CHAPTER 13

Penticton Creek

13.1 GENERAL DESCRIPTION

Reference is made to the key map on Figure 13.1 and the Schematic diagram on Figure 13.2.

Penticton Creek, with an area of only 70 square miles, is the third smallest of the creeks under discussion in this chapter. Being the highest of the watersheds under study, with over 60% of its area above 5,000 feet, it is also the wettest, with an estimated average runoff of 9.3 inches per year.

In 1970, the area served a population of 18,146 persons and an irrigated area of 1,666 acres. Most of the population and irrigated areas are situated within the boundaries of the City of Penticton and hence are outside the natural watershed boundaries of the creek.

Basically, the system is simple with one high, headwaters reservoir (Greyback) of large capacity (10,240 acre-feet) feeding into the V-shaped valley of Penticton Creek and with virtually all water withdrawals being made near the creek mouth.

The headwaters of Penticton Creek are located about 16 miles northeast of its mouth at the City of Penticton. The watershed ridge separates Okanagan drainage from that of the Kettle River system. Ridge elevations are usually in excess of 6000 feet and include the highest point in the watershed, Greyback Mountain, elevation 7004 feet. Headwaters drainage seeps and flows to the large Greyback Reservoir. This reservoir has a relatively small but high yield catchment. Because it is the only significant storage on the system, most of the Penticton Creek watershed is left to flow uncontrolled.

A number of short tributary creeks join Penticton Creek in herringbone fashion. Their short time of concentration, high yield and the steepness of Penticton Creek combine to suggest that wide extremes of flow could be expected downstream. Although flash flooding appears to be a threat, no actual flooding of consequence has been recorded since 1942. The major tributary streams are Corporation Creek (CP3), draining Corporation Lake (CP2)

at elevation 5600 feet, James Creek (MP1), draining Howard Lake (CP4) at elevation 6200 feet, Reed Creek (MP3), draining Reed Lake at elevation 5900 feet and Boulder Creek (MP4).

Water withdrawals to the City of Penticton are made at two diversion points indicated as UP1 and UP2.

As shown by the area-elevation curves on Figure 14.2, the median elevation of Penticton Creek watershed is 5300 feet. This is 700 feet above the next highest tributary (Mission Creek) and 2400 feet above the lowest (Vernon Creek). The general land mass rises very steeply from Okanagan Lake, less than 20% of the watershed being below 4000 feet. Almost half the watershed area is upland plateau between elevation 5000 feet and 6000 feet. This plateau, which is quite strongly pronounced, has been deeply gouged by Penticton Creek.

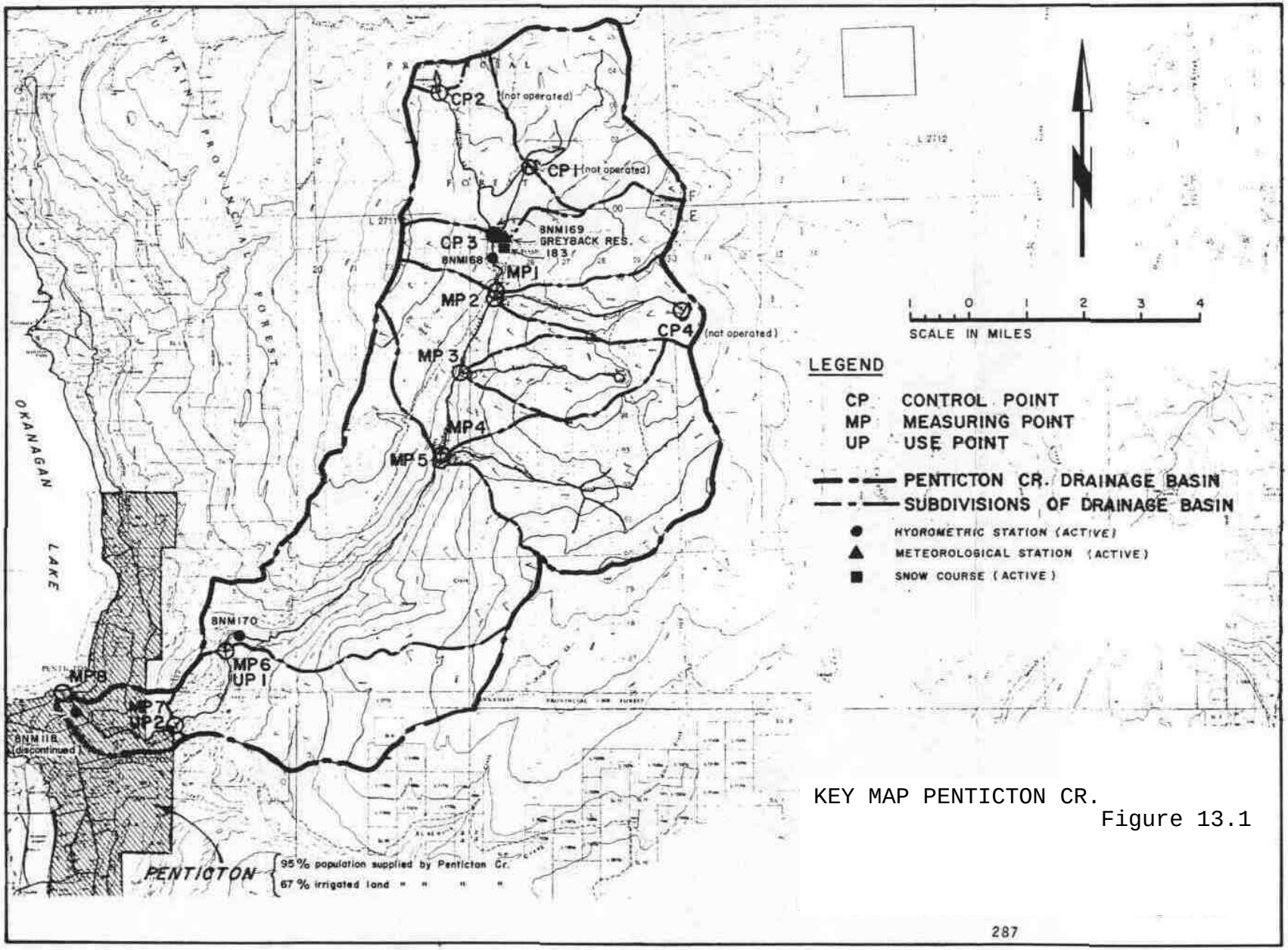
Reference to Figure 14.3 will show that the course of Penticton Creek itself rises at a fairly constant and rapid gradient of 240 feet per mile for the first 10 miles upstream from its mouth to elevation 3500 feet. For the next eight miles the gradient increases to 425 feet per mile, reaching elevation 5100 feet. Thereafter the gradient of the creek channel flattens to near zero as it progresses through Greyback and Penticton #1 reservoirs. Finally, the gradient steepens markedly as it travels the short distance to its headwaters.

