Province of British Columbia

Ministry of Environment
WATER MANAGEMENT BRANCH

MEMORANDUM

To: W. Dreher
Regional Manager
Skeena Region

Date: 7 Feb. 1992
Our File: S2108-6
Your File: 6-General

Re: Hydrology Section Report
Skeena Region Low Flow
February 4, 1992.

In response to the May 9, 1990 memorandum request from J. B. McGonigal enclosed please find a copy of the above report by W. Obedkoff. The Tables of the report can be found on the enclosed diskette in Excel format.

C.H. Coulson, P. Eng.
Head
Hydrology Section
Water Management Division
387-9481

File No. S2108-6
Study No. 318
4 February 1992

HYDROLOGY SECTION REPORT

SKEENA REGION LOW FLOW

INTRODUCTION

Small streams in the populated areas of northwestern British Columbia often exhibit heavy water usage for domestic and agricultural purposes. In response to this condition the Water Management Division of the Skeena Region requested the Hydrology Section to estimate the low flows of certain designated creeks and lakes. These streams were either classified for water licensing purposes as fully recorded without additional storage development, or faced water shortages or other low flow problems.

The basic procedure used in this study is a regional approach which relates hydrometric data to watershed characteristics. Regional graphs were used to estimate drought runoff and low flows from measured basin characteristics of the problem sites.

Reference memoranda used in this study are listed as follows and are referred to by number in the text.

1. J.W. McCracken to water managers; 17/04/90; 55.32.01
2. J.B. McGonigal to H. Coulson; 09/05/90; 6-General
3. W. Obedkoff to C.H. Coulson; 18/09/90; S2108-6
4. W. Obedkoff to J.B. McGonigal; 17/10/90; S2108-6
5. S.Morgan to B.Obedkoff;05/11/90,18/12/90,10/01/91;55.4408
6. J.B. McGonigal to B. Obedkoff; 24/01/91; 55.4408
7. S. Morgan to B. Obedkoff; 06/03/91; 55.4408
8. S. Morgan to R. Nyhof;26/03/91,08/05/91,09/09/91;55.4408.

Reference reports used in this study are:

1. Hydrology report for the Skeena-Nass Strategic Plan; Water Management Branch; 18/05/83; IE-4.1-Hy
2. Hydrology report for the Fraser-Delta Strategic Plan; Water Management Branch; 15/06/83; IE-4.1-Hy.

SKEENA REGION

The study area consists primarily of the Skeena River basin but includes the Queen Charlotte Islands and the headwaters region of Stikine River. The geography of the western edge of this area is comprised of a continuous chain of coast mountains lying perpendicular to the prevailing westerly flow of warm, moist-laden Pacific air masses. This chain and the following mountain ranges act as orographic barriers which force general patterns of decreasing precipitation in an easterly direction. Low flows on small coastal watersheds occur in late summer commensurate with the driest season. However, low flows in the interior occur in the winter due to dominant arctic air masses which freeze surface vaters and restrict discharge to groundwater base flow. Thus, low flows in the coastal zone are controlled primarily by weather conditions but in the interior by surficial geology.

The Skeena River region of the study area contains three hydrologic zones as defined in a hydrology study done in Report 1. The Coast Mountain zone extends to a boundary approximately 50 km east of and parallel to the coastal divide; the Transition zone covers a 50 km parallel strip through the Hazelton Mountains; the Skeena Mountain-Plateau zone lies to the east up to the eastern divide of Babine River. These zones were generally applied in this study but were subdivided into local low flow zones or subregions as defined by hydrometric station data in the vicinity of problem basins.

DATA

All streamflow data in the study area as published by Water Survey of Canada were considered in this study. All subregions, except Burns Lake, were represented by several hydrometric stations. Only small and intermediate sized basins, smaller than the subregions, were used. However, approximately two thirds of the stations measured drainage areas greater than 100 km2, whereas, all but 5% of the problem basins were smaller. Of the 47 regional stations analysed 23 were used in direct reference for making the low flow estimates; the remainder were used in a supporting role in the regionalization procedures. All streamflow data used were deemed to be natural flow as they were checked for upstream diversions by water license data supplied by the Regional office (Memorandum 6 in response to Memorandum 4). The reference stations with summarized data are listed Table 1.

PROCEDURE

The study requirements and designated problem stream sites were given in Memorandum 2. Water use or license purpose, time periods, low flow durations and recurrence interval criteria were

provided (Memorandum 2 high priority stream criteria were used: these were slightly different from Memorandum 1). Study site designations were later refined in Memoranda 5 and 8. The following list outlines the criteria of requirements with the symbols of water use defined for use in the study (Table 2).

WATER USE LICENSE	SYMBOL	TIME PERIOD	RECURRENCE INTERVAL (years)
Runoff:			
Water Works	WW1/2	1 year	5
Irrigation	I	1 year	5
Low Flow:			
Medium Water Works	WW1	7 days	10
Large Water Works	WW2	7 days	25
Irrigation	I	30 days	5
Domestic	D	15 days	5

The regional procedures used for making estimates of drought annual runoff and minimum seven-day average low flows were based on Reports 2 and 1, respectively. Hydrometric data were extracted to determine annual runoff and seven-day low flow averages. The seven-day average data sets were defined for two seasons, summer (June-September) and winter (October-May) based on a study of regional annual hydrograph shapes. However, the northern subregion of Upper Stikine was characterised by a later summer, starting in July. This definition is important, especially for interior mountain and northern streams that have significantly higher summer low flows than winter, where too early a season definition would produce a false summer low flow from the previous winter trough part of the hydrograph. The end of the period of record for the various data sets varied between 1989 and 1990; at the time of compilation the most recent data available were up to mid-1990. Frequency analyses were done with the best distribution fit based in most cases on the Kolmogorov-Smirnov statistic.

Annual Runoff

The regional runoff analysis was based on a graphical plot of mean annual basin unit runoff (mm) versus basin median elevation (m) of gauged watersheds listed in Table 1 (other unlisted hydrometric stations were used but only in a supporting role). Parallel runoff-elevation curves (straight lines on semi-log paper) were drawn through representative station points

to define the local runoff zones or subregions. The common slope was defined as that for the Lower Bulkley zone which had the greatest number of stations with the largest median elevation range (500 to 1500 m) and produced a straight line plot. Runoff estimates for the required problem basins were extracted as points from parallel line projections that most closely defined the runoff variation of the problem basins. Recurrence-interval estimates were made by prorating these mean annual estimates by subregional ratios of recurrence interval - to - mean-year. These ratios were defined by the frequency results of the stations that best represented hydrologic zones and are noted as reference stations in Table 2. The stations may be different from those used to define the mean annual estimates since they covered single subregions representing runoff variation due to local physiographic and climatic influences.

Seasonal Low Flow

The regional low flow analysis was based on graphical plots of seven-day average low flow (m3/s) versus basin drainage area (km2). Hydrometric stations of Table 1 were superimposed on summer and winter plots of Report 1 graphs to define the subregions or local runoff zones (other unlisted stations were used but only in a supporting role). Mean-year (summer and winter) low flow estimates for the problem basins were extracted as points from curve projections (with similar curvatures that converged to the upper limit of the regional curves of Report 1) that most closely defined the low flow variation of the problem basins. Recurrence-interval estimates were made by prorating these mean-year estimates by two subregional ratios, specified duration - to - seven-day average and recurrence interval - to - mean-year. These ratios were defined by the frequency results of the nearest representative subregional stations and are noted as reference stations in Table 2. In this case the same stations were used for mean-year estimates and recurrence-interval ratios because the subregions displayed greater variation since low flows are controlled to a greater degree by watershed surficial geology and physiography.

RESULTS

Drought annual runoff and summer and winter specified duration low flow estimates at designated problem stream sites are listed in Table 2. As with all input data (Table 1) resultant values are significant to no more than three figures. Hydrometric gauges can easily be located from published material and the problem sites are generally located at the mouths of creeks. Regional graphical plots can be obtained if necessary from the author.

The limitation or accuracy of the results cannot be defined since this depends on local geological, groundwater and streambed conditions which were not considered in this study.

WATER SUPPLY ASSESSMENT

The purpose of the low flow estimates is to assess the availability of water to supply current and potential water licenses at designated stream sites. For such an assessment all upstream licenses have to be quantified and accumulated for direct comparison with the water supply estimates.

RECOMMENDATIONS

The low flow estimates as provided in Table 2 fulfil the immediate requirements for evaluating current and future water license demand at designated problem stream sites. The estimates are only accurate for planning water allocation purposes. If the quantity of a proposed license is significantly less than the estimated low flow (minus the upstream licensed flow) a conditional license could be granted. However, if the comparison is marginal or a deficit is shown, a low flow monitoring program should be conducted as outlined in Memorandum 3 to allow a more accurate low flow assessment.

W. Obedkoff, P.Eng.
Senior Hydrologic Engineer
Hydrology Branch
387-9474

TABLE 1 REGIONAL HYDROMETRIC STATIONS

HYDROMETRIC STATION NAME	NUMBER	DRAINAGE AREA (km2)	MEDIAN ELEVATION (m)	MEAN ANNUAL RUNOFF SHORT-TERM PERIOD OF RECORD	(mm)	LONG - TERM REF.STA	(mm)	MEAN SEASONAL SEVEN - DAY LOW FLOW SUMMER PERIOD OF RECORD	(m3/s)	WINTER PERIOD OF RECORD	(m3/s)
	UPPER STIKINE										
1 Klappan River nr. Telegraph Creek	08CC001	3550	1540	1965-89	-	-	639	1962-89	61.8	1964-90	8.48
2 Tuya River near Telegraph Creek	08CD001	3600	1200	1967-89	-	-	322	1962-65,67-89	16.9	1964-90	5.59
3 Iskut River at Outlet of Kinaskan L.	08CG003	1250	1400	1965-70,73-89	-	-	424	1964-71,72-90	18.4	1964-71,72-90	2.94
	UPPER BULKLEY										
4 Pinkut Creek near Tintagel	08EC004	862	1130	1962,66-89	-	-	186	1962-89	1.86	1961-63,65-90	1.67
5 Buck Creek at the Mouth	08EE013	580	1110	1973-83,85-89	-	-	228	1973-89	0.496	1973-90	0.296
6 MacIver Creek near the Mouth	08JA016	53.4	1490	1977-80,83-86,88-89	575	7	623	1977-80,83-89	0.452	1976-86,87-90	0.071
	LOWER BULKLEY										
7 Goathorn Creek near Telkwa	08EE008	132	1180	1961,64-71,73-89	-	-	420	1960-71,73-89	0.815	1960-90	0.137
8 Simpson Creek at the Mouth	08EE012	13.2	1342	1975-77,79-83,85-89	614	7	617	69-70,74-83,85-89	0.123	1974-90	0.008
9 Canyon Creek near Smithers	08EE014	256	991	1974-89	261	7	265	1973-89	0.385	1973-90	0.114
10 Two Mile Creek in District Lot 4834	08EE025	20.0	696	1983-89	198	7,12	209	1983-89	0.094	1982-90	0.053
11 Station Creek above Diversions	08EE028	10.8	1453	1986-89	789	7,12	786	1985-89	0.159	1985-90	0.026
	EAST CEDARVALE										
12 Kispiox River near Hazelton	08EB004	1870	780	1967-89	-	-	759	1963,65-89	18.5	1966-90	5.17
13 Telkwa River below Tsai Creek	08EE020	368	1380	1976-89	1196	7	1220	1976-89	9.44	1975-90	1.53
14 Zymoetz River above O.K. Creek	08EF005	2980	1340	1964-89	-	-	1104	1964-89	58.5	1963-90	13.7
	WEST CEDARVALE										
15 Zymagotitz River near Terrace	08EG011	378	881	1961-62,65-89	-	-	1976	1961-89	14.3	1960-63,64-90	3.13
16 Kitimat River below Hirsch Creek	08FF001	1990	980	1967-89	-	-	2045	1964-89	63.9	1964-65,66-90	19.8
17 Hirsch Creek near the Mouth	08FF002	347	950	1967-89	-	-	1965	1966-89	9.44	1966-90	2.70
	LOWER SKEENA										
18 Little Wedeene R. bl. Bowbyes Cr.	08FF003	188	740	1967-77,80-89	-	-	2915	1966-89	6.54	1966-78,79-90	2.44
19 Exchamsiks River near Terrace	08EG012	370	878	1965-89	-	-	3622	1962-63,65-89	31.5	1962-63,64-90	4.14
	QUEEN CHARLOTTES										
20 Yakoun River near Port Clements	08OA002	477	195	1963-69,72-77,79-87,89	-	-	2100	1962-89	2.70	1962-69,71-90	8.38
21 Premier Creek nr. Queen Charlotte	08OA003	1.04	388	1973-75,77,79-83,86-87	542	20	564	1972-75,77-89	0.001	1972-84,85-87,89-90	0.004
22 Honna River near the Mouth	08OA004	45.3	290					1985-89	0.132		
23 Pallant Creek nr. Queen Charlotte	08OB002	76.7	199	68-71,73-77,80,82,85-87,89	-	-	3338	1963-64,68-80,82,85-89	0.893	67-71,72-76,79-83,84-87,89-90	2.40

TABLE 2 PROBLEM BASIN LOW FLOW ESTIMATES

STREAM	WATER USE	DAINAGE AREA (km2)	MEDIAN ELEVATION (m)	ANNUAL RUNOFF MEAN - YEAR (mm)	MEAN - YEAR (dam3)	REFERENCE STATIONS	FIVE - YEAR 5-YR/MEAN	FIVE - YEAR (dam3)	SUMMER LOW FLOW M-YR-7-DAY (m3/s)	SUMMER LOW FLOW DUR/7-DAY RATIO	SUMMER LOW FLOW R.I./M-YR RATIO	SUMMER LOW FLOW R.I. - YEAR (m3/s)	WINTER LOW FLOW REFERENCE STATIONS	WINTER LOW FLOW M-YR-7-DAY (m3/s)	WINTER LOW FLOW DUR/7-DAY RATIO	WINTER LOW FLOW R.I./M-YR RATIO	WINTER LOW FLOW R.I. - YEAR (m3/s)
									LOW PRIORITY STREAMS								
ATLIN DISTRICT																	
Alkal Creek	I	12.7	470	150	2030	1,2	0.88	1786	0.000	1.25	0.77	0.000	1,2,3	0.000	1.04	0.80	0.000
Glenora Creek	I	3.85	1120	390	1500	1,2	0.88	1320	0.000	1.25	0.77	0.000	1,2,3	0.000	1.04	0.80	0.000
Kluachon Lake	I	45.5	1060	276	12600	1,2	0.88	11088	0.164	1.25	0.77	0.158	1,2,3	0.005	1.04	0.80	0.004
HAZELTON DISTRICT																	
			BURNS LAKE PRECINCT														
Acorn Lake	I	6.11	873	150	917	5,7	0.84	770	0.000	1.34	0.54	0.000	4,5	0.000	1.11	0.65	0.000
Allin Creek	I	148	1060	200	29600	5,7	0.84	24864	0.051	1.34	0.54	0.037	4,5	0.051	1.11	0.65	0.037
Banquard Creek	D	11.8	1040						0.000	1.12	0.54	0.000	4,5	0.000	1.04	0.65	0.000
Boyd Lake	I	2.52	852	155	391	5,7	0.84	328	0.000	1.34	0.54	0.000	4,5	0.000	1.11	0.65	0.000
Carducci Creek	D	3.60	964						0.000	1.12	0.54	0.000	4,5	0.000	1.04	0.65	0.000
Copeland Creek	D	2.92	934						0.000	1.12	0.54	0.000	4,5	0.000	1.04	0.65	0.000
Endako River	I	1870	902	145	271000	5,7	0.84	227640	5.9	1.34	0.54	4.269	4,5	3.4	1.11	0.65	2.453
Forgie Creek	I	42.9	918	145	6220	5,7	0.84	5225	0.004	1.34	0.54	0.003	4,5	0.004	1.11	0.65	0.003
McDonald Creek	D	5.10	812						0.000	1.12	0.54	0.000	4,5	0.000	1.04	0.65	0.000
Parkland Creek	I	6.89	941	166	1140	5,7	0.84	958	0.000	1.34	0.54	0.000	4,5	0.000	1.11	0.65	0.000
Renlout Creek	D	14.7	968						0.001	1.12	0.54	0.001	4,5	0.001	1.04	0.65	0.001
Sam Ross Creek	I	12.2	924	140	1710	5,7	0.84	1436	0.000	1.34	0.54	0.000	4,5	0.000	1.11	0.65	0.000
Shelford Creek	I	26.2	948	330	8650	5,7	0.84	7266	0.17	1.31	0.60	0.134	6	0.021	1.08	0.69	0.016
Sinder Brook	I	3.14	837	135	424	5,7	0.84	356	0.000	1.34	0.54	0.000	4,5	0.000	1.11	0.65	0.000
Snodgrass Creek	I	24.3	872	140	3400	5,7	0.84	2856	0.001	1.34	0.54	0.001	4,5	0.001	1.11	0.65	0.001
Wardrop Creek	I	17.6	857	138	2430	5,7	0.84	2041	0.001	1.34	0.54	0.001	4,5	0.001	1.11	0.65	0.001
			CEDARVALE PRECINCT														
Hood Creek	D	0.28	610						0.000	1.22	0.76	0.000	14	0.000	1.04	0.77	0.000
Hooker Creek	D	0.91	687						0.000	1.22	0.76	0.000	14	0.000	1.04	0.77	0.000
Hoover Creek	D	7.22	412						0.074	1.22	0.72	0.065	15,16	0.035	1.09	0.66	0.025
Nelson Creek	D	0.85	696						0.000	1.22	0.76	0.000	14	0.000	1.04	0.77	0.000
			SMITHERS PRECINCT														
Annabelle Creek	D	8.78	932						0.000	1.16	0.64	0.000	7,9	0.000	1.02	0.52	0.000
Bloc Creek	I	6.19	707	235	1450	5,7	0.84	1218	0.000	1.51	0.62	0.000	7,9	0.000	1.08	0.54	0.000
Cygnet Creek	I	11.8	952	332	3920	5,7	0.84	3293	0.002	1.56	0.50	0.002	9	0.000	1.10	0.45	0.000
Deep Creek	I	104	1040	250	26000	5,7	0.84	21840	0.017	1.38	0.43	0.010	5	0.011	1.15	0.56	0.007
Feeney Brook	I	8.03	680	228	1830	5,7	0.84	1537	0.057	1.72	0.67	0.066	8	0.003	1.12	0.47	0.002
Gardner Creek	D	20.4	816						0.005	1.16	0.64	0.004	7,9	0.001	1.02	0.52	0.001
Gibson Creek	D	17.1	762						0.003	1.16	0.64	0.002	7,9	0.001	1.02	0.52	0.001
Goodman Creek	D	3.17	428						0.008	1.14	0.73	0.007	10,11	0.004	1.04	0.66	0.003
Henry Creek	D	15.1	795						0.000	1.12	0.43	0.000	5	0.000	1.05	0.56	0.000
John Creek	D	10.7	975						0.000	1.12	0.43	0.000	5	0.000	1.05	0.56	0.000
Lacroix Creek	I	36.2	675	225	8140	5,7	0.84	6838	0.016	1.51	0.62	0.015	7,9	0.003	1.08	0.54	0.002
Laing Creek	D	8.29	774						0.001	1.16	0.64	0.001	7,9	0.000	1.02	0.52	0.000
Mathews Creek	WW1	14.9	914	210	3130	5,7	0.84	2629	0.000	1.00	0.37	0.000	5	0.000	1.00	0.33	0.000
Mathews Lake	WW1	1.35	924	213	288	5,7	0.84	242	0.000	1.00	0.37	0.000	5	0.000	1.00	0.33	0.000
Pine Creek	I	138	965	500	69000	5,7	0.84	57960	1.8	1.59	0.71	2.032	7,8	0.22	1.09	0.56	0.134
Raspberry Creek	D	16.4	989						0.000	1.12	0.43	0.000	5	0.000	1.05	0.56	0.000
Robin Creek	I	92.2	818	275	25400	5,7	0.84	21336	0.099	1.51	0.62	0.093	7,9	0.020	1.08	0.54	0.012
Seymour Creek	D	18.4	855						0.21	1.24	0.63	0.164	8	0.014	1.00	0.43	0.006
Silkadahl Creek	I	18.2	854	290	5280	5,7	0.84	4435	0.15	1.00	0.57	0.066	10,11	0.054	1.00	0.50	0.027
Victor Creek	I	6.63	813	274	1820	5,7	0.84	1529	0.000	1.51	0.62	0.000	7,9	0.000	1.08	0.54	0.000
Winch Creek	D	4.58	960						0.000	1.12	0.43	0.000	5	0.000	1.05	0.56	0.000
Lu Lake	D	2.58	1310						0.000	1.12	0.43	0.000	5	0.000	1.05	0.56	0.000
Lu Creek	D	8.75	1320						0.000	1.12	0.43	0.000	5	0.000	1.05	0.56	0.000
PRINCE RUPERT DISTRICT																	
			KITIMAT PRECINCT														
Collins Creek	D	2.70	342						0.016	1.22	0.72	0.014	15,16	0.010	1.09	0.66	0.007
Fortas Creek	I	7.06	100	500	3530	14,15,16,17	0.89	3142	0.073	1.50	0.72	0.079	15,16	0.033	1.28	0.63	0.027
			QUEEN CHARLOTTES PRECINCT														
Premier Creek	D	1.04	358						0.001	1.15	0.49	0.001	20,23	0.004	1.22	0.70	0.003
Sturdy Creek	D	2.01	310						0.002	1.15	0.49	0.001	20,23	0.010	1.22	0.70	0.009
									HIGH PRIORITY STREAMS								
Burger Creek	D	41.6	442						0.50	1.14	0.73	0.416	10,11	0.17	1.04	0.66	0.117
	I	41.6	442	165	6860	5,7	0.84	5762	0.50	1.41	0.78	0.550	10,11	0.17	1.14	0.69	0.134
Deep Creek	WW2	13.1	564	1170	15300	14,15,16,17	0.89	13617	0.18	1.00	0.54	0.097	15,16	0.073	1.00	0.45	0.033
	D	46.7	364						1.2	1.22	0.72	1.054	15,16	0.37	1.09	0.66	0.266
Four Mile Creek	D	5.90	568						0.024	1.14	0.73	0.020	10,11	0.010	1.04	0.66	0.007
Honna River	WW1	45.9	308	1300	59700	20	0.89	53133	0.132	1.00	0.43	0.057	22/20,23	0.70	1.00	0.60	0.420
McDowell Creek	D	19.6	850						0.005	1.16	0.64	0.004	7,9	0.001	1.02	0.52	0.001
	D	19.8	848						0.005	1.16	0.64	0.004	7,9	0.001	1.02	0.52	0.001
Spring Creek	D	12.3	159						0.17	1.22	0.72	0.149	15,16	0.067	1.09	0.66	0.048
	WW2	12.3	159	660	8120	14,15,16,17	0.89	7227	0.17	1.00	0.54	0.092	15,16	0.067	1.00	0.45	0.030
	D	12.7	155						0.17	1.22	0.72	0.149	15,16	0.068	1.09	0.66	0.049
	WW2	12.7	155	660	8380	14,15,16,17	0.89	7458	0.17	1.00	0.54	0.092	15,16	0.068	1.00	0.45	0.031

Province of British Columbia

Ministry of Environment

SEP 11 1990

MEMORANDUM

Bill

To: See Distribution

Date: 90.04.17

File: 55.32.01

Subject: **WATER AVAILABILITY GUIDELINES**

Attached for your review prior to the Spring meeting in Ainsworth Hot Springs is Draft #4 of the Water Availability Guidelines. This item will be discussed at both the Section Head and Regional Managers meetings, with the aim of accepting the approach, format and basic content.

