



To: C.H. Coulson  
Head  
Hydrology Section

Date: April 18, 1989  
Our File: S2109

Re: Meeting with Summerland Water Advisory Committee

On March 21, 1989 a meeting was held between the attendees listed below to discuss various aspects of the water supply for the District of Summerland:

Committee Members

B.C. Ministry of Environment

Ron Dunsdon - Chairman  
Buck Barkwill  
Fred Gartrell  
Ron Mayne  
Tom Johnston

Neil Banera, Head, Water Allocation, Penticton  
B. Letvak, Hydrology Section, Victoria

I distributed and reviewed the attached information sheet and also reviewed the major aspects of the 1981 study by Eric Weiss. There was discussion regarding the above, about questions raised in R. Dunsdon's letter of February 3, and other items of interest. Major points discussed are described below:

1. The computer outputs attached to C.H. Coulson's letter of May 2, 1982 were discussed with regard to the possible value of diverting water from Pitin Creek or North Trout Creek into Headwaters Lakes Reservoirs. Note that these computer runs were for the case of expanded storage in Headwaters Lakes (4604 acre-feet total, or 1000 acre-feet increase) plus the proposed 1500 acre-feet Trout Creek reservoir. Single year droughts of 1 in 10 and 1 in 100 probabilities were tested. For these particular conditions it was demonstrated that there was no further benefit to the proposed diversion. The expanded storage as tested did provide an increase in water supply capability as opposed to the existing (1981) system. It was suggested that multiple year droughts should be analysed as the proposed diversion may provide benefits for this case. This will be done if the computer program and data sets used for the analysis are still functional.

*Bl* Apr 28/89

6890424

2. Another significant item raised in the above discussion is that there is suspicion that the runoff estimate for the Crescent Lake to Headwaters Lakes sub-basins used in the Weiss study may be too high. This is possible, since the estimates are from a statistical model. In order to verify this, a rigorous data collection program would be required involving reservoir levels, diversion flows, reservoir release flows and spills. With regard to the benefits of the proposed diversion of Pitin Creek or North Trout Creek, the results of the computer analysis of monthly flows could of course be different if the runoff was significantly different from that used in the study.
3. The second information sheet which I prepared for the meeting had a column indicating the annual maximum and minimum storages for the sum of all the Summerland reservoirs. This includes Garnet Lake in the Eneas Creek portion of the Summerland system. It was agreed that it would be desirable to produce separate data for storages in the Trout Creek and Eneas Creek systems. The Summerland Committee agreed to do this. It is recommended that the ongoing data recording for the system storages be divided into the two sub-systems.  
  
The overview information sheet could also benefit from columns showing annual values for snow water equivalent, runoff for a local representative watershed, and seasonal evaporation. This sheet would then give an overview of annual data relating to annual water supply.
4. The Weiss report (subject to the uncertainties described above) and the overview of system operation history (second page of the attachment) both indicate that the existing system is able to meet current levels of water use with a considerable level of safety. There is clearly no urgent need for system expansion or revision. However, it is appropriate to review the various aspects of system water supply capability, operations, data collection, etc. with regard to long term planning.
5. Data collection in the system can be valuable for assessing runoff in the various sub-basins, which is then used for operations, as well as assessment of system water supply capability and the effect of system changes. In order to produce runoff data of adequate quality for these uses it is necessary to design and diligently execute a rigorous program of data collection. This requires a serious commitment and takes a significant amount of resources (time and/or money), but is essential to support high quality management of a water supply system of this type. It should be possible for the Province to provide some

C... Coulson

April 18, 1989

advice and assistance in the review of existing data collection and the design of an improved program.