There are several hydrometric, meteorological and snow course stations located within the Penticton Creek system and these are located on Figure 13.1, The most significant hydrometric station is 8NM 118 situated near the creek mouth. It has eight years of records taken during the irrigation season but available continuous record covers only the short period from Ju1y 1969 to March 1972. Hydrographs of mean monthly flows passing this station have been plotted on Figure 13.9.

13.2 HISTORICAL BACKGROUND

In 1905 the Southern Okanagan Land Company purchased the vast Ellis holdings which stretched from Penticton to Osyoos for the purpose of developing the area for agriculture. The Shatford Bros. were the original owners of the project, and within a few short years storage dams were constructed, a distribution system was built, parcels of land were sold, and orchard planting had begun. Some of this work was done in the area now called Penticton.

In 1908 it was decided to form the District Municipality of Penticton



KEY MAP PENTICTON CR.

Figure 13.1

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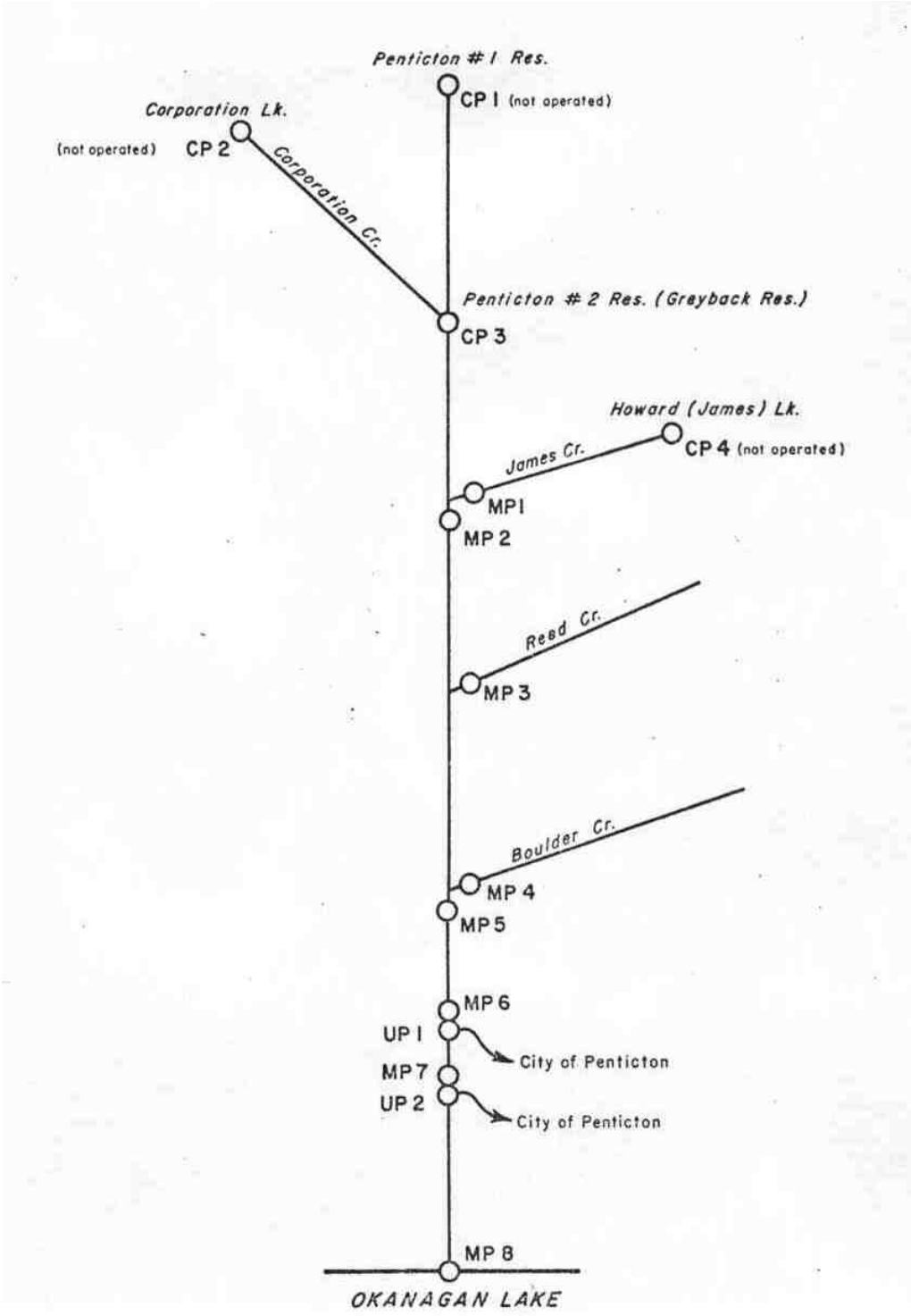


