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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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M E M O R A N D U M

May 18, 1981

TO: George Krill

FROM: Stan Mahlum Stan

SUBJECT: Water Supply for the Yakima River Watershed

Measurements taken as of May 1, 1981 for selected snow courses in the Yakima Basin shows a general decline in water content. Storage content of the five major reservoirs, however, continues well above normal.

Snow cover and reservoir contents of the watershed to May 1, 1981 are shown in tabular (page 6) and graphical forms in the report. The normal (average of 1963-77) and 1977 and 1980 snow survey and reservoir contents are included to compare with the present watershed conditions.

The May 1st snow survey shows that only four of the nine selected snow courses still have a measureable snowpack. Comparing with other years, the water content is about 42% of May 1, 1980 and 31% of the 1963-77 average.

The five irrigation reservoirs have an aggregate storage of 997,600 acre-feet, 93.6% of full.

SM:tf

YAKIMA RIVER WATERSHED

WATER SUPPLY
AS OF
May 1, 1981

Water Resources Technical Group
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1981 Water Supply for the Yakima River Watershed

The purpose of this report is to monitor the water supply for the Yakima River watershed during 1981.

The tracking of the watershed is broken into 2 areas: (1) the water storage in the 5 reservoirs and (2) the water storage in the snow pack that drains into the watershed.

The present snow cover and reservoir content of the watershed are shown in graphical and tabular form in this report; along with the normal (average of 1963 - 1977), 1977, and 1980 years to use as a comparison.

The reservoirs being monitored are:

1. Keechelus Lake
2. Kachess Lake
3. Lake Cle Elum
4. Bumping Lake
5. Rimrock Lake

The snow courses being monitored are:

Station	Drainage Covered
Joe Lake	Keechelus Lake, Kachess Lake
Tunnel Ave	Keechelus Lake
Lemah Creek	Kachess Lake, Cle Elum Lake
Fish Lake	Cle Elum Lake
Van Epps Pass	Cle Elum Lake
Waptus Lake	Cle Elum Lake
Bumping Lake (New)	Bumping Lake
Morse Lake	Bumping Lake
Green Lake	Rimrock Lake
White Pass (East Side)	Rimrock Lake

The "Water Supply Outlook for Washington" published by the United States Department of Agriculture, Soil Conservation Service, is the source of the information used in this report.

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TABLE 1

YAKIMA BASIN

SNOW DATA TO FEBRUARY 1

DRAINAGE BASIN AND/OR SNOW COURSE STATION	WATER CONTENT (INCHES)				
	Average 1963-77	1977	1980	1981	Feb. 15
BUMPING LAKE NEW (Bumping)	16.8	0.0	14.6	5.6	6.1
FISH LAKE (Cle Elum)					
GREEN LAKE (Rimrock)	19.4	2.3	23.4	11.3	
JOE LAKE (Keechelus, Kachess)	41.8	13.4	27.9	8.4	
LEMAN CREEK (Kachess, Cle Elum)	31.0	6.1	23.7	12.0	
MORSE LAKE (Bumping)	38.9	3.0	33.9	16.0	
TUNNEL AVENUE (Keechelus)	17.8	1.2	13.0	2.2	3.0
VAN EPPS PASS (Cle Elum)	39.4	10.3	22.6	18.3	
WAPTUS LAKE (Cle Elum)	32.2	6.9	17.8	7.4	
WHITE PASS (E. SIDE) (Rimrock)	18.4	0.0	15.2	3.0	3.5

RESERVOIR STORAGE DATA TO FEBRUARY 1

RESERVOIR	USABLE CAPACITY	NORMAL 1963-77	1977	1980	1981	Feb. 23
KEECHELUS LAKE	157.8	97.6 61.9%	65.6 41.6%	67.4 42.7%	113.8 72.1%	140.2 89 %
KACHESS LAKE	239.0	173.4 72.6%	192.4 80.5%	67.9 28.4%	179.2 75.0%	200.5 84 %
LAKE CLE ELUM	436.9	259.7 59.4%	382.0 87.4%	361.7 82.8%	220.9 50.6%	258.0 59 %
BUMPING LAKE	33.7	7.8 23.1%	4.4 13.1%	9.2 27.3%	17.0 50.4%	30.1 89 %
RIMROCK LAKE	198.0	118.0 59.6%	128.1 64.7%	54.6 27.6%	170.5 86.1%	194.8 93 %
TOTAL	1065.4	656.5 61.6%	772.5 72.5%	650.8 52.6%	701.4 65.8%	823.6 77 %

