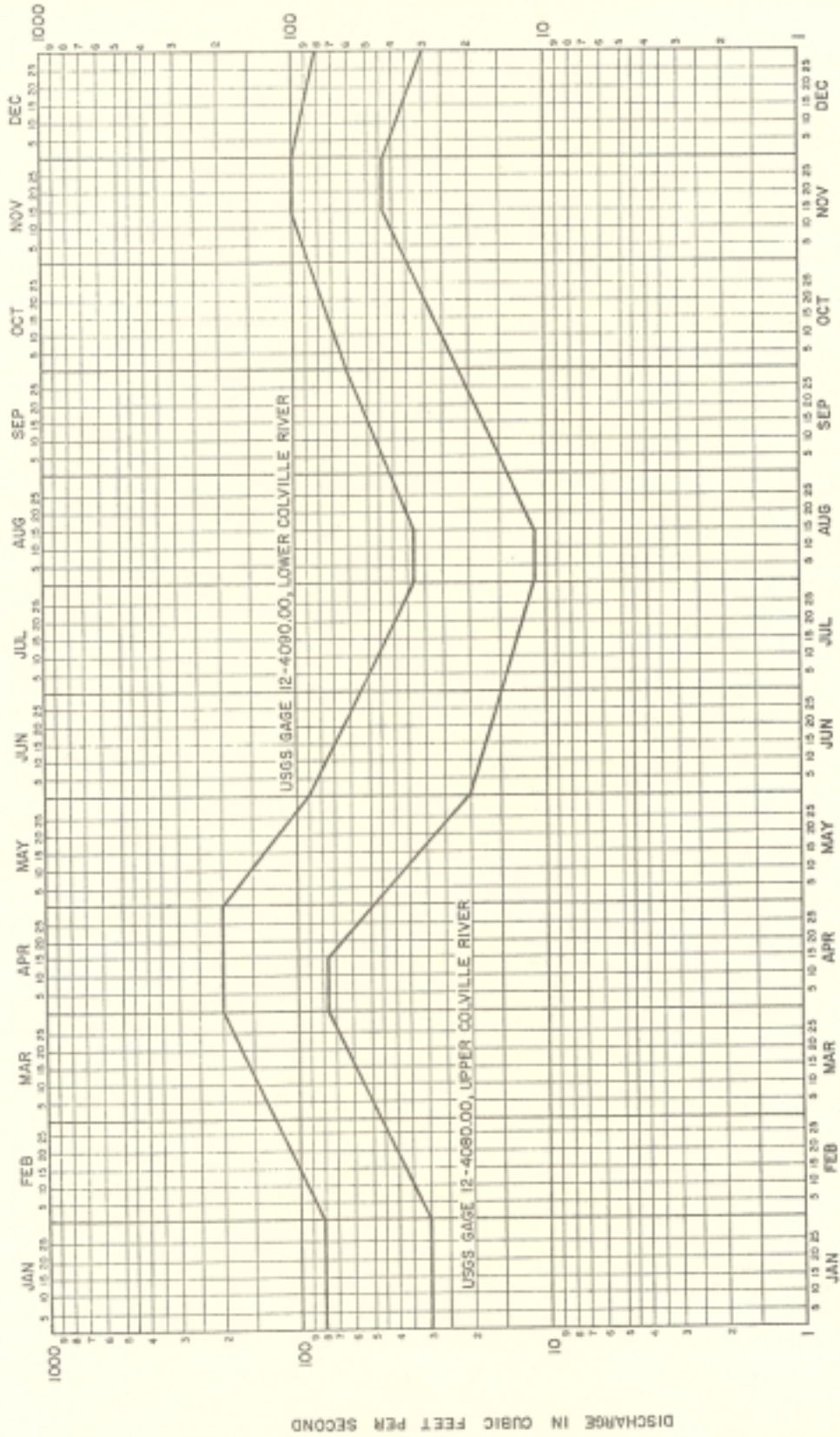


FIGURE 4: COLVILLE RIVER BASIN
STREAM DISCHARGE GAGING STATIONS

Figure 5 BASE FLOW HYDROGRAPH FOR SELECTED STATIONS



stream management units. Figure 4 maps the major control stations in the basin. The control station network shall be used to monitor general streamflow conditions and will serve to identify where flows are approaching required base flow levels, thus signaling when water right regulation will be necessary. During periods of critical flow, all control stations will be monitored directly in the field as conditions require.

The implementation of a base flow preservation program increases the complexity of water right regulation activities. With the addition of base flow requirements, water right regulation can be divided into three different phases:

1. Water rights established later than the effective date of a base flow regulation. When streamflow recedes to established base flow levels, the upstream diversions under such rights are stopped in order of priority until there is sufficient flow at the control station to meet or exceed the required base flow.
2. Water rights established before the effective date of a base flow regulation that are subject to low-flow restrictions-
 - a. For water rights with low-flow restrictions that are equal to or less than base flow requirements, diversion shall be controlled in priority sequence according to individual conditions of each low-flow proviso.
 - b. For water rights with low-flow restrictions that exceed base flow requirements, the Department of Ecology, in concert with the principle of priority based on time, shall take no action to regulate such rights until all diversions under rights subject to base flows have been curtailed.
 - c. Water rights that have been established subject to the 60 cubic feet per second low flow restriction at Kettle Falls have been provisioned with the following statement:

"All diversion shall cease when the flow of the Colville River falls below 60 cubic feet per second - as measured at the United States Geological Survey gaging station located at Kettle Falls. This minimum flow has been tentatively established from recommendations of the Departments of Fisheries and Game and not by existing statutory procedures. Therefore, at such time as minimum flows are established on this stream in accordance with Chapter 90.22 RCW, this permit shall be conditioned to the extent of the new setting, provided that, under no conditions shall the permittee be subjected to a low flow requirement of greater than 60 cubic feet per second of the above-referenced gage."