PENTICTON CR. SCHEMATIC Figure 13.2

comprised of land between Okanagan and Skaha Lakes. Mr. A.H. Wade was the first Reeve and formally took office in February of 1909. One year later this newly created municipality purchased both the Penticton Creek and Ellis Creek irrigation systems from the Southern Okanagan Land Company for $100,000. Initially, these systems supplied irrigation water to approximately 2,700 acres, but over the years the growth of the urban portion of the City of Penticton had reduced this amount to an estimated 2,048 acres in July, 1963.

Over the years, Penticton has made many improvements to its irrigation and domestic water supply system. Original earth ditches were concrete lined and wood flumes were replaced by metal flumes on trestles. A 1950 report estimates that the irrigation system was 85% gravity fed and 15% by low lift pumping from Okanagan Lake.

There are two main sources of gravity water supply, namely Penticton Creek and Ellis Creek to the south. It is estimated that 95% of the population and 67% of irrigated land is served by the Penticton Creek system.

One of the earliest reservoirs to be built on the system is at the main-stem headwaters and is called Penticton *#1.* Later, in 1937 and about one mile downstream from *#1* a new dam was built, called Penticton *#2* which had a capacity of 800 acre feet. Finally, the present Greyback dam was built in 1968 at a point roughly one half mile downstream from Penticton *#2.* This dam, with a storage capacity of 10,240 acre feet, inundates the old Penticton *#2* completely and makes the old Penticton #1 inoperable.

13.3 LAND USE AND WATER REQUIREMENTS

With the exception of a very few private users, the water resource of Penticton Creek is applied entirely to meet the needs of the City of Penticon for both domestic and agricultural purposes. As will be noted from the key maps on Figure 13.1, most of the area served lies outside the natural watershed boundary of Penticton Creek. Being an urban, rural and agricultural area, Penticton has to function as an irrigation district as well as a "city".

Water users in terms of population and areas irrigated are as shown on Table 13.1. These are the figures used as input data for computer programming and do not recognize any water users other than the City of Penticton.

Consumptive use diversions as listed in Table 13.1 are assumed to result in no return flow within the Penticton Creek sub-basin. However, consumptive use diversions are expected to provide a return flow to Okanagan Lake. The amount of return flow varies with the type of use and is estimated as follows:

a) For "Irrigation" return flow = 50% of diversion.

b) For "Domestic and Waterworks", return flow = 65% of diversion.

c) For "Industry", return flow = 90% of diversion where applicable.

TABLE 13.1

WATER USERS IN THE PENTICTON CREEK WATERSHED (1970)

Area Served	Area Irrigated (acres)	Population (approx.) (persons)	Irrigation (ac. ft.)	Diversion Domestic (ac.ft.)	Total (ac. ft.)
City of Penticton	1,666	16,000	5,040	6,133	11,173
Other	0	0	0	0	0
Total	1,666	16,000	5,040	6,133	11,173

From the above, water utilization in terms of the amounts of consumed water and return flow within the Okanagan Lake Basin may be tabulated as shown on Table 13.2.

TABLE 13.2

WATER UTILIZATION IN PENTICTON CREEK (1970)

Requirements	Diversion for Consumptive Use (acre feet)	Consumed Water (acre feet)	Return Flow to Okanagan Lake (acre feet)
Irrigation	5,040	2,520	2,520
Domestic and Waterworks	6,133	2,147	3,986
Industry	0	0	0
Totals	11,173	4,667	6,506

A detailed month by month estimate of diversion requirements at the 1970 state of development Is as shown on Table 13.3

In order to acquire rights over the use of water, most users, acting either individually or collectively in an irrigation district, have maintained water licences for storage and diversion granted by the Crown, in right of the Province. Licences provide their holder with rights over the stated amount of

water and, in cases of a shortage, the older licence takes precedence over the newer.