NOTE: % shown are the % of usable capacity.
* In thousands of acre-feet

TABLE 2

YAKIMA BASIN

SNOW DATA TO MARCH 1

DRAINAGE BASIN AND/OR SNOW COURSE STATION	WATER CONTENT (INCHES)				
	Average 1963-77	1977	1980	1981	March 15, 1981
BUMPING LAKE NEW (Bumping)	20.2	1.0	19.4	7.4	5.6
FISH LAKE (Cle Elum)	31.1	7.1	25.3	12.6	11.1
GREEN LAKE (Rimrock)	29.6	3.8	29.3		
JOE LAKE (Keechelus, Kachess)	53.5	18.0	37.4	25.9	27.7
LEMAH CREEK (Kachess, Cle Elum)	41.9	6.0	31.5	15.9	14.4
MORSE LAKE (Bumping)	47.2	7.7	45.7	27.8	26.7
TUNNEL AVENUE (Keechelus)	21.6	1.2	17.6	5.7	5.2
VAN EPPS PASS (Cle Elum)	43.0	14.6	32.1	27.3	26.1
WAPTUS LAKE (Cle Elum)	41.4	8.0	22.6	15.9	15.6
WHITE PASS (E. SIDE)(Rimrock)	23.1	1.4	19.6	5.7	5.8

RESERVOIR STORAGE DATA*TO MARCH 1

RESERVOIR	USABLE CAPACITY	NORMAL 1963-77	1977	1980	1981	March 15, 1981
KEECHELUS LAKE	157.8	105.4 66.8%	79.8 50.6%	78.3 49.6%	143.4 90.9%	149.5 94.7%
KACHESS LAKE	239.0	183.0 76.6%	203.8 85.3%	76.9 32.2%	204.1 85.4%	210.4 88.0%
LAKE CLE ELUM	436.9	280.2 64.1%	408.3 93.5%	363.3 83.2%	267.3 61.2%	284.5 65.1%
BUMPING LAKE	33.7	8.7 25.8%	9.2 27.3%	15.8 46.9%	32.5 96.4%	32.9 97.6%
RIMROCK LAKE	198.0	125.3 63.3%	129.8 65.6%	68.4 34.5%	198.0 100.0%	195.4 98.7%
TOTAL	1065.4	702.6 65.9%	830.9 78.0%	602.7 56.6%	845.3 79.3%	872.5 81.9%

NOTE: % shown are the % of usable capacity.
* In thousands of acre-feet

TABLE 5

YAKIMA BASIN

SNOW DATA TO APRIL 1

DRAINAGE BASIN AND/OR SNOW COURSE STATION	WATER CONTENT (INCHES)				
	Average 1963-77	1977	1980	1981	April 15, 1981
BUMPING LAKE NEW (Bumping)	21.7	4.4	21.2	0	1.6
FISH LAKE (Cle Elum)	35.3	15.1	30.5	7.1	9.8
GREEN LAKE (Rimrock)	34.9	12.0	30.1	19.0	19.0
JOE LAKE (Keechelus, Kachess)	70.6	40.9	55.4	-	47.0
LEMAH CREEK (Kachess, Cle Elum)	46.6	21.1	32.6	5.3	19.3
MORSE LAKE (Bumping)	59.6	19.9	54.0	30.0	37.5
TUNNEL AVENUE (Keechelus)	24.6	7.4	21.7	1.8	3.3
VAN EPPS PASS (Cle Elum)	57.5	28.4	39.8	26.2	33.6
WAPTUS LAKE (Cle Elum)	44.5	21.9	21.7	12.7	19.0
WHITE PASS (E. SIDE) (Rimrock)	26.0	7.4	23.5	6.3	7.5

RESERVOIR STORAGE DATA* TO APRIL 1

RESERVOIR	USABLE CAPACITY	NORMAL 1963-77	1977	1980	1981	April 15, 1981
KEECHELUS LAKE	157.8	108.8 68.9%	91.0 57.7%	94.4 59.8%	156.9 99.4%	155.6 98.6%
KACHESS LAKE	239.0	189.8 79.4%	214.4 89.7%	92.2 38.6%	217.2 90.9%	224.4 93.9%
LAKE CLE ELUM	436.9	292.1 66.9%	431.0 98.6%	363.4 83.2%	304.2 69.6%	321.4 73.6%
BUMPING LAKE	33.7	8.6 25.5%	13.6 40.4%	27.4 81.3%	33.1 98.2%	33.5 99.4%
RIMROCK LAKE	198.0	142.2 71.8%	139.8 70.6%	96.5 48.7%	197.3 99.6%	196.0 99.0%
TOTAL	1065.4	741.5 69.6%	889.8 83.5%	673.9 63.3%	908.7 85.3%	930.9 87.4%

NOTE: % shown are the % of usable capacity.
* In thousands of acre-feet

TABLE 4

YAKIMA BASIN

SNOW DATA TO MAY 1

DRAINAGE BASIN AND/OR SNOW COURSE STATION	WATER CONTENT (INCHES)			
	Average 1963-77	1977	1980	1981
BUMPING LAKE NEW (Bumping)	15.2	0.0	10.5	0.0
FISH LAKE (Cle Elum)	28.0	2.0	15.6	(Not Measured)
GREEN LAKE (Rimrock)				17.1
JOE LAKE (Keechelus, Kachess)	67.2	40.0	56.2	39.2
LEMAH CREEK (Kachess, Cle Elum)	40.3	14.0	21.6	0.0
MORSE LAKE (Bumping)	61.9	18.0	48.5	32.4
TUNNEL AVENUE (Keechelus)	17.5	0.0	5.4	0.0
VAN EPPS PASS (Cle Elum)	56.1	21.8	48.5	27.9
WAPTUS LAKE (Cle Elum)	38.9	12.9	21.6	0.0
WHITE PASS (E. SIDE) (Rimrock)	27.6	0.0	21.6	0.0

