MINISTRY OF ENVIRONMENT
PROVINCE OF BRITISH COLUMBIA

THE ATTAINMENT OF AMBIENT WATER QUALITY OBJECTIVES IN 1988

Water Management Branch

November, 1989

ACKNOWLEDGEMENTS

The regional staff of the Waste Management Branch carried out most of the monitoring, either directly or through contractors. The Environmental Laboratory analysed the samples up to September 1, 1988 and Zenon Environmental after that time. Information was also obtained from industries via the Waste Management Branch, from the Canada-B.C. Water Quality Monitoring Agreement, from the Ministry of Health, from the federal departments of Environment and of Fisheries and Oceans, and from the Greater Vancouver Regional District.

The report incorporates review comments from regional Environmental Section Heads of the Waste Management Branch, from the Environmental Impact Unit of the Waste Management Branch, and from staff of the Resource Quality Section of the Water Management Branch.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF FIGURES

1. SUMMARY

By the end of 1988, the Ministry had set water quality objectives in 22 bodies of water throughout the Province. These objectives represent safe conditions or levels of contaminants which will protect the most sensitive water use in each body of water. This report presents the results of monitoring done to check attainment of the objectives in 1988. The report is for the use of the managers of the water resource and will help guide them in carrying out more detailed assessments of the results. Familiarity with the background reports on water quality objectives for each basin is assumed.

The objectives to protect various water uses were set in water basins where water quality problems due to human activity were expected. The monitoring results indicate how well the quality of water in these basins is being safeguarded and thereby, indirectly, how well problems are being dealt with. Although the report does not describe the state of water quality in the Province as a whole, the information will be useful in state-of-the-environment-type reporting.

Results of monitoring to check water quality objectives are summarized in a series of tables. Overall, the objectives were met more than 90 percent of the time. Although this result falls short of an ideal 100 percent compliance, it is encouraging when one considers that objectives are only set in problem areas. Variables for which objectives were sometimes exceeded included fecal coliforms, suspended solids, turbidity, nutrients, dissolved oxygen, pH, colour, copper, chromium, cadmium, mercury, molybdenum, and chlorophenols. Objectives for these variables were not, of course, exceeded in all the water basins tested.

Cases of objectives being exceeded should be assessed to determine the cause and the possible need for corrective action. Monitoring in future years will indicate whether the problem is persisting or the situation is improving.

The monitoring in 1988 was the second year for this program which began in 1987. Although the monitoring was more complete in 1988, there were still a few instances of objectives not being checked or of sampling frequency that was too low to allow calculation of average or percentile values.

2. INTRODUCTION

In 1981, the Auditor General recommended that the Ministry develop a method of measuring its performance in safeguarding water quality. To fulfill this recommendation, the Ministry undertook to set water quality objectives for fresh and marine surface waters of British Columbia.

Water quality objectives are safe conditions or levels of contaminants which will protect the most sensitive water use of a specific body of water. They establish a reference against which the state of water quality at a specific site can be checked, as recommended by the Auditor General. They can also be used to prepare Waste Management Permits and to measure their effectiveness. They are thus a basic tool for use in maintaining a sustainable environment.

Work on water quality objectives began in 1982. By the beginning of 1989, objectives had been set in 22 separate bodies of water. In each water basin considered, some type of water quality problem could be expected due to human activity. Objectives have been set for lakes, rivers, creeks, and marine areas in all six Environmental Regions in the Province.

This report for 1988 is the third in a series of annual reports which began in 1986. In 1987 and 1988, funds were allocated for the ambient monitoring needed to check attainment of the objectives. As a result, a fairly accurate account of the attainment of objectives was obtained in 1987 and is again given here for 1988.

The water basins in which water quality objectives are set are usually chosen because of perceived water quality problems. Thus, results presented here indicate conditions in likely problem areas, but do not reflect the state of water quality in the Province as a whole. This is because there are many bodies of water where water quality is relatively unaffected by man and likely to remain so for the foreseeable future. Nevertheless, reports of this type will provide some of the basic data on water quality needed for

"state-of-the-environment reporting" now being considered for British Columbia.

3. METHOD OF PRESENTING AND INTERPRETING THE MONITORING DATA

3.1 REPORTS ON OBJECTIVES

By the end of 1988, the Ministry of Environment had completed 22 reports on water quality objectives for specific bodies of water. The complexity and size of the reports varied considerably, depending upon the body of water considered. These bodies of water were distributed among the Environment Regions as follows:

Vancouver Island	1
Skeena	4
Northern Interior	8
Southern Interior	4
Kootenay	2
Lower Mainland	3

Work is in progress on another 22 reports for different water basins. These reports are now at various stages of completion.

3.2 TABLES OF RESULTS

Data collected in 1988 to check objectives are summarized in Tables 2 to 22, with a separate table for each water basin.

Each table lists all the objectives that have been set, as they appear in the final reports on objectives. A few of the objectives have been updated to reflect new water quality criteria and procedures. For example, we are now using chlorophyll-a instead of periphyton biomass, and total ammonia-N instead of un-ionized ammonia-N. The 90th percentile of 400 MPN/100 mL for fecal coliforms in bathing waters is used in cases when high fecal coliform values were recorded. The tables summarize the measurements made to check the objectives. These include sites, sampling dates, number of samples taken, and the values obtained. Finally, a concluding statement about the results is given.

The conclusion states whether the objective was met or not met. The result is reported as indefinite if there are insufficient data to check the objective, or the data are suspect, or the minimum detectable concentration is too high. If no data were collected, the objective is reported as not checked. We consider these tables to be the most important part of this report since they demonstrate, in a factual way, how well objectives were met in 1988.

3.3 TEXT

The text in this report first gives a provincial overview of the results. We then describe briefly, by Region, the tabulated data for each body of water, mentioning the highlights and drawing some general conclusions. Qualifying statements such as: "The objectives were nearly met, slightly exceeded or probably met" are avoided as being too speculative without the support of further evidence to explain them. Thus, objectives exceeded by a wide margin are categorized equally with apparent borderline cases. While a more detailed interpretation is desirable, the work required to document the significance of results in more detail is beyond the scope of this report.

There is also no attempt to make a detailed assessment of results or to comment on the effect of objectives not being met. Such assessments would entail consideration of flows, discharges, whether objectives are long term or short term, the degree to which objectives are exceeded, and many other factors. Assessments of this type are presently carried out by Regional Waste Management on an ongoing basis.

The report is written to guide those involved in managing water quality by allowing them to focus on areas of concern where further assessment or inspection may be needed. Since monitoring to check water quality objectives covers only a short time span, usually at most 30 days, we believe that any instance when objectives were not met, however close the result, could be significant and is worth a more detailed look. Further

study could show that certain objectives were exceeded due to natural phenomena. On the other hand it could reveal the need for corrective action if the cause of the problem was man-made.

3.4 FIGURES

The 22 water basins where objectives have been set are shown on a location map in Figure 1. The water basins are also detailed in separate maps, Figures 2 to 22, on which sampling locations referred to in the tables are shown. Each figure number corresponds to the table of the same number.

4. PROVINCIAL OVERVIEW OF RESULTS

4.1 PRESENTATION OF RESULTS

In the tables summarizing the monitoring data, there are four kinds of concluding statements. These are: objective met, objective not met, objective not checked, and indefinite result.

To get an overview of performance for the Province, the number of occurrences for which objectives were met, not met, not checked, or were indefinite are totalled for each water basin from the summary tables. In compiling these totals, we counted each instance of a maximum (or minimum) objective being met or not met, as well as all average and percentile values.

The results of this compilation are shown in Table 1. The sum of occurrences for each kind of conclusion is given by Region and then totalled for the whole Province. The occurrences are also expressed as a percent of the total of all occurrences, both by Region and for the Province as a whole.

4.2 DISCUSSION OF RESULTS

Although the results apply to specific occurrences, we have assumed in this analysis that they are representative of the whole year. This simplification is justified, in part, by the fact that data were usually collected during worst case conditions.

Table 1 shows that the objectives were met 88% of the time in the Province as a whole. This result varied according to Region over a fairly small range, from 80% to 92%. Objectives were not met from between 2% to 12% of the time, with an overall average of 6%.

The occurrences of objectives not being checked and of indefinite results averaged 3% for each. If we subtract these relatively minor instances of no result from the total, then the percent of time that objectives were met and not met becomes 93% and 7% respectively.

We can therefore state that in the Province as a whole the objectives are met over 90% of the time. This is an approximate statement since the frequency at which objectives are tested can vary among Regions and thus influence this value. Nevertheless, it is an encouraging result if we consider that objectives are only set in areas where man-made water quality problems are expected. The aim, of course, is for water quality objectives to be met 100% of the time. It will be important to see how close we can get to this ideal situation in the future, both for basins where objectives exist and for basins where objectives are now being developed.

5. VANCOUVER ISLAND REGION

5.1 KOKSILAH RIVER

Data and site locations are presented in Table 2 and Figure 2, respectively.

The river is a major tributary of the Cowichan River near its mouth. It is important for fisheries and recreation and it is also a drinking water source. This is the first year that objectives have been checked in the river.

The objectives for fecal coliforms and E. coli were generally not met. These objectives are fairly restrictive since they were set to protect drinking-water use after disinfection only. The sources of possible contamination need to be established.

Dissolved oxygen levels were measured during the summer at river cross-sections. At times, the dissolved oxygen objective was not met at some points in these cross-sections. Although departures from the objectives were small, further examination of the situation is recommended to assess their significance.

The objectives for suspended solids and for dissolved copper, lead, and zinc were met throughout the river. The turbidity objective was not checked.

5.2 COWICHAN RIVER

The objectives for the Cowichan River were not finished in 1988. Therefore there was no specific monitoring to check their attainment, although other monitoring was carried out. Monitoring of the Cowichan River to check objectives will start in 1989.

6. SKEENA REGION

6.1 BULKLEY RIVER

Data and site locations are presented in Table 3 and Figure 3, respectively.

The Bulkley River is a major tributary to the Skeena River. It is an important river for fisheries and has some drinking water use.

The objective for fecal coliforms was met where measured except just upstream from Houston. All other water quality objectives were met. This shows an improvement over 1987 when the objectives for chlorophyll-a as well as for fecal coliforms were exceeded.

The Morice River objectives were not checked since the river will not now be affected by Kemano completion.

6.2 KATHLYN, SEYMOUR, ROUND, AND TYHEE LAKES

Data and site locations are presented in Table 4 and Figure 4, respectively.

These four small lakes, in the Smithers area, are used for recreation, domestic water supply, and irrigation.

The fecal coliform objectives were met at domestic water intakes and beaches in all four lakes, except at a beach at Tyhee Lake. These objectives had not been tested properly in 1987.

The objectives for turbidity and colour were met in all the lakes except, at times, in Round Lake and in Seymour Lake for turbidity. These results suggest an improvement over 1987.

The total phosphorus objective was not met in any of the lakes, reflecting their continued eutrophic state. The data for Kathlyn Lake do suggest an improving trend. The objectives for phosphorus are long-term and will take time to be achieved.

6.3 LOWER KITIMAT RIVER AND ARM

Data and site locations are presented in Table 5 and Figure 5, respectively.

The river and arm are a migration route for salmonids, and the water is used for recreation and for industrial and municipal supplies. A Kraft pulp mill and an aluminum smelter are located in the water basin.

The objectives for fecal coliform to protect recreation were met in Kitimat Harbour and Kitimat Arm. The stricter fecal coliform objectives to protect shellfish harvesting were met at certain sites in Kitimat Arm, although these sites are presently closed to shellfish harvesting.

The objectives for suspended solids and turbidity were exceeded at times in the Kitimat River, the Harbour, and the Arm.

The objective for average nitrite-nitrogen was not met in the Kitimat River, even upstream from all discharges, although the maximum objective was always met. This may be a natural situation, or due to a sampling problem.

There were a few instances of objectives being exceeded for total copper and total iron in Kitimat Arm, but objectives for all metals were generally met, including those for total aluminum, total cadmium, and total lead.

Objectives for toxic contaminants such as cyanide, fluoride, and ammonia-nitrogen were met at all sites tested. Note that in the case of cyanide, our criteria document recommends that measurements below the current detection limit of 0.005 mg/L be considered acceptable.

This was the first year that most of the objectives for this water basin were checked. The only omissions were chlorophyll-a and pulp mill toxicity in the Kitimat River.

6.4 LAKELSE LAKE

Data and site locations are presented in Table 6 and Figure 6, respectively.

Lakelse Lake drains into the Skeena River and is important for salmon spawning and rearing and for recreation. It is also used as a domestic water supply.

The objectives for fecal coliforms were met, both at water intakes and at bathing beaches. This was the first year that these objectives were checked.

All other objectives checked were met, as they had been in 1987. These included objectives for turbidity, total phosphorus, and chlorophyll-a.

Measurements to check the dissolved oxygen objectives were again omitted.

7. NORTHERN INTERIOR REGION

7.1 CHARLIE LAKE

Data and site locations are presented in Table 7 and Figure 7, respectively.

Charlie Lake is used as a drinking water supply and for recreation.

At the bathing beaches, the geometric mean fecal coliform objective was met but the 90th percentile objective was usually not met, resulting in beach closures. In the body of the lake, at the Fort St. John intake, the more stringent fecal coliform objective to protect drinking water was met. These results are similar to those of 1987.

The total phosphorus objective was generally not met, except for one instance in the North Arm of the lake and two instances in the South Arm. These results indicate that the lake continues to be in a eutrophic state.

7.2 BULLMOOSE CREEK

Data and site locations are presented in Table 8 and Figure 8, respectively.

Bullmoose Creek and it branches (West and South Bullmoose Creek) are adjacent to an open pit coal mine and contain important recreational fish habitat.

The objectives for turbidity and suspended solids were exceeded on occasion downstream from the sedimentation ponds. The problem occurred in May, presumably at the start of the freshet period. The objective for chlorophyll-a, checked in the fall, was usually exceeded.

Other objectives that were met included fecal coliforms (except for one instance), ammonia-nitrogen, nitrite-nitrogen, nitrite plus nitrate

nitrogen, dissolved oxygen and pH. The fecal coliform and dissolved oxygen objectives had not been checked previously.

The substrate sedimentation and chlorophyll-a objectives were not checked. In 1987, the chlorophyll-a objective was exceeded in South Bullmoose Creek.

7.3 NECHAKO RIVER

Data and site locations are presented in Table 9 and Figure 9, respectively.

The Nechako River, a major tributary to the Fraser River at Prince George, has its flow controlled for power generation. The river is an important route for migrating salmon.

The fecal coliform objective was met in the Stuart River, a tributary to the Nechako from the north side. In the Nechako River, where the objective is less stringent, the objective was also met except immediately downstream from Vanderhoof.

Other objectives which were met in both the Nechako and Stuart rivers, as applicable, included ammonia-nitrogen, nitrite-nitrogen, dissolved oxygen, and pH. The chlorophyll-a objective was met in the Nechako River at Fort Fraser but was not met in the Stuart River.

The temperature objective at a site 8 km downstream from Cheslatta Falls was met during the winter months, from January to nearly the end of June and after mid-September. However, during the summer months the objective was frequently exceeded. A similar result was obtained in 1987. A cold water release structure planned for the Kenney Dam will presumably correct the problem.

None of the objectives set for the Chilako River, a tributary to the Nechako from the south side, have yet been checked.

7.4 PINE RIVER

Data and site locations are presented in Table 10 and Figure 10, respectively.

The Pine River, a tributary to the Peace River, supplies water to Chetwynd and supports significant sportfish populations.

All objectives checked were met. These included objectives for fecal coliforms (checked for the first time), turbidity, suspended solids, ammonia-nitrogen, nitrite-nitrogen, and chlorophyll-a.