Current water licences in 1970 for both storage and consumptive use are as listed on Table 13.4.

Table 13.3
DIVERSION REQUIREMENTS ON MISSION CREEK (1970)
GIVEN IN ACRE FEET

Month	Type	City of Penticton	Other	Total
J	Agriculture Domestic	0 307	0 0	0 307
F	Agriculture Domestic	0 245	0 0	0 245
M	Agriculture Domestic	0 307	0 0	0 307
A	Agriculture Domestic	0 368	0 0	0 368
M	Agriculture Domestic	756 613	0 0	756 613
J	Agriculture Domestic	1,260 797	0 0	1,260 797
J	Agriculture Domestic	1,260 981	0 0	1,260 981
A	Agriculture Domestic	1,260 981	0 0	1,260 981
S	Agriculture Domestic	504 491	0 0	504 491
O	Agriculture Domestic	0 429	0 0	0 429
N	Agriculture Domestic	0 307	0 0	0 307
D	Agriculture Domestic	0 307	0 0	0 307
Total		11,173	0	11,173

TABLE 13.4

WATER LICENSES ON PENTICTON CREEK (1970)

Area Served	Total Licensed Storage (ac.ft.)	Agriculture (ac. ft.)	Licensed Diversion		Total (ac. ft.)	Computed Diversion Requirement (ac. ft.)
			Domestic (ac. ft.)	Industry (ac. ft.)		
City of Penticton	13,250	4,625	5,553	0	10,178	11,173
Other	105	432	0	0	432	0
Total	13,355	5,057	5,553	0	10,610	11,173

13.4 ESTIMATED NATURAL WATER SUPPLY

Estimated natural water yields for the area are shown on computer printout sheets, reproduced on Figure 13.3 (Dry Year), Figure 13.4 (Average Year), and Figure 13.5 (Wet Year).

In summary, the annual precipitation and natural runoff of the Penticton Creek Basin under the three types of year is as follows:

TABLE 13.5

ESTIMATED NATURAL WATER YIELDS FOR PENTICTON CREEK SUB-BASIN

Type of Year	Annual Runoff		Average Precipitation (Inches)	Remarks
	Kilo Acre Feet	Inches Over Basin		
Dry	21.9	5.9	-	area = 70 sq. miles Abstracted from Computer Print-out Data.
Average	34.8	9.3	26.3	
Wet	58.2	15.6	-	

13.5 STORAGE

Reference is made to Figure 13.2

In a climate of spring floods and summer droughts it is necessary to store a high proportion of total available water so that it may be used when needed. To this end, the Penticton Creek water users have developed a system which once included a number of small reservoirs but now consists of a single large

Date Of Print-out:
Dec. 7, 1972

FLOWS IN AC. FT.

LOCATION	AREA IN K.AC.	J	F	M	A	M	J	J	A	S	O	N	D	YEAR
CPDA 1	4.5	13.	17.	17.	41.	1658.	1224.	55.	38.	28.	28.	17.	17.	3153.
CPDA 2	0.3	1.	1.	1.	3.	123.	94.	3.	3.	2.	2.	1.	1.	232.
CPDA 3	8.2	27.	34.	34.	80.	2896.	2102.	106.	72.	53.	53.	34.	34.	5523.
CPDA 4	0.2	0.	0.	0.	1.	100.	82.	1.	1.	1.	1.	0.	0.	187.
MPDA 1	2.1	4.	4.	4.	15.	894.	698.	19.	15.	12.	12.	4.	4.	1686.
MPDA 2	14.0	41.	53.	53.	129.	5133.	3791.	170.	117.	88.	88.	53.	53.	9766.
MPDA 3	2.2	6.	8.	8.	20.	803.	594.	27.	19.	14.	14.	8.	8.	1526.
MPDA 4	6.8	18.	22.	23.	62.	2520.	1860.	79.	56.	42.	42.	22.	22.	4788.
MPDA 5	26.9	83.	105.	108.	256.	9335.	6814.	332.	222.	169.	169.	105.	105.	17802.
MPDA 6	37.9	117.	149.	161.	359.	10838.	7712.	446.	277.	216.	216.	148.	148.	20788.
MPDA 7	43.6	131.	168.	183.	402.	11392.	8029.	493.	298.	235.	235.	166.	166.	21899.
MPDA 8	44.9	131.	168.	183.	402.	11392.	8029.	493.	298.	235.	235.	166.	166.	21899.

PENTICTON CR. DRY YEAR (NATURAL FLOW) Figure 13.3

Date Of Print-out:
Dec. 7, 1972

FLOWS IN AC. FT.