Therefore, upon adoption of this program, all water rights established with this provision will be subject to a minimum flow (base flow) as provided in Table 11 at the Kettle Falls control station 12-4090.00.

3. Water rights established before the effective date of a base flow regulation are not subject to low-flow restrictions. Such rights are regulated in priority sequence only when there is insufficient water available to accommodate all rights in this category and only after diversion has been curtailed under all other rights that are subject to flow restrictions.

FUTURE WATER RIGHTS AND ACCOUNTING

A system of accounting and recording to keep track of water appropriation versus availability is an essential part of this management program.

All consumptive water rights will be deducted from the amount specified in Tables 11 and 12 for each month in order to determine the amount of water remaining available for further appropriation. Accounting will be based on the consumptive use impact resulting from consumptive uses. Depletion quantities are presented in the Department's publication, Colville River Basin Water Resources Management Program Technical Report.

As the amount of water appropriated approaches the specified amount available for appropriation, the Department will review the operation and implementation of the management program to reassess the impact of total water use on the available water supply. Streams may be closed to further consumptive appropriation when they are determined to be fully appropriated.

After adoption of this management program and any subsequent management regulation, all applications for water right permits will be processed in accordance with the procedures established in this management program. Changes in purpose of use, point of diversion, and place of use may be executed as provided under Chapter 90.03 RCW.

APPROPRIATION OF WATER FOR DOMESTIC SUPPLY

Issuance of water rights for domestic supply purposes will be guided by the following standard operating procedure:

1. "Domestic supply," when used without qualification, means the noncommercial use of water for: a) normal needs within one or more residences; for example, cooking, drinking, washing, bathing, and other sanitary purposes, and: b) normal needs for maintenance of exterior amenities and ground of not more than one-half (1/2) acre in size, associated with a residence, for example lawn and garden watering or automobile and boat washing.
2. "In-house domestic supply," means only those uses for normal needs within one or more residences as listed above, and does not include uses outside the residential building.

3. Refinement of the water right application is appropriate when the applicable facts are available. For example, if the applicant intends only to water his lawn and garden, the use should be designated "domestic supply, lawn and garden watering only."
4. On streams that are administratively closed to further appropriation for other than single in-house domestic supply or stock watering purposes, the following criteria will be used:
 - a. If water is available from another source, the application for permit may be denied on the basis of insuring the highest feasible use of the remaining waters. This logic would prevail even for household water, since denial would not be endangering health or welfare - rather, it would require the applicant to use an alternative, more reliable source.
 - b. If water is not available from another source, the application may be approved for single in-house domestic supply only. The Department's policy is that people are entitled to household water. Such use is considered superior to instream requirements.
 - c. On closed streams where the availability of water is critical (i.e., the taking of additional water will, in fact, adversely affect existing rights to use the waters in question), all applications for "domestic supply" shall be denied.
5. On streams that have base flow limits established (Upper and Lower Colville River Management Units) the following criteria will be used.
 - a. If water is determined to be available from an alternate source of supply, for example from ground water or from a municipal water supply system, but the applicant desires, nevertheless, to obtain water from the Colville River, the appropriation shall be subject to the base flow levels established for the river, including both in-house and out-of-house use.
 - b. If water is not available from an alternative source, the application may be approved for domestic supply, and the inhouse portion of that established right shall be exempted from base flow.
6. In any general adjudication, the expressed terms of the decree shall govern.

APPROPRIATION OF WATER FOR IRRIGATION PURPOSES

Appropriation of water for irrigation purposes will generally be guided by the criteria set forth in the following:

1. In the field investigation of an application, the quantities of water allocated, as expressed in gallons per minute (gpm) or cubic

feet per second (cfs) and acre-feet per year will be determined and specified in the report of findings.

2. To the extent possible, the intent of the applicant in the development of his irrigation program will be determined and be used as the basis for the water allocated by the permit.
3. The field examiner shall determine the maximum acreage to be irrigated under the proposed project, as well as the segregation of this acreage into different crops. If an annual rotation program is to be followed by the applicant, the field examiner shall determine the breakdown of crops and associated acreages. Where there is uncertainty as to the rotation program, the field examiner shall allocate for what, in his judgment, might be expected to be the maximum use of water.
4. Net irrigation water requirements for each crop shall be determined from the two-year frequency of occurrence table set forth in Station Circular 512, entitled, "Irrigation Water Requirements Estimates for Washington," published by Washington Agricultural Experiment Station, College of Agriculture, Washington State University, November, 1969. This frequency of occurrence is selected in recognition of the fact that the values reported (a) do not take into account those waters available to the crops at the commencement of the irrigation season as soil moisture storage and (b) are based upon maximum crop production where water is not the limiting factor.
5. Water shall be allocated for the net irrigation water requirement of the crops as well as for reasonable delivery and application losses. The following irrigation efficiencies shall be used for computing total irrigation water needs:
 - a. Sprinkler systems (pump at source of supply): 70 percent.
 - b. Rill irrigation (at farm headgate): 65 percent.
6. The rate of diversion or withdrawal is generally a maximum of 10 gpm per acre. Each variance must be tenable and must be explained on the report of findings preliminary to permitting action.
7. The total annual allocation, as expressed in acre-feet per year, shall be calculated from the acreage to be irrigated and the type of each crop as adjusted (increased) by appropriate irrigation efficiency, taking into consideration subparagraph 3 and 4 of this section.
8. In all instances, the maximum number of acres to be irrigated in any calendar year will be the controlling consideration in the allocation of water for irrigation purposes. This acreage will be associated with a specific parcel of land described in the permit.
 8. Pre- and post-irrigation will be considered to be beneficial irrigation uses. Water requirements for pre-irrigation purposes will be included in the net irrigation determination.