6. The value of a drought contingency plan was discussed and it was suggested that Summerland undertake the development of such a plan. The Province can probably provide some advice in this regard.
7. Further to the above, Mr. Dunsdon provided a copy of their minutes of the meeting. A copy is attached with some suggested clarifications added by hand. Regarding the item on data collection, it should be emphasized that better data on runoff in the system (especially key sub-basins) is required if better analysis of system water supply capability is hoped for in the future.
8. A follow-up discussion with Buck Barkwill was held by telephone to discuss runoff observations taken by the District for 1988. As an offshoot of our discussions, I am forwarding copies of runoff data and some plotted annual hydrographs for Bull Creek. This is to provide an example of runoff timing and magnitude for an unregulated sub-basin of Trout Creek. The years chosen were examples of high and low runoff volumes and peaks, and early and late peaks. The "average" hydrograph for the period of record is included for comparison. NOTE: two graph scales are used because of the large variation in runoff for the years in question.



D.B. Letvak  
Senior Hydrological Engineer  
Hydrology Section  
Water Management Branch  
387-9477

DBL/sz  
AES/W3383

Attachment

cc: R. Dunsdon  
N. Banera

## TROUT CREEK RUNOFF

### Basin Area

- a) Above WSC gauge (764 km<sup>2</sup>) = 295 mi<sup>2</sup>
- b) Sum of sub-basins above intake = 279 mi<sup>2</sup>

### Runoff Estimates

- a) W.S.C. station 8NM158, 1970-82 (not adjusted for water use)
  - Average annual runoff = 55 000 ac-ft
  - Water use correction - average annual = 10 000
  - "Natural" annual runoff 65 000 ac-ft
  - Runoff depth 4.1 inches
  
- b) Runoff Estimates Model (used in Weiss report)
  - Estimated runoff (sum of sub-basins) = 52 000 ac-ft
  - Runoff depth 3.5 inches
  
- c) Grid Square Estimates (Okanagan Basin Study)
  - Estimated annual runoff = 82 000 ac-ft
  - Runoff depth 5.1 inches
  - Annual Precipitation 22.5 inches } Guesstimates
  - Annual Evaporation 17.4 inches }

Annual runoff 23% annual precipitation

TROUT CREEK - SUMMERLAND STORAGES AND WATER USE  
(acre-feet)

	Reservoir Storages *			Annual Use		
	Date	Actual	Total	Trout Creek	Eneas Creek	Total
1977	Jan. 29	4990	11615			
	Apr. 30	8311	11615			
	Aug. 30	3697	11615	8000	1000 <sup>e</sup>	9000
1978	June 28	10685	11615			
	Oct. 26	6457	11615	9874	1285	11159
1979	May 15	10708	11615			
	Oct. 12	5912	11615	12442	1334	13776
1980	-	-	11615			
	-	-	11615	10079	750	10829
1981	-	-	11202			
	Feb. 28/82	10813	11202	9742	765	10507
1982	Apr. 1	11256 F	11202			
	Feb. 27/83	10240	11202	8950	1000	9950
1983	Apr. 29	11202 F	11202			
	Oct. 25	9980	11202	8425	900	9325
1984	Mar. 31	11251 F	11202			
	Jan. 26/85	9190	11202	9790	1025	10815
1985	Apr. 28	11246 F	11202			
	Aug. 30	6557	11202	11556	1140	12696
1986	June 13	11285 F	11202			
	Nov. 7	9329	11202	9810	765	10575
1987	May 1	11201 F	11202			
	Oct. 6	5155	11202	12540	1160	13700
1988	June 1	10875	11202			
	Sept. 29	6733	11202	9640	825	10465

\* Including Garnet Lake 1891 ac-ft.  
(Eneas Creek sub-system)