J. W. McCracken, P.Eng.
Water Manager
Lower Mainland Region

Distribution:

Victoria: Dr. D. A. Kasianchuk, Director
Jack Farrell, D/Comptroller of Water Rights
Richard Penner, Head, Appeals Unit, Water Management Branch

	Water Managers	Heads, Allocation Section
Surrey:		Robert Edwards
Nanaimo:	Bill Hollingshead	George Bryden
Kamloops:	Al Zackodnik	Ron Smith
Penticton:		Neil Banera
Williams Lake:		Ken Soneff
Nelson:	John Dyck	Jim Brown
Prince George:	Dennis Roberts	Uwe Finger
Smithers:	Wilf Dreher	Bruce McGonigal

RECEIVED
APR 19 1990
DEPUTY COMPTROLLER OF WATER RIGHTS

RJP Apr 23/90

WATER ALLOCATION GUIDELINES

1. INTRODUCTION

The material in this report is intended to form the basis for the uniform and consistent allocation of water in British Columbia for domestic, waterworks, and irrigation purposes.

These guidelines will ensure that the same, basic methodology is used throughout the province in adjudicating applications for water licences. Regional climatic differences are acknowledged and have been incorporated in the resultant procedures.

These guidelines are intended to ensure continued access to the water resources of this province with reasonable assurances of water availability.

2. WATER ALLOCATION

The adjudication of an application for a water licence is essentially an assessment of supply and demand; demand being the temporal water requirements of the specific purpose and supply being the amount or quantity of water which can be expected to be equalled or exceeded at a specific time of the year.

The allocation of water is "demand driven"; that is, the determination of water availability follows from a knowledge of the purpose for which the water is to be diverted and from recognition of the period of time a water shortage can be tolerated without undue hardship or crop failure.

These guidelines therefore, detail demand assessment first. The assessment of demand requires an estimate of peak daily usage, annual or seasonal consumption, and acceptable duration of water shortages and frequency thereof.

2.A. Demand Assessment

2.A.(i) Domestic Purpose

Consumptive use for domestic purpose is detailed in "Design Guidelines for Rural Residential Community Water System", prepared by the Water Management Branch in 1985. The report does not contain total annual consumptive figures and these may be calculated using basic in-house

per capita use and an estimate of irrigation requirements based on a seasonal distribution of consumptive use and peak irrigation requirements.

The guideline for acceptable water shortages is a deficit for a maximum period of 15 days occurring once in 5 years. During this period the licensee can haul water or use conservation methods with limited hardship.

2.A.(ii) Waterworks Purpose

The design criteria utilized for domestic purpose is also recommended for small community residential systems. Municipalities would be required to submit consumptive use requirements based on residential use, industrial use, etc.

Acceptable periods of water shortage are more conservative for medium to large waterworks systems due to the potential economic hardship for industrial use.

A small waterworks system would be expected to tolerate a shortage for 15 days occurring once in 5 years, a medium system for 3 1/2 days once in 10 years, and a large system for 3 1/2 days once in 25 years.

Small systems are up to 100 lots, medium systems 101 - 1000 lots and large systems greater than 1000 lots.

2.A.(iii) Irrigation Purpose

Estimations of annual irrigation requirements and peak daily requirements may be obtained from the "Irrigation Design Manual for Farm Systems in British Columbia", prepared by the Agricultural Engineering Branch of the Ministry of Agriculture and Fisheries.

Climatological moisture deficits have been calculated by the Air Studies Section for the Lower Fraser Valley, the east coast of Vancouver Island, and the area between Courtenay and Duncan. Water duties for these areas, based on soil types, have been produced utilizing these moisture calculations.

Consumptive use is not evenly distributed throughout the growing season, as shown in Figures 1 and 2, produced from data supplied by the Air Studies Section. Similar information is available for Prince George, Smithers,

Williams Lake, Cranbrook, Trail, Kamloops, Fort St. John, Mackenzie and Kitimat.

Determination of the frequency and duration of water shortages for irrigation purpose is dependent on the type of crop, such as cash crop, tree fruits, forage crop, etc. Whereas a shortage of water for an extended period of time may only affect the quality of a forage crop, a similar shortage for a cash crop may be intolerable.

The recommended acceptable periods of shortages are 2 1/2 days once in 10 years for cash crops, 3 1/2 days once in 10 years for tree fruits, and 7 1/2 days once in 5 years for forage crops.

2.B. Supply Assessment

The determination of water availability constitutes the single most important technical evaluation in the allocation of water. This determination not only includes streamflows which may reasonably expected to occur during the period of use, but also streamflows during the freshet when water is required for the filling of storage.

In February, 1988, the Hydrology Section of the Water Management Branch produced the "Manual of Operational Hydrology in British Columbia". This document covers access to hydrological information and the analysis of this data.

This manual forms an integral part of the uniform and consistent assessment of supply by technical staff processing applications for water licences.

The criteria used to determine water availability is derived from Section 2.A. Demand Assessment. Hydrological analysis normally deals with average flows during a fixed period of time, e.g. 7-day average low flow. Based on the assumption that during a 7 day period, the flows will be less than average for one-half of the period, the following table summarizes the criteria to be used to assess water availability.

Purpose	Return Period	Duration

Domestic	5 years	30 days
Waterworks (Small)	5 years	30 days
Waterworks (Medium)	10 years	7 days
Waterworks (Large)	25 years	7 days
Irrigation (Cash)	10 years	5 days
Irrigation (Tree Fruits)	10 years	7 days
Irrigation (Forage)	5 years	15 days

Consideration should be given to flows at the time of peak usage and the lowest flows during the period of use.

2.C. Allocation Decisions

The combination of peak daily demand and the appropriate streamflow information forms the basis for the issue of a water licence. A shortfall in supply should not automatically result in the refusal of the application. In such cases, further evaluation of opportunities to augment supply through the development of storage or a review of actual water use compared to licenced use is recommended.

An individual domestic licence is insignificant, from a quantity perspective, on all but the smallest sources. Unless special circumstances exist, small domestic licences should issue and will include the maximum daily demand.

Waterworks licences should stipulate the maximum daily quantity and the total annual demand. It necessary, peak withdrawal in gallons per minute should be stipulated.

Irrigation licences must denote the type of crop to be grown, the total annual quantity, the maximum daily quantity, and the peak usage in gallons per minute. This will ensure that sprinkler systems are designed accordingly. If necessary, an appendix should be utilized to ensure the licensee is informed of the basis upon which the licence was issued. Metering of consumption should be a requirement, where practical.

Licences which issue with supporting storage should include an appendix detailing reservoir operation during, and after filling, to support the authorized use and to maintain flows downstream.

When issuing a licence, it is imperative the quantity reflect actual requirements, it be

consistently applied across similar circumstances, it is practical to implement and as simple as possible to regulate when necessary, e.g. current methods of licencing irrigation based on average consumption over the season or a fixed period make for difficult regulation and if followed by the licensee are not practical.

REFERENCES

1. "Design Guidelines for Rural Residential Community Water Systems": B.C. Ministry of Environment and Parks, Water Management.

2. "Irrigation Design Manual for Farm Systems in British Columbia": B.C. Ministry of Agriculture and Fisheries.

3. "Hydrology Handbook": B.C. Ministry of Environment and Parks, Water Management Branch. (Currently being developed).

N. G. Banera

N.G. Banera, P.Eng.
Head, Water Allocation Section
Water Management Program

NGB/bar

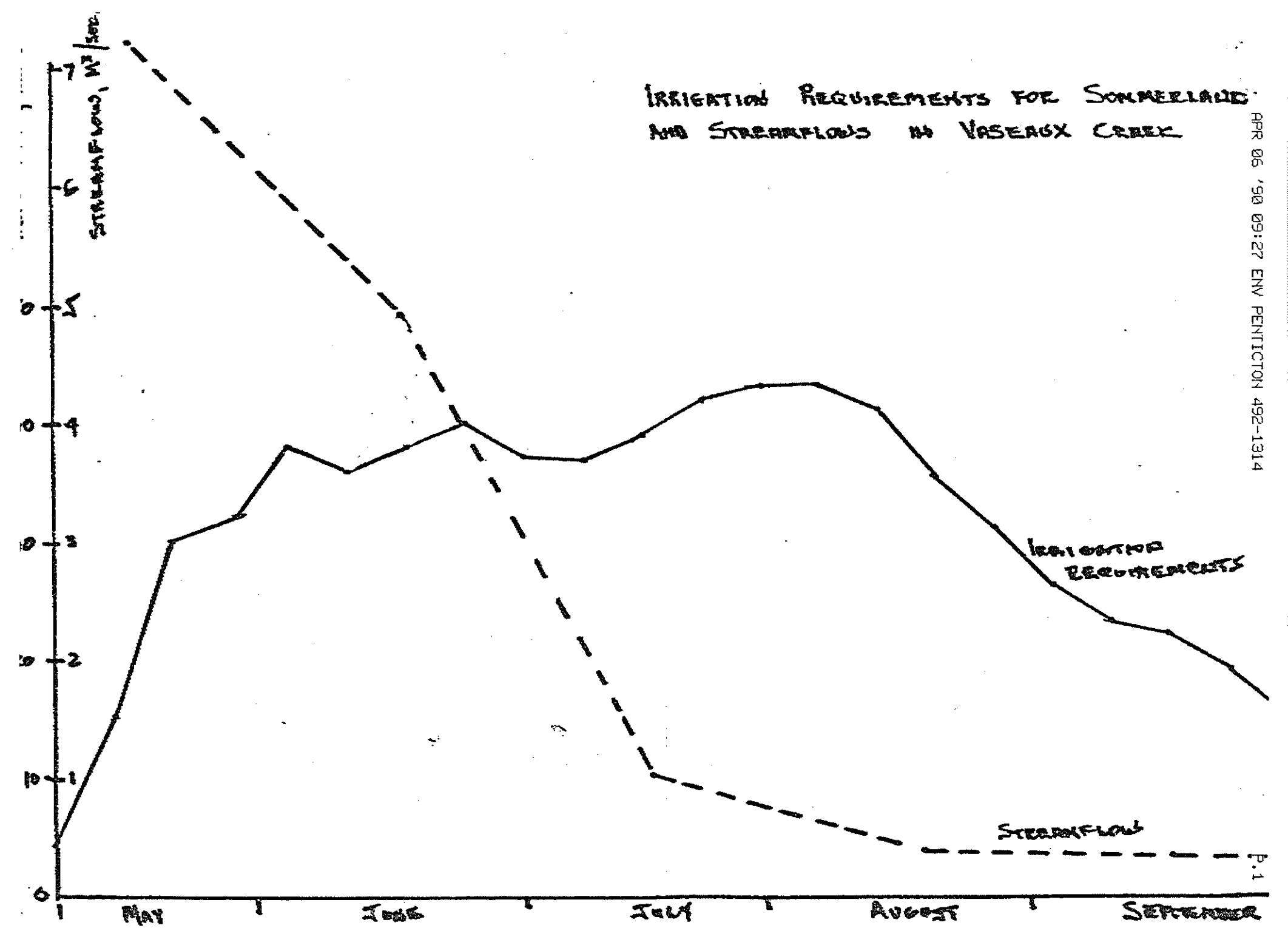
Date typed: April 5, 1990

APPENDIX A

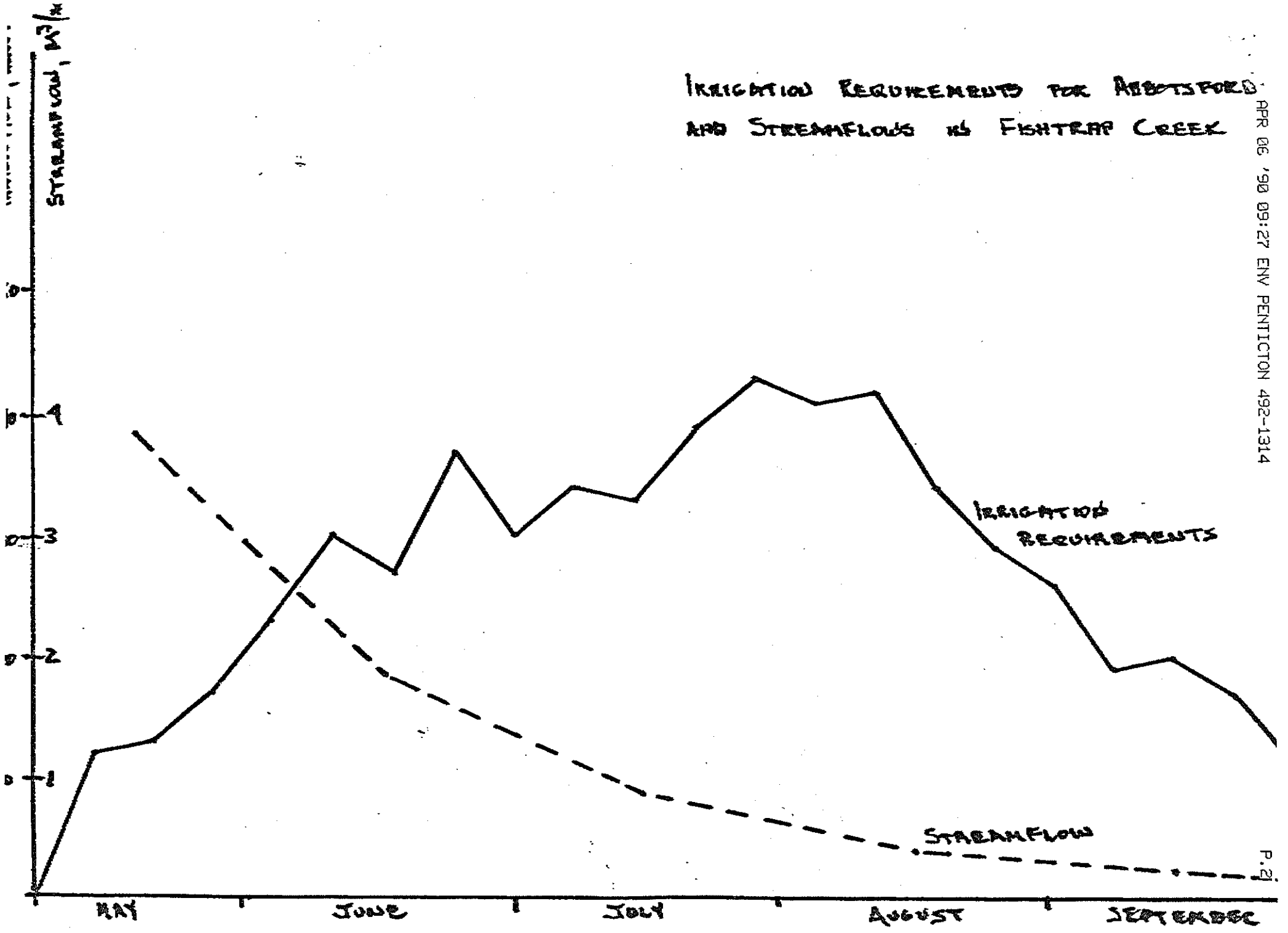
Review of Allocation Legislation
Sections 2-12 of Water Act

APPENDIX B

Review of Regulation Legislation
Sections 12, 33 and 37 of Water Act



Irrigation Requirements for Abbotsford and Streamflows at Fishtrap Creek



074003

Province of British Columbia
SKEENA REGION

Ministry of Environment

MEMORANDUM

Bag 5000, Smithers, British Columbia V0J 2N0

Study 318

To:

Date:

Water Management Branch
Hydrology Section
765 Broughton St.
Victoria, B.C.
V8V 1X5

May 9, 1990

File: 6-General

Atten: H. Coulson

Dear Hal:

Re: Water Availability Guidelines/Supply Assessment

During the Allocation Section Head Meeting held at Ainsworth Hot Springs last week, the Water Availability Guidelines were presented in penultimate draft and unanimously accepted by all the Regional Managers and Section Heads.

Section 2.B of the Water Availability Guidelines deals with Supply Assessment, makes reference to the Manual of Operational Hydrology in British Columbia and sets criteria to be used to assess water availability as follows:

Purpose	Return Period	Duration
Domestic	5 years	30 days
Waterworks (small	5 years	30 days
Waterworks (medium)	10 years	7 days
Waterworks (large)	25 years	7 days
Irrigation (cash)	10 years	5 days
Irrigation (tree fruits)	10 years	7 days
Irrigation (forage)	5 years	15 days

I have perused Chapter 8 (low flow studies) of the Hydrology Manual and more specifically subsection 8.5.4. "Ungauged Watersheds". As you are well aware, there are very few (approximately five) small area basins in the Skeena Region with WSC hydrometric data available. Skeena Region has neither the resources nor staff time to undertake low flow or total annual basin yield analysis for the many nearly or fully recorded streams in this region.

L900529

07/09/90

Accordingly, before further allocation decisions can be made on these many low flow streams we require, from the Hydrology Section, low flow analyses using the above criteria. Also required are analyses of total annual yield. The Water Availability Guidelines do not address criteria for design return period with respect to total annual yield. I would assume this value to be similar to the return period as prescribed above. However, you may wish to discuss this matter further with the Water Availability Guidelines Committee. R. Penner, M. Banner al, J. McCracken

The following list represents those streams in the Skeena Region that have been identified with low flow or fully recorded notations in the stream registers. I have ranked these streams with high priority based on outsanding application(s) pending low flow data data collection and low priority based on streams with low flow or fully recorded notations and having future allocation potential.

I appreciate your attention and response to this matter. Should you wish to discuss this matter further with me, please feel free to contact me at 847-7276.