10. The use of water for irrigation is limited to the amount of water, within the terms of the right, which can be beneficially applied to the number of acres identified in the water right. Acreage cannot be enlarged without acquiring an additional water right.

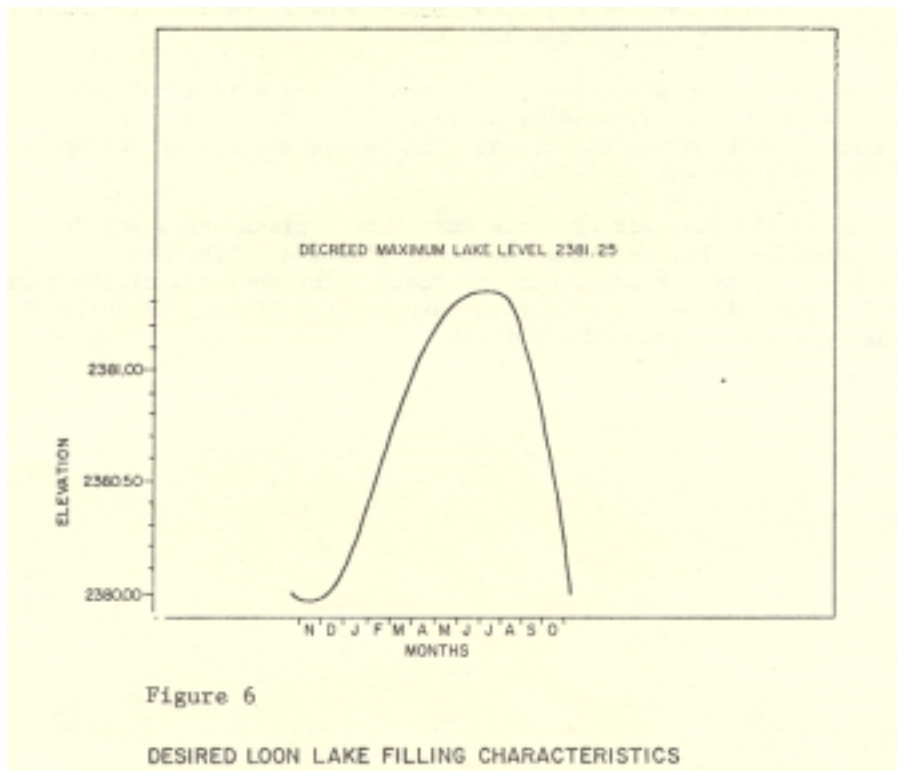
REGULATION OF LOON LAKE LEVEL

The maximum water level of Loon Lake is not to exceed an elevation of 2,381.25 feet. A reading of 81.25 feet on the staff gauge, which is fastened to the concrete wing wall of the control gate structure, corresponds to the maximum elevation of 2,381.25. The gate tender will read the U.S.G.S. staff gauge each time he reads the gauge at the outlet and will record both readings.

To provide for the storage of annual flood waters, the lake level during winter and spring months will be lowered. The gate tender will operate the gate and regulate the lake level as specified by the Department of Ecology. (See Figure 6 below.) The state watermaster will provide instruction regarding lake level maintenance.

The lake level is to be lowered only during the times of the year that the additional flow, due to the lowering of the lake, in the Colville River will not cause property damage.

During November and December, providing there is no chance of causing the Colville River to flood, the lake shall be lowered to 2,380 feet (80.0 on the staff gauge). This action will provide sufficient storage for spring runoff and is consistent with the past 22 years of regulation.



During spring runoff the gates in a normal year will be opened only for channel cleaning and debris removal. The regulation of the lake level during the spring will be dependent upon the condition of snow pack and forecasted runoff. The gate tender is to keep an accurate record of the lake level and notify the watermaster of all unusual fluctuation. The record and an activity report for each year is to be forwarded to the watermaster. The report is to reach the watermaster's office no later than July 31 each year and is to cover the period from June 1 of the preceding year to May 30 of the reporting year.

RESERVOIR STORAGE OF WATER

1. Construction and use of a reservoir in excess of 10 acre-feet or 10 feet in depth requires that a permit to store public waters be obtained. Such permit shall allow the permittee to divert or impound a stated quantity of water in order to fill the reservoir during the period from November 1, until May 31. It also allows the permittee to apply stored water to beneficial use in the amount of one filling annually.
2. Diversion of water in excess of the amount of one filling, or diversion by a party other than the reservoir owner shall require a secondary permit for such amount.
3. For reservoir permits diverting or impounding waters of a closed stream, diversion or impoundment of water for storage shall cease prior to June 1. Diversion of water from the reservoir for application to beneficial use may occur year-round or seasonally as stated in the specific water right permit.
4. Diversion or impoundment of water for filling a reservoir shall be limited to waters available, above the base flow levels presented in this management program, and will be subject to regulation in favor of prior water rights.
5. Sponsors of reservoir projects must submit plans and specifications, prepared by a professional engineer, licensed in the State of Washington, to the Department of Ecology for approval of the safety and design of the proposed structure, if the storage capacity of the facility exceeds 10, acre-feet.