RESERVOIR STORAGE DATA* TO MAY 1

RESERVOIR	USABLE CAPACITY	NORMAL 1963-77	1977	1980	1981
KEECHELUS LAKE	157.8	113.8 72.1%	118.5 75.1%	131.5 83.3%	159.6 100%
KACHESS LAKE	239.0	194.2 81.3%	234.2 98.0%	126.7 53.0%	240.3 100%
LAKE CLE ELUM	436.9	295.9 67.7%	441.3 100%	378.0 86.5%	365.1 83.6%
BUMPING LAKE	33.7	11.6 34.4%	26.2 77.7%	34.4 100%	34.3 100%
RIMROCK LAKE	198.0	136.6 69.0%	154.6 78.1%	144.0 72.7%	198.3 100%
TOTAL	1065.4	752.1 70.6%	974.8 91.5%	814.6 76.5%	997.6 93.6%

NOTE: % shown are the % of usable capacity.
* In thousands of acre-feet

TABLE 5

YAKIMA BASIN

SNOW DATA TO JUNE 1

DRAINAGE BASIN AND/OR SNOW COURSE STATION	WATER CONTENT (INCHES)			
	Average 1963-77	1977	1980	1981
BUMPING LAKE NEW (Bumping)				
FISH LAKE (Cle Elum)				
GREEN LAKE (Rimrock)				
JOE LAKE (Keechelus, Kachess)				
LEMAH CREEK (Kachess, Cle Elum)				
MORSE LAKE (Bumping)				
TUNNEL AVENUE (Keechelus)				
VAN EPPS PASS (Cle Elum)				
WAPTUS LAKE (Cle Elum)				
WHITE PASS (E. SIDE)(Rimrock)				

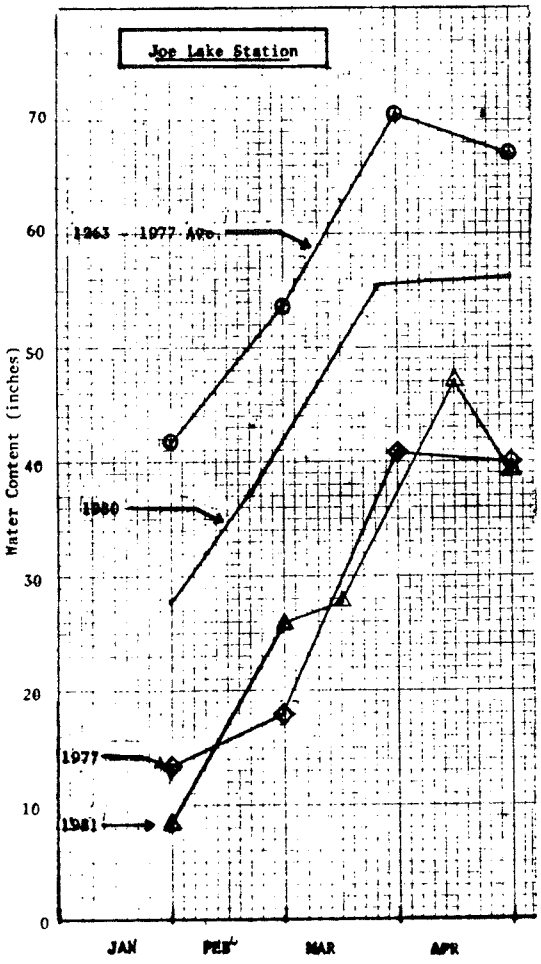
RESERVOIR STORAGE DATA*TO JUNE 1

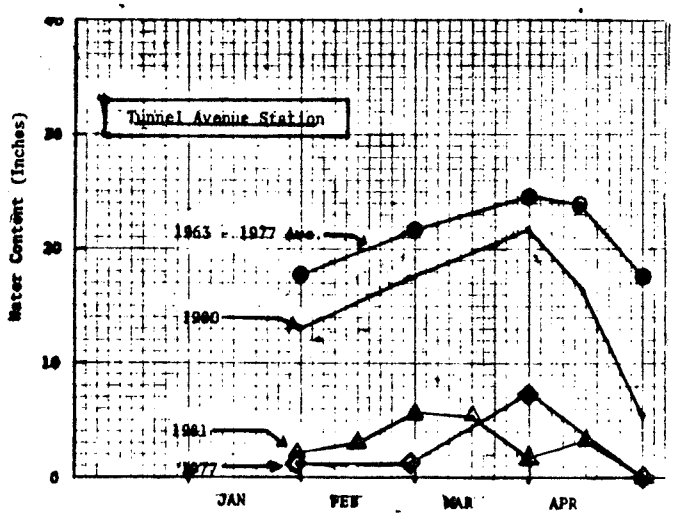
RESERVOIR	USABLE CAPACITY	NORMAL 1963-77	1977	1980	1981
KEECHELUS LAKE	157.8	139.6 88.5%	140.6 89.1%	147.1 93.2%	
KACHESS LAKE	239.0	217.1 90.8%	223.6 93.6%	163.0 68.2%	
LAKE CLE ELUM	436.9	367.9 84.2%	391.8 89.7%	436.2 99.8%	
BUMPING LAKE	33.7	25.4 75.4%	34.9 100.0%	33.4 99.1%	
RIMROCK LAKE	198.0	160.2 80.9%	161.9 81.8%	198.8 100.0%	
TOTAL	1065.4	910.2 85.4%	952.8 89.4%	978.5 91.8%	