LOCATION	AREA IN K. AC	J	F	M	A	M	J	J	A	S	O	N	D	YEAR
CPDA 1	4.5	22.	28.	28.	66.	2533.	1857.	87.	60.	44.	44.	28.	28.	4823.
CPDA 2	0.3	1.	1.	1.	4.	185.	141.	5.	4.	3.	3.	1.	1.	350.
CPDA 3	8.2	43.	55.	55.	126.	4463.	3220.	169.	114.	84.	84.	55.	55.	8522.
CPDA 4	0.2	0.	0.	0.	1.	146.	120.	1.	1.	1.	1.	0.	0.	272.
MPDA 1	2.1	6.	7.	7.	24.	1333.	1036.	29.	23.	18.	18.	7.	7.	2514.
MPDA 2	14.0	66.	85.	86.	204.	7850.	5759.	270.	184.	138.	138.	85.	85.	14950.
MPDA 3	2.2	10.	12.	13.	32.	1230.	904.	42.	29.	22.	22.	12.	12.	2342.
MPDA 4	6.8	38.	36.	37.	98.	3844.	2850.	125.	87.	66.	66.	36.	36.	7310.
MPDA 5	26.9	135.	172.	179.	413.	14363.	10418.	533.	353.	266.	266.	172.	172.	27486.
MPDA 6	37.9	199.	255.	276.	611.	17003.	11953.	748.	450.	353.	353.	252.	252.	32704.
MPDA 7	43.6	227.	291.	319.	701.	18009.	12516.	841.	489.	388.	388.	286.	286.	34739.
MPDA 8	44.9	228.	292.	320.	705.	18024.	12522.	844.	490.	389.	389.	286.	286.	34776.

PENTICTON CR. AVERAGE YEAR (NATURAL FLOW) Figure 13.4

Date Of Print-out:
Dec. 7, 1972

FLOWS IN AC. FT.

LOCATION	AREA IN K. AC.	J	F	M	A	M	J	J	A	S	O	N	D	YEAR
CPDA 1	4.5	36.	46.	46.	108.	4050.	2957.	143.	97.	72.	72.	46.	46.	7718.
CPDA 2	0.3	2.	2.	2.	6.	292.	222.	8.	6.	4.	4.	2.	2.	552.
CPDA 3	6.2	71.	91.	91.	207.	7176.	5155.	278.	187.	137.	137.	91.	91.	13711.
CPDA 4	0.2	0.	0.	0.	2.	229.	165.	2.	2.	2.	2.	0.	0.	420.
MPDA 1	2.1	9.	11.	11.	38.	2095.	1625.	47.	36.	29.	29.	11.	11.	3953.
MPDA 2	14.0	110.	142.	143.	335.	12562.	9174.	444.	301.	224.	224.	142.	142.	23944.
MPDA 3	2.2	17.	21.	21.	53.	1969.	1442.	69.	48.	36.	36.	21.	21.	3752.
MPDA 4	6.8	49.	60.	62.	160.	5140.	4534.	205.	142.	108.	108.	60.	60.	11688.
MPDA 5	26.9	227.	291.	103.	688.	23177.	16688.	888.	581.	442.	442.	291.	291.	44309.
MPDA 6	37.9	353.	453.	458.	1100.	27927.	19449.	1311.	762.	603.	603.	444.	444.	53990.
MPDA 7	43.6	413.	529.	584.	1306.	29924.	20500.	1520.	839.	674.	674.	513.	513.	57988.
MPDA 8	44.9	419.	536.	591.	1336.	30024.	20543.	1548.	844.	679.	679.	518.	518.	58232.

PENTICTON CR. WET YEAR (NATURAL FLOW)

Figure 13.5

reservoir, Greyback.

13.5.1 Greyback Reservoir

The new dam replacing Penticton *#2* was completed in 1968. It is of earthfill and has a crest elevation of 5420 feet. Full storage level is at elevation 5410 feet which permits a maximum drawdown of 68 feet to the outlet invert at elevation 5342 feet. The outlet consists of a 24-inch square slide gate which feeds into a 54-inch square outlet culvert.

Releases from Greyback reservoir are intercepted ten miles downstream by a diversion dam with a crest elevation at 1924 feet. Diverted water passes through a 36-inch steel pipe within a 4300-feet long arched tunnel 2-feet wide by 6-feet high. The distribution system consists of almost five miles of irrigation pipeline ranging in size from 14 inches to four inches and a two inch plastic domestic line.

Hydrologic information on Greyback and three old reservoirs (existing but not operating) is given on Table 13.6.

TABLE 13.6
1970 STORAGES IN THE PENTICTON CREEK SYSTEM

Reservoir	Drainage Area (acres)	Live Storage (acre feet)	Surface Area (acres)	Annual Natural Runoff (acre feet)		
				Dry Year	Average Year	Wet Year
Penticton #1	4,500	0	0	3,153	4,823	7,718
Corporation	300	0	0	232	350	552
Greyback	8,200	10,240	250	5,523		13,711
Howard (James)	200	0	0	187	272	420
Total	13,200	10,240	250	9,095	13,967	22,401

Storages are operated in a manner which seems best to the owners for the purpose of irrigation and domestic use. Unlike some of the tributaries discussed in this chapter, the Penticton Creek watershed appears to have a complete sufficiency of storage for consumptive use purposes. It should be noted, however, that no water demands for Fisheries were made at the time analyses were being made. Reference to Figure 13.6 "Dry" Year (1970) shows that, at UP 2, flow has been reduced to zero by the computer for all months except May,

Photo 45 McCULLOCH RESERVOIR - Looking South (Sept. 12, 1973)
Mission Creek System

Photo 46 GREYBACK RESERVOIR - Looking North (Sept. 12, 1973)
Penticton Creek System

June and September, only the minimum irrigation requirements being released from storage. A similar although less acute situation exists in an average year. From any standpoint, but most particularly Fisheries, this would be a highly undesirable state of affairs and it is probable that additional releases from storage would be made. In this case, where nearly all the water is diverted out of the watershed, there is no opportunity to assume that irrigation return flow will make a useful, unmeasured contribution to creek flow.