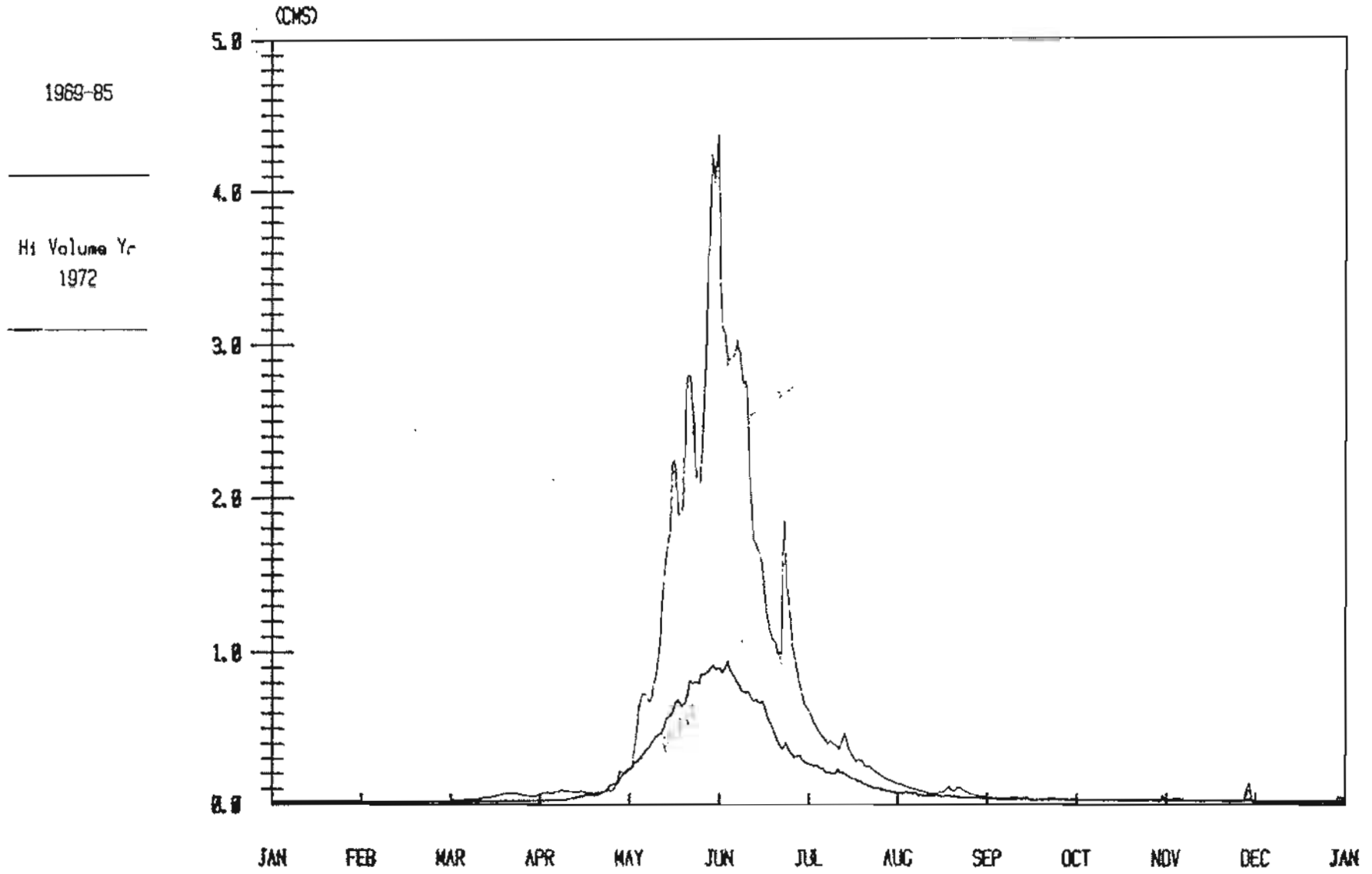
F - System full or "over-full"