NOTE: % shown are the % of usable capacity. 2/19/81
* In thousands of acre-feet

YAKIMA RIVER
ABOVE
KEECHELUS LAKE

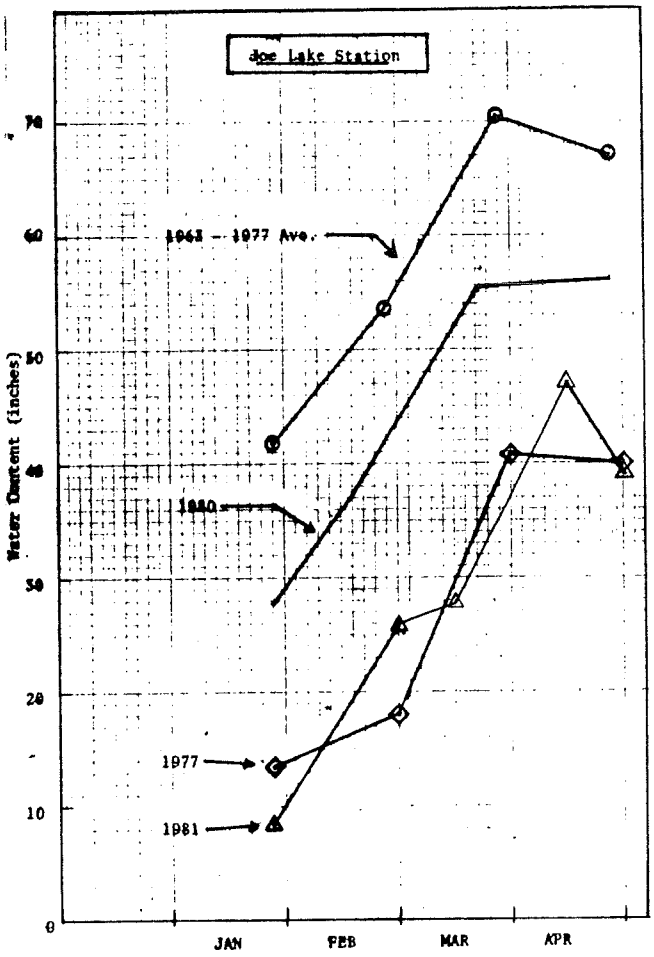
FIGURE 1 (SNOW SURVEY)