Methods of operation are by no means rigid. For computer input purposes they have been estimated as shown on Table 13.7.

TABLE 13.7
RULE CURVE VALUES FOR PENTICTON CR. RESERVOIRS

E

Reservoir Name	Reservoir Capacity	Rule Curve Values Expressed as a Percentage of Reservoir Capacity											
		J	F	M	A	M	J	J	A	S	O	N	D
Penticton	0	0	0	0	0	0	0	0	0	0	0	0	0
Corporation	0	0	0	0	0	0	0	0	0	0	0	0	0
Greyback	10,240	50	50	50	50	100	83	67	50	50	50	50	50
Howard	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	10,240												

E

XPLANATION: For any given month -

1) Percentages shown refer to active storage occupied by water at end of month. e.g. 30% storage occupied by water at end of March.
2) When rule curve value is exceeded, all excess water is released.
3) When rule curve value is not achieved, only stated water requirements are released.
4) Information based on local records of water users.

13.6 RESIDUAL FLOWS

Residual flows for selected points on Penticton Creek are shown in Figure 13.6 (Dry Year), Figure 13.7 (Average Year) and Figure 13.8 (Wet Year). It will be noted that since Penticton Creek has not been classified as a fishery stream no deficiencies appear on the deficiency diagrams, Figure 13.9.

In conclusion, the contribution which Penticton Creek makes to the total tributary inflow to Okanagan Lake may be evaluated for various types of year as shown on Table 13.8.

Date of Print-out: Oct. 20, 1972

STORAGES GIVEN ARE FOR THE END OF THE MONTH
UNITS FOR DEMANDS, STORAGES, FLOWS, AND DEFICIENCIES ARE ACRE FEET

		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
CONTROL POINT	1													
CONTROL POINT	2													
CONTROL POINT	3													
STORAGE		4943.	4866.	4742.	4778.	7474.	9776.	8024.	6084.	5120.	4936.	4786.	4944.	
CONTROL POINT	4													
MEASURING POINT	2													
FLOW		218.	130.	177.	94.	2237.	1688.	1917.	2040.	1054.	782.	193.	191.	10241.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	5													
FLOW		259.	182.	211.	222.	6438.	4712.	2080.	2166.	1175.	363.	245.	245.	18248.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	6													
FLOW		0.	0.	0.	0.	7126.	3870.	0.	0.	206.	0.	0.	0.	11202.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	1													
DEMAND, IRRIGATION		0.	0.	0.	0.	756.	1260.	1260.	1260.	504.	0.	0.	0.	5040.
DEMAND, DOMESTIC		112.	89.	112.	134.	223.	290.	357.	357.	179.	156.	112.	112.	2233.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		112.	89.	112.	134.	979.	1550.	1617.	1617.	683.	156.	112.	112.	7273.
FLOW, UPSTREAM		283.	227.	285.	324.	7940.	5610.	2194.	2225.	1182.	410.	289.	289.	21243.
FLOW, DOWNSTREAM		141.	138.	173.	190.	6961.	4060.	577.	608.	499.	254.	177.	177.	13980.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	2													
DEMAND, IRRIGATION		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, DOMESTIC		195.	156.	195.	234.	390.	507.	624.	624.	312.	273.	195.	195.	3900.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		195.	156.	195.	234.	390.	507.	624.	624.	312.	273.	195.	195.	3900.
FLOW, UPSTREAM		195.	156.	195.	234.	7515.	4377.	624.	624.	518.	273.	195.	195.	15107.
FLOW, DOWNSTREAM		0.	0.	0.	0.	7125.	3870.	0.	0.	206.	0.	0.	0.	11202.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
GRAND TOTALS FOR ALL THE USE POINTS:														
DEMAND, IRRIGATION		0.	0.	0.	0.	756.	1260.	1260.	1260.	504.	0.	0.	0.	5040.
DEMAND, DOMESTIC		307.	245.	307.	368.	613.	797.	981.	981.	491.	429.	307.	307.	6133.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		307.	245.	307.	368.	1369.	2057.	2241.	2241.	995.	429.	307.	307.	11173.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NOTE: NO MINIMUM FLOW REQUIREMENT FROM FISHERIES HAS BEEN STATED.