Yours truly

J.B. McGonigal
Allocation Section Head
Skeena Region

cc: Allocation Section Heads
J.S. Mattison
D.A. Kasianchuk

HIGH PRIORITY STREAMS

SOURCE	W.DISTRICT	PRECINCT	PURPOSE	Rt	DURATION	ANNUAL YIELD
low priority? HOWARD CK	HAZELTON	SMITHERS	IRRIG	5YRS	30DAYS	5YRS
· BURGER CK	HAZELTON	SMITHERS	IRRIG	5YRS	30DAYS	5YRS
			DOMESTIC	5YRS	15DAYS	
· McDOWELL CK	HAZELTON	SMITHERS	DOMESTIC	5YRS	15DAYS	5 yes
low ← ? CURWEN CK priority	PR. RUPERT	Q.C.I.	DOMESTIC	5YRS	15DAYS	5 yes
· FOUR MILE CK	HAZELTON	SMITHERS	DOMESTIC	5YRS	15DAYS	5 yes.
· HONNA R	PR. RUPERT	Q.C.I.	Waterworks (medium)	10 yrs	7 days	N/A
· DEEP CK	PR. RUPERT	TERRACE	Water Works (large)	25yrs	7 days	N/A
· SPRING CK	PR. RUPERT	TERRACE	Waterworks (large)	25yr	7 days	N/A
			Domestic	5years	30days (15?)	N/A.

data required for each stream:
- site location
- drainage area
- median elevation

1977 Low Flow Monit. Prog.
Flows Engr.

LOW PRIORITY STREAMS

SKEENA RIVER

ATLIN

Alkali Ck	Fully Recorded
Carnot Br	Fully Recorded
Colwell Ck	Potential Low Flow Problem
Firbank Br	Fully Recorded
Glenora Ck	Fully Recorded
Haggard Ck	Fully Recorded
Keble Br	Fully Recorded
Keno Lk	Fully Recorded
Kluachon Ck	Fully Recorded

9

HAZELTON

BURNS LAKE

Acorn Lk	Possible Water Shortage
Allin Ck	Possible Water Shortage
Banquarel Ck	Possible Water Shortage
Boyd Lk	Fully Recorded
Carducci Ck	Fully Recorded
Copeland Ck	Fully Recorded
Endako Rv	Possible Low Flows in Upper Reaches
Faber Lk	Possible Water Shortage
Forgie Ck	Possible Water Shortage
Hudson Ck	Storage Req'd for any Further Licence
McDonald Ck	Fully Recorded
Parkland Ck	Possible Water Shortage
Rentoul Ck	Potential Low Flow Problem
Sam Ross Ck	Possible Water Shortage for Irrig. Use
Shelford Ck	Possible Water Shortage
Sinkler Bk	Possible Water Shortage
Snodgrass Lk	Fully Recorded
Wardrop Ck	Potential Low Flow

18

CEDARVALE

Casorso Br	Possible Water Shortage
Farman Ck	Low Flow During July/August
Heman Ck	Fully Recorded
Hood Ck	Fully Recorded
Hooker Ck	Fully Recorded
Hoover Ck	Fully Recorded
Nelson Ck	Fully Recorded

7

...../2

SMITHERS

Babbitt Ck	Fully Recorded
Bede Ck	Fully Recorded
Bloc Ck	Fully Recorded
Boyd Ck	Fully Recorded
Cabell Ck	Fully Recorded
Caslon Ck	Fully Recorded
Chalmers Ck	Fully Recorded
Condon Ck	Fully Recorded
Coulson Br	Fully Recorded
Cygnet Ck	Fully Recorded unless Off-Line Storage Provided
Deep Ck	Fully Recorded
Dobson Ck	Fully Recorded
Dunsany Ck	Fully Recorded
Eakins Ck	Fully Recorded
Faraday Ck	Potential Low Flow Problem
Feeney Br	Fully Recorded
Flagg Ck	Fully Recorded
Florey Ck	Fully Recorded
Garamond Br	Fully Recorded
Garcia Br	Fully Recorded
Gardiner Ck	Possible Low Flow Problem
Gibson Ck	Irr. to be Supported by Storage
Ginsberg Ck	Fully Recorded
Glass Ck	Hold All Applications in Abeyance
Goldoni Ck	Fully Recorded Unless Storage Provided
Goodman Ck	Fully Recorded
Henry Ck	Possible Water Shortage
Highland Ck	Fully Recorded
Hobbs Br	Fully Recorded
John Ck	Fully Recorded Unless Storage Provided
Lacroix Ck	Fully Recorded
Laing Ck	Fully Recorded
Lartet Ck	Potential Low Flow Problem
Latta Ck	Possible Water Shortage
Leekie Ck	Fully Recorded
Lu Lk	Fully Recorded
Mathews Lk	Fully Recorded
Pine Ck	Fully Recorded for Irrig. Unless Storage Provided

...../3

(Smithers cont'd)

Raspberry Ck	Potential Low Flow Problem
Robin Ck	Potential Low Flow Problem
Seymour Ck	Possible Water Shortage
Sikedakh Ck	Possible Water Shortage
Victor Ck	Fully Recorded Unless Storage Provided
Waterfall Ck	Fully Recorded
Winch Ck	Possible Water Shortage

45

PRINCE RUPERT

KITIMAT

Ashley Manor Ck	Potential Low Flow Problem
Beecher Ck	Fully Recorded
Collins Ck	Fully Recorded except for Domestic
Drake Ck	Fully Recorded - Potential Low Flow During January-March
Fortas Ck	Fully Recorded
Lakelse Hotsprings	Possible Water Shortage at P.O.D. 4

6

QUEEN CHARLOTTES

Andys Ck	Fully Recorded
Charley Valley Ck	Fully Recorded
Cyrus Ck	Fully Recorded
Grace Br	Potential Low Flow
Isabel Ck	Fully Recorded
Landon Ck	Fully Recorded
Premier Ck	Fully Recorded
Skid Ck	Potential Low Flow
Sturdy Ck	Fully Recorded Except Domestic Use
Templeton Ck	Fully Recorded

10

TERRACE

Charlotte Br	Possible Water Shortage
Clary Ck	Fully Recorded
Clary Lk	Fully Recorded
Dodge Ck	Fully Recorded
Maiden Ck	Fully Recorded

5

Scott Morgan
Allocation Technician

SM/bs

C.H. Coulson, Head
Hydrology Section
Water Management Branch

18 September 1990
File No. S2108-6
Study No. 318

Re: Skeena Region Low Flow
Water Availability Guidelines/Supply Assessment
Study Proposal

In response to the May 9, 1990 memorandum from J.B. McGonigal, Skeena Region, which requested low flow and annual runoff estimates for a regional water license review, available information and data were reviewed and a study is hereby proposed.

STUDY REQUEST

Various streams were identified in the study request for potential water licenses of different uses and priorities following a specific water availability criteria. Streams were identified for domestic, waterworks and irrigation purposes. Eight creeks were labled as high prority with outstanding water license applications and 100 streams and lakes as low priority with low flow or fully licensed status and those having potential license allocation. The criteria specified for assessing water availability are those of the recently adopted Water Availability Guidelines (Ainsworth Hot Springs meeting, May, 1990). These criteria are based on different duration and frequency low flows for specified water uses. The water uses are further subdivided into different types. Water licenses are also allocated on a total annual demand specification. However, the Guidelines do not specify criteria for total annual yield.

STUDY PROPOSAL

The study proposal to estimate the required low flows for the Skeena Region consists of two phases, a regional analysis and a low flow monitoring program. The regional study will provide preliminary low flow estimates for water allocation planning while the low flow monitoring program should lead to more accurate estimates that can be used in actual licensing of water withdrawls.

REGIONAL LOW FLOW ANALYSIS

The regional low flow study proposal is based on a previous hydrology study, reported in 1983, for the Skeena-Nass Stategic

Plan by the Planning and Assessment Branch. This study consisted of frequency analysis of Water Survey of Canada (WSC) hydrometric data, up to 1981, in northwestern British Columbia. Summer and winter seven-day average low flows (m3/s) for different frequencies were plotted against drainage area (km2) on log-log graph paper. Regional curves were drawn for three hydrologic zones, Coast Mountain, transition and Interior Plateau. The graphs were used to make preliminary low flow estimates for planning purposes for various drainages. The low flow estimates in the proposed Skeena Region study would be used for those proposed diversion stream licenses that are not backed by storage development.

For the proposed study the 1981 data base will be updated and subsequent hydrometric stations added. Low flow graphs will be drawn for the required frequency estimates. The streams listed in the study request will require drainage boundaries drawn on appropriately scaled maps and drainage areas measured to extract the appropriate flow estimates from the regional graphs.

REGIONAL RUNOFF ANALYSIS

For the annual basin runoff analysis hydrometric stations will be plotted in regional graphs to define the runoff curves for each hydrologic zone. The graphical plots will be defined for unit runoff (mm) versus median basin elevation (m). This elevation will have to be defined from appropriately scaled maps for the WSC stations and the required (number to be determined) study basins. The runoff estimates will be used for the proposed diversion licenses that are supported by storage or those waterworks licenses that require an annual runoff value for licensing purposes.

The results of the regional analysis study will enable an identification of those streams that are fully licensed and those that have surplus water.

LOW FLOW MONITORING PROGRAM

The proposed low flow monitoring program is based on the program described in Section 8.6 of the "Manual of Operational Hydrology" by the Hydrology Section, February, 1988, and the report, "1977 Low Flow Monitoring Program", by R.P. Richards, September, 1978. The procedure consists, first, of a series of miscellaneous discharge measurements throughout the year at selected sites. These measurments are then compared with daily precipitation and streamflow at nearby WSC index stations. The final product is an estimate of a continuous discharge record at each selected site.

The low flow monitoring program for the Skeena Region will be applied to those sites that are identified as having surplus water by a water allocation plan, based on the regional phase of the study.

The 1977 Low Flow Program identified only eight sites of the 108 listed in the study request and provided flow estimates for three or four low flow months for only three of the sites. The latest WSC published index was examined for the Skeena Region for active hydrometric stations and 17 with drainage areas less than 400 sq. km. were identified. However, there are no small drainage WSC stations in the Burns Lake region of the Interior Plateau and this area will have to be compared with stations in the nearby transition hydrologic zone.

Phase two (monitoring) of the study should be planned after phase one (regionalization) is incorporated into an assessment of water licenses. Streamflow sites should be identified for required measurements and the program should be initiated before the spring freshet in 1991 to measure as much as possible of the runoff hydrograph.

cc: J.B. McGonigal

W. Obedkoff, P.Eng.
Senior Hydrologic Engineer
Hydrology Section
Water Management Branch
387-9474

Province of
British Columbia

Ministry of
Environment

Water Management Branch
Parliament Buildings
Victoria
British Columbia
V8V 1X5

SENT FROM FAX NO. 387-3429
737 COURTNEY STREET, VICTORIA, B.C.

TO: NAME J. B. McGonigal DATE: 18/09/90

BRANCH Water Management FILE:

ADDRESS Smithers

PHONE FAX NO. 847-7591

TOTAL PAGES SENT 4 (18/09/90 draft memo)
(including this form)

FROM: NAME W. Obedkoff

BRANCH Water Management / Hydrology Sect.

PHONE 387-9474

SUBJECT: Skeena Region Low Flow Study

INSTRUCTIONS:

please phone after reading memo

URGENT ☐ CONFIDENTIAL ☐ MAILED ORIGINAL TO FOLLOW ☐ YES ☐ No

Copies also sent to:

cc: cc:

cc: cc:

Province of British Columbia

Ministry of Environment
WATER MANAGEMENT BRANCH

MEMORANDUM

To: J.B. McGonigal
Allocation Section Head
Skeena Region

Date: 17 October 1990
Our File: S2108-6
Your File: 6-General

Re: Skeena Region Low Flow Study
Regional Hydrometric Stations

Further the to the telephone discussion we had this morning with Wilf Dreher the following Water Survey of Canada hydrometric stations will be used in regional analyses of low flows and annual runoff. Required is a map showing water license points above each station and a copy of the stream registers showing the particulars of the water licenses. Since most of the stations are designated as natural in the WSC Reference Index the final product of this work should not be large. However, it is very important that each station be checked for upstream licenses so that the hydrometric data can be naturalized before they are used in the study. The hydrometric stations are indicated on attached copies of Table A.1 of the 1983 Skeena-Nass Stategic Plan (Hydrology) Report. Additional stations are listed below.

Burns Lake/Smithers

08EE009 Richfield Creek near Topley
08ED001 Nanika River at Outlet of Kidprice Lake
08EE010 Kathlyn Creek above Simpson Creek
08EE006 John Brown Creek near Smithers
08EE017 Waterfall Creek at New Hazelton
08EE025 Two Mile Creek in District Lot 4834
08EE028 Station Creek above Diversions

Kitimat

08FC002 Nascall River near Ocean Falls

Queen Charlotte Islands

080A002 Yakoun River near Port Clements
080A003 Premier Creek near Queen Charlotte
080A004 Honna River near the Mouth
080B002 Pallant Creek near Queen Charlotte

W. Obedkoff, P.Eng.
Senior Hydrologic Engineer
Water Management Branch
387-9474

WORKSPACE NAME: PLN/STRATEG3
JOB NUMBER: AA170/TAB/A1: .1

WORKSPACE NAME: PLN/STRATEG3
JOB NUMBER: AA170/TAB/A1: .2

TABLE A.1
HYDROMETRIC DATA SUMMARY
SKEENA-NASS PLANNING UNIT

PLOT NO.	HYDROMETRIC STATION NUMBER	HYDROMETRIC STATION NAME	DRAINAGE AREA (km^2)	LATITUDE LONGITUDE	PERIOD OF RECORD	TYPE[1] OF RECORD	MEAN ANNUAL RUNOFF: TOTAL DISCHARGE (dam^3)	MEAN ANNUAL RUNOFF: LENGTH[2] OF RECORD (years)	MEAN ANNUAL RUNOFF: UNIT RUNOFF (mm)	MEAN ANNUAL RUNOFF: DAILY DISCHARGE (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY ($L/s/km^2$)	MEAN ANNUAL EXTREME DISCHARGE: LENGTH[2] OF RECORD (years)	MEAN ANNUAL EXTREME DISCHARGE: MINIMUM DAILY (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MINIMUM DAILY ($L/s/km^2$)	MEAN ANNUAL EXTREME DISCHARGE: LENGTH[2] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] INSTANTANEOUS (m^3/s)	EXTREME ANNUAL DISCHARGE: LENGTH[2] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] DAILY (m^3/s)	EXTREME ANNUAL DISCHARGE: MINIMUM[3] DAILY (m^3/s)	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MEAN	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MAX.
Inside Planning Unit Boundary:																							
SN1	08FE002	Kemano Powerhouse	-	53°33'40" 127°56'10"	1954-81	R	2 650 000	27	-	83.9	96.0	-	27	66.2	-	27	-	-	142 (9/1/81)	0.0 (20/6/61)	-	-
SN2	08FE003	Kemano R. above Powerhouse Tailrace	583	54°34'10" 127°56'40"	1971-81	N	1 400 000	10	2 400	44.6	317	544	10	2.93	5.03	10	889E (15/10/74)	9	646E (15/10/74)	1.36 (18/2/78)	1.59	1.59
SN3	08FE001	Kemano R. nr. Butedale	777	53°30'00" 128°05'00"	1951-54	N	-	-	-	-	475	611	3	4.62	5.95	2	790 (30/8/51)	2	648 (27/10/51)	2.58 (10/2/53)	-	-
SN4	08FF001	Kitimat R. below Hirsch Cr.	1 990	54°03'34" 128°40'29"	1964-81	N	4 200 000	15	2 110	133	1051	528	17	16.7	8.39	16	3 000 (1/11/78)	18	2 410 (1/11/78)	9.208 (22/12/73)	1.37	1.48
SN5	08FF003	Little Wedeene R. below Bowbyes Cr.	188	54°08'11" 128°41'24"	1966-81	N	556 000	13	2 960	17.6	127	676	16	1.92	10.2	14	382 (1/11/78)	15	274 (1/11/78)	0.9638 (12/1/68)	1.89	2.47
SN6	08FF002	Hirsch Cr. near the Mouth	347	54°03'48" 128°36'00"	1966-81	N	693 000	15	2 000	21.9	212	611	16	1.99	5.73	15	807E (15/10/74)	16	566E (15/10/74)	0.6578 (21/12/73)	1.54	2.04
SN7	08EB005	Skeena R. above Babine R.	12 400	55°42'58" 127°41'05"	1970-81	N	11 500 000	11	927	364	1980	160	11	30.8	2.48	11	3 260E (9/10/74)	10	2 760 (12/6/72)	22.58 (2/1/71)	1.16	1.44
SN8	08EB003	Skeena R. at Glen Vowell	25 900	55°18'09" 127°40'11"	1960-81	N	19 000 000	21	734	602	3200	124	21	68.2	2.63	21	5 240 (10/10/74)	1	5 830E (12/6/72)	40.5R (3/2/61)	-	-
SN9	08EB001	Skeena R. at Hazelton	-	55°15'25" 127°40'32"	1915-16	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SN10	08EF001	Skeena R. at Usk	42 200	54°37'50" 128°25'40"	1928-81	N	28 900 000	39	685	917	4770	113	48	107	2.54	46	8 100 (12/6/72)	28	9 340 (26/5/48)	51.88 (1/3/50)	1.02	1.04
SN11	08MG009	Skeena R. at Remo	-	54°28'52" 128°44'09"	1950-52	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

WORKSPACE NAME: PLN/STRATEG3
JOB NUMBER: AA170/TAR/A1: .3

WORKSPACE NAME: PLN/STRATEG3
JOB NUMBER: AA170/TAB/A1: .4

TABLE A.1
HYDROMETRIC DATA SUMMARY
SKEENA-NASS PLANNING UNIT (CONT'D.)

PLOT NO.	HYDROMETRIC STATION NUMBER	HYDROMETRIC STATION NAME	DRAINAGE AREA (km^2)	LATITUDE LONGITUDE	PERIOD OF RECORD	TYPE[1] OF RECORD	MEAN ANNUAL RUNOFF: TOTAL DISCHARGE (dam^3)	MEAN ANNUAL RUNOFF: LENGTH[2] OF RECORD (years)	MEAN ANNUAL RUNOFF: UNIT RUNOFF (mm)	MEAN ANNUAL RUNOFF: DAILY DISCHARGE (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY ($L/s/km^2$)	MEAN ANNUAL EXTREME DISCHARGE: LENGTH[2] OF RECORD (years)	MEAN ANNUAL EXTREME DISCHARGE: MINIMUM DAILY (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MINIMUM DAILY ($L/s/km^2$)	MEAN ANNUAL EXTREME DISCHARGE: LENGTH[2] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] INSTANTANEOUS (m^3/s)	EXTREME ANNUAL DISCHARGE: LENGTH[2] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] DAILY (m^3/s)	EXTREME ANNUAL DISCHARGE: MINIMUM[3] DAILY (m^3/s)	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MEAN	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MAX.
SN12	08EC001	Babine R. at Babine	6 480	55°19'25" 126°37'40"	1929-81	N	1 490 000	34	230	47.3	126	19.4	37	14.3	2.21	36	191 (23/6/76)	7	204 (21/6/72)	3.68 (16/4/51)	1.02	1.02
SN13	08EC013	Babine R. at Outlet of Nilkitkwa L.	6 790	55°25'30" 126°42'10"	1972-81	N	1 620 000	9	239	51.3	147	21.6	10	21.3	3.14	9	249 (18/6/72)	8	244 (18/6/72)	15.7 (11/2/80)	1.02	1.02
SN14	08EC010	Babine L. at Babine	-	55°19'00" 126°37'30"	1972-77	N	See Table A2				-	-	-	-	-	-	-	-	-	-	-	-
SN15	08EC012	Babine L. at Pendleton Bay	-	54°29'45" 125°41'35"	1972-76	N	See Table A2				-	-	-	-	-	-	-	-	-	-	-	-
SN16	08EC003	Babine L. at Topley Landing	-	54°48'35" 126°08'20"	1955-81	N	See Table A2				-	-	-	-	-	-	-	-	-	-	-	-
SN17	08EC011	Babine L. at Smithers Landing	-	55°03'10" 126°29'10"	1972-76	N	See Table A2				-	-	-	-	-	-	-	-	-	-	-	-
SN18	08EC008	Morrison R. at Outlet of Morrison L.	414	55°10'20" 126°18'10"	1965-70	N	-	-	-	-	23.8	57.5	4	0.680	1.64	1	-	-	29.7 (12/5/66)	0.680 (4/4/66)	-	-
SN19	08EC004	Pinkut Cr. near Tintagel	862	54°24'52" 125°25'26"	1961-81	R	176 000	17	204	5.56	38.1	44.2	20	1.34	1.56	19	73.9 (22/5/68)	17	70.8 (22/5/68)	0.564 (21/10/66)	1.09	1.14
SN20	08EC006	Chapman L. nr. Smithers	-	55°55'30" 126°40'30"	1967-69	N	See Table A2				-	-	-	-	-	-	-	-	-	-	-	-
SN21	08EC009	Fulton R. at Outlet of Chapman L.	332	54°54'00" 126°39'00"	1967-69	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SN22	08EC005	Fulton R. at Fulton L. Narrows	1 340	54°48'25" 126°18'00"	1960-63	N	462 000	1	345	14.7	113	84.3	1	0.993	0.741	2	-	-	113 (23/5/61)	0.566E (24/3/62)	-	-
SN23	08EC007	Fulton L. nr. Smithers	-	54°48'15" 126°12'40"	1964-73	R	See Table A2				-	-	-	-	-	-	-	-	-	-	-	-

WORKSPACE NAME: PLN/STRATEG3
JOB NUMBER: AA170/TAB/A1: .5

WORKSPACE NAME: PLN/STRATEG3
JOB NUMBER: AA170/TAB/A1: .6

TABLE A.1
HYDROMETRIC DATA SUMMARY
SKEENA-NASS PLANNING UNIT (CONT'D.)