WATER AVAILABILITY

Table 14
Description: Sheep Creek

USGS Gage: 12.4075.15
River Mile: 0.3

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge* (Q ₂)	10.0	12.0	13.0	13.5	16.0	19.0	22.0	17.0	13.5	14.0	12.5	11.0
Base Flow (Q _B)	6.5	7.0	6.5	6.0	6.5	7.5	7.5	6.5	5.5	5.0	4.5	5.0
Consumption (Q _c)	2.5	2.5	2.5	2.5	2.5	2.5	3.0	4.0	7.0	8.0	8.0	3.5
Available for Consumptive Appropriation Q ₂ - (Q _B + Q _c)	1.0	2.5	4.0	5.0	7.0	9.0	11.5	6.5	1.0	1.0	0	2.5

*Adjusted to natural flows

WATER AVAILABILITY

Table 15
Description: Deer Creek

USGS Gage: 12.4075.2
River Mile: 2.0

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge* (Q ₂)	6.5	8.0	8.0	9.0	13.0	24.0	49.0	27.0	17.0	12.0	9.0	6.5
Base Flow (Q _B)	4.0	4.5	4.5	4.0	6.0	10.0	14.0	10.0	6.0	3.5	2.5	3.0
Consumption (Q _c)	1.0	0	0	0	0	0	2.0	3.5	7.0	9.5	9.0	2.5
Available for Consumptive Appropriation Q ₂ (Q _B + Q _c)	1.5	3.5	3.5	5.0	7.0	16.0	33.0	13.5	4.0	-1.0	-2.5	1.0

*Adjusted to natural flows

WATER AVAILABILITY

Table 16
Description: Huckleberry Creek

USGS Gage: 12.4075.60
River Mile: 1.5

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge* (Q ₂)	2.5	5.5	5.5	7.5	12.5	26.5	50.0	25.5	13.0	5.0	2.5	1.5
Base Flow (Q _B)	1.0	1.5	1.5	1.5	1.5	6.0	12.0	6.5	1.5	1.0	1.0	1.0
Consumption (Q _C)	0	0	0	0	0	0	0.5	0.5	1.5	1.5	1.5	0.5
Available for Consumptive Appropriation Q ₂ (Q _B + Q _C)	1.5	4.0	4.0	6.0	11.0	20.5	37.5	18.5	10.0	2.5	0	0

*Adjusted to natural flows

WATER AVAILABILITY

Table 17
Description: Cottonwood Creek

USGS Gage: 12.4075.80
River Mile: 1.2

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge* (Q ₂)	6.0	7.5	7.5	8.5	11.0	20.5	35.0	19.5	11.5	7.5	5.0	5.5
Base Flow (Q _B)	4.5	5.0	5.0	5.0	6.0	9.0	11.5	8.5	4.5	3.5	3.5	4.0
Consumption (Q _C)	0	0	0	0	0	0	0.5	0.5	1.0	1.5	1.5	0.5
Available for Consumptive Appropriation Q ₂ (Q _B + Q _C)	1.5	2.5	2.5	3.5	5.0	11.5	23.0	10.5	6.0	2.5	0	1.0

*Adjusted to natural flows

WATER AVAILABILITY

Table 18

USGS Gage: 12.4077

Description: Chewelah Creek

River Mile: 2.0

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge* (Q ₂)	14.0	17.5	18.5	18.5	23.5	36.5	67.0	73.0	41.0	21.5	15.5	10.0
Base Flow (Q _B)	9.0	10.0	9.0	7.5	9.0	12.5	19.0	15.0	9.0	4.5	3.0	6.0
Consumption (Q _c)	2.0	1.5	1.5	1.5	1.5	1.5	3.0	5.0	10.0	12.5	12.5	4.5
Available for Consumptive Appropriation Q ₂ - (Q _B + Q _c)	3.0	6.0	8.0	9.5	13.0	22.5	45.0	53.0	22.0	4.5	0	-0.5

*Adjusted to natural flows

WATER AVAILABILITY

Table 19

USGS Gage: 12.4080

Description: Upper Colville River

River Mile: 32.1

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge* (Q ₂)	69	84	91	102	135	218	358	250	161	101	79	61
Base Flow (Q _B)	27	41	36	30	38	59	76	32	17	13	11	18
Consumption (Q _c)	9	5.5	5.5	5.5	5.5	5.5	15.5	26	50.5	64	63	21.5
Available for Consumptive Appropriation Q ₂ - (Q _B + Q _c)	33	35.5	49.5	66.5	91.5	153.5	266.5	1.92	93.5	24	5	21.5

*Adjusted to natural flows

WATER AVAILABILITY

Table .20
Description: Stensgar Creek

USGS Gage: 12.4081.00
River Mile: 0.8

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge* (Q ₂)	2.0	3.5	3.5	3.5	5.5	14.0	30.0	22.0	9.5	2.5	1.0	2.0
Base Flow (Q _B)	1.5	2.5	2.0	1.5	2.0	2.5	8.5	4.0	2.5	1.0	1.0	1.0
Consumption (Q _c)	0.5	0	0	0	0	0	0.5	0.5	1.5	1.5	1.5	0.5
Available for Consumptive Appropriation Q ₂ - (Q _B + Q _c)	0	1.0	1.5	2.0	3.5	11.5	21.0	17.5	5.5	0	-1.5	0.5

*Adjusted to natural flows

WATER AVAILABILITY

Table 21
Description: Stranger Creek

USGS Gage: 12.4081.2
River Mile: 0.8

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge* (Q ₂)	3.0	4.0	4.0	4.0	6.0	14.5	30.5	22.5	10.5	3.5	2.0	2.5
Base Flow (Q _B)	1.5	2.5	2.0	1.5	2.0	2.5	7.5	4.0	2.0	1.0	1.0	1.0
Consumption (Q _c)	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.3	3.0	3.0	3.0	1.5
Available for Consumptive Appropriation Q ₂ - (Q _B + Q _c)	1.0	0.5	1.0	1.5	3.0	11.0	22.0	17.0	5.5	-0.5	-2.0	0