# 08NM133 BULL CREEK near CRUMP

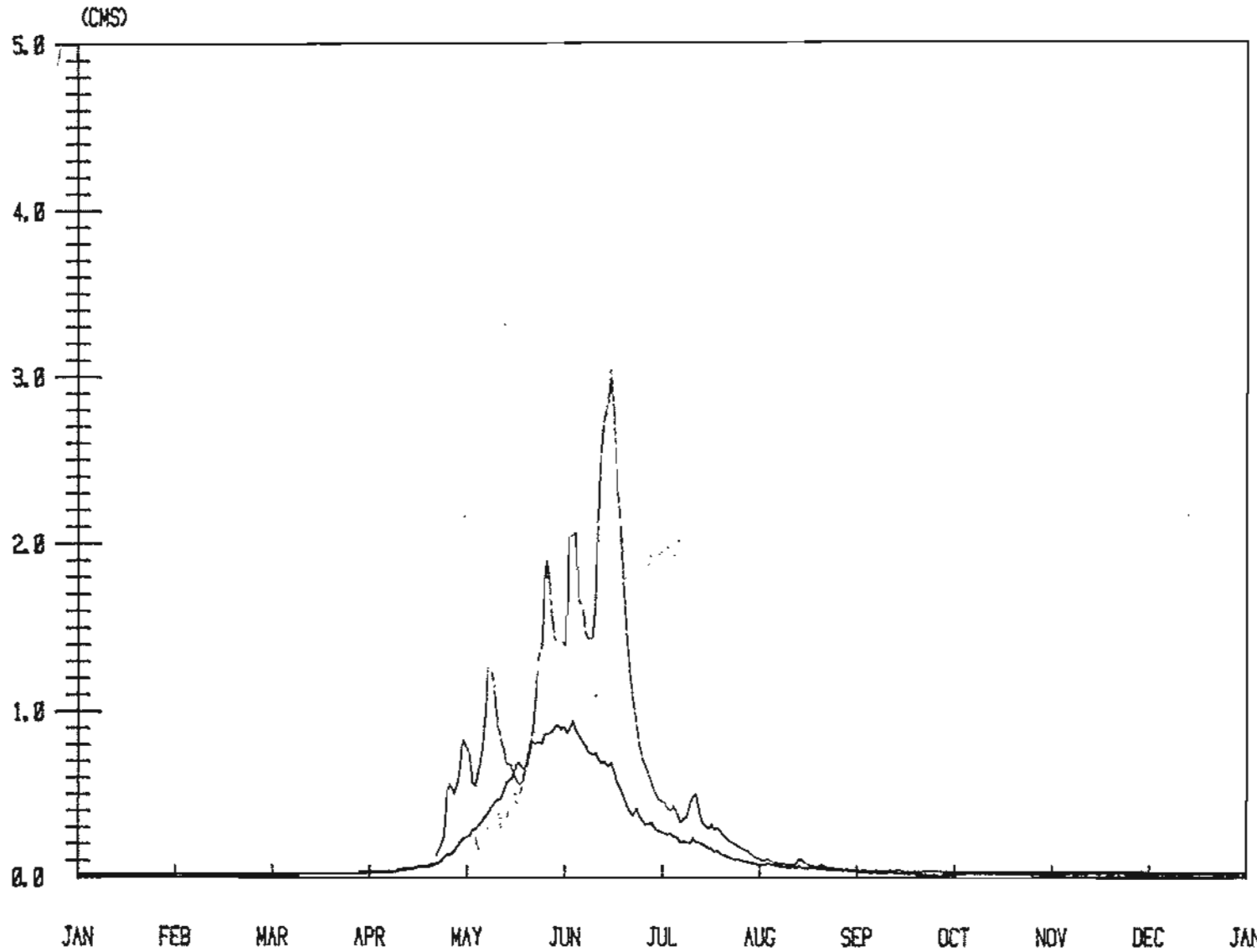
Average Daily Discharge (cms)





Ø8NM133 BULL CREEK near CRUMP

Average Daily Discharge (cms)