PLOT NO.	HYDROMETRIC STATION NUMBER	NAME	DRAINAGE AREA (km^2)	LATITUDE LONGITUDE	PERIOD OF RECORD	TYPE[1] OF RECORD	MEAN ANNUAL RUNOFF: TOTAL DISCHARGE (dam^3)	LENGTH[2] OF RECORD (years)	UNIT RUNOFF (mm)	DAILY DISCHARGE (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY (m^3/s)	($L/s/km^2$)	LENGTH[2] OF RECORD (years)	MINIMUM DAILY (m^3/s)	($L/s/km^2$)	LENGTH[2] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] INSTANTANEOUS (m^3/s)	LENGTH[2] OF RECORD (years)	MAXIMUM[3] DAILY (m^3/s)	MINIMUM[3] DAILY (m^3/s)	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MEAN	MAX.
SN24	08EC002	Fulton R. at the Mouth	1 400	54°48'50" 126°10'15"	1963-70	R	437 000	4	312	13.9	133	95.0	7	1.70	1.21	5	-	-	194 (23/5/68)	1.19 (24/9/65)	-	-
SN25	08EB004	Kispiox R. nr. Hazelton	1 870	55°28'00" 127°44'31"	1963-81	N	1 470 000	15	786	46.3	304	163	17	4.21	2.25	15	702E (2/11/78)	2	595E (2/11/78)	2.19B (20/3/74)	1.22	1.27
SN26	08EE003	Bulkley R. nr. Houston	2 380	54°23'45" 126°42'30"	1930-81	N	571 000	1	240	18.1	122	51.3	19	0.934	0.392	1	-	-	204 (14/5/51)	0.934B (9/1/71)	-	-
SN27	08EE004	Bulkley R. at Quick	7 360	54°37'05" 126°53'55"	1930-81	N	4 350 000	34	591	138	590	80.2	51	21.4	2.91	36	-	-	957 (13/6/72)	10.5 (13/12/31)	-	-
SN28	08EE002	Bulkley R. nr. Hubert	7 490	53°38'55" 126°58'25"	1315	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SN29	08EE005	Bulkley R. nr. Smithers	8 940	54°46'58" 127°07'59"	1946-71	N	5 180 000	1	579	164	786	87.9	7	19.8	2.22	1	-	-	1 190 (29/5/48)	19.8B (13/1/71)	-	-
SN30	08EE001	Bulkley R. nr. Hazelton	12 300	55°15'32" 127°36'10"	1928-41	N	5 190 000	3	422	164	889	72.3	12	20.3	1.65	3	-	-	1 510 (1/6/36)	15.6 (31/12/31)	-	-
SN31	08EE019	Maxan Cr. at outlet of Maxan L.	246	54°19'10" 126°06'59"	1976	N	89 900	1	365	2.84	31.1	126	1	0.289	1.17	1	-	-	31.1E (8/5/76)	0.289E (29/3/76)	-	-
SN32	08EE018	Maxan Cr. above Bulkley L.	368	54°21'25" 126°10'12"	1974-79	N	81 700	5	220	2.59	25.9	70.4	5	0.162	0.440	5	36.8 (6/5/76)	5	36.2 (6/5/76)	0.028 (28/8/79)	1.04	1.05
SN33	08EE015	Foxy Cr. above Lu Creek	16.1	54°12'46" 126°15'30"	1974	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SN34	08EE016	Lu Creek nr. the Mouth	7.25	54°12'29" 126°15'53"	1974	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SN35	08EE009	Richfield Cr. nr. Topley	173	54°30'59" 126°20'04"	1964-74	N	41 700	9	241	1.32	14.4	83.2	10	0.041	0.237	9	23.1 (12/6/72)	9	21.0 (16/5/73)	0.012B (21/1/74)	1.08	1.12

WORKSPACE NAME: PLN/STRATEG3
JOB NUMBER: AA170/TA8/A1: .7

WORKSPACE NAME: PLN/STRATEG3
JOB NUMBER: AA170/TA8/A1: .8

TABLE A.1
HYDROMETRIC DATA SUMMARY
SKEENA-NASS PLANNING UNIT (CONT'D.)

PLOT NO.	HYDROMETRIC STATION NUMBER	HYDROMETRIC STATION NAME	DRAINAGE AREA (km^2)	LATITUDE LONGITUDE	PERIOD OF RECORD	TYPE[1] OF RECORD	MEAN ANNUAL RUNOFF: TOTAL DISCHARGE (dam^3)	MEAN ANNUAL RUNOFF: LENGTH[2] OF RECORD (years)	MEAN ANNUAL RUNOFF: UNIT RUNOFF (mm)	MEAN ANNUAL RUNOFF: DAILY DISCHARGE (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY ($L/s/km^2$)	MEAN ANNUAL EXTREME DISCHARGE: LENGTH[2] OF RECORD (years)	MEAN ANNUAL EXTREME DISCHARGE: MINIMUM DAILY (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MINIMUM DAILY ($L/s/km^2$)	MEAN ANNUAL EXTREME DISCHARGE: LENGTH[2] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] INSTANTANEOUS (m^3/s)	EXTREME ANNUAL DISCHARGE: LENGTH[2] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] DAILY (m^3/s)	EXTREME ANNUAL DISCHARGE: MINIMUM[3] DAILY (m^3/s)	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MEAN	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MAX.
SM36	08EE013	Buck Cr. at the Mouth	580	54°23'52" 126°39'04"	1973-81	N	142 000	9	245	4.49	49.5	85.3	9	0.240	0.414	9	75.3 (17/5/73)	9	72.5 (17/5/73)	0.0968 (20/1/74)	1.10	1.15
SM37	08ED002	Morice R. nr. Houston	1 910	54°07'05" 127°25'26"	1961-81	N	2 410 000	20	1 260	76.3	247	129	20	14.4	7.54	20	394 (17/6/69)	19	391 (14/6/69)	9.17 (10/4/69)	1.01	1.01
SM38	08ED003	Morice R. at the Mouth	4 270	54°22'56" 126°44'24"	1971	N	3 580 000	1	838	113	552	129	1	10.3	2.41	1	-	-	552 (9/6/71)	10.38 (7/1/71)	-	-
SM39	08ED001	Nanika R. at Outlet of Kidprice L.	741	53°55'50" 127°27'10"	1950-81	N	902 000	10	1 220	28.6	131	177	12	3.70	4.99	11	278 (2/11/78)	9	240 (2/11/78)	2.65 (16/2/78)	1.37	1.38
SM40	08EE022	Deep Cr. below Gibson Cr.	89.9	54°35'32" 126°50'03"	1978-79	R	-	-	-	-	6.10	67.9	2	0.011	0.122	1	-	-	8.24 (30/4/79)	0.011 (4/8/78)	-	-
SM41	08EE020	Telkwa R. below Tsai Cr.	368	54°36'10" 127°29'42"	1975-81	N	454 000	6	1 230	14.4	86.9	236	6	1.57	4.27	6	239E (1/11/78)	6	156E (1/11/78)	1.16E (29/3/80)	1.37	1.53
SM42	08EE008	Goathorn Cr. nr. Telkwa	132	54°38'50" 127°07'20"	1960-81	N	57 000	18	432	1.80	14.9	113	20	0.133	1.01	19	49.8 (20/5/68)	20	40.8 (20/5/68)	0.066 (27/3/80)	1.81	2.16
SM43	08EE011	Kathlyn Lake nr. Smithers	-	54°49'03" 127°11'55"	1968-80	X	See Table A2				-	-	-	-	-	-	-	-	-	-	-	-
SM44	08EE010	Kathlyn Cr. above Simpson Cr.	24.6	54°48'45" 127°12'05"	1967-79	N	6 820	6	277	0.216	0.905	36.8	11	0.020	0.813	10	-	-	1.30 (15/6/72)	0.0 (20/8/77)	-	-
SM45	08EE012	Simpson Creek at the Mouth	13.2	54°48'36" 127°12'09"	1969-81	N	8 120	6	615	0.257	1.94	147	11	0.008	0.606	8	5.07 (1/11/78)	6	2.61 (2/6/70)	0.002 (22/3/80)	1.99	2.43
SM46	08EE023	McKinnon Cr. above Diversions		54°47'59" 127°13'19"	1978-79	X	-	-	-	-	0.248	-	2	0.002	-	1	-	-	0.304 (5/5/79)	0.002 (2/8/78)	-	-
SM47	08EE014	Canyon Cr. nr. Smithers	256	54°48'26" 127°07'49"	1973-81	N	69 800	8	273	2.21	18.8	73.4	8	0.103	0.402	8	-	-	30.0 (26/4/77)	0.0088 (15/1/74)	-	-

WORKSPACE NAME: PLN/STRATEG3
JOB NUMBER: AA170/TAB/A1: .9

WORKSPACE NAME: PLN/STRATEG3
JOB NUMBER: AA170/TAB/A1: .10

TABLE A.1
HYDROMETRIC DATA SUMMARY
SKEENA-NASS PLANNING UNIT (CONT'D.)

PLOT NO.	HYDROMETRIC STATION NUMBER	HYDROMETRIC STATION NAME	DRAINAGE AREA (km^2)	LATITUDE LONGITUDE	PERIOD OF RECORD	TYPE[1] OF RECORD	MEAN ANNUAL RUNOFF: TOTAL DISCHARGE (dam^3)	MEAN ANNUAL RUNOFF: LENGTH[2] OF RECORD (years)	MEAN ANNUAL RUNOFF: UNIT RUNOFF (mm)	MEAN ANNUAL RUNOFF: DAILY DISCHARGE (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY ($L/s/km^2$)	MEAN ANNUAL EXTREME DISCHARGE: LENGTH[2] OF RECORD (years)	MEAN ANNUAL EXTREME DISCHARGE: MINIMUM DAILY (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MINIMUM DAILY ($L/s/km^2$)	MEAN ANNUAL EXTREME DISCHARGE: LENGTH[2] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] INSTANTANEOUS (m^3/s)	EXTREME ANNUAL DISCHARGE: LENGTH[2] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] DAILY (m^3/s)	EXTREME ANNUAL DISCHARGE: MINIMUM[3] DAILY (m^3/s)	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MEAN	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MAX.
SN48	08EE024	Cygnet Cr. above Diversions	6.73	54°51'05" 127°04'22"	1979	N	-	-	-	-	0.408	60.6	1	0.0	0.0	1	-	-	0.408 (3/5/79)	0.0 (27/8/79)	-	-
SN49	08EE021	Cygnet Cr. at Adams Road	10.4	54°50'54" 127°04'34"	1978	R	-	-	-	-	0.351	33.8	1	0.0	0.0	1	-	-	0.351 (27/8/78)	0.0 (1/8/78)	-	-
SN50	08EE017	Waterfall Cr. at New Hazelton		54°14'45" 127°35'26"	1974-75	N	-	-	-	-	0.682	-	1	0.012	-	1	-	-	0.682 (4/8/75)	0.0128 (24/3/75)	-	-
SN51	08EE006	Jonn Brown Cr. nr. Smithers	79.0	55°00'37" 127°19'58"	1947-49	N	40 300	1	510	1.27	8.30	105	2	0.197	2.49	2	-	-	10.9 (28/5/48)	0.068 (20/3/48)	-	-
SN52	08EE007	Hospital Spring nr. Hazelton		55°15'16" 127°39'04"	1948-49	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SN53	08EF004	Kitsequecla R. nr. Skeena Crossing	728	55°05'25" 127°48'40"	1960-71	N	483 000	7	664	15.3	145	199	12	1.67	2.29	9	603 (24/10/66)	12	269 (2/6/64)	0.9348 (14/2/66)	2.16	3.39
SN54	08EF002	Machlanguel Cr. nr. Kitwanga		55°06'21" 128°01'40"	1948-50	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SN55	08EF005	Zymoetz R. above O.K. Cr.	2 980	54°29'00" 128°19'50"	1963-81	N	3 370 000	17	1 130	107	693	232	19	13.0	4.36	19	3 140E (1/11/78)	19	1 980E (1/11/78)	7.908 (18/3/69)	1.71	2.00
SN56	08EF003	Zymoetz R. nr. Terrace	3 080	54°32'10" 128°27'15"	1952-64	N	4 350 000	9	1 410	138	790	256	13	18.6	6.04	13	-	-	1 050E (31/10/61)	8.21 (3/3/52)	-	-
SN57	08EG026	Kitsumkalum R. nr. Terrace	2 180	54°34'55" 128°39'37"	1929-52	N	3 890 000	4	1 780	123	478	219	22	18.1	8.30	16	883 (3/6/36)	18	883 (3/6/36)	7.70 (15/3/33)	1.02	1.08
SN58	08EG011	Zymagotitz R. nr. Terrace	376	54°31'07" 128°43'40"	1960-81	N	752 000	19	2 000	23.8	182	484	22	3.01	8.01	20	549E (15/10/74)	22	382E (15/10/74)	1.548 (18/3/69)	1.82	2.33
SN59	08EG007	Lakelse R. nr. Terrace	389	54°23'30" 128°31'40"	1948-55	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

WORKSPACE NAME: PLN/STRATEG3
JOB NUMBER: AA170/TAB/A1: .11

TABLE A.1
HYDROMETRIC DATA SUMMARY
SKEENA-NASS PLANNING UNIT (CONT'D.)

PLOT NO.	HYDROMETRIC STATION NUMBER	HYDROMETRIC STATION NAME	DRAINAGE AREA (km^2)	LATITUDE LONGITUDE	PERIOD OF RECORD	TYPE[1] OF RECORD	MEAN ANNUAL RUNOFF: TOTAL DISCHARGE (dam^3)	MEAN ANNUAL RUNOFF: LENGTH[2] OF RECORD (years)	MEAN ANNUAL RUNOFF: UNIT RUNOFF (mm)	MEAN ANNUAL RUNOFF: DAILY DISCHARGE (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY ($L/s/km^2$)	MEAN ANNUAL EXTREME DISCHARGE: LENGTH[2] OF RECORD (years)	MEAN ANNUAL EXTREME DISCHARGE: MINIMUM DAILY (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MINIMUM DAILY ($L/s/km^2$)	MEAN ANNUAL EXTREME DISCHARGE: LENGTH[2] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] INSTANTANEOUS (m^3/s)	EXTREME ANNUAL DISCHARGE: LENGTH[2] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] DAILY (m^3/s)	EXTREME ANNUAL DISCHARGE: MINIMUM[3] DAILY (m^3/s)	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MEAN	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MAX.
SN60	08EG000R	Williams Cr. nr. Terrace	218	54°24'55" 128°31'59"	1954	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SN61	08EG010	Shulbuckhand Cr. nr. Terrace	54.1	54°21'15" 128°33'50"	1953-55	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SN62	08EG012	Exchamsiks R. nr. Terrace	370	54°21'27" 129°18'41"	1962-81	N	1 360 000	17	3 680	43.1	344	930	20	3.23	8.73	18	864 (1/11/78)	19	572E (15/10/74)	1.548 (18/3/69)	1.50	1.92
SN63	08EG003	Kntada R. nr. Kwinitsa	150	54°09'53" 129°34'39"	1929-31	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SN64	08EG002	Big Falls R. nr. Port Essington	248	53°59'02" 129°43'53"	1928-30	R	935 000	1	3 770	29.7	244	984	1	3.06	12.3	1	-	-	244 (21/8/29)	3.06 (10/4/29)	-	-
SN65	08EG001	Brown Cr. nr. Port Essington	56.2	54°01'37" 129°50'29"	1928-32	N	193 000	3	3 430	6.10	25.4	452	4	0.374	6.66	4	-	-	32.6 (30/10/31)	0.113E (6/9/28)	-	-
SN66	08EG013	Boneyard Cr. at Outlet of Rainbow L.	33.2	54°11'55" 130°04'50"	1964-65	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SN67	08EG014	Rainbow L. nr. Prince Rupert	-	54°11'56" 130°04'50"	1964-65	N	See		Table	A2	-	-	-	-	-	-	-	-	-	-	-	-
SN68	08EG016	Kloiya R. nr. Prince Rupert	105	54°14'51" 130°10'18"	1964-81	R	196 000	11	1 870	6.21	65.5	624	14	0.446	4.25	12	170 (19/11/71)	11	107 (19/11/71)	0.130 (20/11/73)	1.41	1.59
SN69	08EG015	Diana Cr. nr. Prince Rupert	59.0	54°13'46" 130°09'41"	1964-72	R	123 000	7	2 080	3.90	29.2	495	8	1.28	21.7	7	66.3 (24/10/72)	4	55.2 (24/10/72)	0.187 (3/9/65)	1.24	1.28
SN70	08EG004	Thulme R. nr. Port Simpson	73.6	54°29'30" 129°59'45"	1929-31	N	-	-	-	-	56.6	769	1	1.44	19.6	1	-	-	56.6E (13/10/29)	1.44 (4/1/29)	-	-
SN71	08DB002	Union Cr. nr. Port Simpson	60.3	54°39'45" 130°15'45"	1929-31	N	227 000	1	3 770	7.20	43.6	723	1	0.269	4.46	1	-	-	43.6 (16/9/30)	0.269 (22/1/30)	-	-

TABLE A.1
HYDROMETRIC DATA SUMMARY
SKEENA-NASS PLANNING UNIT (CONT'D.)

PLOT NO.	HYDROMETRIC STATION NUMBER	HYDROMETRIC STATION NAME	DRAINAGE AREA (km^2)	LATITUDE LONGITUDE	PERIOD OF RECORD	TYPE[1] OF RECORD	MEAN ANNUAL RUNOFF: TOTAL DISCHARGE (dam^3)	MEAN ANNUAL RUNOFF: LENGTH[2] OF RECORD (years)	MEAN ANNUAL RUNOFF: UNIT RUNOFF (mm)	MEAN ANNUAL RUNOFF: DAILY DISCHARGE (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY ($L/s/km^2$)	MEAN ANNUAL EXTREME DISCHARGE: LENGTH[2] OF RECORD (years)	MEAN ANNUAL EXTREME DISCHARGE: MINIMUM DAILY (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MINIMUM DAILY ($L/s/km^2$)	MEAN ANNUAL EXTREME DISCHARGE: LENGTH[2] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] INSTANTANEOUS (m^3/s)	EXTREME ANNUAL DISCHARGE: LENGTH[2] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] DAILY (m^3/s)	EXTREME ANNUAL DISCHARGE: MINIMUM[3] DAILY (m^3/s)	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MEAN	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MAX.
SN84	08DC003	Georgie R. nr. Stewart		55°42'48" 130°04'54"	1929-30	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SN85	08DC006	Bear R. above Bitter Cr.	350	56°02'34" 129°55'30"	1967-81	N	772 000	14	2 210	24.4	126	360	15	1.67	4.77	14	271 (8/10/74)	14	225 (8/10/74)	0.9348 (15/3/74)	1.50	1.82
SN86	08DC001	American Cr. nr. Stewart	166	56°06'24" 129°52'54"	1929-30	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Outside Planning Unit Boundary:																							
TN9	08JA001	Nechako R. at Fort Fraser	15 100	54°03'18" 124°33'39"	1915-53	R	-	-	-	-	554	36.7	24	58.1	3.85	3	-	-	835 (6/6/48)	56.4 (8/4/44)	-	-
Oo6	08JA002	Ootsa R. at Ootsa L.	4 450	53°37'30" 125°44'00"	1929-52	N	3 130 000	18	703	99.2	329	73.9	22	21.4	4.81	21	-	-	524 (4/6/48)	12.8 (7/4/45)	-	-
Oo8	08JA016	MaCivor Cr. nr. the Mouth	53.4	53°48'07" 126°21'00"	1976-81	N	34 900	4	654	1.10	8.64	162	4	0.068	1.27	4	12.2 (31/5/80)	4	10.3 (31/5/80)	0.037 (5/3/80)	1.24	1.30
Oo9	08JA003	Whitesail R. nr. Ootsa L.	1 010	53°38'20" 126°44'56"	1930-52	N	1 050 000	6	1 040	33.4	110	109	19	9.83	9.73	8	150 (21/6/50)	17	149 (21/6/50)	7.08E (1/3/36)	1.03	1.08
Oo10	08JA006	Tahtsa R. at Outlet of Tahtsa L.	578	53°41'00" 127°14'00"	1930-53	N	830 000	1	1 440	26.3	128	222	8	4.91	8.50	8	-	-	174 (20/6/50)	3.28 (20/4/51)	-	-
Oo11	08JA005	Tahtsa R. nr. Ootsa L.	1 420	53°45'20" 126°42'00"	1930-52	N	1 620 000	1	1 140	51.4	220	155	21	13.5	9.51	7	317 (20/6/50)	18	314 (20/6/50)	7.36B (16/3/51)	1.18	1.77
Oo12	08JA015	Laventie Cr. nr. the Mouth	86.5	53°39'09" 127°32'13"	1976-81	N	165 000	5	1 910	5.23	64.8	749	6	0.297	3.43	5	266 (1/11/78)	6	161 (1/11/78)	0.147B (1/3/79)	2.66	2.74
Oo13	08JA013	Skins L. Spillway, Nechako Reservoir	-	53°46'15" 125°58'14"	1956-81	R	3 900 000	25	-	124	326	-	25	10.6	-	26	-	-	538 (21/7/81)	0.0 (1/1/56)	-	-

TABLE A.1
HYDROMETRIC DATA SUMMARY
SKEENA-NASS PLANNING UNIT (CONT'D.)