*Adjusted to natural flows

WATER AVAILABILITY

Table 22

USGS Gage: 12.4084.10

Description: Little Pend Oreille River

River Nile: 0.5

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge* (Q ₂)	19	23	25	23	30	51	133	142	64	27	17	17
Base Flow (Q _B)	11	15	12	12	14	16	44	35	11	13	10	10
Consumption (Q _c)	1	1	1	1	1	1	2	2	3.5	4.5	4.5	2
Available for Consumptive Appropriation Q ₂ - (Q _B + Q _c)	7	7	12	10	15	34	87	105	39.5	9.5	2.5	5

*Adjusted to natural flows

WATER AVAILABILITY

Table 23

USGS Gage.: 12.4084.2

Description: Hailer Creek

River Mile: 0.8

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge* (Q ₂)	1.5	2.0	2.0	2.0	3.0	8.0	18.0	13.0	5.5	1.5	1.0	1.0
Base Flow (Q _B)	1.0	1.5	1.0	1.0	1.0	1.5	5.0	2.5	1.0	1.0	1.0	1.0
Consumption (Q _c)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0	1.0	0.5
Available for Consumptive Appropriation Q ₂ - (Q _B + Q _c)	0	0	0.5	0.5	1.5	6.0	12.5	10	3.5	-0.5	-1.0	-0.5

*Adjusted to natural flows

WATER AVAILABILITY

Table: 24
Description: Mill Creek

USGS Gage: 12.4087
River Mile: 0.4

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge* (Q ₂)	17	21	23	21	30	58	124	135	63	29	18	14
Base Flow (Q _B)	10	15	13	12	13	17	45	45	14	7	5	7
Consumption (Q _c)	3	2	2	2	2	2	3.5	6.5	11	13.5	12.5	5.5
Available for Consumptive Appropriation Q ₂ - (Q _B + Q _c)	4	4	8	7	15	39	75.5	83.5	38	8.5	0.5	1.5

*Adjusted to natural flows

WATER AVAILABILITY

Table 25
Description: Lower Colville River

USGS Gage: 12.4090
River Mile: 5.0

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
One in two year Discharge* (Q ₂)	119	151	172	183	245	~ 424	754	628	343	188	135	105
Base Flow (Q _B)	70	100	90	80	100	157	200	135	70	43	33	49
Consumption (Q _c)	17	9	9	9	9	9	43	45	88	110	108	38
Available for Consumptive Appropriation Q ₂ - (Q _B + Q _c)	32	42	73	94	136	258	511	448	185	35	-6	18

*Adjusted to natural flows

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GLOSSARY

ACRE-FOOT: A unit for measuring the volume of water or sediment. It is equal to the amount of water needed to cover one acre of land with water one foot deep. This is 43,560 cubic feet, or 325,851 gallons.

ALLOCATION: Designating specific amounts of the water resource for specific beneficial uses.

APPROPRIATION: The process of legally acquiring the right to specific amounts of the public water resource for application to beneficial uses.

APPROPRIATION LIMIT: The level beyond which appropriation permits will not be granted.

BASE FLOW: A level of streamflow established in accordance with provisions of Chapter 90.54 RCW required in perennial streams to preserve wildlife, fish, scenic, aesthetic, and other environmental and navigational values.

BENEFICIAL USES: Uses of water for domestic, stock watering, industrial, commercial, agricultural, irrigation, hydroelectric power production, mining, fish and wildlife maintenance and enhancement, recreational, and thermal power production purposes, and preservation of environmental and aesthetic values, and all other uses compatible with the enjoyment of the public waters of the state.

CLOSURE: Administrative measure to keep water resources from further appropriation to consumptive uses. Generally, domestic household use and normal stock watering are exempted when there is no practicable alternate source of supply.

CONFLUENCE: A place of meeting of two or more streams; the point where a tributary joins the main stream; a fork.

CONJUNCTIVE USE: The integrated use of ground and surface water in such a way as to increase the benefits of the use of all the waters of the basin.

CONSUMPTIVE USE: Use of water whereby there is a diminishment of the water source.

CONSUMPTIVE USE REQUIREMENT (crop): The amount of consumptive use for irrigation each year for a particular type of crop. Measured in acre-feet or feet per acre.

CONTROL STATION: Any streamflow measurement site at which a regulatory base flow has been established.

CUBIC FEET PER SECOND (cfs): A unit of measure for the rate of discharge of water. One cubic foot per second is the rate of flow of a stream with a cross section of one square foot which is flowing at one foot per second. It is equal to 448.8 gallons per minute.

DISCHARGE: In simplest form, discharge simply means outflow. The term can describe the flow of water from a faucet or from a drainage basin covering hundreds of square miles.

DIVERSION: The physical act of removing water from a stream or other body of surface water.

DRAINAGE AREA: The area of land drained by a stream, measured in the horizontal plane. It is the area which is enclosed by a drainage divide.

DRAINAGE BASIN: A part of the surface of the earth that is occupied by a drainage system consisting of a surface stream or a permanent body of water together with all tributary streams and bodies of impounded water (lakes, ponds, reservoirs, etc.).

FLOOD: Any relatively high streamflow or an overflow that comes from a river or body of water and which causes or threatens damage.

GAUGING STATION: A particular location on a stream, canal, lake, or reservoir where systematic measurements of the quantity of water flowing are made.

GROUND WATER: Water in the ground lying in the zone of saturation. Natural recharge includes water added by rainfall, flowing through pores or small openings in the soil into the water table.

HYDRAULIC CONTINUITY: A cause and effect relationship between water under the ground with water standing or flowing on the surface.