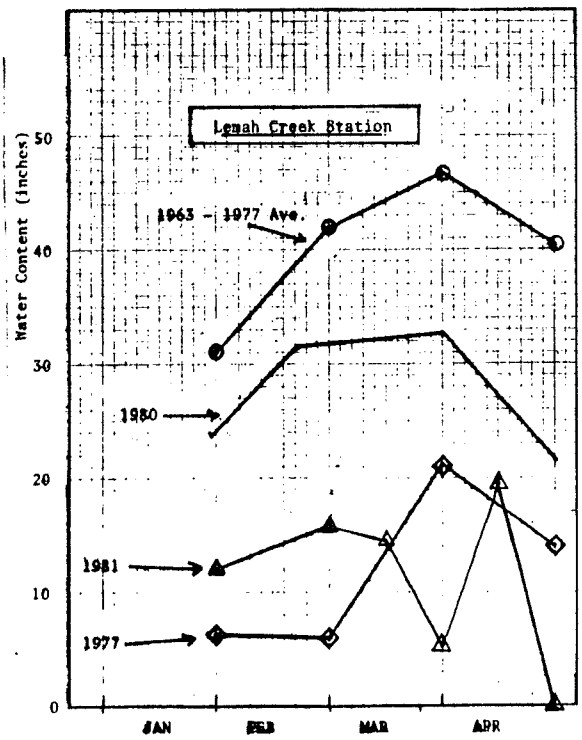




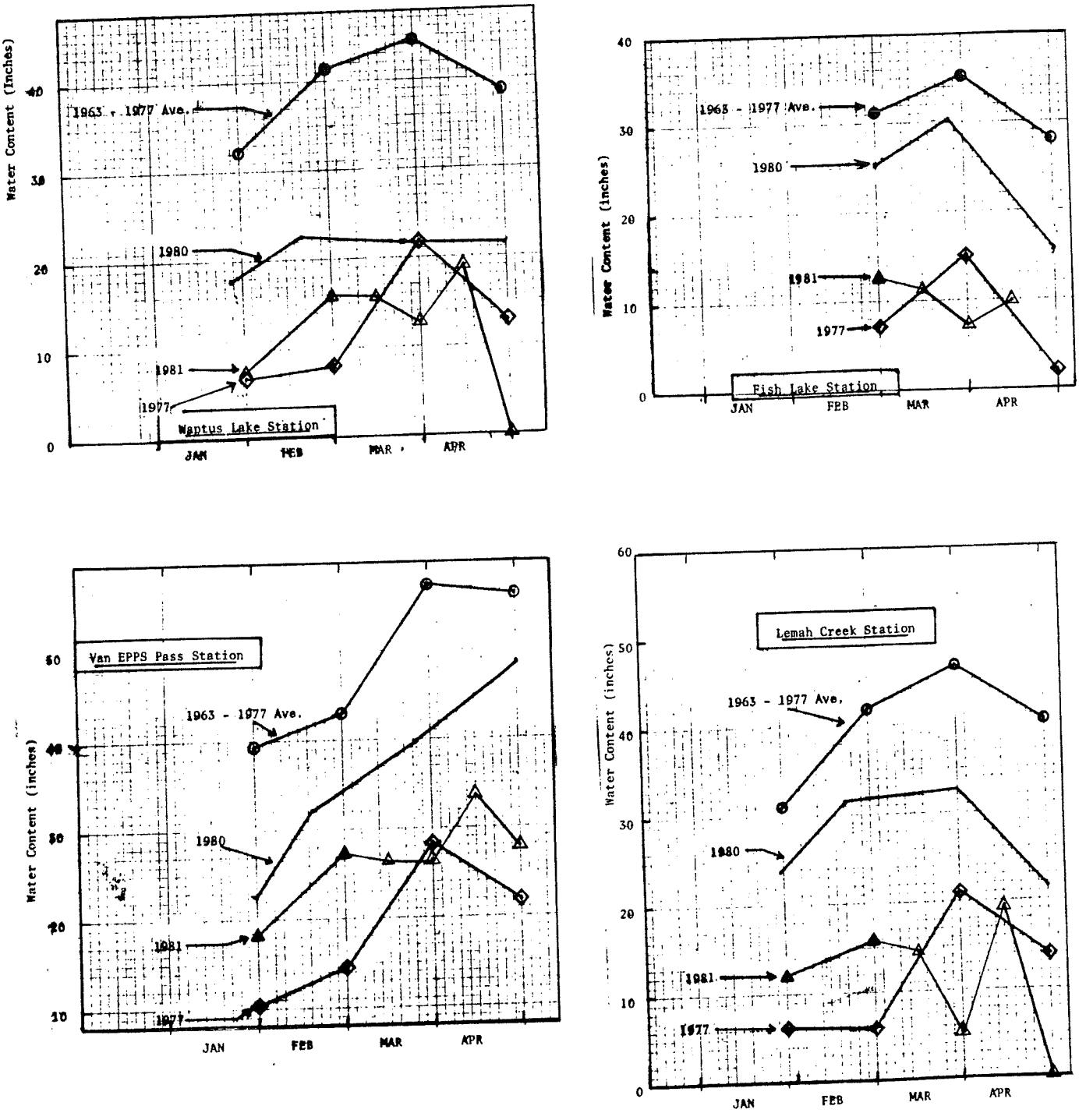
YAKIMA RIVER
ABOVE
KACHESS LAKE

FIGURE 2 (SNOW SURVEY)