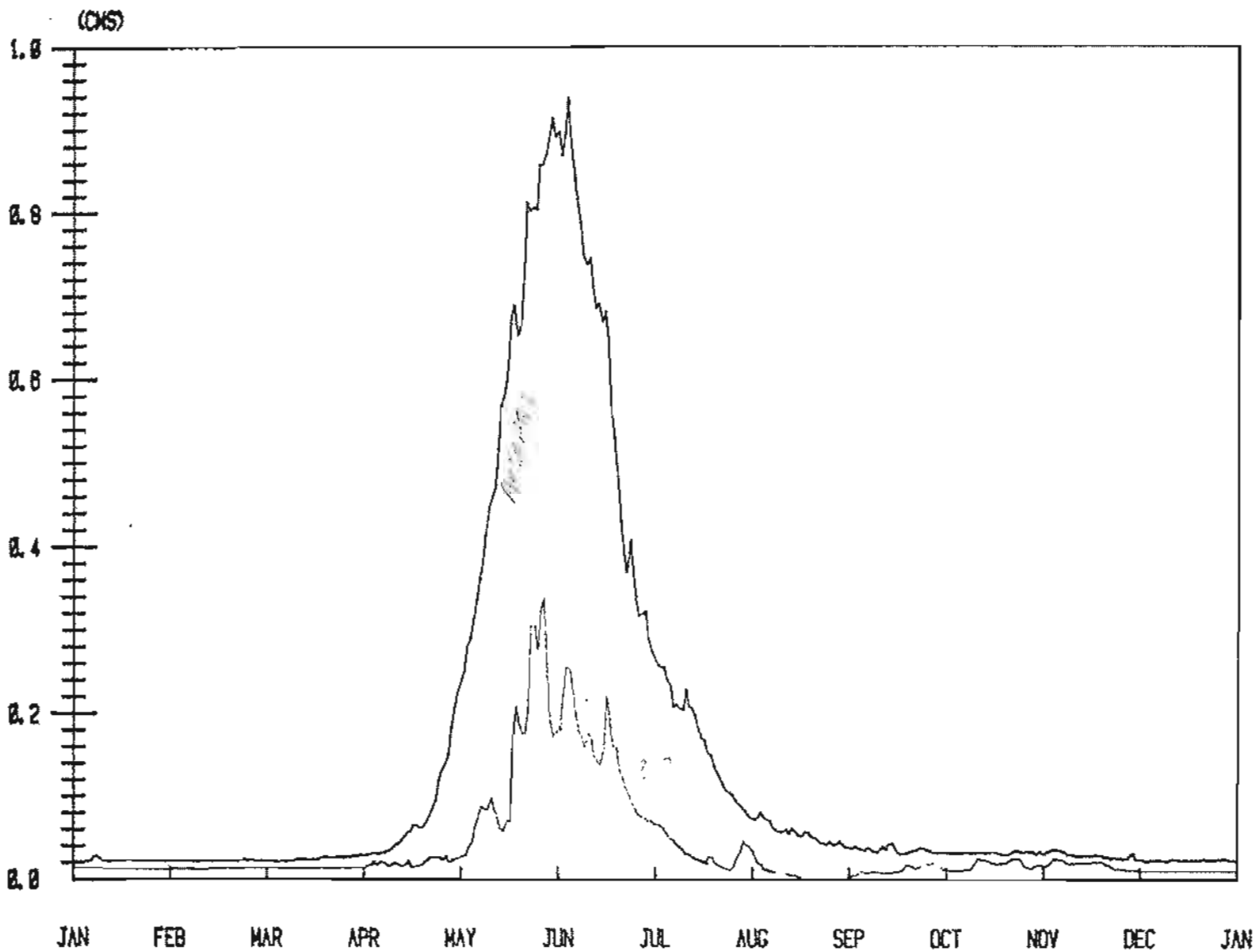


1969-85

Late Dis. Yr  
1974

Ø8NM133 BULL CREEK near CRUMP

Average Daily Discharge (cms)



# 08NM133 BULL CREEK near CRUMP

Average Daily Discharge (cms)



1969-85  
-----  
Early Dis Yr  
1977  
-----