The objective for dissolved oxygen was not checked. Previous measurements showed the objective was met in 1987.

7.5 POUCE COUPE RIVER

Data and site locations are presented in Table 11 and Figure 11, respectively.

The Pouce Coupe River and its tributary, Dawson Creek, run into the Peace River inside the Alberta Border. The waters are affected mainly by municipal discharges.

The fecal coliform objective for the Pouce Coupe River was checked for the first time and was met.

Turbidity and suspended solids objectives were often exceeded in the Pouce Coupe River and in Dawson Creek.

The objectives for ammonia-nitrogen were met in both streams. Those for nitrite-nitrogen were also met in both streams except once in Dawson Creek.

The chlorophyll-a objective was not met in the Pouce Coupe, a result similar to 1987, but was not checked in Dawson Creek.

7.6 PEACE RIVER

Data and site locations are presented in Table 12 and Figure 12, respectively.

Objectives were set for the Peace River between the Bennett Dam and the B.C.-Alberta Border. The water is important for aquatic life and irrigation and can be affected by municipal discharges, an oil and gas refinery and a pulp mill built in 1988, after the objectives were set. The objectives were first checked in 1988.

The following objectives were met in both the Peace River and the Beatton River (a tributary), as applicable: fecal coliforms, fluoride, cyanide, ammonia-nitrogen, nitrite-nitrogen, dissolved oxygen, pH, and temperature. The result for sulfide was indefinite because the detection limit was too high.

Turbidity and suspended solids objectives were met in the Peace River and also in the Beatton River except once in freshet. The objective for chlorophyll-a was generally not met in the Peace River, except at a point 5 km downstream from the oil and gas refinery.

Regarding heavy metals, the objectives for total lead, total nickel, and total zinc were met in the Peace River. The maximum objective for total copper was met except once, downstream from the refinery. The objective for total chromium was also exceeded downstream from the refinery. However, most of the chromium results were indefinite because of the high detection limit.

Regarding organics, the results for chlorophenols were indefinite because not all species were measured. The results for phenols were

indefinite because there were too few measurements to calculate a correct average value. The objective for 2,4-D was met at all sites.

Only the objective for dissolved gas was not checked in 1988.

7.7 WILLIAMS LAKE

Data and site locations are presented in Table 13 and Figure 13, respectively.

Williams Lake is important for drinking water, recreation, and aquatic life. The water quality is affected by nutrients from traditional farming practices in the San Jose drainage, the main inlet to the lake.

The objective for fecal coliform to protect bathing beaches was met. The fecal coliform objective to protect drinking water was not checked.

The total phosphorus and chlorophyll-a objectives were not met, indicating the continued eutrophic state of the lake.

Objectives for turbidity, dissolved oxygen, and water clarity were not met at all times. Such results can be expected in a eutrophic lake until some form of lake restoration is carried out.

7.8 UPPER FINLAY RIVER

This area was the site of a gold and silver mine and mill, now closed. Objectives applied to Jock and Galen creeks which eventually flow into the Upper Finlay River.

The objectives were checked in 1987. Since the area is remote and the operation is closed, no further monitoring was carried out in 1988. The mill was reactivated in 1989 and therefore monitoring in 1990 is recommended.

8. SOUTHERN INTERIOR REGION

8.1 BONAPARTE RIVER

Data and site locations are presented in Table 14 and Figure 14, respectively.

The Bonaparte River is a tributary to the Thompson River. It is an important trout habitat and is affected by cattle farming and municipal discharges. This was the first year that the objectives have been checked in detail in the Bonaparte River and its main tributaries, Clinton Creek and Loon Creek.

The fecal coliform objective was met in the upper reaches of the Bonaparte River, except immediately downstream from Clinton Creek. In Clinton Creek itself, the objective was usually not met. The objective was also exceeded near the mouth of the Bonaparte River and downstream from the Cache Creek sewage treatment plant. The fecal coliform objective was met in Loon Creek.

The objectives for suspended solids and turbidity were frequently not met during freshet in the Bonaparte River and Clinton Creek. The objectives were met in Loon Creek. Since suspended material entered the streams from diffuse sources, only one upstream control site was used to check these objectives.

An objective for dissolved solids, applicable only to Clinton Creek, was not met although more data should be obtained to confirm this result.

The objective for ammonia-nitrogen was met in the Bonaparte River and in Clinton and Loon creeks. The same result was obtained for nitrite-nitrogen except for one instance in the Bonaparte River, just downstream from the Cache Creek sewage treatment plant, when the objective was exceeded.

The chlorophyll-a objective was not met in the Bonaparte River. A less stringent objective was met in Clinton Creek, except at its mouth.

The dissolved oxygen objective was met in the Bonaparte River and in the winter in Loon Lake. The pH objective was met in the Bonaparte River and in Loon Creek, but was occasionally exceeded in Clinton Creek. Clinton Creek may have a naturally high pH level.

8.2 OKANAGAN VALLEY LAKES

Data and site locations are presented in Table 15 and Figure 15, respectively.

Objectives have only been set so far for phosphorus, which is the main factor controlling the trophic state of the lakes. The lakes are highly valued for recreation, fisheries, and as a source of drinking and irrigation water.

The total phosphorus objective was met in Kalamalka Lake and in all parts of Okanagan Lake except Armstrong Arm at the northern end. The objective was not met in Wood Lake, Skaha Lake, or Osoyoos Lake.

These results were the same as those obtained in 1987, although average levels of total phosphorus were slightly more elevated in 1988.

8.3 SIMILKAMEEN RIVER

Data and site locations are presented in Table 16 and Figure 16, respectively.

The Similkameen River is important for fisheries, drinking water, and irrigation. Water quality can be affected by mining and municipal discharges. The water quality objectives are presently being updated because of an increase in mining activity.

The fecal coliform objective, set to protect the water for drinking after disinfection only, was not always met in the Similkameen River and was exceeded in Allison Creek, a tributary. There were several indefinite results due either to insufficient sampling or to incorrect frequency of sampling. In the main lakes draining to the Similkameen River (Allison, Osprey, and Missezula lakes), the objective was either not checked or was improperly measured.

Objectives for ammonia-nitrogen and pH were met in the Similkameen River. The pH objective was exceeded once in Wolfe Creek, a tributary adjacent to a copper mine, but this may have been a natural event.

The total phosphorus objective was met in Osprey Lake, exceeded in Missezula Lake, and measured at the wrong time in Allison Lake.

Regarding heavy metals, the objectives for dissolved copper and dissolved zinc were met in the Similkameen River and in Wolfe Creek. Other objectives measured in Wolfe Creek were dissolved manganese which was met and dissolved molybdenum, for which the objective was exceeded downstream from the mine.

8.4 CAHILL CREEK

Data and site locations are presented in Table 17 and Figure 17, respectively.

Cahill Creek, its tributaries (Nickel Plate Mine Creek and Sunset Creek), and a parallel stream (Red Top Gulch Creek) enter the Similkameen River near Hedley. This watershed is the site of a gold mine and mill which started operation in August, 1987.

Most of the objectives were met in 1988, as they had been in 1987. They included objectives for suspended solids, turbidity, dissolved solids, sulfate, strong-acid dissociable cyanide and thiocyanate, cyanate, arsenic,

ammonia-nitrogen, nitrite-nitrogen and nitrate-nitrogen. A major exception was the objective for weak-acid dissociable cyanide, which was not met in Cahill Creek at its mouth. The objective for pH was usually met except in Cahill Creek and Red Top Gulch Creek on a few occasions when alkaline conditions were recorded.

Among the metals the following objectives were met: total copper (except one in Red Top Gulch Creek), total aluminum, dissolved iron, total lead, total molybdenum, total silver, and total zinc. The objective for total cadmium was exceeded once at the mouth of Cahill Creek. The objective for total mercury was also exceeded once, both in Cahill Creek and Red Top Gulch Creek. The objectives for total mercury in fish and total selenium in water were not checked.

9. KOOTENAY REGION

9.1 COLUMBIA AND WINDERMERE LAKES

Data and site locations are presented in Table 18 and Figure 18, respectively.

The two lakes are important to fisheries, recreation, and drinking water.

All objectives set for the lakes were met, except turbidity in Columbia Lake which was not checked. Objectives that were met included those for fecal coliforms at water intakes and bathing beaches, turbidity in Windermere Lake, and total phosphorus in both lakes. The results for total phosphorus were an improvement over those obtained in 1987.

9.2 TOBY CREEK AND UPPER COLUMBIA RIVER

Data and site locations are presented in Table 19 and Figure 19, respectively.

Toby Creek enters the upper Columbia River just downstream from Windermere Lake. Both streams are important for aquatic life and recreation and can be affected by domestic sewage discharges. Toby Creek can also receive drainage from an abandoned mine.

The fecal coliform objectives were met in Toby Creek but exceeded in the Upper Columbia River upstream and downstream from Radium.

All other objectives, which apply to Toby Creek, were met where checked. These included objectives for turbidity, suspended solids, ammonia-nitrogen, nitrite-nitrogen, total barium, total cadmium, dissolved copper, total lead, and total zinc. The objective for chlorophyll-*a* in Toby Creek was not checked but was met in 1987.

10. LOWER MAINLAND REGION

10.1 FRASER RIVER FROM HOPE TO KANAKA CREEK

Data and site locations are presented in Table 20 and Figure 20, respectively.

Objectives were set for the Fraser River, tributaries entering from the south, and all major water courses between the Fraser River and the International Border. The Fraser River is a major salmon migration route and the tributaries are important spawning areas. The river and many of the tributaries are also used for irrigation.

The fecal coliform objective was met in the Fraser River and in several tributaries including Hope Slough, Atchelitz Creek, Chilliwack Creek, the Salmon River, and the Chilliwack River. The objective was also met at Cultus Lake bathing beaches. The objective was exceeded in Elk Creek, a tributary of Hope Slough.

The ammonia-nitrogen objectives were met in the Fraser River except, at times, immediately downstream from the Chilliwack sewage treatment plant. The objectives were met in all the tributaries checked.

The dissolved oxygen objective was met in the Fraser River except again, in one instance, immediately downstream from the Chilliwack sewage treatment plant. In the tributaries the dissolved oxygen objective was not met at times in Hope Slough, Luckakuck Creek, Chilliwack Creek, and Elk Creek. The dissolved oxygen objective was met in Cultus Lake, Atchelitz Creek, the Salmon River, and the Chilliwack River.

The objective for pH was met in the Fraser River and in all the tributaries.

10.2 FRASER RIVER FROM KANAKA CREEK TO THE MOUTH

Data and site locations are presented in Table 21 and Figure 21, respectively.

The river and outer estuary are important for salmon migration and rearing. The water is used for irrigation and certain beaches are important for recreation. Water quality can be affected by major discharges of municipal and industrial effluents.

The fecal coliform objective was met in the Main Stem, the North Arm and the Middle Arm. In the Main Arm, it was met at most points except, at times, 12 km downstream from the Annacis sewage treatment plant, 2 km downstream from the Lulu sewage treatment plant, and just downstream from Steveston. The objective was met at all points along Iona Beach and along Tsawwassen Beach.

The objective for ammonia-nitrogen was met in the Main Arm and in the Middle Arm. It was not checked in the North Arm although it was met there in 1987.

The dissolved oxygen objective was met at all points in the Main Stem, the Main Arm, and the North Arm. It was generally met in the Middle Arm, except once at Dinsmore Bridge. The objective was not checked on the Banks.

The pH objective was met in the Main Arm, the North Arm, and the Middle Arm. It was not checked in the Main Stem.

The objectives for total copper, total lead, and total zinc were met in the Main Arm and the Middle Arm. This was an improvement over 1987 when these objectives were not met at certain times in the Main Arm. The objectives were not checked in the North Arm in 1988.

Checking the objective for chlorophenols in water gave mostly indefinite results because the detection limit for each individual chlorophenol was too high. The objective was exceeded in one instance in the Middle Arm, downstream from Mitchell Island. The detection limit used to check the objective for chlorophenols in sediments in the river arms was also too high. However, this objective was met on Sturgeon Bank and on Roberts Bank. The objective for chlorophenols in fish was met in fish from the Main Stem, the Main Arm, and the North Arm.

The objectives for PCBs in sediments and PCBs in fish were met in the Main Stem, the Main Arm, and the North Arm.

The objective for suspended solids was not checked in the North and Middle arms, although it was exceeded once in 1987.

10.3 BOUNDARY BAY

Data and site locations are presented in Table 22 and Figure 22, respectively.

Boundary Bay sustains a crab and herring fishery and is important for recreation. Its main tributaries, the Little Campbell River, the Serpentine River, and the Nicomekl River, provide important habitat for trout and salmon and are used for irrigation. This is the first year that these objectives have been checked.

The fecal coliform objective to protect water for recreation was generally met at beaches in Boundary Bay except for two instances. In these cases the maximum objective was exceeded at a site in White Rock and a site at Boundary Bay Beach. In the tributary rivers, the fecal coliform objective to protect irrigation use was met in the main stem of the rivers but exceeded in some of their tributaries. These included Murray Creek, a tributary to the Nicomekl River, and Mahood, Latimer, and Hyland creeks, which are all tributaries to the Serpentine River.

The objectives for suspended solids and turbidity were exceeded a number of times in the three tributary rivers and in the creeks which flow into them. The high values occurred in the October to November period. The objectives were not checked in Boundary Bay.

The objectives for ammonia-nitrogen were met in all the tributaries. However, the objectives for nitrite-nitrogen were often exceeded. The chlorophyll-a objective was not checked.

The dissolved oxygen objective was occasionally exceeded in the three tributary rivers but was met in the creeks flowing into them. The dissolved oxygen objective was met in Boundary Bay.

The pH objective was exceeded at times by acidic conditions in the Nicomekl and Serpentine Rivers but met elsewhere.

The objectives for total lead in the Nicomekl River were met.

Checking the objective for PCBs in water of the Serpentine River and its tributary creeks gave indefinite results because of the high detection limit used. The objective for PCBs in the sediments was met in Boundary Bay but was not checked for the Serpentine River. The objective for PCBs in fish from the Serpentine River was also not checked.