HYDROGRAPH: A graph showing varying streamflow (or stream discharge) with respect to time during a year as determined at a specific cross-sectional location in the stream.

INSTREAM VALUE: The attitude of society towards the instream use of water for aesthetic, fish and wildlife, recreation, hydroelectric, and general environmental purposes.

NONCONSUMPTIVE USE: A type of water use where either there is no diversion from a source body, or where there is no diminishment of the source.

PERENNIAL STREAM: A stream is considered perennial if its natural flow is normally continuous at any given location.

PRECIPITATION: The discharge of water, as rain, snow, hail, etc., out of the atmosphere, generally onto land or water surfaces. This is the process which permits atmospheric water to become surface or subsurface water. The term precipitation is often used to describe the amount of water that is precipitated.

PRIORITY OF USES: A use category ranking which specifies an order of water uses to determine the method for regulating water uses. All rights within a lower priority use are subject to regulation before any rights in the next higher priority. Rights within a defined water use category are to be regulated on a first-in-time, first-in-right basis.

PUBLIC INTEREST: The sense of local, county, or state values at a given point in time.

PUBLIC WATERS: All waters not previously appropriated.

PUBLIC WATER SUPPLY: The system for the collection, treatment, storage, and distribution of potable water from the sources of supply to any community, collection or number of individuals, but excluding water supplies serving one single family dwelling.

RESERVATION: An approved priority claim to water for a future beneficial use.

RETURN FLOW (irrigation): Irrigation water which is not consumed in evaporation or plant growth, and which returns to a surface stream or ground water aquifer.

RELINQUISHMENT: Reversion to the state of a right to divert or withdraw water.

RIPARIAN: Pertaining to the banks of streams, lakes, or tidewater.

RIVER BASIN: The total area drained by a river and its tributaries; watershed; drainage basin.

RUNOFF: That part of precipitation that appears in surface streams. This is the streamflow before it is affected by artificial diversions, reservoirs, or other man-made changes in or on stream channels.

SINGLE DOMESTIC USE: Water used by a single household including up to one-half an acre lawn or garden irrigation.

STORAGE: Water naturally or artificially impounded in surface or underground reservoirs.

STREAMFLOW: The discharge or water flow that occurs in a natural channel. The word discharge can be applied to a canal, but streamflow describes only the discharge in a surface stream course. Streamflow applies to discharge whether or not it is affected by diversion or reservoirs.

STREAM MANAGEMENT UNIT: Stream segments, reaches, or tributaries, each containing a control station, which are identified as units for defining base flow levels.

WATER RIGHT: A right to make beneficial use of public waters of the state.

WATERSHED: The area drained by a given stream; drainage basin.

WITHDRAW: The administrative procedure of closing a water supply source from further appropriation for an indefinite period of time, RCW 90.54.050(2). Also, the removal of ground water from its source.

APPENDIX

WATER RESOURCES MANAGEMENT PROGRAM

REGULATION FOR THE COLVILLE RIVER

BASIN, WRIA-59, CHAPTER 173-559 WAC.

Washington State Department of Ecology
chapter 173-559
Water Resources Program for the Colville River Basin, WRIA 59
Statutory Authority: Water Resources
Act of 1971,
chapter 90-.54
RCW and
Water Resources
Program, chapter
173-500 WAC

NEW SECTION

WAC 173-559-010 PURPOSE. This regulation is adopted in accordance with the Water Resources Management Regulation, chapter 173-500 WAC, which was promulgated under the authority of the Water Resources Act of 1971, chapter 90.54 RCW. This chapter, including any amendments, applies to all waters that lie within or contribute to the-Colville River-drainage basin. This chapter sets forth the department's policies to manage the basin's water resources.

NEW SECTION

WAC 173-559-020 DEFINITIONS. For purposes of this chapter, the following definitions shall be used.

(1) "Allocation" means the designating if specific amounts of the water resource for specific beneficial uses.

(2)"Base Flow" means a level of stream flow established in accordance with Provisions of Chapter 90.54 RCW required in perennial streams to preserve wildlife, fish, scenic, aesthetic, and other environmental and navigational values.

(3) "Consumptive Use" means use of water; whereby there is diminishment of the water .resources.

(4) "Department" means the Washington State department of ecology.

(5) "Director" means the director of the department of ecology.

(6) "Domestic Use" means use of water associated with human health and welfare requirements, including water used for drinking, bathing, sanitary purposes, cooking, laundering, irrigation of not over one-half acre of lawn and garden per dwelling, and other incidental household uses.

(7) "Hydrograph" is a graph showing the variation of streamflow (or stream discharge) with respect to time during a year as determined at a specific cross-sectional location on the stream.

(8) "In-house Domestic Use" means use of water for drinking, cleaning, sanitation, and other uses in a residence, excluding irrigation of lawn and garden.

(9) "Nonconsumptive Use" means a type of water use where either there is no diversion from a source body, or where there is no diminishment of the source.

(10) "Perennial Stream" means a stream with a natural flow which is normally continuous at any given location.

(11) "Reservoir Permit" means a water right permit which authorizes construction of an impoundment structure, storage of water and generally the use of water in the amount of one filling annually.

(12) "Secondary Permit" means a water right permit which allows diversion of water for beneficial use from a storage reservoir. A secondary permit is necessary only for use in excess of one filling annually, or for diversion and use by a party other than the reservoir owner.

(13) "Stream Management Unit" means a stream segment, reach, or tributary, containing a control station, that is identified on a stream reach map in an adopted water resource management program document as a unit for defining base flow levels.

(14) "Water Right" means a right to make beneficial use of public waters of the state.