PLOT NO.	HYDROMETRIC STATION NUMBER	HYDROMETRIC STATION NAME	DRAINAGE AREA (km^2)	LATITUDE LONGITUDE	PERIOD OF RECORD	TYPE[1] OF RECORD	MEAN ANNUAL RUNOFF: TOTAL DISCHARGE (dam^3)	MEAN ANNUAL RUNOFF: LENGTH[4] OF RECORD (years)	MEAN ANNUAL RUNOFF: UNIT RUNOFF (mm)	MEAN ANNUAL RUNOFF: DAILY DISCHARGE (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MAXIMUM DAILY ($L/s/km^2$)	MEAN ANNUAL EXTREME DISCHARGE: LENGTH[4] OF RECORD (years)	MEAN ANNUAL EXTREME DISCHARGE: MINIMUM DAILY (m^3/s)	MEAN ANNUAL EXTREME DISCHARGE: MINIMUM DAILY ($L/s/km^2$)	MEAN ANNUAL EXTREME DISCHARGE: LENGTH[4] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] INSTANTANEOUS (m^3/s)	EXTREME ANNUAL DISCHARGE: LENGTH[2] OF RECORD (years)	EXTREME ANNUAL DISCHARGE: MAXIMUM[3] DAILY (m^3/s)	EXTREME ANNUAL DISCHARGE: MINIMUM[3] DAILY (m^3/s)	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MEAN	RATIO OF MAXIMUM INSTANTANEOUS TO DAILY DISCHARGE: MAX.
TN15	08JB003	Nautley R. nr. Fort Fraser	6 030	54°05'07" 124°35'58"	1950-81	N	1 090 000	28	181	34.5	122	20.2	29	7.98	1.32	28	180 (10/5/77)	5	234 (26/5/76)	0.0 (4/9/61)	-	-
TN17	08JB002	Stellako R. at Glenannan	3 600	54°00'38" 125°00'01"	1929-81	N	722 000	31	201	22.9	78.2	21.7	33	5.31	1.48	33	69.9 (5/6/81)	2	166 (23/6/72)	1.98 (30/1/30)	-	-
Do15	08JB001	Francois L. at Southbank	-	54°01'30" 125°45'55"	1935-74	N	See Table A2				-	-	-	-	-	-	-	-	-	-	-	-
Do16	08JB011	Francois L. at Francois L.	-	54°03'05" 125°45'16"	1974-81	N	See Table A2				-	-	-	-	-	-	-	-	-	-	-	-
Do17	08JB007	Nadina L. nr. Noralee	-	53°54'15" 126°58'15"	1964-81	N	See Table A2				-	-	-	-	-	-	-	-	-	-	-	-
Do18	08JB008	Nadina R. at Outlet of Nadina L.	399	53°54'08" 126°57'13"	1964-81	N	175 000	7	439	5.54	37.1	93.0	16	0.754	1.89	7	-	-	63.4 (21/5/68)	0.413 (28/3/79)	-	-
Do19	08JB006	Nadina R. nr. Noralee	1 050	53°59'50" 126°35'15"	1950-58	N	-	-	-	-	79.2	75.4	6	-	-	-	87.5 (21/5/57)	3	95.7A (6/6/54)	-	1.01	1.01
TN22	08JC006	Murray Cr. at Vanderhoof	125	54°01'48" 124°00'55"	1962-74	R	9 710	6	77.7	0.308	4.78	38.2	10	0.002	0.016	11	-	-	13.5E (1/5/74)	0.0E (29/7/63)	-	-
TN26	08JE001	Stuart R. nr. Fort St. James	14 600	54°25'05" 124°16'30"	1929-81	N	4 180 000	39	286	132	321	22.0	51	38.9	2.66	47	-	-	592 (29/6/72)	20.4 (6/4/30)	-	-
TN28	08JD006	Driftwood R. above Kastberg Cr.	407	55°58'17" 126°38'28"	1979-81	N	216 000	2	531	13.7	52.1	128	2	0.650	1.60	2	86.5 (26/5/81)	1	80.9 (26/5/81)	0.425 (19/2/80)	-	-
TN29	08JE005	Kazchek Cr. nr. the Mouth	-	54°54'01" 125°08'17"	1979-81	N	309 000	2	-	9.79	47.1	-	2	1.32	-	2	33.6 (19/5/81)	2	33.4 (19/5/81)	0.531 (29/9/81)	-	-
TN31	08JE005	Tsilcon R. nr. the Mouth	414	54°36'38" 124°14'40"	1975-81	N	69 700	6	168	2.20	30.5	73.6	6	0.296	0.716	6	43.0 (2/5/79)	5	42.5E (3/5/79)	0.160 (19/8/81)	-	-

Province of British Columbia
SKEENA REGION
Ministry of Environment

NOV 07 1990

MEMORANDUM

Bag 5000, Smithers, British Columbia V0J 2N0

Bill Obedkoff, P. Eng. 90.11.05
Hydrology Section
Watershed Studies 55.4408
Victoria

Re: Supply Assessment - High Priority Streams (Skeena Region)

Enclosed are photocopies of the Water Rights Maps containing the high priority streams in the Skeena Region. The recommended location for your study is marked on each map as well as all the points of diversion.

Listed below are the water licence numbers, file numbers, purpose and quantity for each point of diversion on each high priority stream.

Burger Creek

P.O.D. 'L' - CWL 60200 (file #0369908)
220 ac.ft. (irrigation) 24 ac.ft = 0.037 m³/s

P.O.D. 'B' - CWL 49331 (file #0328797)
2000 g.p.d. (domestic)

P.O.D. 'R' - Application 6-555
500 g.p.d. (domestic)
24 ac.ft. (irrigation)

2500 gpd. = 0.000 m³/s

Sum lf. 5-yr. = 0.55 m³/s

Supply is OK

The recommended location of your study is the mouth of Burger Creek.

Deep Creek

P.O.D. 'F' - CWL 55006 (file #0355075)
500 g.p.d. (domestic)

P.O.D. 'D' - CWL 54119 (file #0364553)
1000 g.p.d. (domestic)

- CWL 60212 (file 6-6116)
500 g.p.d. (domestic)

2000 gpd = 0.000 m³/s

P.O.D. 'G' - CWL 60206 (file 6-066)
2.0 c.f.s. (conservation) diversion? non-consumptive?

..../2

Howard Cr. & Curwen Cr. ?

Information required for licenses above hydrometric gauges:
- user name
- date of priority (Xerox of computer register sheet)
- water useage records, eg., periods of use; flow records
- is useage non-consumptive? eg., conservation

LEO 07/11/90

A-5: AF = 0.000153 m^3/s

0.8107 ac.ft = 1 dam^3

P.O.D. 'H' - CWL 62007 (file 6-242)
2.0 c.f.s. (conservation) diversion? same flow as a ✓ or additive? X

P.O.D. 'R' - CWL 22517 (file #0189873)
182,500,000 g.p.year (waterworks)

- CWL 27977 (file #0239567)
182,500,000 g.p.year (waterworks)

$\frac{365{,}000{,}000 \text{ Imp Gal.}}{365 \text{ day}} = 0.053\ m^3/s$

5-yr. wint. l.f. 0.039 m^3/s
sum l.f. 0.11 m^3/s

There are two recommended locations for you study. One is the mouth of Deep Creek and the other is just upstream of the intake at P.O.D. 'R'.

hence supply is 100% used up

Four Mile Creek

P.O.D. 'Q' - CWL 57173 (file #0367252)
50 ac.ft. (irrigation) 0.008 m^3/s

P.O.D. 'X' - CWL 68036 (file 6-372)
500 g.p.d. (domestic)

P.O.D. 'N' - CWL 68037 (File #0369591)
1.0 ac.ft. (irrigation)
500 g.p.d. (domestic)

- CWL 68040 (file #0219728)
10 ac.f.t. (irrigation) 0.002
500 g.p.d. (domestic)

Domestics 0.000 m^3/s

P.O.D. 'BB' - Application 6-589
500 g.p.d. (domestic)

- Application 6-592
500 g.p.d. (domestic)

61 ac ft = 0.009 m^3/s

supply: 50% used up

The recommended location of your study is the mouth of Four Mile Creek.

5yr. Sum l.f. 0.020 m^3/s
wint. l.f. 0.007 m^3/s

Honna River

P.O.D. 'C' - CWL 072042 (file 6-392)
54,750,000 g.p.year (waterworks) = 0.008 m^3/s

P.O.D. 'B' - Application 6-275 use?

The recommended location of your study is the mouth of the Honna River.

..../3

5 yr. Sum. 7-day avg. l.f. 0.057 m^3/s
wint. 0.14

Supply O.K.

McDowell Creek

P.O.D. 'D' - CWL 29025 (file #0244682)
70 ac.ft. (irrigation) = 0.011 m³/s

- CWL 29026 (file #0244682)
70 ac.ft. (storage)

5-11, sum 1.f. is 0.004 m³/s
(Irrig. lic. with storage back-up)

P.O.D. 'U' - FWL 19811 (file #0238550)
1000 g.p.d. (domestic)

P.O.D. 'V' - Application 6-565
500 g.p.d. (domestic)

} 0.000 m³/s

The recommended location of your study is the mouth of McDowell Creek or at Highway 16 crossing.

Spring Creek

P.O.D. 'GG' - CWL 41100 (file #0310811)
500 g.p.d. (domestic)

P.O.D. 'NN' - CWL 51342 (file #0364092)
500 g.p.d (domestic)

- CWL 53359 (file #365700)
500 g.p.d. (domestic)

- CWL 54803 (file #355229)
500 g.p.d. (domestic)

P.O.D. 'C' - CWL 54083 (file #0305212)
750 g.p.d. (domestic)

P.O.D. 'T' - CWL 54084 (file #0346764)
750 g.p.d. (domestic)

P.O.D. 'Y' - CWL 58109 (file #0367245)
500 g.p.d. (domestic)

- CWL 58110 (file #0367246)
500 g.p.d. (domestic)

- CWL 58111 (file #0367247)
500 g.p.d. (domestic)

- CWL 58112 (file #0367248)
500 g.p.d. (domestic)

..../4

P.O.D. 'QQ' - CWL 61270 (file #0369080)
500 g.p.d. (domestic)

600 gpd = 0.000 m^3/s

January 1st
$5 \times \frac{1}{2} = 0.03$ m^3/s
∴ Supply is OK

The recommended location of your study is the mouth of Spring Creek or just below P.O.D. 'NN'.

Before the list and maps of the low priority streams are sent to you, could you please verify that this is the information you require. You can reach me at 847-7691.

Scott Morgan.

Scott Morgan
Allocation Technician
Water Management Branch

SM/bs

Encl.

Province of British Columbia
SKEENA REGION

Ministry of Environment

MEMORANDUM

Bag 5000, Smithers, British Columbia V0J 2N0

Bill Obedkoff, P. Eng.
Hydrology Section
Watershed Studies
Victoria

December 18, 1990

File: 55.4408

Re: Supply Assessment - Low Priority Streams (Skeena Region)

Enclosed is a list of all low priority streams in the Skeena Region along with the W.R. Maps they are located on, the Stream Register notes and the Recommended Study Location. As you can see, most recommended study locations are near the mouth of the stream.

Photocopies of our W.R. maps as well as the stream register have not been included since copies of both of these can be found in victoria.

I hope this information is helpful to you. Please feel free to call me at 847-7691 if you have any questions.

Scott Morgan

Scott Morgan
Allocation Technician
Water Management Branch

SM/bs

Encl.

BOO 08/01/91 phoned S.M. re maps for sites other than at mouths and unlabeled streams (1:50,000)
- also WSC sites - maps & stream registers for upstream license points
- streams requiring ann. R/O estimates (for mid-elev.) to be identified
eg., water works & irrigation licenses & applications

MINISTRY OF ENVIRONMENT
HYDROLOGY SECTION
DEC 28 1990
FILE:

LOW PRIORITY STREAMS

SKEENA REGION

ATLIN

Stream	WR Map	Stream Record	Recommended Study Location
Alkali Ck	104.G.084	Fully Recorded	Near the Mouth
Carnot Br	104N(5H)	Fully Recorded	"
Colwell Ck	104N.052.2.4	Potential Low Flow Problem	"
Glenora Ck	104.G.084	Fully Recorded	"
Haggard Ck	104.G.084	Fully Recorded	"
Keble Br	104N.052.2.4	Fully Recorded	"
Keno Lk	104M(15-G)	Fully Recorded	Outlet
Kluachon Ck	104G(16A)	Fully Recorded	Near the Mouth

HAZELTON DISTRICT

BURNS LAKE PRECINCT

Acorn Lk	93.F.092	Possible Water Shortage	Outlet
Allin Ck	93.K.001	Possible Water Shortage	Near the Mouth
Banquarel Ck	93.K.005	Possible Water Shortage	"
Boyd Lk	93.F.092	Fully Recorded	Outlet
Carducci Ck	93.K.013	Fully Recorded	Near the Mouth
Copeland Ck	93.F.091	Fully Recorded	"
Endako Rv	93.K.006	Poss Low Flows in Upper Reaches	
Faber Lk	93.K.002	Possible Water Shortage	Outlet
Forgie Ck	93.K.031	Possible Water Shortage	Near the Mouth
Hudson Ck	93.K.014	Storage Req'd for any Further Licence	"
McDonald Ck	93.L.010	Fully Recorded	Near the Mouth
Parkland Ck	93.L.010	Possible Water Shortage	"
Rentoul Ck	93K/5(E)	Potential Low Flow Problem	"
Sam Ross Ck	93.K.004	Possible Water Shortage for Irrig. Use	"
Shelford Ck	93E/NE	Possible Water Shortage	"
Sinkler Bk	93K.001	Possible Water Shortage	"
Snodgrass Lk	93K.001	Fully Recorded	"
Wardrop Ck	93K.022	Potential Low Flow	"

CEDARVALE PRECINCT

Casorso Br	103P/SE(1B)	Possible Water Shortage	Near the Mouth
Farman Ck	93.M.012	Low Flow During July/August	"
Heman Ck	103P/SE(1B)	Fully Recorded	"
Hood Ck	103.I.089	Fully Recorded	"
Hooker Ck	103.I.089	Fully Recorded	"
Hoover Ck	103.I.058	Fully Recorded	"
Nelson Ck	103.I.089	Fully Recorded	"

..../2

SMITHERS PRECINCT

Stream	WR Map	Stream Record	Recommended Study Location
Babbitt Ck	93L.085.1.1.1	Fully Recorded	Near the Mouth
Bede Ck	93.L.076	Fully Recorded	"
Bloc Ck	93.L.067	Fully Recorded	"
Boyd Ck	93.L.037	Fully Recorded	"
Cabell Ck	93L.075.3.2.2	Fully Recorded	Downstream of P.O.D.'A'
Chalmers Ck	93.L.076	Fully Recorded	Near the Mouth
Condon Ck	93.M.042	Fully Recorded	Downstream of P.O.D. 'E'
Coulson Br	93.L.067	Fully Recorded	Near the Mouth
Cygnet Ck	93.L.085	Fully Recorded unless Off-Line Storage Provided	Near the Mouth
Deep Ck	93.L.066	Fully Recorded	"
Dobson Ck	93.M.052	Fully Recorded	Downstream of P.O.D. 'B'
Faraday Ck	93.L.036	Potential Low Flow Problem	Downstream of P.O.D. 'B'
Feeney Br	93.L.084	Fully Recorded	Near the Mouth
Flagg Ck	93.M.022	Fully Recorded	Downstream of P.O.D. 'K'
Florey Ck	93.L.047	Fully Recorded	Near the Mouth
Garamond Br	93.M.032	Fully Recorded	"
Gardner Ck	93.L.066	Possible Low Flow Problem	"
Gibson Ck	93.L.057	Irr. to be Supported by Storage	"
Glass Ck	93L.084.2.2	Hold All Applications in Abeyance	Downstream of P.O.D. 'B'
Goldoni Ck	93L.056.4.2	Fully Recorded Unless Storage Provided	Near the Mouth
Goodman Ck	93.M.052	Fully Recorded	"
Henry Ck	93.L.037	Possible Water Shortage	"
Highland Ck	93.M.042	Fully Recorded	"
Hobbs Br	93.L.084	Fully Recorded	Downstream of P.O.D. 'KK'
John Ck	93.L.047	Fully Recorded Unless Storage Provided	Near the Mouth
Lacroix Ck	93.L.066.1.4	Fully Recorded	"
Laing Ck	93.L.056	Fully Recorded	"
Lartet Ck	93.L.037	Potential Low Flow Problem	"
Leekie Ck	93.L.047	Fully Recorded	Downstream of P.O.D. 'N'
Lu Lk	93.L.029	Fully Recorded	At Lu Creek Outlet
Mathews Lk	93.L.047	Fully Recorded	Near the Mouth
Pine Ck	93.L.085	Fully Recorded for Irrig Unless Storage Provided	"
Raspberry Ck	93.L.048	Potential Low Flow Problem	"
Robin Ck	93.L.066	Potential Low Flow Problem	"
Seymour Ck	93.L.075.1.4.3	Possible Water Shortage	"
Sikedalh Ck	93.M.032	Possible Water Shortage	"
Victor Ck	93.L.076	Fully Recorded Unless Storage Provided	"
Winch Ck	93.L.048	Possible Water Shortage	"

..../3

PRINCE RUPERT DISTRICT

KITIMAT PRECINCT

Stream	WR Map	Stream Record	Recommended Study Location
Ashley Manor	Ck 103.I.038	Potential Low Flow Problem	Near the Mouth
Beecher Ck	6618 B & C	Fully Recorded	"
Collins Ck	103.I.048	Fully Recorded except for Domestic	Downstream of P.O.D. 'G'
Drake Ck	103.I.058	Fully Recorded - Potential Low Flow During January-March	Near the Mouth
Fortas Ck	103.I.047	Fully Recorded	"
Lakelse Hotsprings	6620B	Possible Water Shortage at P.O.D. 4	"

QUEEN CHARLOTTES PRECINCT

Andys Ck	6630B	Fully Recorded	Near the Mouth
Charley Valley Ck	6630B	Fully Recorded	"
Cyrus Ck	103F/NE (E1/2)	Fully Recorded	"
Grace Br	6630C	Potential Low Flow	"
Isabel Ck	6630A-1	Fully Recorded	"
Landon Ck	103.F.030.2.3	Fully Recorded	"
Premier Ck	6630	Fully Recorded	"
Skidd Ck	6630C	Potential Low Flow	"
Sturdy Ck	6630A-1	Fully Recorded Except Domestic Use	"

Terrace Precinct

Charlotte Br	103I.077	Possible Water Shortage	Near the Mouth
Dodge Ck	103.J.029	Fully Recorded	"
Maiden Ck	103P/SW(3-H)	Fully Recorded	"

Scott Morgan
Allocation Technician

SM/bs

Province of British Columbia
SKEENA REGION

Ministry of Environment

MEMORANDUM

Bag 5000, Smithers, British Columbia V0J 2N0

Bill Obedkoff, P. Eng.
Hydrology Section
Watershed Studies
Victoria

January 10, 1991

File: 55.4408

Re: Supply Assessment - Low Priority Streams (Skeena Region)

As per our telephone conversation on January 8, 1991 enclosed are the photocopies of the water rights maps and stream registers for the low priority streams you requested.

Also enclosed is a list of the low priority streams in the Skeena Region with the streams containing substantial irrigation demand being highlighted in yellow and the streams with waterworks demand being highlighted in blue.

If you need any further information, you may reach me at 847-7691.

Scott Morgan.

Scott Morgan
Allocation Technician
Water Management Branch

SM/bs

Encl.

WO 11/01/91

SMITHERS PRECINCT

Stream	WR Map	Stream Record	Recommended Study Location
Babbitt Ck	93L.085.1.1.1	Fully Recorded	Near the Mouth
Bede Ck	93.L.076	Fully Recorded	"
Bloc Ck	93.L.067	Fully Recorded	"
Boyd Ck	93.L.037	Fully Recorded	"
Cabell Ck	93L.075.3.2.2	Fully Recorded	Downstream of P.O.D.'A'
Chalmers Ck	93.L.076	Fully Recorded	Near the Mouth
Condon Ck	93.M.042	Fully Recorded	Downstream of P.O.D. 'E'
Coulson Br	93.L.067	Fully Recorded	Near the Mouth
Cygnet Ck	93.L.085	Fully Recorded unless Off-Line Storage Provided	Near the Mouth
Deep Ck	93.L.066	Fully Recorded	"
Dobson Ck	93.M.052	Fully Recorded	Downstream of P.O.D. 'B'
Faraday Ck	93.L.036	Potential Low Flow Problem	Downstream of P.O.D. 'B'
Feeney Br	93.L.084	Fully Recorded	Near the Mouth
Flagg Ck	93.M.022	Fully Recorded	Downstream of P.O.D. 'K'
Florey Ck	93.L.047	Fully Recorded	Near the Mouth
Garamond Br	93.M.032	Fully Recorded	"
Gardner Ck	93.L.066	Possible Low Flow Problem	"
Gibson Ck	93.L.057	Irr. to be Supported by Storage	"
Glass Ck	93L.084.2.2	Hold All Applications in Abeyance	Downstream of P.O.D. 'B'
Goldoni Ck	93L.056.4.2	Fully Recorded Unless Storage Provided	Near the Mouth
Goodman Ck	93.M.052	Fully Recorded	"
Henry Ck	93.L.037	Possible Water Shortage	"
Highland Ck	93.M.042	Fully Recorded	"
Hobbs Br	93.L.084	Fully Recorded	Downstream of P.O.D. 'KK'
John Ck	93.L.047	Fully Recorded Unless Storage Provided	Near the Mouth
Lacroix Ck	93.L.066.1.4	Fully Recorded	"
Laing Ck	93.L.056	Fully Recorded	"
Lartet Ck	93.L.037	Potential Low Flow Problem	"
Leekie Ck	93.L.047	Fully Recorded	Downstream of P.O.D. 'N'
Lu Lk	93.L.029	Fully Recorded	At Lu Creek Outlet
Mathews Lk	93.L.047	Fully Recorded	Near the Mouth
Pine Ck	93.L.085	Fully Recorded for Irrig Unless Storage Provided	"
Raspberry Ck	93.L.048	Potential Low Flow Problem	"
Robin Ck	93.L.066	Potential Low Flow Problem	"
Seymour Ck	93.L.075.1.4.3	Possible Water Shortage	"
Sikedalh Ck	93.M.032	Possible Water Shortage	"
Victor Ck	93.L.076	Fully Recorded Unless Storage Provided	"
Winch Ck	93.L.048	Possible Water Shortage	"

..../3

- IRRIGATION
- WATERWORKS.