R.J. Rocchini, P.Eng.
Resource Quality Section
Water Management Branch

TABLE 1

PROVINCIAL OVERVIEW OF WATER QUALITY OBJECTIVES - 1988

REGION	NUMBER OF OCCURRENCES				
	OBJECTIVES MET	OBJECTIVES NOT MET	OBJECTIVES NOT CHECKED	INDEFINITE RESULT	TOTAL
Vancouver Island	96	10	2	4	112
	86%	9%	2%	3%	100%
Skeena	623	45	4	15	687
	91%	6.5%	0.5%	2%	100%
Northern Interior	1090	166	44	54	1354
	81%	12%	3%	4%	100%
Southern Interior	1866	99	12	45	2022
	92%	5%	1%	2%	100%
Kootenay	96	2	14	1	113
	85%	2%	12%	1%	100%
Lower Mainland	1712	94	92	79	1977
	87%	5%	4%	4%	100%
All Regions	5483	416	168	198	6265
	87%	7%	3%	3%	100%
All Regions less occurrences with no result	5483	416			5899
	93%	7%			100%

TABLE 2

COWICHAN - KOKSILAH RIVERS WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc. (np)	Koksilah River: at Port Renfrew Rd E207425	Jul 12-Aug10	5	np = 80/100 mL	Obj. not met
		Aug 15-Sep27	5	np = 11/100 mL	indef result
	at Highway 1 0123981	Jul 12-Aug15	5	np = 125/100mL	Obj. not met
		Aug 22-Sep27	4	80 - 180/100mL	Obj. not met
E. Coli <10/100 mL 90th perc. (np)	Koksilah River: at Port Renfrew Rd E207425	Jul 12-Aug15	5	np = 50/100 mL	Obj. not met
		Aug 15-Sep27	5	np = 11/100 mL	indef result
	at Highway 1 0123981	Jul 12-Aug15	5	np = 100/100mL	Obj. not met
		Aug 22-Sep27	4	80 - 158/100mL	Obj. not met
Turbidity max increase: 5 NTU or 10%	Koksilah River	1988	0	no data collected	Objective not checked
Suspended Solids max increase: 10 mg/L or 10%	Koksilah River: at Port Renfrew Rd E207425	Mar 1-Aug 10	5	<1 - 5 mg/L	Control site
	at Koksilah Road E206976	Mar 1	1	no increase	Objective met
	at Highway 1 0123981	Feb 18-Aug10	6	max increase <1 mg/L	Objective met
Dissolved Oxygen 11.2 mg/L min (Oct-May) 8.0 mg/L min (Jun-Sep)	Koksilah River: at Port Renfrew Rd E207425	Jul 18	2	7.5 mg/L 8.0 mg/L	Obj. not met Obj. met
		Sep 8	2	10.4-10.6 mg/L	Obj. met
	d/s Kelvin Road E207433	Jul 18	2	7.6 mg/L 8.2 mg/L	Obj. not met Obj. met
		Sep 8	1	7.8 mg/L	Obj. not met

TABLE 2 continued

COWICHAN - KOKSILAH RIVERS WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen 11.2 mg/L min (Oct-May) 8.0 mg/L min (Jun-Sep)	Koksilah River: at Highway 1 0123981	Jul 18	3	5.4 mg/L 7.0 mg/L 8.2 mg/L	Obj. not met Obj. not met Obj. met
		Sep 8	1	7.5 mg/L	Obj. not met
Dissolved Copper 0.002 mg/L av 0.004mg/L max or 20% max inc.	Koksilah River: E207425 at Port Renfrew Rd	Jul 12-Aug10 Mar 1-Aug 10	5 7	av < 0.001mg/L max= 0.004mg/L	Objectives met
	E206976 at Koksilah Road	Mar 1-Apr 6	2	max= 0.002mg/L	Max obj. met
	0123981 at Highway 1	Jul 12-Aug10 Mar 1-Aug 10	5 7	av = 0.001mg/L max= 0.003mg/L	Objectives met
Dissolved Lead 0.003 mg/L av 0.008mg/L max or 20% max inc.	Koksilah River: E207425 at Port Renfrew Rd	Jul 12-Aug10 Mar 1-Aug 10	5 7	av < 0.001mg/L max= 0.001mg/L	Objectives met
	E206976 at Koksilah Road	Mar 1-Apr 6	2	max= 0.001mg/L	Max obj. met
	0123981 at Highway 1	Jul 12-Aug10 Mar 1-Aug 10	5 7	av < 0.001mg/L max= 0.001mg/L	Objectives met
Dissolved Zinc 0.030 mg/L av 0.180mg/L max or 20% max inc.	Koksilah River: E207425 at Port Renfrew Rd	Jul 12-Aug10 Mar 1-Aug 10	5 7	av < 0.005mg/L max= 0.007mg/L	Objectives met
	E206976 at Koksilah Road	Mar 1-Apr 6	2	max< 0.005mg/L	Max obj. met
	0123981 at Highway 1	Jul 12-Aug10 Mar 1-Aug 10	5 7	av < 0.005mg/L max= 0.007mg/L	Objectives met

This is only a partial report as the objectives for the Cowichan River were not completed in 1988.

TABLE 3

BULKLEY RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc. (np)	0400297 u/s Houston	Aug16,22,29, Sep 6,12	5	np = 25/100 mL	Objective not met
	0400434 u/s Smithers	Aug16,22,29 Sep 6,12	5	np = 9/100 mL	Objective met
Fecal Coliforms <200/100 mL geometric mean (gm)	0400295 100m d/s Houston	Aug16,22,29 Sep 6,12	5	gm = 19/100 mL	Objective met
	0400435 d/s Smithers in initial dil. zone	Aug16,22,29, Sep 6,12	5	gm = 4/100 mL	Objective met
Turbidity max increase: 5 NTU or 10%	0400297 u/s Houston	Aug16,22,29, Sep 6,12	5	0.9-1.5 NTU	Control site
	0400295 100m d/s Houston	Aug16,22,29, Sep 6,12	5	max inc = 0.6 NTU	Objective met
	0400434 u/s Smithers	Aug16,22,29, Sep 6,12	5	1.5-2.5 NTU	Control site
	0400435 d/s Smithers in initial dil. zone	Aug16,22,29, Sep 6,12	5	max inc = 0.5 NTU	Objective met
Susp Solids max increase: 10 mg/L or 10%	0400297 u/s Houston	Aug16,22,29, Sep 6,12	5	1 - 28 mg/L	Control site
	0400295 100m d/s Houston	Aug16,22,29, Sep 6,12	5	max inc = 1.0 mg/L	Objective met
	0400434 u/s Smithers	Aug16,22,29 Sep 6,12	5	2 - 5 mg/L	Control site
	0400435 d/s Smithers in initial dil. zone	Aug16,22,29, Sep 6,12	5	max inc = 0 mg/L	Objective met
Tot. Cl2 Res. 0.002mg/L max		1988	0	no data collected	Objective not checked

TABLE 3 continued

BULKLEY RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
chlorophyll-a <50 mg/m2 av	0400297 u/s Houston	Aug 31	6	av = 3.9 mg/m2	Objective met
	0400295 100m d/s Houston	Aug 31	6	av = 13.8mg/m2	Objective met
	0400434 u/s Smithers	Aug 31	6	av = 6.2 mg/m2	Objective met
	0400435 d/s Smithers in initial dil. zone	Aug 31	6	av = 5.2 mg/m2	Objective met
Ammonia-N <0.90 mg/L av 4.67 mg/L max at pH = 8.1 temp = 10 C	0400297 u/s Houston	Aug16-Sep12	5	av < 0.005mg/L max= 0.007mg/L	Objectives met
	0400295 100m d/s Houston	Aug16-Sep12	5	av = 0.021mg/L max= 0.034mg/L	Objectives met
Ammonia-N <1.59 mg/L av 8.25 mg/L max at pH = 7.8 temp = 10 C	0400434 u/s Smithers	Aug16-Sep12	5	av < 0.005mg/L max< 0.005mg/L	Objectives met
	0400435 d/s Smithers in initial dil. zone	Aug16-Sep12	5	av < 0.005mg/L max= 0.006mg/L	Objectives met
Nitrite-N <0.02 mg/L av 0.06 mg/L max	0400297 u/s Houston	Aug16-Sep12	5	all <0.005mg/L	Objectives met
	0400295 100m d/s Houston	Aug16-Sep12	5	all <0.005mg/L	Objectives met
	0400434 u/s Smithers	Aug16-Sep12	5	all <0.005mg/L	Objectives met
	0400435 d/s Smithers in initial dil. zone	Aug16-Sep12	5	all <0.005mg/L	Objectives met
Dissolved Oxygen 7.8 mg/L min	0400297 u/s Houston	Aug16-Sep12	5	8.7 - 9.3 mg/L	Objective met

TABLE 3 continued

BULKLEY RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen 7.8 mg/L min	0400295 100m d/s Houston	Aug16-Sep12	5	8.2 - 9.5 mg/L	Objective met
	0400434 u/s Smithers	Aug16-Sep12	5	8.3 - 9.7 mg/L	Objective met
	0400435 d/s Smithers in initial dil. zone	Aug16-Sep12	5	8.3 - 9.6 mg/L	Objective met

Morice River objectives were not checked since the river will not now be affected by Kemano completion.

TABLE 4

KATHLYN, SEYMOUR, ROUND & TYHEE LAKES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms: <10/100 mL 90th perc. (np) at water intakes <200/100 mL geometric mean (gm) <400/100 mL 90th perc. (np) at beaches	Kathlyn Lake: E207548 beach	Jul 18-Aug15	5	gm < 2.4/100mL np < 3/100 mL	Objective met
	E207549 intake #2	Jul 18-Aug15	5	np < 2/100 mL	Objective met
	E207550 intake #3	Jul 18-Aug15	5	np < 2/100 mL	Objective met
	E207551 intake #4	Jul 18-Aug15	5	np < 2/100 mL	Objective met
	Seymour Lake: E207552 intake #1	Jul 18-Aug15	5	np = 6/100 mL	Objective met
	E207553 intake #2	Jul 18-Aug15	5	np = 6/100 mL	Objective met
	E207554 intake #3	Jul 18-Aug15	5	np < 2/100 mL	Objective met
	Round Lake: E207555 beach	Jul 18-Aug15	5	gm < 2/100 mL np < 2/100 mL	Objective met
	E207556 intake #2	Jul 18-Aug15	5	np = 6/100 mL	Objective met
	E207557 intake #3	Jul 18-Aug15	5	np < 2/100 mL	Objective met
	E207558 intake #4	Jul 18-Aug15	5	np = 3/100 mL	Objective met
	Tyhee Lake: E207559 beach	Jul 18-Aug15	5	gm = 13/100 mL np=11000/100mL	Objective not met
	E207560 intake #2	Jul 18-Aug15	5	np = 6/100 mL	Objective met

TABLE 4 continued

KATHLYN, SEYMOUR, ROUND & TYHEE LAKES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc. (np) at water intakes	Tyhee Lake: E207561 intake #3	Jul 18-Aug15	5	np < 2/100 mL	Objective met
	E207562 intake #4	Jul 18-Aug15	5	np < 2/100 mL	Objective met
Turbidity <1 NTU av 5 NTU max	Kathlyn Lake: E207549 intake #2	Jul 18-Aug15	5	av = 0.8 NTU max= 1.0 NTU	Objectives met
	E207550 intake #3	Jul 18-Aug15	5	av = 0.8 NTU max= 0.9 NTU	Objectives met
	E207551 intake #4	Jul 18-Aug15	5	av = 0.8 NTU max= 0.9 NTU	Objectives met
	Seymour Lake: E207552 intake #1	Jul 18-Aug15	5	av = 4.5 NTU max= 6.0 NTU	Objectives not met
	E207553 intake #2	Jul 18-Aug15	5	av = 7.0 NTU max= 15.0 NTU	Objectives not met
	E207554 intake #3	Jul 18-Aug15	5	av = 0.8 NTU max= 1.4 NTU	Objectives met
	Round Lake: E207556 intake #2	Jul 18-Aug15	5	av = 1.1 NTU max= 1.5 NTU	Max obj. met av not met
	E207557 intake #3	Jul 18-Aug15	5	av = 2.9 NTU max= 5.3 NTU	Objectives not met
	E207558 intake #4	Jul 18-Aug15	5	av = 2.3 NTU max= 3.3 NTU	Max obj. met av not met
	Tyhee Lake: E207560 intake #2	Jul 18-Aug15	5	av = 0.5 NTU max= 0.8 NTU	Objectives met

TABLE 4 continued

KATHLYN, SEYMOUR, ROUND & TYHEE LAKES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity <1 NTU av 5 NTU max	Tyhee Lake: E207561 intake #3	Jul 18-Aug15	5	av = 0.5 NTU max= 0.6 NTU	Objectives met
	E207562 intake #4	Jul 18-Aug15	5	av = 1.0 NTU max= 2.0 NTU	Objectives met
Total P <0.015mg/L av at spring overturn	Kathlyn Lake 1131007 North Basin	May 2 0.5-8 m	3	0.017 - 0.022 mg/L av = 0.019mg/L	Objective not met
	Round Lake 1131008 mid-lake	May 2 0.5-17 m	3	0.071 - 0.088 mg/L av = 0.079mg/L	Objective not met
	Tyhee Lake 1131009 North Basin	May 2 0.5-15 m	3	0.028 - 0.031 mg/L av = 0.029mg/L	Objective not met
Colour 15 TCU max near water intakes	Kathlyn Lake: E207549 intake #2	Jul 18-Aug15	5	max = 10 TCU	Objective met
	E207550 intake #3	Jul 18-Aug15	5	max = 10 TCU	Objective met
	E207551 intake #4	Jul 18-Aug15	5	max = 9 TCU	Objective met
	Round Lake: E207556 intake #2	Jul 18-Aug15	5	max = 10 TCU	Objective met
	E207557 intake #3	Aug 7-Aug 15	2	max = 15 TCU	Obj. met
		Jul 18-Aug 1	3	20 - 40 TCU	Obj. not met
	E207558 intake #4	Jul 18-Aug15	4	max = 15 TCU	Obj. met
		Aug 7	1	25 TCU	Obj. not met
	Tyhee Lake: E207560 intake #2	Jul 18-Aug15	5	max = 5 TCU	Objective met

TABLE 4 continued

KATHLYN, SEYMOUR, ROUND & TYHEE LAKES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Colour 15 TCU max near water intakes	Tyhee Lake: E207561 intake #3	Jul 18-Aug15	5	max = 6 TCU	Objective met
	E207562 intake #4	Jul 18-Aug15	5	max = 6 TCU	Objective met

TABLE 5

LOWER KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coli. <14/100 mL median (med) <43/100 mL 90th perc(np) (shellfish) <200/100 mL geo mean (gm) <400/100 mL 90th perc(np) (recreation)	Kitimat Harbour: shellfish closure 0400510 Ocelot Dock, N end	Aug 9-Sep 5	5	med = 20/100mL gm = 10/100mL np = 30/100mL	Recreational objectives met
	0400512 Ocelot Dock, S end	Aug 9-Sep 5	5	med = 24/100mL gm = 21/100mL np = 40/100mL	Recreational objectives met
	Kitimat Arm: shellfish closure E207571 Bish Cove	Aug 9-Sep 5	5	med = 2/100mL gm = 5/100mL np = 17/100mL	Recreational & shellfish objctvs. met
	E207572 Hospital Beach	Aug 9-Sep 5	5	med = 17/100mL gm = 17/100mL np = 50/100mL	Recreational objectives met
	E207573 Mission Beach	Aug 9-Sep 5	5	med = 7/100mL gm = 6/100mL np = 15/100mL	Recreational & shellfish objctvs. met
	E207574 Henderson's Beach	Aug 9-Sep 5	5	med = 18/100mL gm = 11/100mL np = 22/100mL	Recreational objectives met
Susp. Solids max increase: 10 mg/L or 10%	Kitimat River: 0430025 at Hwy Bridge	Aug 9-Sep 5	5	5 - 29 mg/L	Control site
	E207569 u/s STP & Eurocan	Aug 15-Sep 5	4	max inc=2 mg/L	Obj. met
		Aug 9	1	inc = 15 mg/L	Obj. not met
	E207570 100m d/s Eurocan	Aug 21-Sep 5	3	max inc=9 mg/L	Obj. met
		Aug 9,15	2	inc=19,12 mg/L	Obj. not met
	Kit. Harbour & Arm E207571 Bish Cove	Aug 9-Sep 5	5	2 - 6 mg/L	Control site