NEW SECTION

WAC 173-559-030 ESTABLISHMENT OF BASE FLOWS. Section 90.54.020 RCW requires that perennial rivers and streams shall be retained with base flows necessary to provide for preservation of wildlife, fish, scenic, aesthetic, and other environmental values and navigational values. Under this provision, base flows for stream management units of a basin are established which describe discharge rates at stream measurement stations in each unit. The following subsections, WAC 173-559-030(1) through (4),-establish these requirements for WRIA 59:

- (1) In the ,Colville River Basin, monitoring of base flows, will take place at the following control points:

Table 1

<u>Stream Management Unit & Control Station Number</u>	<u>Control Station Location by River-Mile, and Section Township and Range</u>	<u>Stream Management Reach</u>
Upper Colville River No. 12.4080.00	32.1 Sec. 31, T. ;33 N., R. 40 E. W. M.	Colville River from confluence with Stensgar creek to con- fluence of Sheep creek and Deer Creek.
Lower Colville River No. 12.4090.00	5.0 Sec. 29, T. 36 N., R. 38 E.W.M.	Colville River from confluence with Lake Roose- velt to con- fluence with Stensgar Creek

- (2) In the Colville River Basin, base flows for the stream management units in WAC 173-559-030 (1) are set in table 2 as follows:

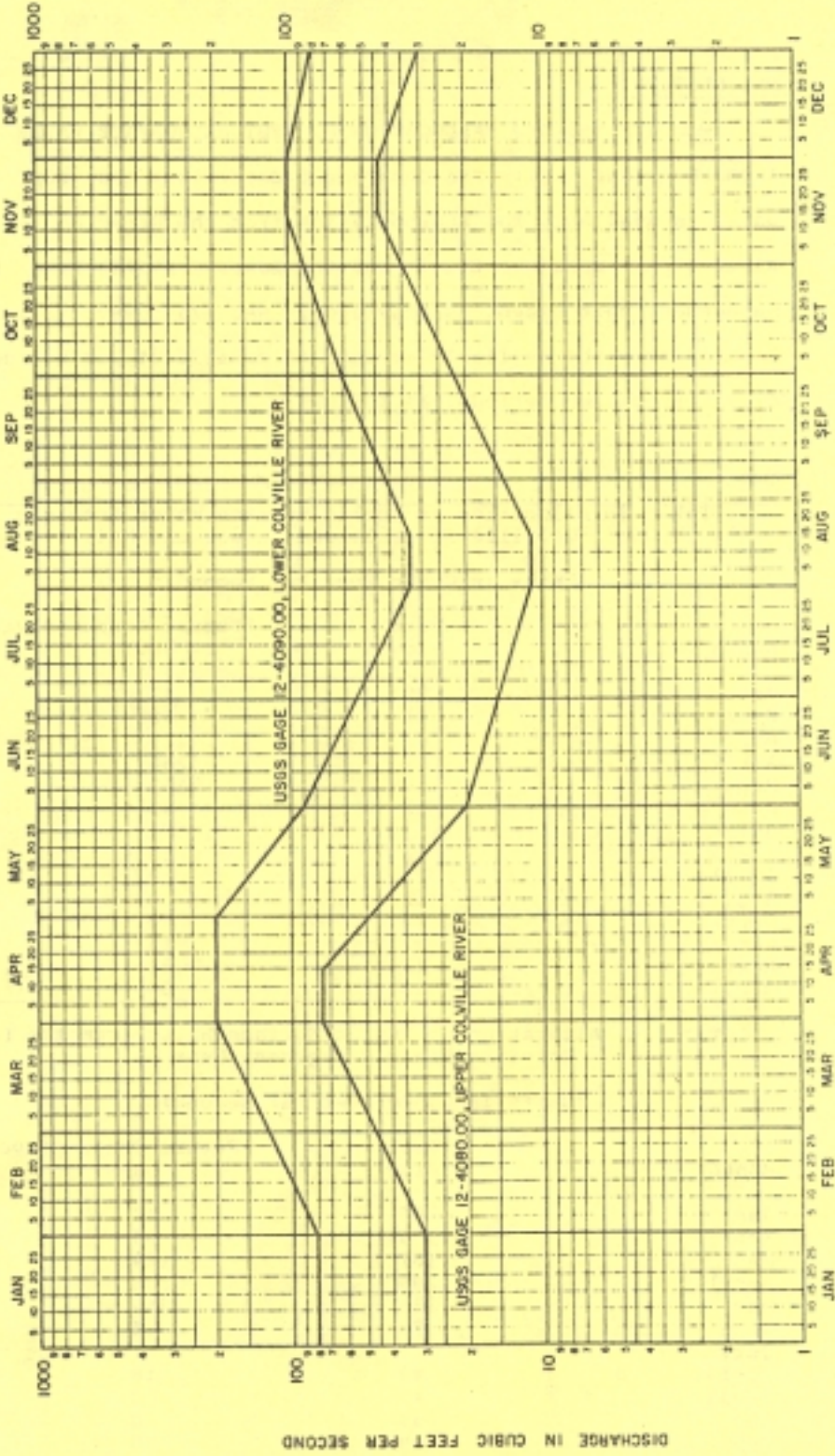
Table .2
Base Flows in the Colville Rider Basin
(in Cubic Feet Per Second)

Month	Day	Upper Colville (12.4-080.00)	Lower Colville (12.4090.00)
Jan.	1	30	80
	15	30	80
Feb.	1	30	80
	15	38	100
Mar.	1	47	124
	15	59	157
Apr.	1	76	57
	15	200	200
May	1	49	200
	15	32	135
Jun.	1	20	90
	15	17	70
Jul.	1	15	55
	15	13	43
Aug.	1	11	33
	15	11	33
Sep.	1	14	40
	15	18	49
Oct.	1	22	60
	15	27	70
Nov.	1	35	84
	15	43	100
Dec.	1	43	100
	15	36	90

(3) Figure 1, Base Flow Hydrographs for Selected Stations, shall be used to define base flows on those days not identified in WAC 173-559-030(2).