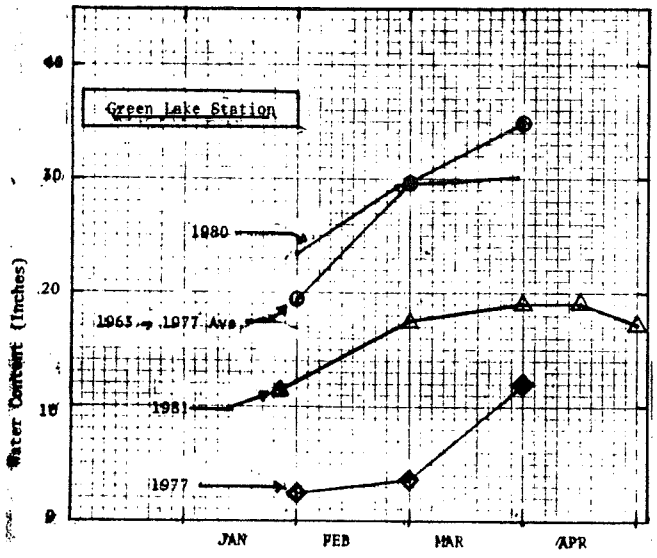


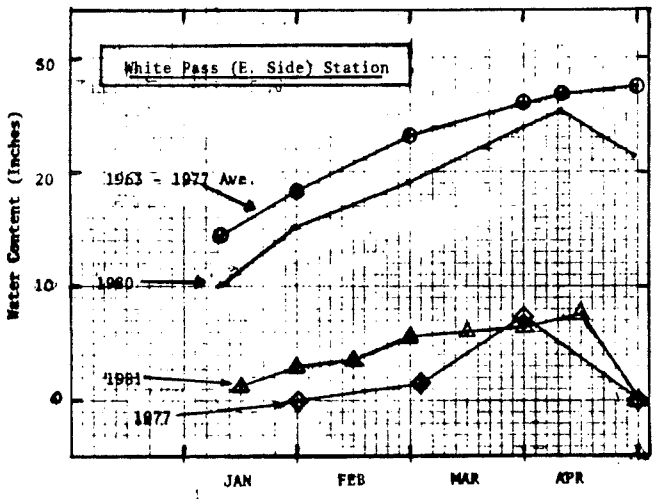
YAKIMA RIVER
ABOVE
LAKE CLE ELUM
FIGURE 3 (Snow Survey)



YAKIMA RIVER
ABOVE
RIMROCK LAKE

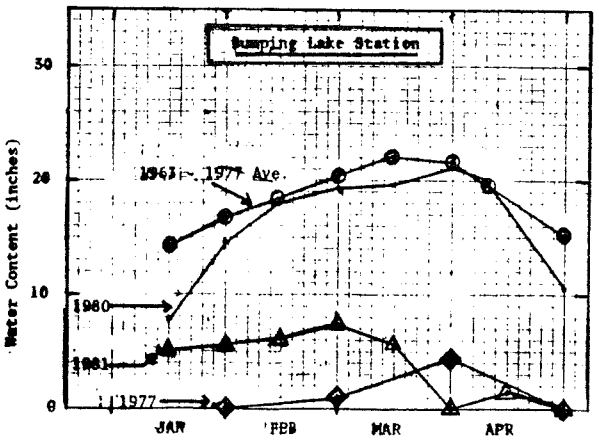
FIGURE 4 (SNOW SURVEY)

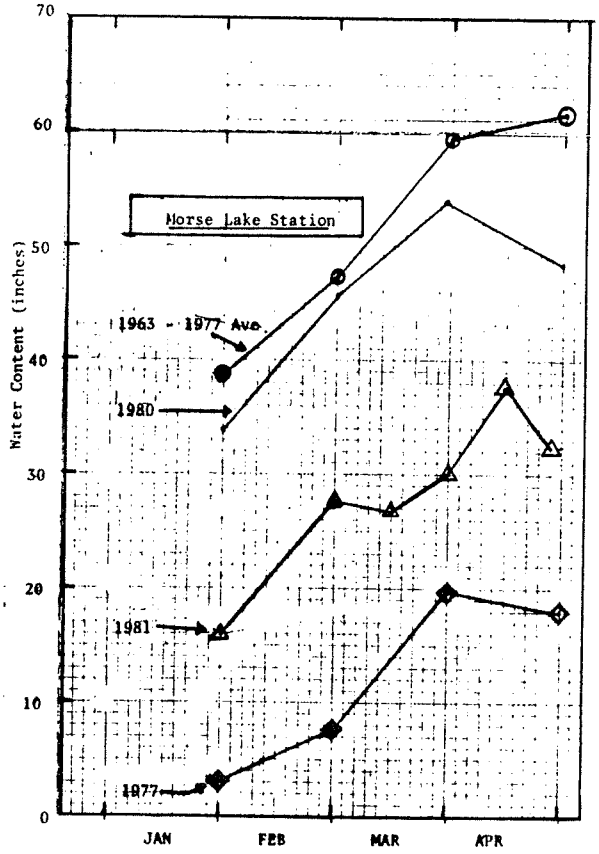




YAKIMA RIVER
ABOVE
BUMPING LAKE

FIGURE 5 (Snow Survey)