TABLE 5 continued

LOWER KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Susp. Solids max increase: 10 mg/L or 10%	Kit. Harbour & Arm 0400510 Ocelot Dock, N end	Aug 9-Sep 5	5	max inc=4 mg/L	Objective met
	0400512 Ocelot Dock, S end	Aug 9-Sep 5	5	max inc=6 mg/L	Objective met
	E207572 Hospital Beach	Aug 9-Sep 5	4	max inc=5 mg/L	Obj. met
		Aug 29	1	inc = 12 mg/L	Obj. not met
	E207573 Mission Beach	Aug 9-Sep 5	5	max inc=6 mg/L	Objective met
	E207574 Henderson's Beach	Aug 15-Sep 5	3	max inc=6 mg/L	Obj. met
		Aug 9,29	2	inc=14,12 mg/L	Obj. not met
Turbidity max increase: 5 NTU or 10%	Kitimat River: 0430025 at Hwy Bridge	Aug 9-Sep 5	5	1.5 - 9.7 NTU	Control site
	E207569 u/s STP & Eurocan	Aug 9-Sep 5	4	max inc=4.3NTU	Obj. met
		Aug 29	1	inc = 6.0 NTU	Obj. not met
	E207570 100m d/s Eurocan	Aug 15-Sep 5	3	max inc=1.6NTU	Obj. met
		Aug 9,29	2	inc=6.3,8.0NTU	Obj. not met
	Kit. Harbour & Arm E207571 Bish Cove	Aug 9-Sep 5	5	0.4 - 1.2 NTU	Control site
	0400510 Ocelot Dock, N end	Aug 9-Sep 5	5	max inc=4.1NTU	Objective met
	0400512 Ocelot Dock, S end	Aug 9-Sep 5	4	max inc=3.6NTU	Obj. met
		Aug 29	1	inc = 5.7 NTU	Obj. not met
	E207572 Hospital Beach	Aug 9-Sep 5	4	max inc=4.5NTU	Obj. met
		Aug 29	1	inc = 11.2 NTU	Obj. not met

TABLE 5 continued

LOWER KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity max increase: 5 NTU or 10%	Kit. Harbour & Arm E207573 Mission Beach	Aug 9-Sep 5	5	max inc=3.9NTU	Objective met
	E207574 Henderson's Beach	Aug 15-Sep 5	3	max inc=4.1NTU	Obj. met
		Aug 9,29	2	inc=6.7,5.3NTU	Obj. not met
WAD Cyanide 0.001mg/L max or min detection level of 0.005 mg/L	Kit. Harbour & Arm 0400510 Ocelot Dock, N end	Jun 20-Sep 5	9	all <0.005mg/L	Objective met
	0400512 Ocelot Dock, S end	Jun 20-Sep 5	10	all <0.005mg/L	Objective met
	E207571 Bish Cove	Jun 21-Sep 5	7	all <0.005mg/L	Objective met
	E207572 Hospital Beach	Aug 9-Sep 5	5	all <0.005mg/L	Objective met
	E207573 Mission Beach	Aug 9-Sep 5	5	all <0.005mg/L	Objective met
	E207574 Henderson's Beach	Aug 9-Sep 5	5	all <0.005mg/L	Objective met
Fluoride 1.5 mg/L max	Kit. Harbour & Arm 0400510 Ocelot Dock, N end	Jun 20-Sep 5	11	max = 1.41mg/L	Objective met
	0400512 Ocelot Dock, S end	Jun 20-Sep 5	12	max = 0.73mg/L	Objective met
	E207571 Bish Cove	Jun 21-Sep 5	9	max = 0.68mg/L	Objective met
	E207572 Hospital Beach	Aug 9-Sep 5	5	max = 0.32mg/L	Objective met
	E207573 Mission Beach	Aug 9-Sep 5	5	max = 0.27mg/L	Objective met

TABLE 5 continued

LOWER KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fluoride 1.5 mg/L max	Kit. Harbour & Arm E207574 Henderson's Beach	Aug 9-Sep 5	5	max = 0.30mg/L	Objective met
H2S 0.002mg/L max or about 0.008mg/L max diss sulfide at pH = 7.6 temp = 10 C cond = 35 umhos/cm	Kitimat River: 0430025 at Hwy Bridge	Aug 9-Sep 5 at each site	15	all <0.5 mg/L tot sulfide or all <0.12 mg/L H2S	Indefinite result at each site
	E207569 u/s STP & Eurocan				
	E207570 100m d/s Eurocan				
Chlorophyll-a <50 mg/m2 av	Kitimat River	1988	0	no data collected	Objective not checked
Ammonia-N <1.85 mg/L av 11.2 mg/L max at pH = 7.6 temp = 10 C	Kitimat River: 0430025 at Hwy Bridge	Aug 9-Sep 5	5	av = 0.056mg/L max= 0.088mg/L	Objectives met
	E207569 u/s STP & Eurocan	Aug 9-Sep 5	5	av = 0.039mg/L max= 0.050mg/L	Objectives met
	E207570 100m d/s Eurocan	Aug 9-Sep 5	5	av = 0.042mg/L max= 0.061mg/L	Objectives met
Ammonia-N <1.0 mg/L av 2.5 mg/L max	Kit. Harbour & Arm 0400510 Ocelot Dock, N end	Aug 9-Sep 5	5	av = 0.040mg/L max= 0.082mg/L	Objectives met
	0400512 Ocelot Dock, S end	Aug 9-Sep 5	5	av = 0.026mg/L max= 0.037mg/L	Objectives met
	E207571 Bish Cove	Aug 9-Sep 5	5	av = 0.019mg/L max= 0.035mg/L	Objectives met
	E207572 Hospital Beach	Aug 9-Sep 5	5	av = 0.034mg/L max= 0.056mg/L	Objectives met
	E207573 Mission Beach	Aug 9-Sep 5	5	av = 0.018mg/L max= 0.026mg/L	Objectives met

TABLE 5 continued

LOWER KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <1.0 mg/L av 2.5 mg/L max	Kit. Harbour & Arm E207574 Henderson's Beach	Aug 9-Sep 5	5	av = 0.027mg/L max= 0.035mg/L	Objectives met
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Kitimat River: 0430025 at Hwy Bridge	Aug 9-Sep 5	5	av = 0.04 mg/L max= 0.06 mg/L	Max obj. met av not met
	E207569 u/s STP & Eurocan	Aug 9-Sep 5	5	av = 0.04 mg/L max= 0.05 mg/L	Max obj. met av not met
	E207570 100m d/s Eurocan	Aug 9-Sep 5	5	av = 0.04 mg/L max= 0.05 mg/L	Max obj. met av not met
Dissolved Oxygen 7.8 mg/L min	Kitimat River: 0430025 at Hwy Bridge	Aug 9-Sep 5	5	9.6 - 10.3mg/L	Objective met
	E207569 u/s STP & Eurocan	Aug 9-Sep 5	5	9.8 - 10.5mg/L	Objective met
	E207570 100m d/s Eurocan	Aug 9-Sep 5	5	9.7 - 10.5mg/L	Objective met
pH 6.5 - 9.0	Kitimat River: 0430025 at Hwy Bridge	Aug 9-Sep 5	5	7.1 - 7.9	Objective met
	E207569 u/s STP & Eurocan	Aug 9-Sep 5	5	7.1 - 7.5	Objective met
	E207570 100m d/s Eurocan	Aug 9-Sep 5	5	7.1 - 7.6	Objective met
Total Al 20% increase	Kit. Harbour & Arm E207571 Bish Cove	Jun 21 1 & 6m	2	<0.5 mg/L	Control site
	0400510 Ocelot Dock, N end	Jun 21 1 & 5m	2	<0.5 mg/L	Objective met
	0400512 Ocelot Dock, S end	Jun 21 1 & 7m	2	<0.5 mg/L	Objective met

TABLE 5 continued

LOWER KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cd <0.012mg/L av 0.038mg/L max	Kit. Harbour & Arm 0400510 Ocelot Dock, N end	Aug 9-Sep 5	5	all<0.0005mg/L	Objectives met
	0400512 Ocelot Dock, S end	Aug 9-Sep 5	5	all<0.0005mg/L	Objectives met
	E207571 Bish Cove	Aug 9-Sep 5	5	all<0.0005mg/L	Objectives met
	E207572 Hospital Beach	Aug 9-Sep 5	5	all<0.0005mg/L	Objectives met
	E207573 Mission Beach	Aug 9-Sep 5	5	all<0.0005mg/L	Objectives met
	E207574 Henderson's Beach	Aug 9-Sep 5	5	all<0.0005mg/L	Objectives met
Total Cu <0.002mg/L av 0.003mg/L max or 20% increase	Kit. Harbour & Arm 0400510 Ocelot Dock, N end	Aug 9-Sep 5	5	all <0.001mg/L	Objectives met
	0400512 Ocelot Dock, S end	Aug 9-Sep 5	5	all <0.001mg/L	Objectives met
	E207571 Bish Cove	Aug 9-Sep 5	5	all <0.001mg/L	Objectives met
	E207572 Hospital Beach	Aug 9-Sep 5	5	av < 0.001mg/L max= 0.001mg/L	Objectives met
	E207573 Mission Beach	Aug 9-Sep 5	5	all <0.001mg/L	Objectives met
	E207574 Henderson's Beach	Aug 9-Sep 5 Aug 21 Aug 9-Sep 5	5 1 4	av < 0.002mg/L max= 0.008mg/L max< 0.001mg/L	Av obj. met max not met max obj. met
Total Fe 0.3 mg/L max	Kit. Harbour & Arm 0400510 Ocelot Dock, N end	Jun 20-Jun22	5	0.1 - 0.3 mg/L	Obj. met
		Jun 20 at 1m	1	0.4 mg/L	Obj. not met

TABLE 5 continued

LOWER KITIMAT RIVER AND ARM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Fe 0.3 mg/L max	Kit. Harbour & Arm 0400512 Ocelot Dock, S end	Jun 20-Jun21	4	max = 0.3 mg/L	Obj. met
		Jun 22,Aug 4	2	0.4, 0.5 mg/L	Obj. not met
	E207571 Bish Cove	Jun 21-Jun22	3	max = 0.3 mg/L	Obj. met
		Jun 22 at 1m	1	0.7 mg/L	Obj. not met
Total Pb <0.009mg/L av 0.22 mg/L max or 20% increase	Kit. Harbour & Arm 0400510 Ocelot Dock, N end	Aug 9-Sep 5	5	all <0.001mg/L	Objectives met
	0400512 Ocelot Dock, S end	Aug 9-Sep 5	5	all <0.001mg/L	Objectives met
	E207571 Bish Cove	Aug 9-Sep 5	5	all <0.001mg/L	Objectives met
	E207572 Hospital Beach	Aug 9-Sep 5	5	all <0.001mg/L	Objectives met
	E207573 Mission Beach	Aug 9-Sep 5	5	av < 0.004mg/L max= 0.020mg/L	Objectives met
	E207574 Henderson's Beach	Aug 9-Sep 5	5	av < 0.002mg/L max= 0.005mg/L	Objectives met
Toxicity % mill effl. in river: <0.05 of the 96-h LC50	Kitimat River	1987	0	no data collected	Objective not checked

TABLE 6

LAKELSE LAKE WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms: <10/100 mL 90th perc. (np) at water intakes	E207580 intake, lake NW	Aug 9-Sep 5	5	np <2/100 mL	Objective met
	E207581 intake, Gainey Pt.	Aug 9-Sep 5	5	np <2/100 mL	Objective met
	E207582 intake, lake NE	Aug 9-Sep 5	5	np <2/100 mL	Objective met
<200/100 mL geometric mean (gm) at beaches	E207583 Furlong Beach	Aug 9-Sep 5 Aug 24	5 1	gm = 3/100 mL 6/100 mL	Objective met
Turbidity 1 NTU av 5 NTU max	E207580 intake, lake NW	Aug 9-Sep 5	5	av = 0.8 NTU max = 1.8 NTU	Objectives met
	E207581 intake, Gainey Pt.	Aug 9-Sep 5	5	av = 0.5 NTU max = 0.6 NTU	Objectives met
	E207582 intake, lake NE	Aug 9-Sep 5	5	av = 0.5 NTU max = 0.7 NTU	Objectives met
Total P <0.010mg/L av May - Aug	E206616 N end,deepest pt.	Apr 30 0.5-30 m	3	0.006 - 0.008 mg/L	Objective met
		Jul 18 0.5-16 m	3	<0.003 - 0.005 mg/L	
		Apr 30-Jul18	6	av = 0.005mg/L	
Chlorophyll-a <0.003 mg/L	E206616 N end,deepest pt	Apr 30	4	av = 0.002mg/L	Obj. met
		Jul 18	4	av = 0.001mg/L	Obj. met
Dissolved Oxygen >6 mg/L 5m above sed.		1988	0	no data collected	Objective not checked

TABLE 7

CHARLIE LAKE WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90 th perc. near water intakes	Fort St John intake	June 22,28, July 5,20,26	5	<2-2/100 mL <2/100 mL 90th perc	Objective met
Fecal Coliforms* <200/100 mL geometric mean (gm) <400/100mL 90th perc. (np) at beaches	Beatton Park Beach south	Jun 13,22,28 Jul 4,11	5	4-460/100 mL gm = 25/100mL np = 230/100mL	Objectives met
	Beatton Park beach centre	Jun 13,22,28 Jul 4,11	5	<3-460/100 mL gm = 17/100mL np = 230/100mL	Objectives met
		Jul 26,Aug3, 8,22,31	5	<3-1100/100mL gm = 38/100mL np = 600/100mL	gm obj. met np not met
	Beatton Park beach north	Jun 13,22,28 Jul 4,11	5	4-1100/100 mL gm = 62/100mL np = 600/100mL	gm obj. met np not met
		Jul 26,Aug3, 8,22,31	5	<3-1100/100mL gm = 34/100mL np = 600/100mL	gm obj. met np not met
Total-P <0.050 mg/L av at spring overturn <0.075 mg/L av at all other times	0400390 Charlie L. south arm	April 28 (spring overturn)	1 1 1	1.0m:0.062mg/L 6.0m:0.068mg/L 10m :0.078mg/L av = 0.069mg/L	Objective not met
		May 31 (spring overturn)	1 1 1	1.0m:0.048mg/L 7.0m:0.034mg/L 13m :0.057mg/L av = 0.046mg/L	Objective met
		July 11	1 1 1	0.5m:0.053mg/L 6.0m:0.057mg/L 10m :0.153mg/L av = 0.088mg/L	Objective not met

*High coliform levels resulted in beach closure

TABLE 7 continued

CHARLIE LAKE WATER QUALITY OBJECTIVES

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total P <0.050 mg/L av at spring overturn <0.075 mg/L av at all other times	0400390 Charlie L. south arm	Aug 25	1 1 1	1.0m:0.153mg/L 5.0m:0.273mg/L 10m :0.141mg/L av = 0.189mg/L	Objective not met
		Sep 29	1 1 1	0.5m:0.072mg/L 4.5m:0.089mg/L 8.0m:0.100mg/L av = 0.087mg/L	Objective not met
		Oct 18	1 1 1	0.5m:0.057mg/L 5.0m:0.059mg/L 9.5m:0.059mg/L av = 0.058mg/L	Objective met
	E207459 Charlie L. north arm	May 31 (spring overturn)	1 1 1	1.0m:0.056mg/L 4.0m:0.062mg/L 7.0m:0.080mg/L av = 0.066mg/L	Objective not met
		July 11	1 1 1	0.5m:0.252mg/L 3.5m:0.037mg/L 6.5m:0.088mg/L av = 0.126mg/L	Objective not met
		Aug 25	1 1 1	1.0m:0.227mg/L 4.0m:0.128mg/L 6.5m:0.128mg/L av = 0.161mg/L	Objective not met
		Sep 29	1 1 1	0.5m:0.100mg/L 3.0m:0.094mg/L 6.0m:0.100mg/L av = 0.098mg/L	Objective not met
		Oct 18	1 1 1	0.5m:0.057mg/L 3.5m:0.066mg/L 6.5m:0.063mg/L av = 0.062mg/L	Objective met