(4) All surface water rights, established by appropriation in the Upper Colville and Lower Colville stream management units after adoption of this regulation, shall be subject to the base flows set in WAC 173-559-030(1) through (3). However, these base flows will not apply to in-house domestic use and stock watering use, if an alternate source is not available to satisfy these uses. If the cumulative, impact of numerous single in-house domestic use diversions is determined to substantially affect a stream's base flow or existing rights, then new permits for this use may be denied.

Figure 1 BASE FLOW HYDROGRAPH FOR SELECTED STATIONS



NEW SECTION

WAC 173-559-040 ALLOCATION FOR FUTURE SURFACE WATER

APPROPRIATIONS. (1) The department determines that surface water is available for appropriation from the Upper Colville River stream management unit and the Lower Colville River stream management unit except as provided in WAC 173-553-050(2). Tables 3 and 4 show the available amounts in cubic feet per second during specified periods, as follows:

Table 3 Allocation of Public Surface Water from the
Upper Colville River Stream Management Unit
(Units in Cubic Feet Per Second)

Month	Base Flow	Future Consumptive Uses
Jan.	30	47
Feb.	41	68
Mar.	61	129
April	44	256
May	20	192
June	13	93
July		
1-15	12	18
16-31	12	0
Aug.	11	0
Sept.	17	0
Oct.	27	16
Nov.	43	21
Dec.	36	37

Table 4 Allocation of Public Surface Water from the Lower
Colville River Management Unit
(Units in Cubic Feet Per Second)

Month	Base Flow	Future Consumptive Uses
Jan.	80	47
Feb.	100	68
Mar.	157	129
April	200	256
May	135	256
June	70	94
July		
1-15	43	18
16-31	43	0
Aug.	33	0
Sept.	49	0
Oct.	70	17
Nov.	100	21
Dec.	90	37

(2) Total appropriations for nonconsumptive uses may exceed the allocation limits specified in tables 3 and 4.

(3) Monthly allocations in tables 3 and 4 do not apply to the use of stored water. Specific provision will be included in all reservoir permits regarding period of filling, use and release of water.

NEW SECTION

WAC 173-559-050 CERTAIN STREAMS AND LAKES ARE CLOSED TO FURTHER CONSUMPTIVE APPROPRIATIONS. (1) The department has determined that no water is available for further consumptive appropriation in streams tributary- to the Colville River. Therefore, these tributary streams are closed to further consumptive appropriation except for reservoir storage from November 1 through May 31. Applications for single in-house domestic use, or stockwatering may be approved if no alternate source of water supply is available and the proposed use will not impair existing water rights.

(2) The Upper Colville River and Lower Colville River will be closed to further consumptive appropriation from July 16 through September 30, except for in-house domestic use and normal stockwatering if no alternate source of water supply is available.

(3) If the cumulative impact of numerous single in-house domestic use diversions is determined to substantially affect a closed stream's base flow, then new permits for this use may be denied. Base flow levels for closed streams are specified in the department's publication, "Water Resources Management Program, Colville River Basin."

(4) Appropriation of water from streams tributary to the Colville River for out of stream storage and on-stream storage shall be subject to the base flows recommended in the department's publication, "Water Resources Management Program, Colville River Basin."

(5)(a) Lakes included in table 5 are closed to further consumptive appropriation for specified periods of the year, except for in-house domestic and stockwatering uses. The department may deny applications for domestic use if the cumulative effect of such diversions would be detrimental to retaining a lake substantially in its natural condition.

Table 5 Lake Closures

Lake	Tributary to	Location	Period of Closure
Deer Lake	Sheep Creek	T. 30 N., R. 41 E. Secs. 1, - 11,12,14	June 1-Oct. 31
Loon Lake	Sheep Creek	T. 30 N., R. 41, E. Secs. 33, 34., T.29 N., R. 41 E. Secs. 2, 3,4,10,11	June 1-Oct. 31
Waitts Lake	Waitts Creek	T. 31 N., R. 40 E. Secs. , 17-20	June 1-Oct. 31
Jumpoff Joe Lake	Colville River	T. 31 N., R. 40 E. Sec. 19	June 1-Oct. 31
White Mud Lake		T. 35 N., R. 40 E. Sec. 19.	June 1-Oct. 31
Heritage and Thomas Lakes	Little Pend Oreille River	T. 36 N., R. 42 E. Secs. 8,9, 17,18	June 1-Oct. 31

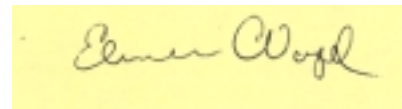
(b) Appropriation of water from lakes not specified in table 5 will be permitted if prior water rights will not be adversely affected and if the appropriation will not conflict with the intent of RCW 90.54.020(3)(a) which stipulates, in part, that "lakes and ponds shall be retained substantially in their natural condition."

NEW SECTION

WAC 173-559-060 GROUND WATER. If it is determined that a future development of ground water affects surface waters subject to the provisions of Sections 173-559-030 through 173-559-050 WAC, then rights to said ground water shall be subject to the same conditions as affects the surface water.

NEW SECTION

WAC 173-559-070 EFFECTS ON PRIOR RIGHTS. Nothing in this chapter shall be construed to lessen, enlarge, or modify existing rights acquired by appropriation or by other means.

A handwritten signature in black ink on a yellow rectangular background. The signature appears to read "Elmer Vogel".