YAKIMA BASIN

RESERVOIR CONTENT

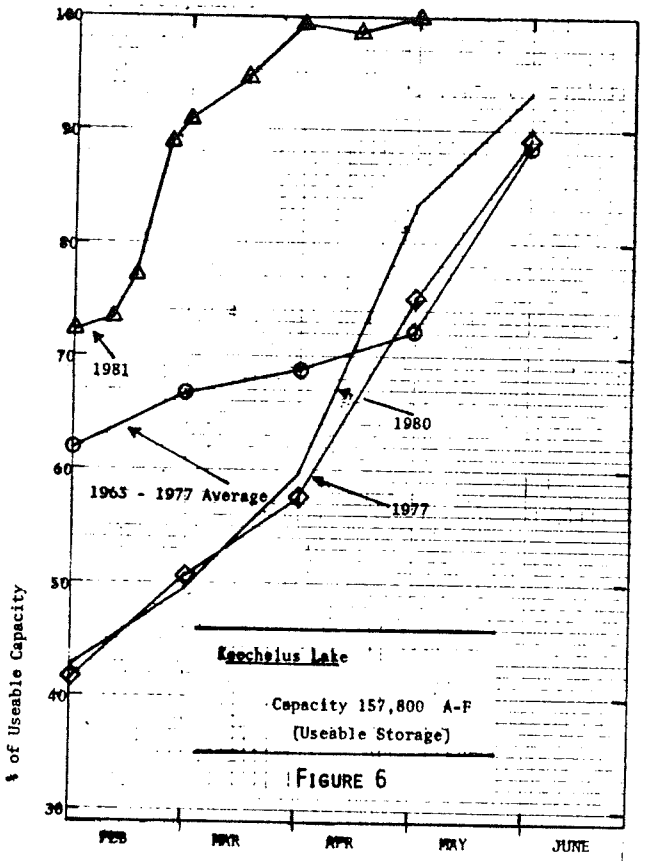
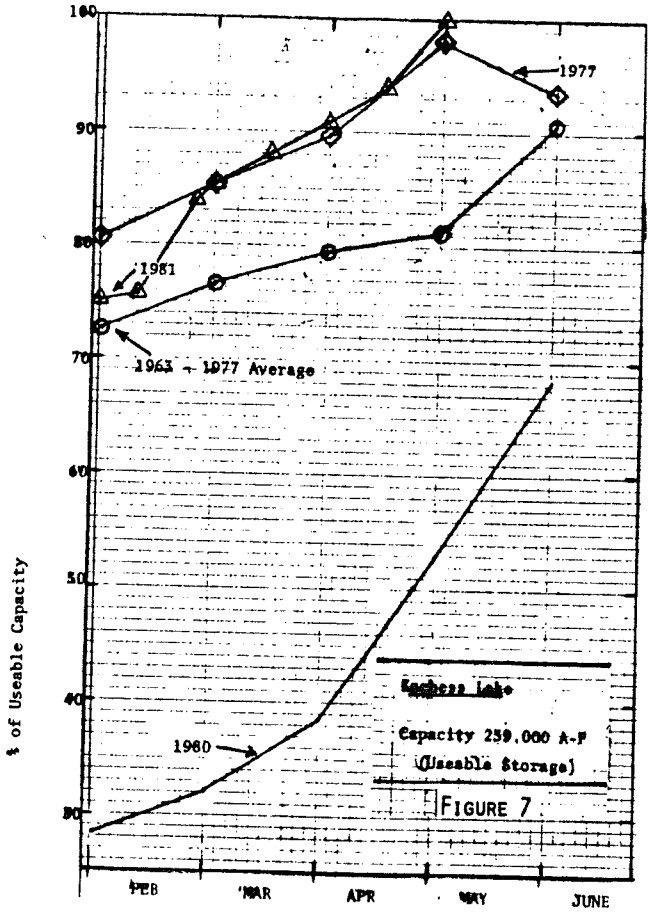


FIGURE 6



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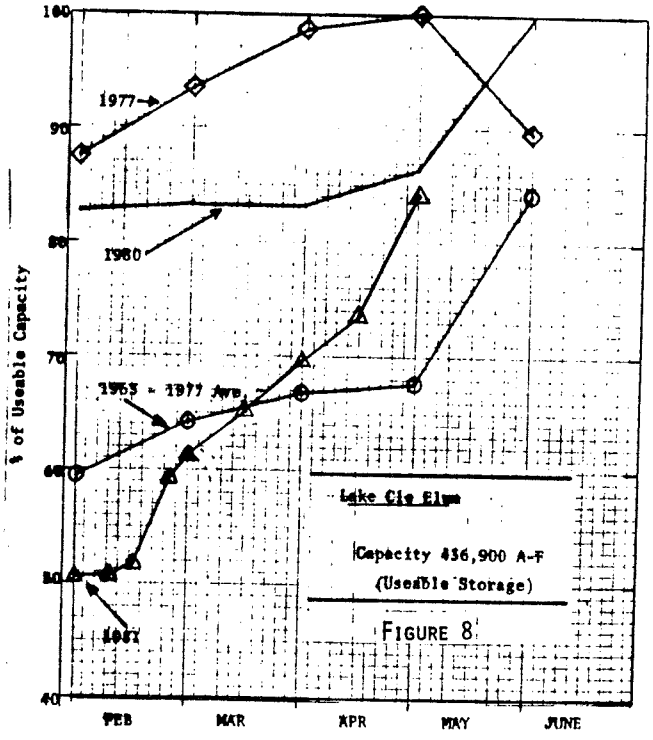