TABLE 8

BULLMOOSE CREEK WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc. (np)	W Bullmoose Creek: E206225 u/s sed ponds	Apr 25,May2, 9,17,24	5	all < 2/100 mL	Control site
	E206226 d/s sed pond 3	Apr 25,May2, 9,17,24	5	< 2 - 4/100 mL	Objective met
	E206227 d/s sed ponds 1&2	Apr 25,May2, 9,17,24	5	< 2 - 4/100 mL	Objective met
	S Bullmoose Creek: E206228 u/s plant	Apr 25,May2, 9,17,24	5	all < 2/100 mL	Control site
	E206229 d/s plant	Apr 25,May2, 9,17,24	5	all < 2/100 mL	Objective met
	Bullmoose Creek: 0410094 1.2 km d/s confl.	Apr 25,May2, 9,17,24	5	<2 - 34/100 mL np = 8/100 mL	Objective met
	E206232 20 km d/s confl.	Apr 25,May2, 9,17,24	5	<2 - 14/100 mL np = 11/100 mL	Objective not met
Turbidity max increase: 5 NTU or 10%	W Bullmoose Creek: E206225 u/s sed. ponds	Apr 25-May24 May 9	4 1	0.8-3.0 NTU 3.3 NTU	Control site
	E206226 d/s sed. pond 3	Apr 25-May24	5	max increase: = 4.7 NTU	Objective met
	E206227 d/s sed ponds 1&2	Apr 25-May24	4	max inc=4.1NTU	Obj. met
		May 9	1	inc = 5.7 NTU	Obj. not met
	S Bullmoose Creek: E206228 u/s plant	Apr 25-May24	5	0.3-6.0 NTU	Control site
	E206229 d/s plant	Apr 25-May24	5	max inc=1.1NTU	Objective met

TABLE 8 continued

BULLMOOSE CREEK WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity max increase: 5 NTU or 10%	Bullmoose Creek: 0410094 1.2km d/s confl.	Apr 25-May24	5	max inc=4.7NTU	Objective met
	E206232 20 km d/s confl.	Apr25 & May2	2	max inc=1.5NTU	Obj. met
		May 9,17,24	3	inc=6.6-40 NTU	Obj. not met
Susp. Solids max increase: 10 mg/L or 10%	W Bullmoose Creek: E206225 u/s sed. ponds	Apr 25-May24 May 9	4 1	<1 - 4 mg/L 10 mg/L	Control site
	E206226 d/s sed. pond 3	Apr 25-May24	4	max inc=5 mg/L	Obj. met
		May 9	1	inc = 15 mg/L	Obj. not met
	E206227 d/s sed. ponds 1&2	Apr 25-May24	4	max inc=5 mg/L	Obj. met
		May 9	1	inc = 20 mg/L	Obj not met
	S Bullmoose Creek: E206228 u/s plant	Apr 25-May24	5	<1 - 13 mg/L	Control site
	E206229 d/s plant	Apr 25-May24	5	max inc=2 mg/L	Objective met
	Bullmoose Creek: 0410094 1.2km d/s confl.	Apr 25-May24	4	max inc=7 mg/L	Obj. met
		May 9	1	inc = 16 mg/L	Obj. not met
	E206232 20 km d/s confl.	Apr25 & May2	2	max inc=1 mg/L	Obj. met
		May 9,17,24	3	inc=17-169mg/L	Obj. not met
Substrate sedimentation no increase in particulate <3 mm dia	W Bullmoose Creek S Bullmoose Creek Bullmoose Creek	1988	0	no data collected	Objective not checked

TABLE 8 - continued

BULLMOOSE CREEK WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Chlorophyll-a av < 50mg/m2	W Bullmoose Creek: E206227 d/s sed. ponds 1&2	Oct 26	6	av = 113 mg/m2	Objective not met
	S Bullmoose Creek: E206228 u/s plant	Oct 26	6	av = 52.5mg/m2	Objective not met
	E206229 d/s plant	Oct 26	6	av = 244 mg/m2	Objective not met
	Bullmoose Creek: 0410094 1.2km d/s confl.	Oct 26	6	av = 24.4mg/m2	Objective met
	E206232 20km d/s confl.	Oct 26	6	av = 58 mg/m2	Objective not met
Ammonia-N <1.18 mg/L av 6.14 mg/L max at pH = 8.0 temp = 5 C	W Bullmoose Creek: E206225 u/s sed. pond 3	Apr 25-May24	5	all <0.005mg/L	Control site
	E206226 d/s sed. pond 3	Apr 25-May24	5	<0.005 - 0.005 mg/L	Objectives met
	E206227 d/s sed. ponds 1&2	Apr 25=May24	5	all <0.005mg/L	Objectives met
	S Bullmoose Creek: E206228 u/s plant	Apr 25-May24	5	av = 0.005mg/L max= 0.006mg/L	Control site
	E206229 d/s plant	Apr 25-May24	5	av = 0.006mg/L max= 0.007mg/L	Objectives met
	Bullmoose Creek: 0410094 1.2km d/s confl.	Apr 25-may24	5	av = 0.005mg/L max= 0.006mg/L	Objectives met
	E206232 20km d/s confl.	Apr 25-May24	5	av = 0.005mg/L max= 0.007mg/L	Objectives met

TABLE 8 - continued

BULLMOOSE CREEK WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite-N <0.02 mg/L av 0.06 mg/L max	W Bullmoose Creek: E206225 u/s sed. pond 3	Apr 25-May24	5	all <0.005mg/L	Control site
	E206226 d/s sed. pond 3	Apr 25-May24	5	all <0.005mg/L	Objectives met
	E206227 d/s sed. ponds 1&2	Apr 25-May24	5	all<0.005mg/L	Objectives met
	S Bullmoose Creek: E206228 u/s plant	Apr 25-May24	5	av =<0.005mg/L max= 0.006mg/L	Control site
	E206229 d/s plant	Apr 25-May24	5	all <0.005mg/L	Objectives met
	Bullmoose Creek: 0410094 1.2km d/s confl.	Apr 25-May24	5	av =<0.005mg/L max= 0.006mg/L	Objectives met
	E206232 20 km d/s confl.	Apr 25-May24	5	all <0.005mg/L	Objectives met
Nitrite + Nitrate-N 10 mg/L max	W Bullmoose Creek: E206225 u/s sed. pond 3	Apr 25-May24	5	<0.02-0.04mg/L	Control site
	E206226 d/s sed. pond 3	Apr 25-May24	5	0.87-4.30 mg/L	Objective met
	E206227 d/s sed. ponds 1&2	Apr 25-May24	5	1.25-4.65 mg/L	Objective met
	S Bullmoose Creek: E206228 u/s plant	Apr 25-May24	5	all < 0.02mg/L	Control site
	E206229 d/s plant	Apr 25-May24	5	0.08-1.37 mg/L	Objective met
	Bullmoose Creek: 0410094 1.2km d/s confl.	Apr 25-May24	5	0.71-3.67 mg/L	Objective met

TABLE 8 - continued

BULLMOOSE CREEK WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite + Nitrate-N 10 mg/L max	Bullmoose Creek: E206232 20 km d/s confl.	Apr 25-May24	5	0.42-0.76 mg/L	Objective met
Diss. Oxygen 7.75 mg/L min	W Bullmoose Creek: E206225 u/s sed. pond 3	May 9,17,24	3	10.2-10.9 mg/L	Control site
	E206226 d/s sed. pond 3	May 9,17,24	3	9.2-10.1 mg/L	Objective met
	E206227 d/s sed. pond 1&2	May 9,17,24	3	9.0-9.9 mg/L	Objective met
	S Bullmoose Creek: E206228 u/s plant	May2,9,17,24	4	10.3-11.5 mg/L	Control site
	E206229 d/s plant	May 9,17,24	3	9.2-10.4 mg/L	Objective met
	Bullmoose Creek: 0410094 1.2km d/s confl.	May 9,17,24	3	9.2-10.1 mg/L	Objective met
	E206232 20 km d/s confl.	May 9,17,24	3	9.3-10.2 mg/L	Objective met
pH 6.5 min	W Bullmoose Creek: E206225 u/s sed. pond 3	Apr 25-May24	5	8.0 - 8.2	Control site
	E206226 d/s sed. ponds 3	Apr 25-May24	5	7.8 - 8.0	Objective met
	E206227 d/s sed. ponds 1&2	Apr 25-May24	5	7.8 - 8.1	Objective met

TABLE 8 - continued

BULLMOOSE CREEK WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 min	S Bullmoose Creek: E206228 u/s plant	Apr 25-May24	5	8.0 - 8.2	Control site
	E206229 d/s plant	Apr 25-May24	5	8.0 - 8.3	Objective met
	Bullmoose Creek: 0410094 1.2km d/s confl.	Apr 25-May24	5	7.9 - 8.2	Objective met
	E206232 20 km d/s confl.	Apr 25-May24	5	7.9 - 8.2	Objective met

TABLE 9

NECHAKO RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <100/100 mL 90th perc. (np)	Nechako River: 0400629 200m u/s Ft Fraser	Jan 14,20,26 Feb 2,8	5	<2 - 2/100 mL np = <2/100 mL	Objective met
	0400631 200m d/s Ft Fraser	Jan 14,20,26 Feb 2,8	5	<2 - 2/100 mL np = <2/100 mL	Objective met
		Sep 7-Oct 3	4	6 - 60/100 mL	Indef result
	0400449 u/s Vanderhoof	Jan 14,20,26 Feb 2,8	5	<2 - 22/100 mL np = 18/100 mL	Objective met
	0400450 100m d/s Vanderhf.	Jan 14,20,26 Feb 2,8	5	430 - >24000 /100 mL np>10000/100mL	Objective not met
	E207450 0.5km d/s Vanderhf	Sep 7,12,27, Oct 3	4	8 - 26/100 mL	Indefinite result
	E207451 2.0km d/s Vanderhf	Sep 7,12,27 Oct 3	4	8 - 32/100 mL	Indefinite result
	Chilako River	1988	0	no data collected	Objective not checked
Fecal Coliforms <10/100 mL 90th perc. (np)	Stuart River: 0400488 E bank at Hwy 27 (area exempt from objectives)	Nov 8,14,21, 29,Dec 6	5	<2 - 12/100 mL np = 9/100 mL	Objective met
	0920101 W bank at Hwy 27	Nov 8,14,21, 29	4	all <2/100 mL	Indefinite result
Fecal Coliforms <200/100 mL geom. mean	Necoslie River 0400801 d/s Ft St James 20m u/s Hwy 27	Nov 8,14,21, 29	4	<2 - 4/100 mL	Indefinite result
Cl2 Residual 0.002mg/L max	Nechako & Stuart rivers	1988	0	no data collected	Objective not checked

TABLE 9 continued

NECHAKO RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <1.85 mg/L av 12.7 mg/L max at pH=7.5 temp=10 C	Nechako River: 0400629 200m u/s Ft Fraser	Jan 14,20,26 Feb 2,8	5	av =0.006mg/L max =0.010mg/L	Objectives met
	0400631 200m d/s Ft Fraser	Jan 14,20,26 Feb 2,8	5	av =0.007mg/L max =0.013mg/L	Objectives met
	0400449 u/s Vanderhoof	Jan 14,20,26 Feb 2,8	5	av =0.007mg/L max =0.012mg/L	Objectives met
	0400450 100m d/s Vanderhf.	Jan 14,20,26 Feb 2,8	5	av =0.449mg/L max =0.965mg/L	Objectives met
	E207450 0.5km d/s Vanderhf	Sep 7-Oct 3	4	<0.005 - 0.008 mg/L	Max obj. met
	E207451 2.0km d/s Vanderhf	Sep 7-Oct 3	4	<0.005 - 0.005 mg/L	Max obj. met
	Stuart River: 0400488 E bank at Hwy 27	Nov 8,14,21, 29,Dec 6	5	av =0.035mg/L max =0.065mg/L	Objectives met
	0920101 W bank at Hwy 27	Feb24-Nov29	6	<0.005 - 0.008 mg/L	Max obj. met
	Chilako River	1988	0	no data collected	Objectives not checked
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Nechako River: 0400629 200m u/s Ft Fraser	Jan 14,20,26 Feb 2,8	5	av <0.005mg/L max <0.005mg/L	Objectives met
	0400631 200m d/s Ft Fraser	Jan 14,20,26 Feb 2,8	5	av <0.005mg/L max <0.005mg/L	Objectives met
	0400449 u/s Vanderhoof	Jan 14,20,26 Feb 2,8	5	av <0.005mg/L max <0.005mg/L	Objectives met
	0400450 100m d/s Vanderhf.	Jan 14,20,26 Feb 2,8	5	av <0.005mg/L max <0.005mg/L	Objectives met
	E207450 0.5km d/s Vanderhf	Sep 7,12,27, Oct 3	4	max <0.005mg/L	Max obj. met

TABLE 9 continued

NECHAKO RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Nechako River: E207451 2.0km d/s Vanderhf	Sep 7,12,27, Oct 3	4	max <0.005mg/L	Max obj. met
	Stuart River: 0400488 E bank at Hwy 27	Nov 8,14,21, 29,Dec 6	5	av <0.005mg/L max <0.005mg/L	Objectives met
	0920101 w bank at Hwy 27	Nov 8,14,21 29	4	max <0.005mg/L	Max obj. met
	Chilako River	1988	0	no data	Obj not chkd
Chlorophyll-a <50 mg/m2 av	Stuart River: 0400488 E bank at Hwy 27	Jul 30 Nov 8	3 5	av = 8.6 mg/m2 av = 38 mg/m2	Obj. met Obj. met
	0920101 W bank at Hwy 27	Jul 30 Nov 8	5 5	av = 4.2 mg/m2 av = 104 mg/m2	Obj. met Obj. not met
	Nechako River: 0400629 200m u/s Ft Fraser	Nov 8	5	av = 33.4mg/m2	Objective met
	0400631 200m d/s Ft Fraser	Nov 8	5	av = 43.7mg/m2	Objective met
Chlorophyll-a <100 mg/m2 av	Chilako River	1988	0	no data collected	Objective not checked
Diss. Oxygen 7.75-11.2mg/L min depending on fish egg stage	Nechako River: 0400629 200m u/s Ft Fraser	Sep 9,27 Sep 12 Oct 3	2 1 1	10 mg/L 9 mg/L 11 mg/L	Obj. met Obj. met Obj. met
	0400631 200m d/s Ft Fraser	Sep 12,27 Sep 7 Oct 3	2 1 1	10 mg/L 9 mg/L 11 mg/L	Obj. met Obj. met Obj. met
	0400449 u/s Vanderhoof	Sep 7,12,27 Oct 3	3 1	10 mg/L 11 mg/L	Obj. met Obj. met
	0400450 100m d/s Vanderhf.	Sep 7,27 Oct 3	2 1	10 mg/L 11 mg/L	Obj. met Obj. met

TABLE 9 continued

NECHAKO RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Diss. Oxygen 7.75-11.2mg/L min depending on fish egg stage	Nechako River: E207450 0.5km d/s Vanderhf	Sep7,27 Sep 12 Oct 3	2 1 1	10 mg/L 9 mg/L 11 mg/L	Obj. met Obj. met Obj. met
	E207451 2.0km d/s Vanderhf	Sep 7,12,27 Oct 3	3 1	10 mg/L 11 mg/L	Obj. met Obj. met
	Stuart River: 0400488 E bank at Hwy 27	Nov 8,14, Dec 6	3	12 mg/L	Obj. met
	0920101 W bank at Hwy 27	Nov 8,14	2	12 mg/L	Obj. met
	Chilako River	1988	0	no data collected	Objective not checked
pH 6.5 - 8.5	Nechako River: 0400629 200m u/s Ft Fraser	Jan 14-Oct 3	9	7.4 - 7.8	Objective met
	0400631 200m d/s Ft Fraser	Jan 14-Oct 3	9	7.3 - 7.7	Objective met
	0400449 u/s Vanderhoof	Jan 14-Oct 3	9	7.3 - 7.9	Objective met
	0400450 100m d/s Vanderhf.	Jan 14-Oct 3	8	7.5 - 8.1	Objective met
	E207450 0.5km d/s Vanderhf	Sep 7-Oct 3	4	7.7 - 8.0	Objective met
	E207451 2.0km d/s Vanderhf	Sep 7-Oct 3	4	7.7 - 7.8	Objective met
	Stuart River: 0400488 E bank at Hwy 27	Feb24-Nov21	5	7.7 - 8.1	Objective met
	0920101 W bank at Hwy 27	Feb24-Nov29	6	7.6 - 8.1	Objective met

TABLE 9 continued

NECHAKO RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 8.5	Chilako River	1988	0	no data collected	Objective not checked
Temperature <15 C av ~ 100m d/s Cheslatta Falls <20 C Jul-Aug <18 C Sep-Jun ~ 100m u/s Stuart River	Nechako River 8 km d/s Cheslatta Falls*	Jan 1-Jun 26 Jun27-Aug19 Aug20-Sep12 Sep13-Dec31	136 54 21 98	0.8-14.7 C av 15.3-18.6 C av 15.0-16.1 C av 0-14.7 C av	Obj. met Obj not met Obj not met Obj. met
Total Gas Pressure 109% max	Nechako River	1988	0	no data collected	Objective not checked

*This site is the only one for which data are available. We have assumed it is representative of a site 100m downstream from Cheslatta Falls.