LOW PRIORITY STREAMS

SKEENA REGION

ATLIN

Stream	WR Map	Stream Record	Recommended Study Location
Alkali Ck	104.G.084	Fully Recorded	Near the Mouth
Carnot Br	104N(5H)	Fully Recorded	"
Colwell Ck	104N.052.2.4	Potential Low Flow Problem	"
Glenora Ck	104.G.084	Fully Recorded	"
Haggard Ck	104.G.084	Fully Recorded	"
Keble Br	104N.052.2.4	Fully Recorded	"
Keno Lk	104M(15-G)	Fully Recorded	Outlet
Kluachon Ck	104G(16A)	Fully Recorded	Near the Mouth

HAZELTON DISTRICT

BURNS LAKE PRECINCT

Acorn Lk	93.F.092	Possible Water Shortage	Outlet
Allin Ck	93.K.001	Possible Water Shortage	Near the Mouth
Banquarel Ck	93.K.005	Possible Water Shortage	"
Boyd Lk	93.F.092	Fully Recorded	Outlet
Carducci Ck	93.K.013	Fully Recorded	Near the Mouth
Copeland Ck	93.F.091	Fully Recorded	"
Endako Rv	93.K.006	Poss Low Flows in Upper Reaches	
Faber Lk	93.K.002	Possible Water Shortage	Outlet
Forgie Ck	93.K.031	Possible Water Shortage	Near the Mouth
Hudson Ck	93.K.014	Storage Req'd for any Further Licence	"
McDonald Ck	93.L.010	Fully Recorded	Near the Mouth
Parkland Ck	93.L.010	Possible Water Shortage	"
Rentoul Ck	93K/5(E)	Potential Low Flow Problem	"
Sam Ross Ck	93.K.004	Possible Water Shortage for Irrig. Use	"
Shelford Ck	93E/NE	Possible Water Shortage	"
Sinkler Bk	93K.001	Possible Water Shortage	"
Snodgrass Lk	93K.001	Fully Recorded	"
Wardrop Ck	93K.022	Potential Low Flow	"

CEDARVALE PRECINCT

Casorso Br	103P/SE(1B)	Possible Water Shortage	Near the Mouth
Farman Ck	93.M.012	Low Flow During July/August	"
Heman Ck	103P/SE(1B)	Fully Recorded	"
Hood Ck	103.I.089	Fully Recorded	"
Hooker Ck	103.I.089	Fully Recorded	"
Hoover Ck	103.I.058	Fully Recorded	"
Nelson Ck	103.I.089	Fully Recorded	"

..../2

PRINCE RUPERT DISTRICT

KITIMAT PRECINCT

Stream	WR Map	Stream Record	Recommended Study Location
Ashley Manor Ck	103.I.038	Potential Low Flow Problem	Near the Mouth
Beecher Ck	6618 B & C	Fully Recorded	"
Collins Ck	103.I.048	Fully Recorded except for Domestic	
Drake Ck	103.I.058	Fully Recorded - Potential Low Flow During January-March	Downstream of P.O.D. 4
Fortas Ck	103.I.047	Fully Recorded	Near the Mouth
Lakelse Hotsprings	6620B	Possible Water Shortage at P.O.D. 4	"

QUEEN CHARLOTTES PRECINCT

Andys Ck	6630B	Fully Recorded	Near the Mouth
Charley Valley Ck	6630B	Fully Recorded	"
Cyrus Ck	103F/NE (E1/2)	Fully Recorded	"
Grace Br	6630C	Potential Low Flow	"
Isabel Ck	6630A-1	Fully Recorded	"
Landon Ck	103.F.030.2.3	Fully Recorded	"
Premier Ck	6630	Fully Recorded	"
Skidd Ck	6630C	Potential Low Flow	"
Sturdy Ck	6630A-1	Fully Recorded Except Domestic Use	"

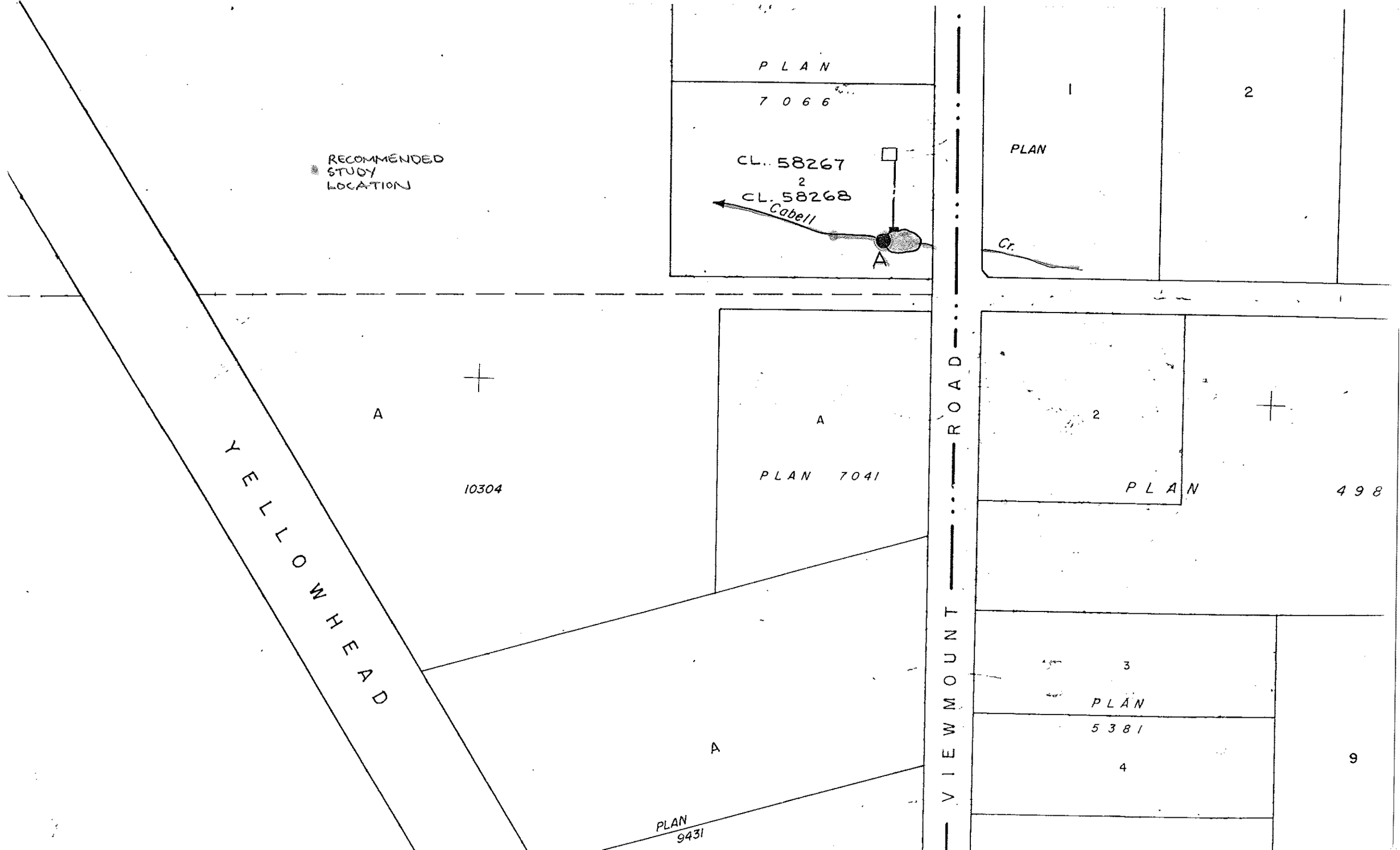
Terrace Precinct

Charlotte Br	103I.077	Possible Water Shortage	Near the Mouth
Dodge Ck	103.J.029	Fully Recorded	"
Maiden Ck	103P/SW(3-H)	Fully Recorded	"

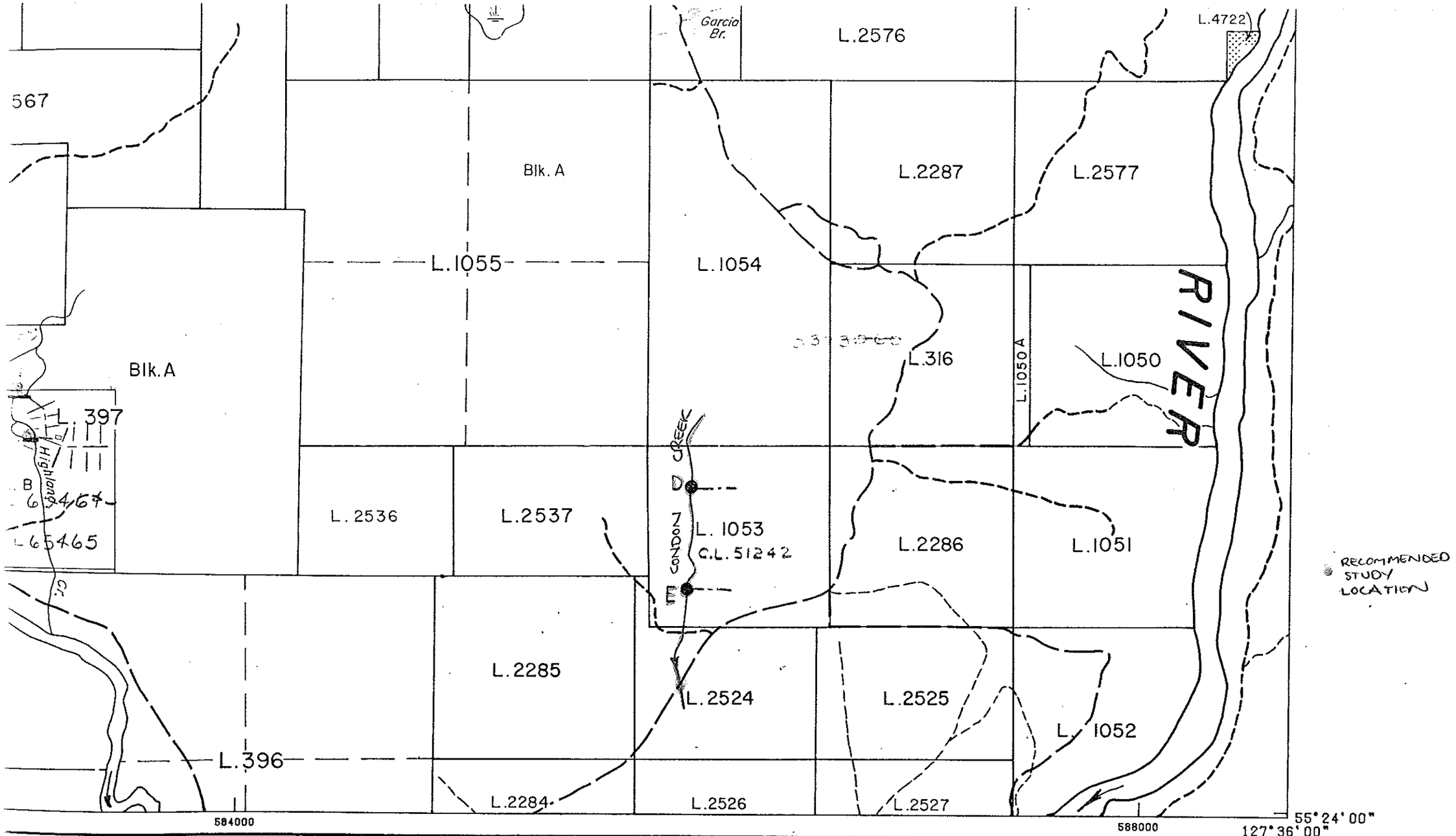
Scott Morgan
Allocation Technician

SM/bs

1987.05.01	C 65516	BUTZ SPR	EE	93.L.094	500.00 GD DOM	E 1/2 OF L 1123 R 5 COAST DIST EXC PLAN 10258	BUTZ TOM & LORNA	6000378
1989.01.11		BUTZ SPR	EE	93.L.094	1,000.00 GD DOM 1.00 AF IRR IND	E 1/2 OF L 1123 R 5 COAST DIST EXC PLAN 10258	BUTZ TOM & LORNA	6000517
1981.06.23	C 58267	CABELL CR	A	93.L.075.3.2.2	500.00 GD DOM	L 2 OF SEC 20 OF TP 4 R 5 COAST DIST PLAN 7066	POJAR JAMES & ROSAMUND	0368874
1981.06.23	C 58268	CABELL CR	A	93.L.075.3.2.2	1.00 AF STO	STO FOR CL 58267	POJAR JAMES & ROSAMUND	0368874 STO IN CR
1976.08.30	C 49828	CALAMITY SPRS	P Q	93.L.066	1,500.00 GD DOM	W 1/2 OF N 1/2 OF N 1/2 OF LOT 786 R 5 COAST DIST LYING NE OF RD SHOWN ON PLAN 1640	BROOK WES & DOUG	0340191


PLAN
7066
RECOMMENDED
STUDY
LOCATION
CL. 58267
2
CL. 58268
Cabell
A
1
2
PLAN
Cr.
A
10304
A
PLAN 7041
2
PLAN 498
YELLOWHEAD
VIEWMOUNT ROAD
3
PLAN
5381
4
9
PLAN
9431

1987.06.18	C 68058	COFFIN CR	DD	93.L.056	709.00 AF	CON	SEC 22 TP 8 R 5 COAST DIST	FISH AND WILDLIFE DUCKS UNLIMITED (CANADA)	6000398	PCL 17133
1983.05.27	C 60203	COGGAN CR	A	93.L.028	500.00 GD	DOM	L 6240 R 5 COAST DIST	FERRIS HENRY & GLENDA	6000080	PCL 14163
1988.04.06	C 68048	COLD CR	K	93.L.027	500.00 GD 1.00 AF 500.00 GD	DOM IRR IND	1 AC OF L 5207 R 5 COAST DIST EXC PLAN 6800	HANSELL LYALL & JUNE	6000448	
1967.10.25	C 34726	COLE LK	A	93.L.007	1,500.00 GD	DOM	L 6769 R 5 COAST DIST	WEST FRASER MILLS LTD	0277268	
1977.12.19	C 51242	CONDON CR	D E	93.M.042	20.00 AF	IRR	10 AC OF L 1053 R 5 COAST DIST	HAGEN JAMES M	0342416	



DISTRICT
EGISTRATION DISTRICT

SCALE - 1:20000

Metres 400 0 400 800 1200 1600 2000 Metres

Feet 1600 0 1600 3200 4800 Feet

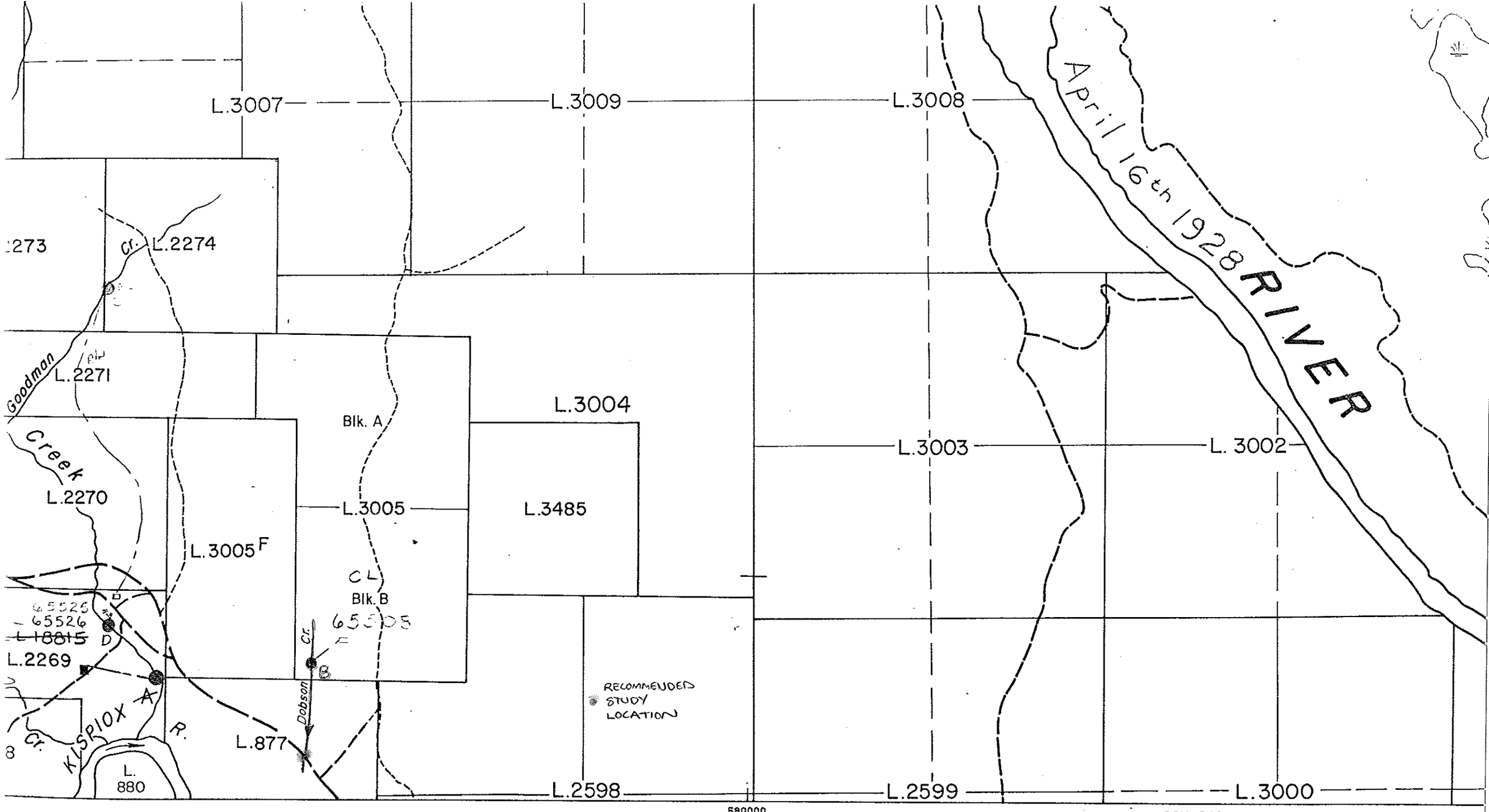
Negative No.:

Map Designation: WATER LICENCE MAP

B.C.G.S. Number:

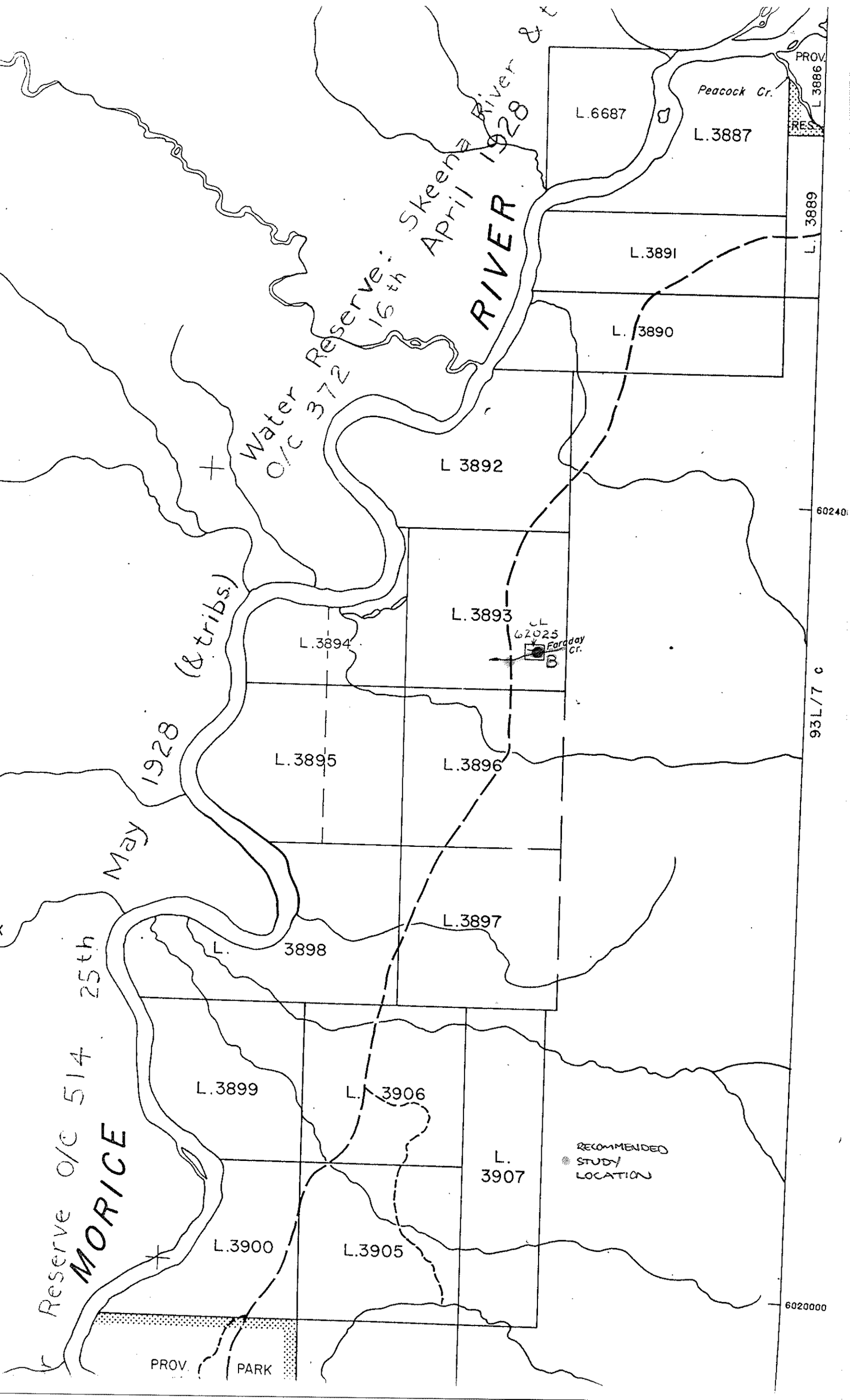
93 • M • 042

1981.03.16	C 60701	DICKERSON POND	B	93.L.075.3.2.4	2.5 AF STO	STO FOR CL	DICKERSON BILL	0368074
1985.07.22	C 65508	DOBSON CR	B	93.M.052	500.00 GD DOM 1.00 AF STO	BLK B OF L 3005 CASSIAR DIST	VOSS LAVERNA	6000267 RES ON CREEK
1961.12.15	C 27234	DOCKRILL CR	A	93.L.046	.00 TF LIM	THE LIM (CHANGING COURSE OF CR) PROJECT OF THE LICENSEE ON L 731 & 738 R 5 COAST DIST AS SHOWN ON THE ATTACHED PLAN	C N RAIL-BCND	0233806 PCL 05023
1966.04.29	C 31684	DODDING SLOUGH	C	93.M.022	500.00 GD DOM 10.00 AF IRR	10 AC OF BLK E & G OF L 39 CASSIAR DIST PLAN 961	DODDING DAVID T J	0269103
1958.06.25	C 43260	DONALD BR	A	93.L.075.3.3.1		SEE THOMAS BR		0221001