PENTICTON CR. DRY YEAR (1970) Figure 13.6

Date of Print-out: Oct. 20, 1972

STORAGES GIVEN ARE FOR THE END OF THE MONTH
UNITS FOR DEMANDS, STORAGES, FLOWS, AND DEFICIENCIES ARE ACRE FEET

		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
CONTROL POINT	1													
CONTROL POINT	2													
CONTROL POINT	3													
STORAGE		9041.	9065.	9100.	9120.	9192.	10240.	8499.	6748.	5120.	5078.	5054.	5039.	
CONTROL POINT	4													
MEASURING POINT	2													
FLOW		195.	39.	78.	184.	4779.	3711.	2010.	1937.	1764.	179.	184.	185.	19039.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	5													
FLOW		219.	120.	107.	393.	11312.	8370.	2274.	2105.	1694.	309.	193.	193.	27991.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	8													
FLOW		1.	1.	1.	318.	13584.	8817.	344.	1.	1020.	1.	1.	1.	23690.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	1													
DEMAND, IRRIGATION		0.	0.	0.	0.	756.	1260.	1260.	1260.	504.	0.	0.	0.	5040.
DEMAND, DOMESTIC		112.	89.	112.	134.	223.	290.	357.	357.	179.	156.	112.	112.	2233.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		112.	89.	112.	134.	979.	1550.	1617.	1617.	683.	156.	112.	112.	7273.
FLOW, UPSTREAM		271.	209.	264.	591.	13715.	9035.	2498.	2202.	1919.	335.	273.	271.	32783.
FLOW, DOWNSTREAM		147.	120.	152.	457.	12953.	8355.	871.	585.	1298.	238.	161.	161.	25515.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	2													
DEMAND, IRRIGATION		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, DOMESTIC		195.	156.	195.	234.	390.	507.	624.	624.	312.	273.	195.	195.	3900.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		195.	156.	195.	234.	390.	507.	624.	624.	312.	273.	195.	195.	3900.
FLOW, UPSTREAM		195.	156.	195.	547.	13949.	8918.	954.	624.	1331.	273.	195.	195.	27552.
FLOW, DOWNSTREAM		0.	0.	0.	313.	13569.	8411.	340.	0.	1019.	0.	0.	0.	23652.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
GRAND TOTALS FOR ALL THE USE POINTS:														
DEMAND, IRRIGATION		0.	0.	0.	0.	756.	1260.	1260.	1260.	504.	0.	0.	0.	5040.
DEMAND, DOMESTIC		307.	245.	307.	368.	613.	797.	981.	981.	491.	429.	307.	307.	6133.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		307.	245.	307.	368.	1369.	2057.	2241.	2241.	995.	429.	307.	307.	11173.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NOTE: NO MINIMUM FLOW REQUIREMENT FROM FISHERIES HAS BEEN STATED.

PENTICTON CR. AVERAGE YEAR (1970) Figure 13.7

Date of Print-out:
Oct. 20, 1972

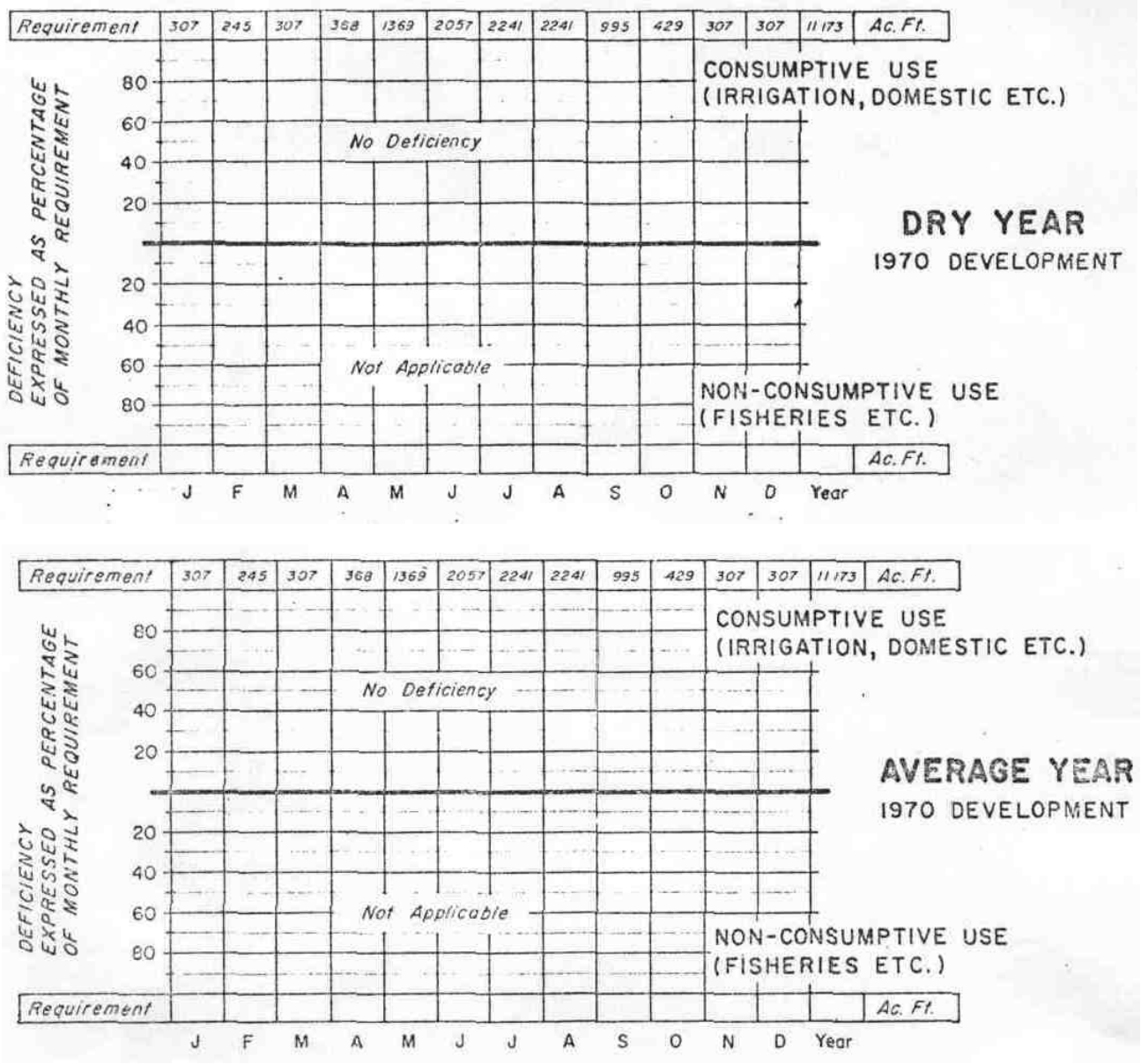
STORAGES GIVEN ARE FOR THE END OF THE MONTH
UNITS FOR DEMANDS, STORAGES, FLOWS, AND DEFICIENCIES ARE ACRE FEET