TABLE 10

PINE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc. (np)	E206235 100 m u/s Chetwynd	Oct 3,11,17, 20,24,31	6	<2 - 4/100 mL np = 3/100 mL	Objective met
Fecal Coliforms <200/100 mL geometric mean	0400561 5 km d/s Chetwynd (Twidwell Bend)	Oct 3,11,17, 20,24,31	6	<2 - 8/100 mL gm =2.5/100 mL	Objective met
Turbidity max increase: 5 NTU or 10%	E206235 100 m u/s Chetwynd	Oct 3,11,17, 20,24,30	6	1 - 11 NTU	Control site
	0400561 5 km d/s Chetwynd (Twidwell Bend)	Oct 3,11,17, 20,24,31	6	no increase measured	Objective met
Susp. Solids max increase: 10 mg/L or 10%	E206235 100 m u/s Chetwynd	Oct 3,11,17 20,24,31	6	<1 - 18 mg/L	Control site
	0400561 5 km d/s Chetwynd (Twidwell Bend)	Oct 3,11,17, 20,24,31	6	no increase measured	Objective met
Tot. Cl2 Res. 0.002 mg/L max	d/s Chetwynd	1988	0	chlorination not occurring	no need to check objective
Chlorophyll-a <50 mg/m2 av	E205235 100 m u/s Chetwynd	Oct 17	6	av = 3.7 mg/m2	Objective met
	0400561 5 km d/s Chetwynd (Twidwell Bend)	Oct 17	6	av = 31.8mg/m2	Objective met

TABLE 10 continued

PINE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <0.72 mg/L av 3.74 mg/L max at pH = 7.2 temp = 10 C	E206235 100 m u/s Chetwynd	Oct 3,11,17, 20,24,31	6	all <0.005mg/L	Control site
	0400561 5 km d/s Chetwynd (Twidwell Bend)	Oct 3,11,17, 20,24,31	6	av = 0.006mg/L max= 0.010mg/L	Objectives met
Nitrite-N <0.02 mg/L av 0.06 mg/L max	E206235 100 m u/s Chetwynd	Oct 3,11,17, 20,24,31	6	all <0.005mg/L	Control site
	0400561 5 km d/s Chetwynd (Twidwell Bend)	Oct 3,11,17 20,24,31	6	av < 0.005mg/L max< 0.005mg/L	Objectives met
Dissolved Oxygen 7.75 mg/L min	d/s Chetwynd	1988	0	no data collected	Objective not checked

TABLE 11

POUCE COUPE RIVER AND DAWSON CREEK WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <200/100 mL geometric mean (gm)	Pouce Coupe River: E206705 u/s mun. discharge	Apr 25,May2, 9,11,16	5	4 - 25 /100 mL gm =7.3/100 mL	Objective met
	E206706 600m d/s mun. dis.	Apr 25,May2, 9,11,16	5	8 - 48 /100 mL gm=17.1/100 mL	Objective met
	E206959 1.7km d/s DC confl	Apr 25,May2, 9,11,16	5	8 - 46 /100 mL gm=19.4/100 mL	Objective met
Turbidity max increase: 5 NTU or 10%	Pouce Coupe River: E206705 u/s mun. discharge	Apr 25-May16	5	27 - 56 NTU	Control site
	E206706 600m d/s mun. dis.	Apr 25-May16	5	increase = 15 - 36 NTU	Objective not met
	E206959 1.7km d/s DC confl	Apr 25-May16	5	increase = 16 - 115 NTU	Objective not met
	Dawson Creek: 0410034 u/s mun. discharge	Aug 25-Sep14	4	5.4 - 21 NTU	Control site
	0410039 2.5km d/s mun. dis	Aug 25	1	increase = 3 NTU	Objective met
		Sep 1-Sep 14	3	increase = 18.6-22.3 NTU	Objective not met
Susp. Solids max increase: 10 mg/L or 10%	Pouce Coupe River: E206705 u/s mun. discharge	Apr 25,May2, 9,11,16	5	32 - 86 mg/L	Control site

TABLE 11 continued

POUCE COUPE RIVER AND DAWSON CREEK WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Susp. Solids max increase: 10 mg/L or 10%	Pouce Coupe River: E206706 600m d/s mun. dis.	Apr 25 & May 16	2	increase = 7 mg/L	Objective met
		May 7,9,11	3	increase = 19 - 50 mg/L	Objective not met
	E206959 1.7km d/s DC confl	Apr 25-May11	4	increase = 27 - 106 mg/L	Objective not met
		May 6	1	increase = 5 mg/L	Objective met
	Dawson Creek: 0410034 u/s mun. discharge	Aug 25-Sep14	4	4 - 12 mg/L	Control site
	0410039 2.5km d/s mun. dis	Aug 25-Sep14	4	increase = 19 - 35 mg/L	Objective not met
		Apr 25-May16	5	61 - 102 mg/L	Indefinite result
Tot. Cl2 Res. <0.01mg/L max	Pouce Coupe River & Dawson Creek	1988	0	chlorination not occurring	no need to check obj.
Chlorophyll-a <50 mg/m2 av	Pouce Coupe River: E206705 u/s mun. discharge	Oct 19	6	av = 7.0 mg/m2	Objective met
	E206959 1.7km d/s DC confl	Oct 19	6	av = 282 mg/m2	Objective not met
	Dawson Creek	1988	0	no data	Obj not chkd
Ammonia-N <0.89 mg/L av 4.61 mg/L max at pH = 8.1 temp = 12 C	Pouce Coupe River: E206705 u/s mun. discharge	Apr 25,May2, 9,11,16	5	av = 0.018mg/L max= 0.030mg/L	Objectives met
	E206706 600m d/s mun. dis.	Apr 25,May2, 9,11,16	5	av = 0.043mg/L max= 0.103mg/L	Objectives met
	E206959 1.7km d/s DC confl	Apr 25,May2, 9,11,16	5	av = 0.079mg/L max= 0.193mg/L	Objectives met

TABLE 11 continued

POUCE COUPE RIVER AND DAWSON CREEK WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <0.89 mg/L av 4.61 mg/L max at pH = 8.1 temp = 12 C	Dawson Creek: 0410034 u/s mun. discharge	Aug 25-Sep14	3	0.028 - 0.087 mg/L	Max obj. met
	0410039 2.5km d/s mun. dis	Apr 25,May2, 9,11,16	5	av = 0.493mg/L max= 1.230mg/L	Objectives met
Nitrite-N 0.06 mg/L max	Pouce Coupe River: E206705 u/s mun. discharge	Apr 25-May16	5	max =0.006mg/L	Objective met
	E206706 600m d/s mun. dis.	Apr 25-May16	5	max <0.005mg/L	Objective met
	E206959 1.7km d/s DC confl	Apr 25-Sep14	8	max =0.009mg/L mg/L	Objective met
	Dawson Creek: 0410034 u/s mun. discharge	Aug 25-Sep14	3	max =0.019mg/L	Objective met
	0410039 2.5km d/s mun. dis	Apr 25-Sep14	7	max =0.031mg/L	Objective met
		May 2	1	max =0.067mg/L	Obj. not met
Dissolved Oxygen 5.5 mg/L min	Pouce Coupe River: E206705 u/s mun. discharge	Apr 25-May16	5	9 - 11 mg/L	Objective met
	E206706 600m d/s mun. dis.	Apr 25-May16	5	9 - 13 mg/L	Objective met
	E206959 1.7km d/s DC confl	Apr 25 Sep 6	8	7 - 12 mg/L	Objective met
	Dawson Creek: 0410034 u/s mun. discharge	Apr 25-Sep 6	3	8 - 11 mg/L	Objective met
	0410039 2.5km d/s mun. dis	Apr 25-Sep 1	6	9 - 11 mg/L	Obj. met
		Sep 6	1	4 mg/L	Obj. not met

TABLE 12

PEACE RIVER MAINSTEM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <100/100 mL 90 th perc. (np)	Peace River: 0400134 3.2km u/s Ft St Jn (N side)	Sep 28,Oct5, 13,18,25	5	1 - 4 /100 mL np = 3 /100 mL	Objective met
	0400135 3.2km u/s Ft St Jn (midstream)	Sep 28,Oct5, 13,18,25	5	<2 - 2 /100 mL np < 2 /100 mL	Objective met
	0400492 100m d/s Ft St Jn.	Sep 28,Oct5, 13,18,25	5	all <2 /100 mL np <2 /100 mL	Objective met
	0400138 u/s Petro-Can (N side)	Sep 28,Oct5, 13,18,24	5	all <2 /100 mL np <2 /100 mL	Objective met
	0400139 u/s Petro-Can (midstream)	Sep28,Oct5, 13,18,24	5	<2 - 6 /100 mL np = 5 /100 mL	Objective met
	0410054 100m d/s Petro-Can	Sep 28,Oct5, 13,18,25	5	<2 - 4 /100 mL np = 4/100 mL	Objective met
	0400142 5 km d/s Petro-Can (N side)	Sep 28,Oct5, 13,18	4	<2 - 100/100mL	Indefinite result
	0400143 5 km d/s Petro-Can (midstream)	Sep 28,Oct5, 13,18	4	<2 - 2 /100 mL	Indefinite result
Fecal Coliform <200/100 mL geometric mean (gm)	Beatton River: E207448 u/s Ft St Jn. dis.	Apr 25,May4, 10,17,24	5	20 - 170/100mL gm = 41 /100mL	Objective met
	E207449 d/s Ft St Jn. dis.	Apr 25,May4, 10,17,24	5	10 - 180/100mL gm = 22 /100mL	Objective met

TABLE 12 continued

PEACE RIVER MAINSTEM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity max increase: 5 NTU or 10%	Peace River: 0400134 3.2km u/s Ft St Jn (N side)	Sep 28,Oct5, 13,18,25	5	1.2 - 1.8 NTU	Control site
	0400135 3.2km u/s Ft St Jn (midstream)	Sep 28,Oct5, 13,25	4	1.1 - 1.8 NTU	Control site
	0400492 100m d/s Ft St Jn.	Sep 28,Oct5, 13,18,25	5	1.1 - 1.7 NTU no increase	Objective met
	0400138 u/s Petro-Can (N side)	Sep 28,Oct5, 13,18,24	5	1.2 - 2.0 NTU	Control site
	0400139 u/s Petro-Can (midstream)	Sep 28,Oct5, 13,18 24	5	1.0 - 1.8 NTU	Control site
	0410054 100m d/s Petro-Can	Sep 28,Oct5, 13,18	4	1.2 - 2.6 NTU max inc=1.5NTU	Objective met
	0400142 5 km d/s Petro-Can (N side)	Sep 28,Oct5, 13,18	4	1.2 - 1.7 NTU no increase	Objective met
	0400143 5 km d/s Petro-Can (midstream)	Sep 28,Oct5, 13,18	4	1.2 - 2.0 NTU	Objective met
	Beatton River: E207448 u/s Ft St Jn. dis.	Apr 25,May4, 10,17,24	5	280 - 2800 NTU	Control site
	E207449 d/s Ft St Jn. dis.	Apr 25,May10 17,24	4	300 - 2600 NTU max inc = 7%	Objective met
		May 4	1	increase = 17%	Obj. not met

TABLE 12 continued

PEACE RIVER MAINSTEM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids max increase: 10 mg/L or 10%	Peace River: 0400134 3.2km u/s Ft St Jn (N side)	Sep 28,Oct5, 13,18,25	5	<1 - 4 mg/L	Control site
	0400135 3.2km u/s Ft St Jn (midstream)	Sep 28,Oct5, 13,25	4	2 - 3 mg/L	Control site
	0400492 100m d/s Ft St Jn.	Sep 28,Oct5, 13,18,25	5	3 - 4 mg/L max inc=1 mg/L	Objective met
	0400138 u/s Petro-Can (N side)	Sep 28,Oct5 13,18,24	5	3 - 5 mg/L	Control site
	0400139 d/s Petro-Can (midstream)	Sep 28,Oct5, 13,18,24	5	2 - 4 mg/L	Control site
	0410054 100m d/s Petro-Can	Sep 28,Oct5, 13,18	4	3 - 10 mg/L max inc=6 mg/L	Objective met
	0400142 5 km d/s Petro-Can (N side)	Sep 28,Oct5, 13,18	4	2 - 5 mg/L no increase	Objective met
	0400143 5 km d/s Petro-Can (midstream)	Sep 28,Oct5, 13,18	4	3 - 6 mg/L max inc=1 mg/L	Objective met
	Beatton River: E207448 u/s Ft St Jn. dis.	Apr 25,May4, 10,17,24	5	631 - 6420mg/L	Control site
	E207449 d/s Ft St Jn. dis.	May 4,10,17, 24	4	max inc = 4%	Objective met
		Apr 25	1	increase = 12%	Obj. not met

TABLE 12 continued

PEACE RIVER MAINSTEM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Tot Cl2 Res. 0.002mg/L max	Peace River	1988	0	no data collected	Objective not checked
Diss Fluoride 1.0 mg/L max	Peace River: 0410054 100m d/s Petro-Can	Sep 28-Oct18	4	all <0.10 mg/L	Objective met
	0400142 5 km d/s Petro-Can (N side)	Sep 28-Oct18	4	all <0.10 mg/L	Objective met
	0400143 5 km d/s Petro-Can (midstream)	Sep 28-Oct18	4	all <0.10 mg/L	Objective met
WAD - CN <0.005mg/L av 0.01 mg/L max	Peace River: 0410054 100m d/s Petro-Can	Sep 28-Oct25	5	av =0.005 mg/L max=0.005 mg/L	Objectives met
	0400142 5 km d/s Petro-Can (N side)	Sep 28-Oct18	4	max<0.005 mg/L	Max obj. met
	0400143 5 km d/s Petro-Can (midstream)	Sep 28-Oct18	4	max=0.005 mg/L	Max obj. met
Chlorophyll-a 50 mg/m2 av	Peace River: 0400134 3.2km u/s Ft St Jn (N side)	Sep 28	3	av = 63.8mg/m2	Objective not met
	0400138 u/s Petro-Can (N side)	Sep 28	3	av = 110 mg/m2	Objective not met
	0410054 100m d/s Petro-Can	Sep 28	3	av = 128 mg/m2	Objective not met
	0400142 5 km d/s Petro-Can (N side)	Sep 28	3	av = 30.7mg/m2	Objective met
	Beatton River	1988	0	no data	Obj not chkd