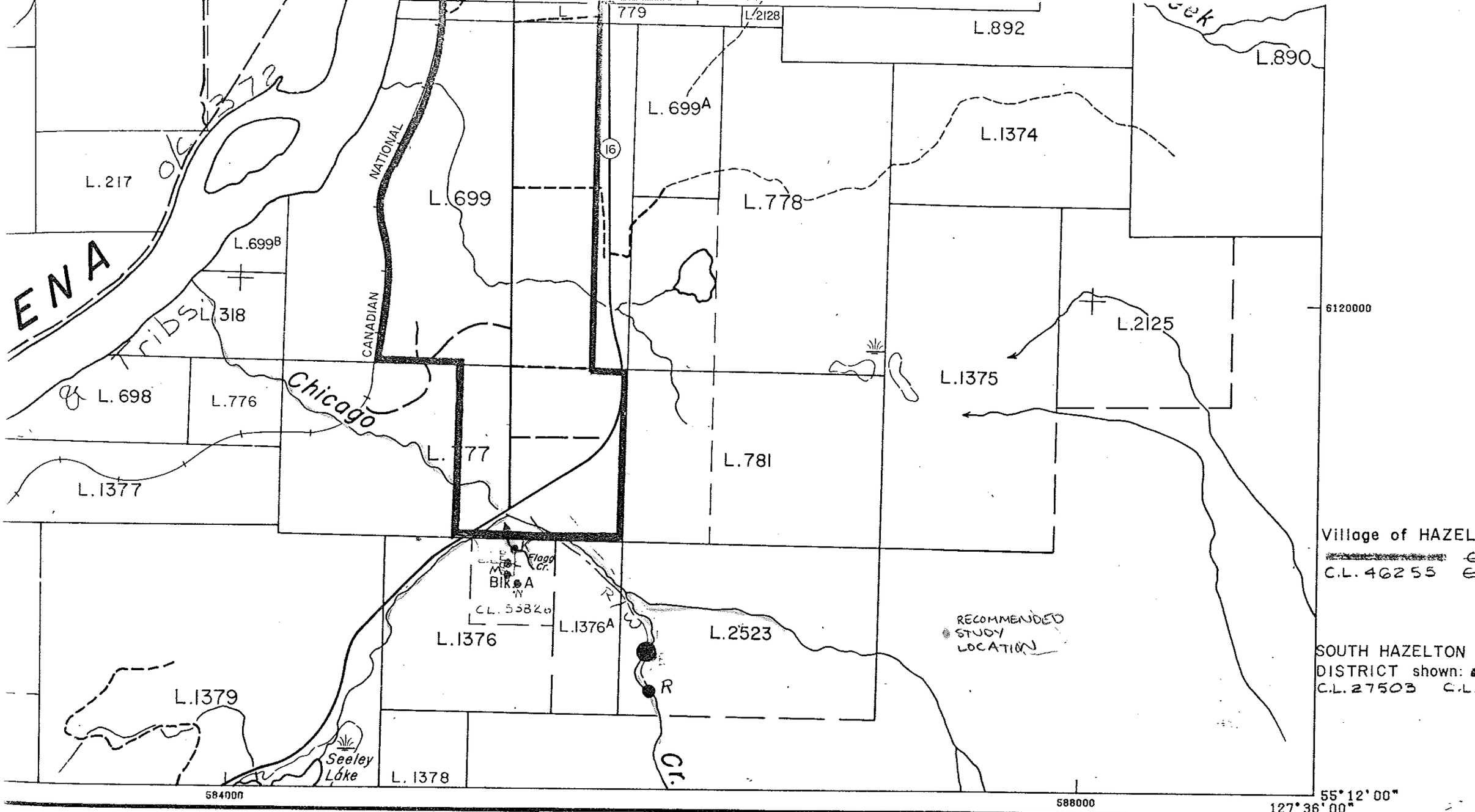


he Environment TO SALES OFFICE, V8V 1X5.	MAP BASE: 20 Chain Interim SEE MAP INDEX: W.R. 93 M/N.W. REVISION DATE: June 12, 1979	WATER DISTRICT HAZELTON PRECINCT SMITHERS	U.T.M. Zone 9	CASSIAR DISTRICT PRINCE RUPERT LAND REGISTRATION

1979.09.25	C 54811	EWALD SPR	JJ	93.L.066	1,000.00 GD	DOM	SW 1/4 OF SEC 16 TP 7 R 5 COAST DIST	EWALD GERALD M & FLO	0355495	
1985.03.05	C 62025	FARADAY CR	B	93.L.036	500.00 GD	IND	L 3893 R 5 COAST DIST HELD UNDER LICENCE OF OCCUPATION 632345	SHEPERT JOHN	6000249	/M
1988.02.09		FEDRAL CR		93LNE (10H)	.056 CS	MNG IND	MC DOME B R 5 COAST DIST	MPD CONSULTANTS LTD	6000443	/M
1970.05.15	C 68024	FEENEY BR	SS	93.L.084	1,000.00 GD 16.50 AF	DOM IRR	11 AC OF NW 1/4 OF L 5441A R 5 COAST DIST	RAUFER HELMUT W	0296439 PCL 17124	/M
1971.06.15	C 38402	FEENEY BR	N	93.L.084	1,000.00 GD	DOM	NE 1/4 OF L 5441A R 5 COAST DIST	GLASS DALE G & JUSTINA	0305523	/M


Skeena River & t
PROV.
Peacock Cr.
L 3886
RES.
L.6687
L.3887
L. 3889
L.3891
L. 3890
RIVER
Water Reserve: Skeena River
O/C 372 16th April 1928
L 3892
602400
L.3893
LL 62025 Faraday cr.
B
L.3894
(& tribs)
1928
L.3895
L.3896
93L/7 c
May
L.3897
L. 3898
25th
514
L.3899
L. 3906
L. 3907
RECOMMENDED STUDY LOCATION
Reserve O/C
MORICE
L.3900
L.3905
6020000
PROV. PARK

1971.06.15	C 38402	FEENEY BR	N	93.L.084	1,000.00 GD	DOM	NE 1/4 OF L 5441A R 5 COAST DIST	GLASS DALE G & JUSTINA	0305523
1961.06.15	C 26981	FENTON CR	A	93.L.026	7,000.00 GD	WWK	L 3911 & 3913 R 5 COAST DIST	ENGINEERING BRANCH FORESTS MINISTRY OF	0236926
1979.06.22	C 53517	FIRE & REMINGTON SPR	A B	93.L.095	2,000.00 GD	IND	L 4010A R 5 COAST DIST	REMINGTON CHARLES L E & DAWN O	0365875
1979.06.01	C 70636	FLAGG CR & FLAGSTAD & FLANNIGAN SPR	K L M	93.M.022	65,000.00 GD	IND	BLK A OF L 1376 CASSIAR DIST EXC NORTHERLY 20 M THEREOF	POLOK RUDY	0365964
1979.06.01	C 70636	FLAGSTAD SPR	L	93.M.022			SEE FLAGG CR		0365964
1979.06.01	C 70636	FLANNIGAN SPR	M	93.M.022			SEE FLAGG CR		0365964



ASSIAR DISTRICT
LAND REGISTRATION DISTRICT

SCALE - 1:20000

Metres 400 0 400 800 1200 1600 2000 Metres

Feet 1600 0 1600 3200 4800 Feet

Negative No.:

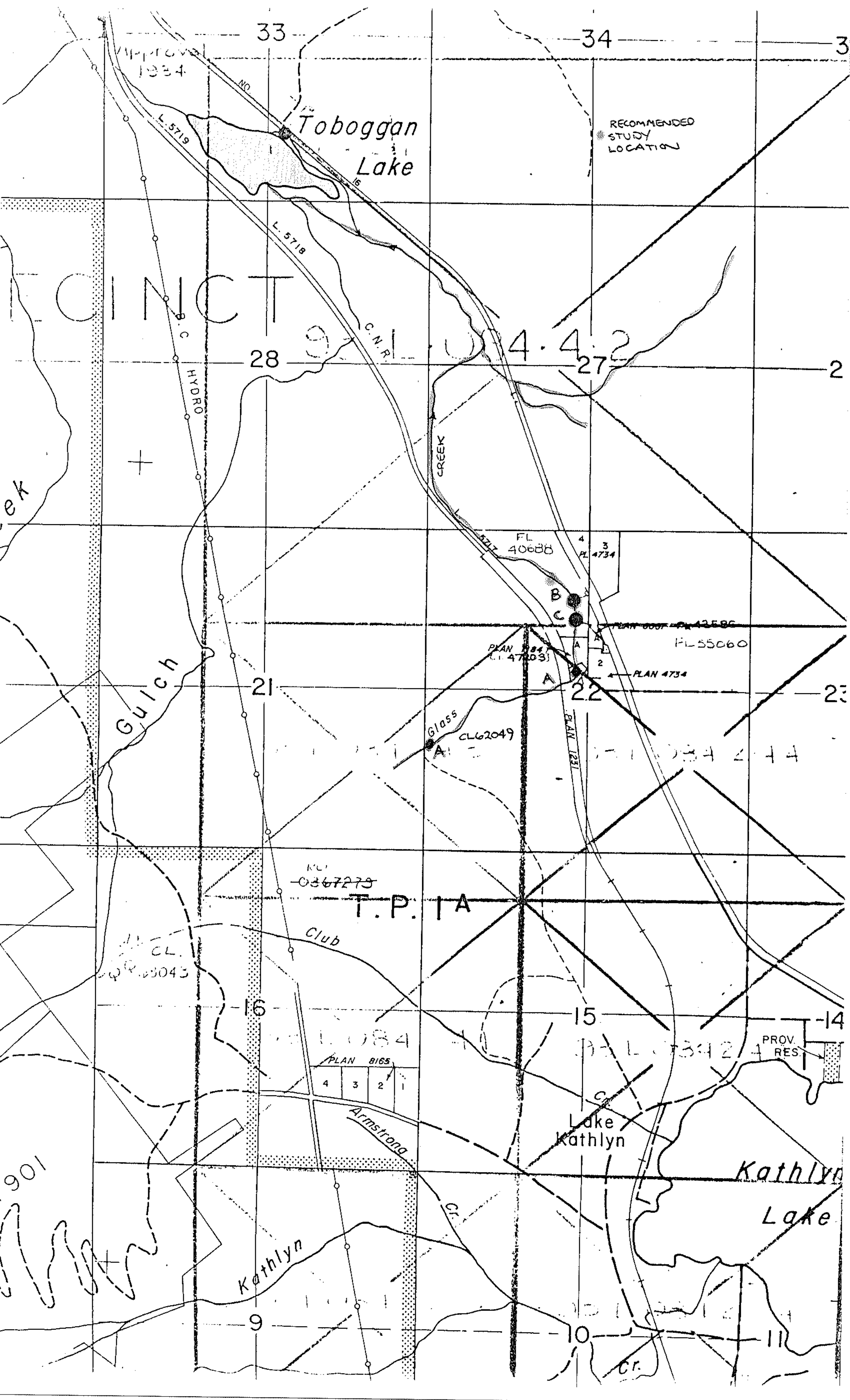
Map Designation: WATER LI

B.C.G.S. Number:

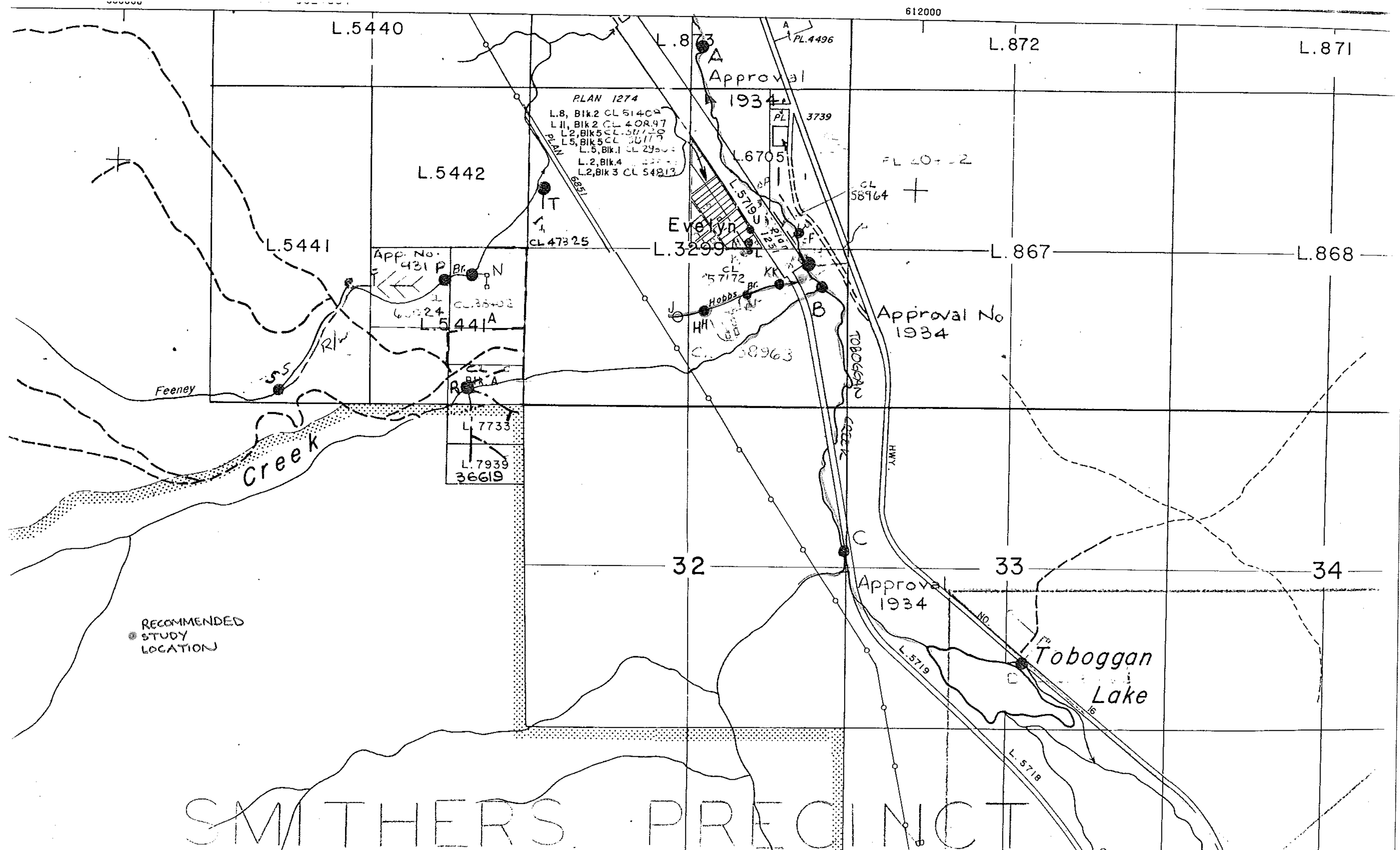
93 • M • 022

1977.05.06	C 49830	GIBSON CR	D	93.L.056.4.4	500.00	GD	DOM	THAT PART OF L 180 R 5 COAST DIST LYING NW OF HWY #16 (PLAN 4757)	HOPE BRIAN D & DELAINE V	0341264	
1988.01.19	C 68043	GLACIER GULCH	QQ	93.L.084	12.00	CS	LIM	SEC 16 TP 1A R 5 COAST DIST	BULKLEY-NECHAKO REG DISTRICT OF	6000441	PCL 17129
1988.06.14		GLACIER GULCH	RR	93.L.084	10,000.00	GD	MIN	W 1/2 OF NE 1/4 OF SEC 36 TP 5 R 5 COAST DIST EXC PLAN 8647	PIERRE THERRIEN CONTRACTING LTD	6000463	PCL
1968.05.31	F 40688	GLASS CR	B	93.L.084.4/2.2	1,000.00	GD	DOM	L A OF SEC 22 TP 1A R 5 COAST DIST PLAN 9734	HORLINGS JANTJE	0281167	
1970.01.26	F 55060	GLASS CR	C	93.L.084.4/2.2	1,000.00	GD	DOM	L 2 SEC 22 TP 1A R 5 COAST DIST PLAN 4734 EXC PLAN 6007	RIDENOURE BEN & RITA	0290770	

1973.07.17	C 47203	GLASS CR	A	93.L.084.2.4.4	500.00	GD	DOM	THAT PART OF PCL A OF NW 1/4 SEC 22 TP 1A R 5 COAST DIST PLAN 7184 LYING N & E OF RD SHOWN ON SAID PLAN	NORDING WESLEY F	0317274	
1985.11.25	C 62049	GLASS CR	A	93.L.084.2.4.3	500.00	GD	DOM	L 3 OF SEC 22 TWP 1A R 5 COAST DIST PLAN 9692	VANDER MEULEN ERIC & ANITA	6000286	/
1980.03.05	C 55473	GLENDOWER SPR	G	93.L.057	1,500.00	GD	DOM	L 293 R 5 COAST DIST	ANDERSON R	0366119	/
1980.06.05	C 55357	GLINKA CR	P	93.L.084.2.2.2	500.00	GD	DOM	L B OF SEC 3 TP 1A R 5 COAST DIST PLAN 9423	SPOELSTRA JAN & YVONNE	0365695	/
1980.07.03	C 54929	GLINKA CR	Q	93.L.084.2.2.2	500.00	GD	DOM	L C OF SEC 3 TP 1A R 5 COAST DIST PLAN 9423	REBAGLIATI MICHAEL	0366861	/