FIGURE 8

YAKIMA BASIN

RESERVOIR CONTENT

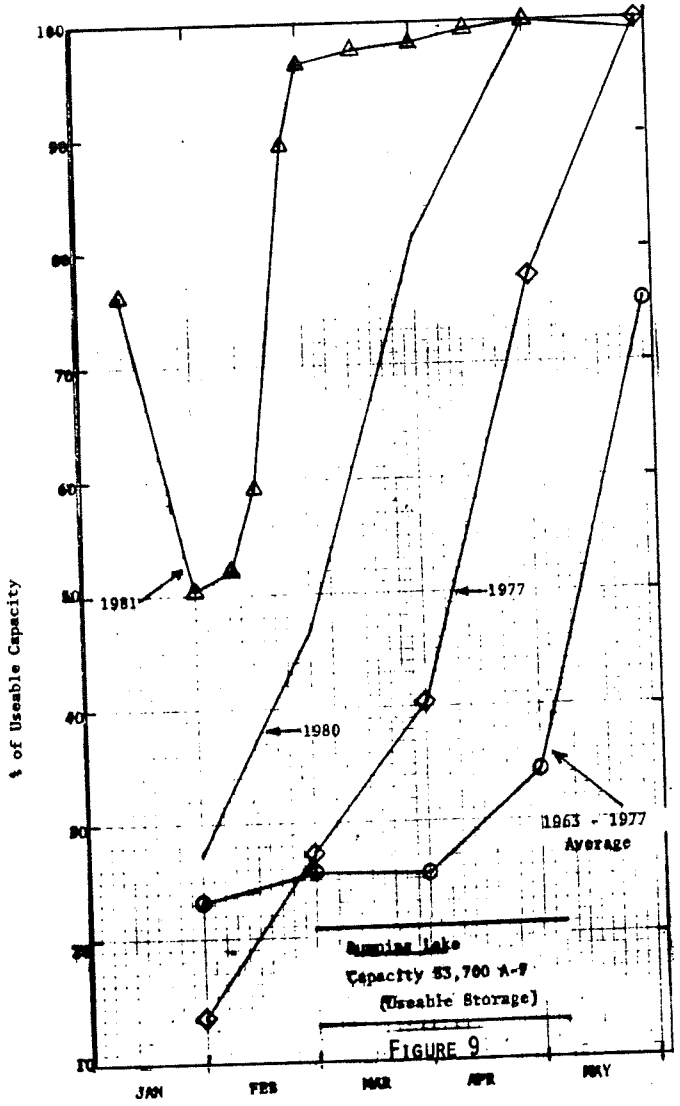

FIGURE 9

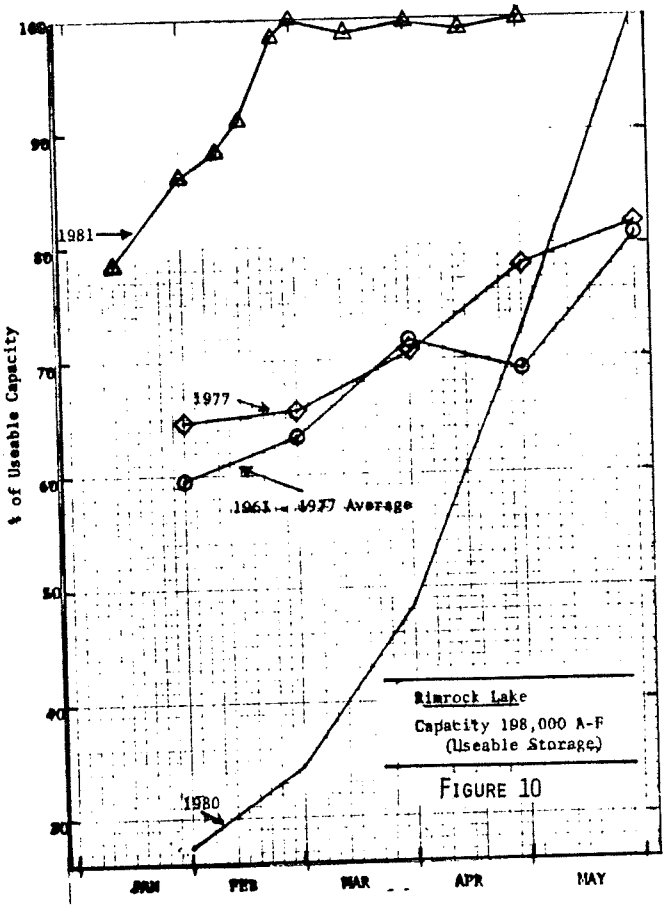

FIGURE 10

DEPARTMENT OF ECOLOGY—ROUTER

TO	INITIAL	DATE
1. Bruce Cameron		
2. Ed Garling		
3. Dam Safety		
4.		
5.		

	APPROVAL		PREPARE REPLY FOR DIRECTOR
	REVIEW AND COMMENT		SIGNATURE
	NECESSARY ACTION		SEE ME
	ACKNOWLEDGE		AS REQUESTED
	NOTE AND RETURN	X	FOR YOUR INFORMATION
	INITIAL FOR CLEARANCE		FILE

REMARKS OR ADDITIONAL ROUTING

FROM G. KRILL DATE 5/18/81

ECY 010-12