TABLE 12 continued

PEACE RIVER MAINSTEM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <0.906mg/L av at pH = 8.1 temp = 9 C	Peace River: 0400134 3.2km u/s Ft St Jn (N side)	Sep 28,Oct5, 13,18,25	5	av = 0.006mg/L	Objective met
	0400135 3.2km u/s Ft St Jn (midstream)	Sep 28,Oct5, 13,18,25	5	av = 0.007mg/L	Objective met
	0400492 100m d/s Ft St Jn.	Sep 28,Oct5, 13,18,25	5	av = 0.007mg/L	Objective met
	0400138 u/s Petro-Can (N side)	Sep 28,Oct5, 13,18,24	5	av = 0.007mg/L	Objective met
	0400139 u/s Petro-Can (midstream)	Sep28,Oct5, 13,18,24	5	av = 0.006mg/L	Objective met
	0410054 100m d/s Petro-Can	Sep 28,Oct5, 13,18,25	5	av = 0.005mg/L	Objective met
	0400142 5 km d/s Petro-Can (N side)	Sep 28,Oct5, 13,18	4	<0.005 - 0.006 mg/L	Indefinite result
	0400143 5 km d/s Petro-Can (midstream)	Sep 28,Oct5, 13,18	4	<0.005 - 0.007 mg/L	Indefinite result
	Beatton River: E207448 u/s Ft St Jn. dis.	Apr 25,May4, 10,17,24	5	av = 0.032mg/L	Objective met
	E207449 d/s Ft St Jn. dis.	Apr 25,May4, 10,17,24	5	av = 0.049mg/L	Objective met
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Peace River: 0400134 3.2km u/s Ft St Jn (N side)	Sep 28,Oct5, 13,18,25	5	all <0.005 mg/L	Objectives met

TABLE 12 continued

PEACE RIVER MAINSTEM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Peace River: 0400135 3.2km u/s Ft St Jn (midstream)	Sep 28,Oct5, 13,18,25	5	all <0.005 mg/L	Objectives met
	0400492 100m d/s Ft St Jn.	Sep 28,Oct5, 13,18,25	5	all <0.005 mg/L	Objectives met
	0400138 u/s Petro-Can (N side)	Sep 28,Oct5, 13,18,24	5	all <0.005 mg/L	Objectives met
	0400139 u/s Petro-Can (midstream)	Sep28,Oct5, 13,18,24	5	all <0.005 mg/L	Objectives met
	0410054 100m d/s Petro-Can	Sep 28,Oct5, 13,18,25	5	all <0.005 mg/L	Objectives met
	0400142 5 km d/s Petro-Can (N side)	Sep 28,Oct5, 13,18	4	all <0.005 mg/L	Max obj. met
	0400143 5 km d/s Petro-Can (midstream)	Sep 28,Oct5, 13,18	4	all <0.005 mg/L	Max obj. met
	Beatton River: E207448 u/s Ft St Jn. dis.	Apr 25,May4, 10,17,24	5	av = 0.005mg/L max= 0.006mg/L	Objectives met
	E207449 d/s Ft St Jn. dis.	Apr 25,May4, 10,17,24	5	av = 0.006mg/L max= 0.006mg/L	Objectives met
Dissolved Oxygen 7.25 mg/L min	Peace River: 0400134 3.2km u/s Ft St Jn (N side)	Oct 18,25	2	8.5 - 9.2 mg/L	Objective met
	0400135 3.2km u/s Ft St Jn (midstream)	Oct 18,25	2	8.5 - 9.2 mg/L	Objective met

TABLE 12 continued

PEACE RIVER MAINSTEM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen 7.25 mg/L min	Peace River: 0400492 100m d/s Ft St Jn.	Oct 18,25	2	8.8 - 9.1 mg/L	Objective met
	0400138 u/s Petro-Can (N side)	Oct 18,24	2	8.8 - 9.0 mg/L	Objective met
	0400139 u/s Petro-Can (midstream)	Oct 18,24	2	8.8 - 9.0 mg/L	Objective met
	0410054 100m d/s Petro-Can	Oct 18	1	8.3 mg/L	Objective met
	0400142 5 km d/s Petro-Can (N side)	Oct 18	1	8.5 mg/L	Objective met
	0400143 5 km d/s Petro-Can (midstream)	Oct 18	1	8.5 mg/L	Objective met
	Beatton River: E207448 u/s Ft St Jn. dis.	Apr 25-May24	4	10 - 13 mg/L	Objective met
	E207449 d/s Ft St Jn. dis.	Apr 25-May24	4	11 - 12 mg/L	Objective met
Tot diss gas 110% max	Peace River	1988	0	no data collected	Objective not checked
pH 6.5 - 9.0	Peace River: 0400134 3.2km u/s Ft St Jn (N side)	Sep 28-Oct25	5	8.1 - 8.3	Objective met
	0400135 3.2km u/s Ft St Jn (midstream)	Sep 28-Oct25	5	8.1 - 8.3	Objective met
	0400492 100m d/s Ft St Jn.	Sep 28-Oct25	5	8.1 - 8.3	Objective met

TABLE 12 continued

PEACE RIVER MAINSTEM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 9.0	Peace River: 0400138 u/s Petro-Can (N side)	Sep 28-Oct24	5	8.0 - 8.3	Objective met
	0400139 u/s Petro-Can (midstream)	Sep 28-Oct24	5	8.1 - 8.3	Objective met
	0410054 100m d/s Petro-Can	Sep 28-Oct18	4	8.1 - 8.3	Objective met
6.5 - 9.0	0400142 5 km d/s Petro-Can (N side)	Sep 28-Oct18	4	8.1 - 8.3	Objective met
	0400143 5 km d/s Petro-Can (midstream)	Sep 28-Oct18	4	8.1 - 8.2	Objective met
	Beatton River: E207448 u/s Ft St Jn. dis.	Apr 25-May24	5	7.5 - 7.9	Objective met
	E207449 d/s Ft St Jn. dis.	Apr 25-May24	5	7.5 - 7.8	Objective met
Temperature 1 C max increase	Peace River: 0400134 3.2km u/s Ft St Jn (N side)	Oct 18 & 25	2	9 & 8 C	Control site
	0400135 3.2km u/s Ft St Jn (midstream)	Oct 18 & 25	2	9 & 8 C	Control site
	0400492 100m d/s Ft St Jn.	Oct 18 & 25	2	9 & 8 C	Objective met
	0400138 u/s Petro-Can (N side)	Oct 18 & 24	2	9 & 8 C	Control site

TABLE 12 continued

PEACE RIVER MAINSTEM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Temperature 1 C	Peace River: 0400139 u/s Petro-Can (midstream)	Oct 18 & 24	2	9 & 8 C	Control site
	0410054 100m d/s Petro-Can	Oct 18	1	9 C	Objective met
	0400142 5 km d/s Petro-Can (N side)	Oct 18	1	9 C	Objective met
	0400143 5 km d/s Petro-Can (midstream)	Oct 18	1	9 C	Objective met
Tot Copper <0.004mg/L av 0.011mg/L max at hardness 93 mg/L or 20% increase	Peace River: 0400134 3.2km u/s Ft St Jn (N side)	Sep 28,Oct5, 13,18,25	5	av = 0.002mg/L max= 0.003mg/L	Control site
	0400135 3.2km u/s Ft St Jn (midstream)	Sep 28,Oct5, 13,18,25	5	av = 0.002mg/L max= 0.005mg/L	Control site
	0400492 100m d/s Ft St Jn.	Sep 28,Oct5, 13,18,25	5	av = 0.002mg/L max= 0.003mg/L	Objectives met
	0400138 u/s Petro-Can (N side)	Sep 28,Oct5, 13,24	4	0.001 - 0.002 mg/L	Control site
	0400139 u/s Petro-Can (midstream)	Sep28,Oct5, 13,24	4	0.001 - 0.005 mg/L	Control site
	0410054 100m d/s Petro-Can	Oct 5-Oct 25	4	max= 0.003mg/L	Max obj. met
		Sep 28-Oct25 Sep 28	5 1	av = 0.005mg/L max= 0.015mg/L	Av not met Max not met
	0400142 5 km d/s Petro-Can (N side)	Sep 28,Oct5, 13,18	4	0.001 - 0.007 mg/L	Max obj. met

TABLE 12 continued

PEACE RIVER MAINSTEM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Tot Copper <0.002mg/L av 0.011mg/L max at hardness 93 mg/L or 20% increase	Peace River: 0400143 5 km d/s Petro-Can (midstream)	Sep 28,Oct5, 13,18	4	0.001 - 0.002 mg/L	Max obj. met
Chlorophenols (tri + tetra + penta) 0.0002 mg/L max	Peace River: 0410054 100m d/s Petro-Can	Sep 28-Oct25	5	<0.0001 mg/L (tetra+penta)	Indefinite result
	0400142 5 km d/s Petro-Can (N side)	Oct 5,13,18	3	<0.0001 mg/L (tetra+penta)	Indefinite result
	0400143 5 km d/s Petro-Can (midstream)	Oct 5,13,18	3	<0.0001 mg/L (tetra+penta)	Indefinite result
Total Chromium 0.002mg/L max or 20% increase	Peace River: 0400134 3.2km u/s Ft St Jn (N side)	Sep 28,Oct5, 13,18,25	5	all <0.005mg/L	Control site
	0400135 3.2km u/s Ft St Jn (midstream)	Sep 28,Oct5, 13,18	4	all <0.005mg/L	Control site
		Oct 25	1	0.005 mg/L	Control site
	0400492 100m d/s Ft St Jn.	Sep 28,Oct5, 13,18	4	all <0.005mg/L	Indef result
		Oct 25	1	<0.005 mg/L	Obj. met
	0400138 u/s Petro-Can (N side)	Sep 28,Oct5, 13,24	4	all <0.005mg/L	Control site
	0400139 u/s Petro-Can (midstream)	Sep28,Oct5, 13,24	4	all <0.005mg/L	Control site

TABLE 12 continued

PEACE RIVER MAINSTEM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE		VALUE	
Total Chromium 0.002mg/L max or 20% increase	Peace River: 0410054 100m d/s Petro-Can	Sep 28	1	0.005 mg/L	Obj. not met
		Oct 5-Oct 25	4	all <0.005mg/L	Indef result
	0400142 5 km d/s Petro-Can (N side)	Sep 28	1	0.005 mg/L	Obj. not met
		Oct 5,13,18	3	all <0.005mg/L	Indef result
	0400143 5 km d/s Petro-Can (midstream)	Sep 28	1	0.016 mg/L	Obj. not met
		Oct 5,13,18	3	all <0.005mg/L	Indef result
Total Lead <0.003mg/L av 0.007mg/L max at hardness 93 mg/L or 20% increase	Peace River: 0400134 3.2km u/s Ft St Jn (N side)	Sep 28,Oct5, 13,18,25	5	av = 0.001mg/L max= 0.001mg/L	Control site
	0400135 3.2km u/s Ft St Jn (midstream)	Sep 28,Oct5, 13,18,25	5	av = 0.001mg/L max= 0.001mg/L	Control site
	0400492 100m d/s Ft St Jn.	Sep 28,Oct5, 13,18,25	5	av = 0.001mg/L max= 0.001mg/L	Objectives met
	0400138 u/s Petro-Can (N side)	Sep 28,Oct5, 13,24	4	<0.001 - 0.001 mg/L	Control site
	0400139 u/s Petro-Can (midstream)	Sep28,Oct5, 13,24	4	<0.001 - 0.001 mg/L	Control site
	0410054 100m d/s Petro-Can	Sep 28,Oct5, 13,18,25	5	av < 0.001mg/L max= 0.001mg/L	Objectives met
	0400142 5 km d/s Petro-Can (N side)	Sep 28,Oct5, 13,18	4	<0.001 - 0.001 mg/L	Max obj. met
	0400143 5 km d/s Petro-Can (midstream)	Sep 28,Oct5, 13,18	4	<0.001 - 0.001 mg/L	Max obj. met

TABLE 12 continued

PEACE RIVER MAINSTEM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Nickel 0.065mg/L max at hardness 93 mg/L	Peace River: 0400134 3.2km u/s Ft St Jn (N side)	Sep 28,Oct5, 13,18,25	5	<0.001 - 0.003 mg/L	Objective met
	0400135 3.2km u/s Ft St Jn (midstream)	Sep 28,Oct5, 13,18,25	5	<0.001 - 0.013 mg/L	Objective met
	0400492 100m d/s Ft St Jn.	Sep 28,Oct5, 13,18,25	5	all <0.005mg/L	Objective met
	0400138 u/s Petro-Can (N side)	Sep 28,Oct5, 13,24	4	all <0.005mg/L	Objective met
	0400139 u/s Petro-Can (midstream)	Sep28,Oct5, 13,24	4	all <0.005mg/L	Objective met
	0410054 100m d/s Petro-Can	Sep 28,Oct5, 13,18	4	<0.005 - 0.005 mg/L	Objective met
	0400142 5 km d/s Petro-Can (N side)	Sep 28,Oct5, 13,18	4	<0.005 - 0.005 mg/L	Objective met
	0400143 5 km d/s Petro-Can (midstream)	Sep 28,Oct5, 13,18	4	<0.005 - 0.016 mg/L	Objective met
Total Zinc 0.03 mg/L max or 20% increase	Peace River: 0400134 3.2km u/s Ft St Jn (N side)	Sep 28,Oct5, 13,25	4	<0.005 - 0.016 mg/L	Control site
		Oct 18	1	0.040 mg/L	
	0400135 3.2km u/s Ft St Jn (midstream)	Sep 28,Oct5, 13,25	4	<0.005 - 0.014 mg/L	Control site
		Oct 18	1	0.090 mg/L	
	0400492 100m d/s Ft St Jn.	Sep 28,Oct5, 13,18	4	<0.005 - 0.016 mg/L	Objective met

TABLE 12 continued

PEACE RIVER MAINSTEM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Zinc 0.03 mg/L max or 20% increase	Peace River: 0400138 u/s Petro-Can (N side)	Sep 28,Oct5, 13,24	4	<0.005 - 0.013 mg/L	Control site
	0400139 u/s Petro-Can (midstream)	Sep28,Oct5, 13,24	4	<0.005 - 0.017 mg/L	Control site
	0410054 100m d/s Petro-Can	Sep 28,Oct5, 13	3	<0.005 - 0.011	Objective met
		Oct 18	1	0.040 mg/L	Objective
	0400142 5 km d/s Petro-Can (N side)	Sep 28,Oct5, 13,18	4	<0.005 - 0.016 mg/L	Objective met
	0400143 5 km d/s Petro-Can (midstream)	Sep 28,Oct5, 13,18	4	<0.005 - 0.011 mg/L	Objective met
Phenol 0.002 mg/L av or 20% increase	Peace River: 0410054 100m d/s Petro-Can	Sep 28,Oct5, 13,18	4	all <0.002mg/L	Indefinite result
	0400142 5 km d/s Petro-Can (N side)	Sep 28,Oct5, 13,18	4	<0.002 - 0.005 mg/L	Indefinite result
	0400143 5 km d/s Petro-Can (midstream)	Sep 28,Oct5, 13,18	4	all <0.002mg/L	Indefinite result
Sulfide 0.002mg/L max or 20% increase	Peace River: 0410054 100m d/s Petro-Can	Sep 28,Oct5, 13,18	4	all <0.05 mg/L	Indefinite result
	0400142 5 km d/s Petro-Can (N side)	Sep 28,Oct5, 13,18	4	all <0.05 mg/L	Indefinite result

TABLE 12 continued

PEACE RIVER MAINSTEM WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Sulfide 0.002mg/L max or 20% increase	Peace River: 0400143 5 km d/s Petro-Can (midstream)	Sep 28,Oct5, 13,18	4	all <0.05 mg/L	Indefinite result
2,4-D (ester) 0.004mg/L max	Peace River: 0410054 100m d/s Petro-Can	Sep 28	1	<0.001 mg/L	Objective met
	0400142 5 km d/s petro-Can (N side)	Sep 28	1	<0.001 mg/L	Objective met
	0400143 5 km d/s Petro-Can (midstream)	Sep 28	1	<0.001 mg/L	Objective met