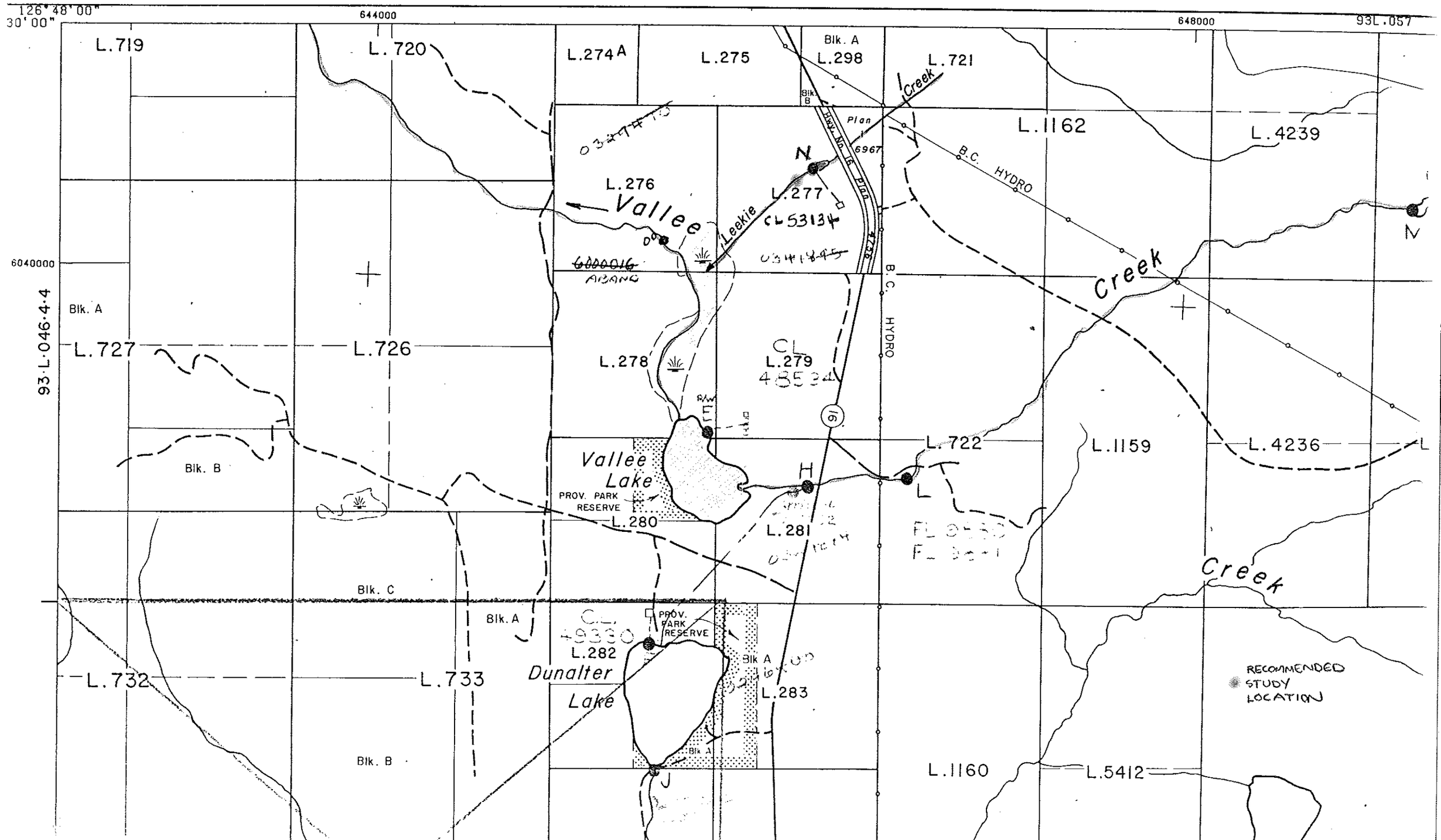

Toboggan Lake
RECOMMENDED STUDY LOCATION
Approval 1934
L. 5719
L. 5718
C.N.R.
B.C. HYDRO
CREEK
FL 40688
PL 4734
B
C
A
PLAN 4734
FL 55060
PLAN 1231
Glass
CL62049
Gulch
T.P. 1A
Club
PLAN 8165
Armstrong Cr.
Lake Kathlyn
Kathlyn Lake
Kathlyn
PROV. RES.
Cr.
33
34
28
27
21
22
23
16
15
14
9
10
11

1986.05.09	C 65465	HIGHLAND CR		93.M.042	25.00 AF STO	AS SET OUT IN CWL 65464	WILSON GILBERT & MARY	6000307 PCL 16415		
1986.05.09	C 65464	HIGHLAND CR	N P	93.M.042	15.00 AF IRR 500.00 GFD DOM 300.00 GD IND	25 AC OF BLK B OF L 397 CASSIAR DIST EXC S 66' & PLAN 8589	WILSON GILBERT & MARY	6000307	/H	
1975.10.24	C 47099	HITCHCOCK SPR	B	93.L.058	1,000.00 GD DOM	L B OF L 3561 R 5 COAST DIST PLAN 8166	ROYAL BANK OF CANADA	0329794 PCL 10729	/H	
1966.07.18	C 57172	HOBBS BR	JJ KK	93.L.084	1,500.00 GD DOM	SE 1/4 OF L 3299 R 5 COAST DIST LYING W OF CNR R/W PLAN 1231	VEENSTRA JOHN & SARA	0270258	/H	
981.08.28	C 58963	HOBBS BR	HH	93.L.084	0.00 TF IND	SE 1/4 OF L 3299, R 5, COAST DIST LYING W OF CNR R/W (PLAN 1231)	VEENSTRA JOHN & SARA	0369186	/H	

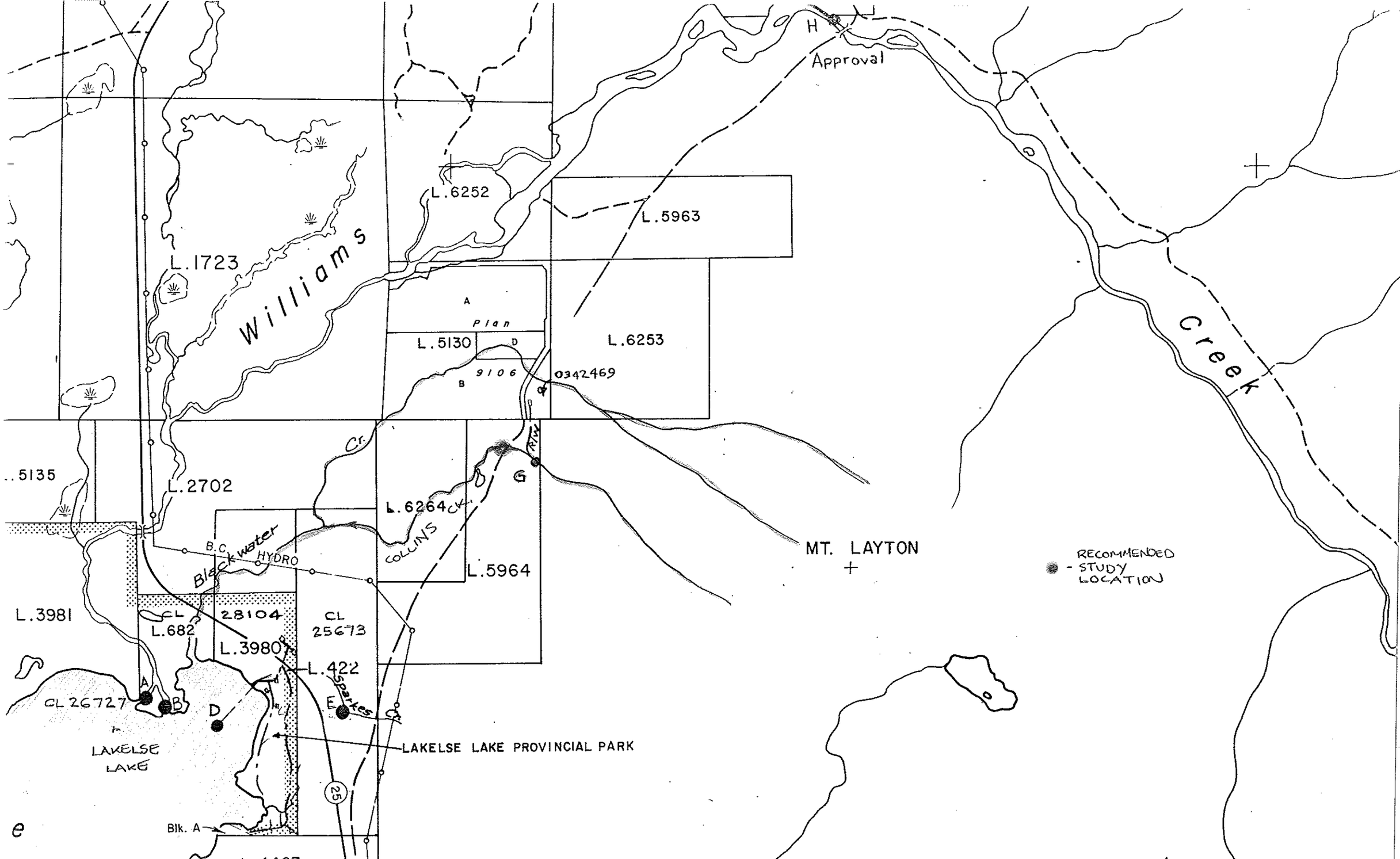


612000
L.5440
L.873
A
Approval
1934
PL.4496
L.872
L.871
PLAN 1274
L.8, Blk.2 CL 51409
L.11, Blk.2 CL 40897
L.2, Blk.5
L.5, Blk.5
L.5, Blk.1
L.2, Blk.4
L.2, Blk 3 CL 54813
PL
3739
L.6705
L.5442
PLAN 6851
T
CL 47325
CL 58964
Evelyn
L.5719
L.5441
L.3299
L.867
L.868
App. No. 431
P
N
CL 57172
KK
Hobbs
Br
J
H
B
L.5441A
Approval No 1934
Feeney
S
R
L.7733
L.7939
36619
Creek
TOBOGGAN
CREEK
HWY.
C
32
33
34
Approval 1934
NO. 16
RECOMMENDED STUDY LOCATION
L.5719
Toboggan Lake
D
L.5718
SMITHERS PRECINCT

1978.02.28	C 53134	LEEKIE CR	N	93.L.047	500.00 GD	DOM	THAT PT OF L 277 R 5 COAST DIST LYING W OF HWY #16 (PLAN 4756)	MCRAE DOUGLAS K ALLISON DEE L	0342752
1978.02.28	C 53135	LEEKIE CR	N	93.L.047	.75 AF	STO	STO FOR CL 53134	MCRAE DOUGLAS K ALLISON DEE L	0342752
1983.06.13	C 61956	LELAND SPR	SS	93.L.085	500.00 GD	DOM	N 1/2 OF L 1197 R 5 COAST DIST	RABBIOSI LELAND	6000082
1988.07.07		LELAND SPR	SS	93.L.075	500.00 GD	IND	N 1/2 OF L 1197 R 5 COAST DIST	RABBIOSI LELAND H & OLETA M	6000473
1960.12.22	C 26899	LEMIEUX CR	B C	93.L.066	1,000.00 GD 50.00 AF	DOM IRR	50 AC OF L 760 R 5 COAST DIST	BAXTER LAMAR	0234289


126°48'00"
30'00"
644000
648000
93L.057
6040000
93·L·046·4·4
L.719
L.720
L.274A
L.275
Blk. A
L.298
L.721
Blk. B
Creek
Plan 6967
Hwy No. 16
L.1162
L.4239
B.C. HYDRO
N
L.276
Vallee
Leekie
L.277
CL 53134
0341845
6000016
ABAND
B.C. HYDRO
Creek
Blk. A
L.727
L.726
L.278
CL
L.279
48534
R/W
16
L.722
L.1159
L.4236
Blk. B
Vallee
Lake
PROV. PARK
RESERVE
H
L.280
L.281
Blk. C
Blk. A
CL
49330
PROV. PARK RESERVE
L.282
Dunalter
Lake
Blk. A
L.283
L.732
L.733
Blk. B
J
L.1160
L.5412
Creek
RECOMMENDED
STUDY
LOCATION

1978.01.19	C 54003	COLLINS CR	G	103.I.048	1,000.00	GD	DOM	BLK C OF L 5130 R 5 COAST DIST PLAN 9106	SILVA S	0342469	PCL 12403
1933.09.23	F 09482	COUGAR LK	A	103.H.006	167.00	CS	PWR	L 2483 R 4 COAST DIST	MATACHEWAN CONSOLIDATED MINES	0113810	PCL 01117
1933.09.23	F 09483	COUGAR LK	A	103.H.006	100,000.00	AF	STO	STO FOR FL 9482	MATACHEWAN CONSOLIDATED MINES	0113810	
1967.05.23	C 32768	CREECH CR	GG	6620A	1,500.00	GD	DOM	L 3 PLAN 1628 & S 1/2 OF L 4 OF L 4127 R 5 COAST DIST PLAN 1654	RITCHIE ALICE F MRS	0273478	
1987.07.14	C 65519	CREECH CR	RR	6620A	500.00	GD	DOM	L 1 OF L 4127 R 5 COAST DIST PLAN 1628	MERRISON RONALD & RUBY	6000404	


Approval
L.6252
L.5963
L.1723
Williams
Creek
A
Plan
L.5130
D
L.6253
9106
B
0342469
Cr.
R/W
..5135
L.2702
L.6264
Ck.
COLLINS
G
MT. LAYTON
RECOMMENDED
STUDY
LOCATION
B.C
HYDRO
Blackwater
L.5964
L.3981
CL
L.682
28104
CL
25673
L.3980
L.422
Sparkes
Cr.
CL 26727
A
B
D
E
LAKELSE
LAKE
LAKELSE LAKE PROVINCIAL PARK
25
Blk. A
e

Province of British Columbia
SKEENA REGION

Ministry of Environment

MEMORANDUM

Bag 5000, Smithers, British Columbia V0J 2N0

Bill Obedkoff
Hydrology Section
Watershed Studies
Victoria

January 24, 1991

File: 55.4408

Subject: Skeena Region Low Flow Study

Further to your October 17, 1990 letter in which you request:

a) Map depicting water licence points above stations.
b) Copy of stream registers.

We agreed during a recent telephone conversation that a) above would not be required.

We have identified three categories for licences upstream of stations. They are:

1. No extractive concerns upstream of station.
2. Irrigation extraction upstream of station.
3. Other significant extractions upstream of station.

The following list of streams reflect the above categories and include, where required, additional explanation of licensing concerns upstream of stations:

Source	Category	Remarks
Richfield Creek	1	
Nanika River	1	
Kathlyn Creek	3	
John Brown Creek	3	Please note that during the period of record, the licensed volume (20,000 gpd) may not have been extracted as the main water supply for the Band is from Corya Creek.
Waterfall Creek	1	Main water supply is from Station Creek, a portion of which is diverted into Waterfall Creek for dilution purposes. Diverted volume unknown.

..../2

WO 31/01/91

Two Mile Creek	1	
Station Creek	1	
Nascall River		Not in our Region.
Yakoun River	1	
Premier Creek	3	There are at least two P.O.D.'s above the gauge site (location unknown) with an undetermined number of users.
Honna River	3	There is a water works P.O.D. above station; however, no works have been constructed.
Pallant Creek	1	
Pinkut Creek	1	
Fulton River	1	
Fulton River	1	
Kispiox River	1	
Bulkley River	1	There are several licences upstream of station but no significant extractive use occurring.
Maxan Creek	1	
Maxan Creek	1	
Buck Creek	3	The development of the Equity Silver Mine has resulted in a portion of the upper basin (area unknown) being diverted (Berzelius Creek) into the Maxan Creek basin.
Telkwa River	1	
Goathorn Creek	1	
Simpson Creek	3	The 2 million gpd licence (file 0326425) never used.
Canyon Creek	2 & 3	There has been some undetermined irrigation use during the period of record.

..../3

Kitseguecla River	1	
Zymoetz River	1	
Zymoetz River	1	
Kitsumkalum River	1	
Zymogotitz River	1	
Shulbuckhand Creek	1	
Exchamsiks River	1	
Khtada River	1	
Big Falls River	1	
Brown Creek	1	
Boneyard Creek	3	Flow regulated by dams.
Kloya River	3	Skeena Cellulose extracts large volumes (upstream of station) to pulp mill. A record of use may be available from mill for period of record. Extracted volume is less than half of that licensed.
Diana Creek	3	Flow influenced by dams.
Thulme River	1	
Union Creek	1	
Macivor Creek		Not in Region.
Laventie Creek		Not in Region.
Nadina River	1	
Nadina River	1	
Kitimat River	1	
Little Wedeene	1	
Hirsch Creek	1	

In the matter of a local area network of gauging stations, further discussion in the regional office is required and a determination made for the streams to be gauged, location of gauging sites and who will be involved with installation, maintenance and monitoring.

We look forward to your input in this regard.

J.B. McGonigal
Allocation Section Head
Water Management Branch

JBMcG/bs

Province of British Columbia
SKEENA REGION
Ministry of Environment

MEMORANDUM

Bag 5000, Smithers, British Columbia V0J 2N0

Bill Obedkoff, P. Eng.
Hydrology Section
Watershed Studies
Victoria

March 6, 1991

File: 55.4408

Re: Gauged Stream Water Licences - Atlin Precinct

Please find enclosed all Water Licences and applications upstream of WSC gauge 9AA008 on Pine Creek, Atlin Precinct including tributaries as per our telephone conversation on March 4, 1991.

Neither Wann River (gauge 9AA015) nor Lindenman Creek (gauge 9AA010) have Water Licences or applications on them.

Scott Morgan

Scott Morgan
Allocation Technician
Water Management Branch

SM/bs

Encl.

LWO 08/03/91

MINISTRY OF ENVIRONMENT
HYDROLOGY SECTION
MAR 8 1991
FILE:

Province of British Columbia
SKEENA REGION

Ministry of Environment

MEMORANDUM

Bag 5000, Smithers, British Columbia V0J 2N0

Richard Nyhof
Watershed Studies
Victoria

March 26, 1991

File: 55.4408

Re: Low Priority Streams - Skeena Region

I received your list of creeks needing a more precise location description. You will be happy to know that out of these I have eliminated 38 due to their small size, however, I have included one. The ones I eliminated are crossed out on the enclosed list.

Also enclosed are photocopies of 1:50000 scale maps showing the location of the remaining creeks.

I hope this information is useful. If you have any other questions, you may reach me at 847-7691.

Scott Morgan
Allocation Technician
Water Management Branch

SM/bs

Encl.

Atlin

Carnot Br	104 N/5	
Colwell Cr	104 N/12	
Haggard Cr	104 G/14	
Keble Br	104 N/12	
Kemo Lk	104 M/15	

Hazelton District
Burns Lake Precinct

Boyd Lk	93 F/13 ✓	
Copeland Cr.	93 F/13 ✓	
Faber Lake	93 K/4	water course mapped but no name
Forgie Cr.	93 K/5 ✓	
Hudson Cr.	93 K/3	
Sinkler Br.	93 K/4 ✓	
Wardrop Cr.	93 K/4 ✓	

Hazelton District
Cedarvale Precinct

Casorso Br.	103 P/1	
Farmon Cr.	93m/4	
Herman Cr.	103 P/1	
Hood Cr.	103 I/16 ✓	water course mapped but no name
Hooker Cr.	103 I/16 ✓	"
Nelson Cr.	103 I/16 ✓	"

(NEWLY INCLUDED) ✓

ANNABELLE CK	93L/10 Smithers Precinct	
Babbitt Cr.	93L/14	
Boyd Cr.	93L/7	
Cabell Cr.	93L/14	
Chalmers Cr.	93L/10	
Condon Cr.	93m/5	
Coulson Br.	93L/10	
Dobson Cr.	93m/12	
Feeney Br.	93L/14	✓
Flagg Cr.	93m/4	
Florey Cr.	93L/7	✓
Gavanond Br.	93m/5	
Gibson Cr.	93L/10	✓
Gloss Cr.	93L/14	
Goldoni Cr.	93L/10	
Goodman Cr.	93m/5	✓
Highland Cr.	93m/5	
Hobbs Br.	93L/14	
John Cr.	93L/7	✓
Lacroix Cr.	93L/10	✓
Laing Cr.	93L/10	✓
Lartet Cr.	93L/7	✓
Leckie Cr.	93L/7	
Lu Lake	93L/1	
Raspberry Cr.	93L/7	✓
Robin Cr.	93L/10	✓
Silvedalh Cr.	93m/5	✓
Winch Cr.	93L/7	✓

Kitimat Precinct

shley Namar	103I/7
eecher Cr.	103I/10
ollins Cr.	103I/7 ✓
Drake Cr.	103I/10
ortas Cr.	103I/7 ✓
kelse H. Spring	103I/7

Queen Charlottes Princinct

ndys Cr.	103F/8
nartey Volley Cr.	103F/8
yrus Br.	103F/1E-G/5W-G/4W
abel Cr.	103F/8
unclon Cr.	103F/1
kidel Cr.	103F/1

Terrace Precinct

harlotte Br.	103I/10
edge Cr.	1035/8
aiden Cr.	103P/3

Province of British Columbia
SKEENA REGION

Ministry of Environment

MEMORANDUM

Bag 5000, Smithers, British Columbia V0J 2N0

Richard Nyhof
Watershed Studies
Victoria

MAY 10 1991

May 8, 1991

File: 55.4408

Re: Low Priority Streams - Skeena Region

Upon further examination of the list of creeks you sent us, it gives me great pleasure to announce that several of these creeks can be disregarded. These include: Bede Ck, Chalmers Ck, Faraday Ck, Florey Ck, Grace Ck, Isabel Ck, Lartet Ck & Skidd Ck.

Enclosed are the confirmed locations of Bloc Ck, Carducci Ck, Henry Ck & Mathews Ck.

Neither Gardner Ck nor Endako River had a map sheet attached and, therefore, I was unsure of what information you needed. You may reach me at 847-7691 if you have any more questions or need more information.

Scott Morgan
Allocation Technician
Water Management Branch

SM/bs

Encl.

Province of British Columbia
SKEENA REGION
Ministry of Environment

MEMORANDUM

Bag 5000, Smithers, British Columbia V0J 2N0

September 9, 1991 File: 55.4408

Richard Nyhof
Watershed Studies
Victoria

SEP 11 1991

Re: Endako River and Burger Creek

I am not very familiar with the Endako River, however I suggest that a good study location would be just upstream of the mouth at Fraser Lake. Although Fraser Lake is not in our region, most of the Endako River is and therefore this location would be useful to us and possibly the Prince George office as well. 93K

The study area we are interested in on Burger Creek is located on D.L.2557, just upstream of where the unnamed creek from the north and the unnamed creek from the south enter.(see the attached map)

In late July of this year, Paul Marquis, the Regional Hydrologist, and myself installed a gauge on Burger Creek on D.L.2557.(see the attached map for the approximate location)
The owner of D.L.2557, Mr. Fred Roisum, has agreed to read the gauge for us.

Mr. Roisum has applied for an irrigation purpose water licence and the Department of Fisheries and Oceans has objected. D.F.O. feels that there will not be enough water for fish to spawn if this water licence is issued.

If you need any more information you may reach me at 847-7691.

Scott Morgan

Scott Morgan
Allocation Technician

Encl.