		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL
CONTROL POINT	1													
CONTROL POINT	2													
CONTROL POINT	3													
STORAGE		5120.	5120.	5120.	5120.	8192.	10240.	8499.	6861.	5120.	5120.	5120.	5120.	
CONTROL POINT	4													
MEASURING POINT	2													
FLOW		110.	142.	142.	335.	9491.	7120.	2184.	1938.	1985.	224.	142.	142.	23941.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	5													
FLOW		227.	291.	302.	686.	20106.	14641.	2629.	2218.	2188.	442.	291.	291.	44314.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
MEASURING POINT	8													
FLOW		111.	290.	282.	958.	25583.	16438.	1046.	280.	1470.	250.	211.	211.	47060.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	1													
DEMAND, IRRIGATION		0.	0.	0.	0.	756.	1260.	1260.	1260.	504.	0.	0.	0.	5040.
DEMAND, DOMESTIC		112.	89.	112.	134.	223.	290.	357.	357.	179.	156.	112.	112.	2233.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		112.	89.	112.	134.	979.	1550.	1617.	1617.	683.	156.	112.	112.	7273.
FLOW, UPSTREAM		351.	453.	491.	1100.	24905.	17392.	3098.	2390.	2380.	603.	444.	444.	53993.
FLOW, DOWNSTREAM		241.	364.	381.	966.	23926.	15842.	1441.	782.	1668.	447.	332.	332.	46720.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
USE POINT	2													
DEMAND, IRRIGATION		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, DOMESTIC		195.	156.	195.	234.	390.	507.	624.	624.	312.	273.	195.	195.	3900.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		195.	156.	195.	234.	390.	507.	624.	624.	312.	273.	195.	195.	3900.
FLOW, UPSTREAM		300.	439.	470.	1172.	25473.	16900.	1644.	859.	1737.	518.	401.	401.	55715.
FLOW, DOWNSTREAM		109.	283.	275.	938.	25083.	16395.	1020.	235.	1425.	245.	206.	206.	48815.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
GRAND TOTALS FOR ALL THE USE POINTS														
DEMAND, IRRIGATION		0.	0.	0.	0.	756.	1260.	1260.	1260.	504.	0.	0.	0.	5040.
DEMAND, DOMESTIC		307.	245.	307.	368.	613.	797.	981.	981.	491.	429.	307.	307.	6133.
DEMAND, INDUSTRIAL		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
DEMAND, TOTAL		307.	245.	307.	368.	1369.	2057.	2241.	2241.	995.	429.	307.	307.	11173.
DEMAND, DEFICIENCY		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NOTE : NO MINIMUM FLOW REQUIREMENT FROM FISHERIES HAS BEEN STATED.

PENTICTON CR. WET YEAR (1970)

Figure 13.8



PENTICTON CR. (1970) DEFICIENCY DIAGRAM Figure 13.9

TABLE 13.8

COMPARISON BETWEEN ESTIMATED INFLOWS TO PENTICTON CREEK AND OKANAGAN LAKE

Type of Year	Regulated Flows at 1970 Development		Percentage Contribution by Penticton Creek to Okanagan Lake Inflow
	Inflow to Okanagan Lake from Penticton Creek	Total Tributary Inflow to Okanagan Lake from All Sources	
	acre feet	acre feet	%
Dry	11,200	279,200	4.0
Average	23, 700	516,000	4.6
Wet	47,100	796,700	5.9