TABLE 13

WILLIAMS LAKE WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <200/100 mL geo mean (gm) <400/100 mL 90th perc(np) at beaches	Scout Island Beach	Aug 3-Sep 1	6	gm = 15/100 mL np = 43/100 mL	Objectives met
<10/100 mL 90th perc(np) at water intakes	water intakes	1988	0	no data collected	Objective not checked
Turbidity	lake centre 0603019	Jul 19-Aug10	2	1.8 - 4.0 NTU	Max obj. met
<1 NTU av 5 NTU max		Aug 17-Aug24	2	7.8 - 8.2 NTU	Max obj. not met
Total P <0.020mg/L av at spring overturn	lake centre 0603019	Apr 22 0-15 m depth	6	0.046 - 0.053 mg/L av = 0.050mg/L	Objective not met
Chlorophyll-a <0.005mg/L av	lake centre 0603019	Jul 19-Aug24	2	av = 0.015mg/L	Objective not met
Dissolved Oxygen	lake centre 0603019 5m above sediment	Mar 8	1	3 mg/L	Obj. not met
		Apr 21	1	8 mg/L	Obj. met
4 mg/L min 5m above sed.		Jul 19	1	0.2 mg/L	Obj. not met
Water Clarity	lake centre 0603019	Jun 12-Jul24	7	0.75 - 1.0 m	Obj. not met
1.2 m min Secchi reading		Aug 3-Aug 17	3	1.25 - 2.0 m	Obj. met
		Aug 24-Sep12	4	0.5 - 1.0 m	Obj. not met
		Sep 15-Sep25	2	1.25 m	Obj. met
		Jun 12-Sep25	16	av = 1.1 m	Obj. not met

TABLE 14

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <100/100 mL 90th perc. (np)	Bonaparte River: E207300 u/s 57 Mile Creek	Jan 24-Feb21	5	np <2/100 mL	Obj. met
		May 1-May 30	5	np = 20/100 mL	Obj. met
	0600017 u/s Clinton Creek	Jan 24-Feb21	5	np = 50/100 mL	Obj. met
		May 1-May 30	5	np = 45/100 mL	Obj. met
	E206646 d/s Clinton Creek	Jan 24-Feb21	5	np = 120/100mL	Obj. not met
		May 1-May 30	5	np = 45/100 mL	Obj. met
	E207296 u/s Loon Creek	Jan 25-Feb22	5	np = 34/100 mL	Obj. met
		May 2-May 30	5	np = 70/100 mL	Obj. met
	0600186 u/s Hat Creek	Jan 25-May22	5	np = 6/100 mL	Obj. met
		May 2-May 30	5	np = 55/100 mL	Obj. met
	E207291 d/s Hat Creek	Jan 25-Feb22	5	np = 6/100 mL	Obj. met
		May 2-May 30	5	np = 40/100 mL	Obj. met
	E207289 u/s Cache Creek	Jan 25-Feb22	5	np <3/100 mL	Obj. met
		May 2-May 30	5	np = 30/100 mL	Obj. met
	E207290 d/s Cache Creek	Jan 25-Feb22	5	np = 3/100 mL	Obj. met
		May 2-May 30	5	np = 70/100 mL	Obj. met
	0600506 u/s Cache Cr. STP	Jan 25-Feb22	5	np = 4/100 mL	Obj. met
		May 2-May 30	5	np = 40/100 mL	Obj. met
	0600508 d/s Cache Cr. STP	Jan 25-Feb22	5	np =1400/100mL	Obj. not met
		May 2-May 30	5	np = 180/100mL	Obj. not met
	0600329 at the mouth	Jan 25-Feb22	5	np = 270/100mL	Obj. not met
		May 2-May 30	5	np = 60/100 mL	Obj. met

TABLE 14 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <100/100 mL 90th perc. (np)	Clinton Creek: E206666 u/s Clinton	Jan 24-Feb21	5	np = 5/100 mL	Obj. met
		May 1-May 30	5	np = 12/100 mL	Obj. met
	0600503 u/s Clinton STP	Jan 24-Feb21	5	np = 150/100mL	Obj. not met
		May 1-May 30	5	np = 65/100 mL	Obj. met
	0600258 d/s Clinton STP	Jan 24-Feb21	5	np =1700/100mL	Obj. not met
		May 1-May 30	5	np = 50/100 mL	Obj. met
	0600505 3km d/s Clint STP	Jan 24-Feb21	5	np = 800/100mL	Obj. not met
		May 1-May 30	5	np = 180/100mL	Obj. not met
	0600009 at the mouth	Jan 24-Feb21	5	np = 240/100mL	Obj. not met
		May 1-May 30	5	np = 115/100mL	Obj. not met
	Loon Creek: E207295 d/s Loon Lake	May 2-May 30	5	np = 30/100 mL	Objective met
	0600297 u/s hatchery	Jan 25-Feb22	5	np = 8/100 mL	Obj. met
		May 2-May 30	5	np = 100/100mL	Obj. met
	E206110 d/s hatchery	Jan 25-Feb22	5	np = 4/100 mL	Obj. met
		May 2-May30	5	np = 90/100 mL	Obj. met
	0600336 at the mouth	Jan 25-Feb22	5	np <2/100 mL	Obj. met
		May 2-May 30	5	np = 100/100mL	Obj. met

TABLE 14 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc. at water intakes <200/100 mL geom. mean at beaches	Loon Lake	1988	0	no data collected	Objective not checked
Suspended Solids max increase: 10 mg/L or 10%	Bonaparte River: E207300 u/s 57 Mile Creek	May 9-May 30	4	2 - 4 mg/L	Control site
	0600017 u/s Clinton Creek	May 9-May 30	4	max increase = 1 mg/L	Objective met
	E206646 d/s Clinton Creek	May 9-May 30	4	max increase = 3 mg/L	Objective met
	E207296 u/s Loon Creek	May 9-May 30	4	max increase = 6 mg/L	Objective met
	0600186 u/s Hat Creek	May 9-May 24	3	inc=19-22 mg/L	Obj. not met
		May 30	1	inc = 8 mg/L	Obj. met
	E207291 d/s Hat Creek	May 9-May 24	3	inc=14-16 mg/L	Obj. not met
		May 30	1	inc = 8 mg/L	Obj. met
	E207289 u/s Cache Creek	May 9-May 24	3	inc=24-28 mg/L	Obj. not met
		May 30	1	inc = 9 mg/L	Obj. met
	E207290 d/s Cache Creek	May 9-May 24	3	inc=19-26 mg/L	Obj. not met
		May 30	1	inc = 10 mg/L	Obj. met
	0600506 u/s Cache Cr. STP	May 9-May 24	3	inc=21-28 mg/L	Obj. not met
		May 30	1	inc = 9 mg/L	Obj. met

TABLE 14 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended Solids max increase: 10 mg/L or 10%	Bonaparte River: 0600508 d/s Cache Cr. STP	May 9-May 24	3	inc=20-29 mg/L	Obj. not met
		May 30	1	inc = 10 mg/L	Obj. met
	0600329 at the mouth	May 9-May 30	4	inc=21-36 mg/L	Objective not met
	Clinton Creek: E206666 u/s Clinton	May 9-May 30	4	1 - 3 mg/L	Control site
	0600503 u/s Clinton STP	May 9-May 24	2	inc = 3-6 mg/L	Obj. met
		May 16	1	inc = 13 mg/L	Obj. not met
	0600258 d/s Clinton STP	May 9-May 16	2	inc=13-15 mg/L	Obj. not met
		May 24	1	inc = 3 mg/L	Obj. met
	0600505 3km d/s Clint STP	May 16-May24	2	inc = 10 mg/L	Obj. met
		May 9-May 30	2	inc=15-19 mg/L	Obj. not met
	0600009 at the mouth	May 9-May 30	4	max increase = 8 mg/L	Objective met
	Loon Creek: E207295 d/s Loon Lake	May 9-May 30	4	<1 - 2 mg/L	Control site
	0600297 u/s hatchery	May 9-May 30	4	max increase = 9 mg/L	Objective met
	E206110 d/s hatchery	May 9-May 30	4	max increase = 7 mg/L	Objective met
	0600336 at the mouth	May 9-May 30	4	max increase = 8 mg/L	Objective met
Turbidity max increase: 5 NTU or 10%	Bonaparte River: E207300 u/s 57 Mile Creek	Jan 24 May30	10	0.4 - 1.0 NTU	Control site

TABLE 14 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity max increase: 5 NTU or 10%	Bonaparte River: 0600017 u/s Clinton Creek	Jan 24-May30	10	max increase = 0.4 NTU	Objective met
	E206646 d/s Clinton Creek	Jan 24-May30	10	max increase = 4.6 NTU	Objective met
	E207296 u/s Loon Creek	Jan 24-May30	10	max increase < 1.7 NTU	Objective met
	0600186 u/s Hat Creek	Jan 25-Feb22	5	inc < 1.4 NTU	Obj. met
		May 9-May 30	4	max inc=2.9NTU	Obj. met
	E207291 d/s Hat Creek	Jan 25-May 2	6	inc < 3.0 NTU	Obj. met
		May 9-May 30	4	max inc=3.4NTU	Obj. met
	E207289 u/s Cache Creek	Jan 25-May30	9	max inc=4.4NTU	Obj. met
		May 16	1	inc = 5.4 NTU	Obj. not met
	E207290 d/s Cache Creek	Jan 25-May 2	6	inc < 3.5 NTU	Obj. met
		May 9-May 30	4	max inc=4.8NTU	Obj. met
	0600506 u/s Cache Cr. STP	Jan 25-May30	9	max inc=4.4NTU	Obj. met
		May 16	1	inc = 5.2 NTU	Obj. not met
	0600508 d/s Cache Cr. STP	Jan 25-May30	9	max inc=4.4NTU	Obj. met
		May 16	1	inc = 5.7 NTU	Obj. not met
	0600329 at the mouth	Jan 20-Mar18	8	inc < 5 NTU	Obj. met
		May 9-May 24	3	max inc=7.1NTU	Obj. not met
		May 30	1	inc = 4.2 NTU	Obj. met
	Clinton Creek: E206666 u/s Clinton	Jan 24-May30	10	0.4 - 1.8 NTU	Control site

TABLE 14 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity max increase: 5 NTU or 10%	Clinton Creek: 0600503 u/s Clinton STP	Jan 24-May30	8	max inc=3.7NTU	Obj. met
		Feb 14	1	inc = 8.3 NTU	Obj. not met
	0600258 d/s Clinton STP	Jan 24-May24	7	max inc=4.1NTU	Obj. met
		Feb 14-Feb21	2	max inc=7.4NTU	Obj. not met
	0600505 3km d/s Clint STP	Jan 24-May24	8	max inc=4.7NTU	Obj. met
		May 1,30	2	inc=7.1,9.5NTU	Obj. not met
	0600009 at the mouth	Jan 24-May30	9	max inc=4.9NTU	Obj. met
		Feb 14	1	inc = 8.0 NTU	Obj. not met
	Loon Creek: E207295 d/s Loon Lake	May 2-May 30	5	0.3 - 0.9 NTU	Control site
	0600297 u/s hatchery	May 2-May 30	5	max increase = 1.8 NTU	Objective met
	E206110 d/s hatchery	May 2-May 30	5	max increase = 1.7 NTU	Objective met
	0600336 at the mouth	May 2-May 30	5	max increase = 2.0 NTU	Objective met
Diss. Solids 500 mg/L max	Clinton Creek: 0600503 u/s Clinton STP	Aug 4	1	509 mg/L	Objective not met
	0600258 d/s Clinton STP	Aug 4	1	623 mg/L	Objective not met
	0600505 3km d/s Clint STP	Aug 4	1	676 mg/L	Objective not met
	0600009 at the mouth	Aug 4	1	502 mg/L	Objective not met

TABLE 14 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Tot. Cl2 Res.	Bonaparte River Clinton Creek	1988	0	chlorination not occurring	no need to check obj.
Ammonia-N <0.37 mg/L av 1.93 mg/L max at pH = 8.5 temp = 10 C	Bonaparte River: E207300 u/s 57 Mile Creek	Jan 24-Feb21	5	av = 0.009mg/L max= 0.014mg/L	Objectives met
		May 1-May 30	5	all <0.005mg/L	Objctvs. met
	0600017 u/s Clinton Creek	Jan 24-Feb21	5	av = 0.029mg/L max= 0.084mg/L	Objectives met
		May 1-May 30	5	av < 0.005mg/L max= 0.005mg/L	Objectives met
	E206646 d/s Clinton Creek	Jan 24-Feb21	5	av = 0.090mg/L max= 0.284mg/L	Objectives met
		May 1-May 30	5	all <0.005mg/L	Objctvs. met
	E207296 u/s Loon Creek	Jan 25-Feb22	5	av = 0.092mg/L max= 0.260mg/L	Objectives met
		May 2-May 30	5	av = 0.008mg/L max= 0.017mg/L	Objectives met
	0600186 u/s Hat Creek	Jan 25-May22	5	av = 0.021mg/L max= 0.049mg/L	Objectives met
		May 2-May 30	5	av = 0.007mg/L max= 0.012mg/L	Objectives met
	E207291 d/s Hat Creek	Jan 25-Feb22	5	av = 0.017mg/L max= 0.029mg/L	Objectives met
		May 2-May 30	5	av = 0.007mg/L max= 0.010mg/L	Objectives met
	E207289 u/s Cache Creek	Jan 25-Feb22	5	av = 0.013mg/L max= 0.017mg/L	Objectives met
		May 2-May 30	5	av = 0.009mg/L max= 0.020mg/L	Objectives met

TABLE 14 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <0.37 mg/L av 1.93 mg/L max at pH = 8.5 temp = 10 C	Bonaparte River: E207290 d/s Cache Creek	Jan 25-Feb22	5	av = 0.011mg/L max= 0.015mg/L	Objectives met
		May 2-May 30	5	av = 0.007mg/L max= 0.009mg/L	Objectives met
	0600506 u/s Cache Cr. STP	Jan 25-Feb22	5	av = 0.010mg/L max= 0.015mg/L	Objectives met
		May 2-May 30	5	av = 0.007mg/L max= 0.012mg/L	Objectives met
	0600508 d/s Cache Cr. STP	Jan 25-Feb22	5	av = 0.062mg/L max= 0.104mg/L	Objectives met
		May 2-May 30	5	av = 0.014mg/L max= 0.030mg/L	Objectives met
	0600329 at the mouth	Jan 20-Feb22	6	av = 0.097mg/L max= 0.069mg/L	Objectives met
		May 2-May 30	5	av = 0.007mg/L max= 0.008mg/L	Objectives met
	Clinton Creek: E206666 u/s Clinton	Jan 24-Feb21	5	all <0.005mg/L	Objctvs. met
		May 1-May 30	5	av = 0.006mg/L max= 0.007mg/L	Objectives met
	0600503 u/s Clinton STP	Jan 24-Feb21	5	av = 0.135mg/L max= 0.343mg/L	Objectives met
		May 1-May 30	5	av < 0.005mg/L max= 0.006mg/L	Objectives met
	0600258 d/s Clinton STP	Jan 24-Feb21	5	av = 0.009mg/L max= 0.016mg/L	Objectives met
		May 1-May 30	5	av = 0.012mg/L max= 0.031mg/L	Objectives met

TABLE 14 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <0.37 mg/L av 1.93 mg/L max at pH = 8.5 temp = 10 C	Clinton Creek: 0600505 3km d/s Clint STP	Jan 24-Feb21	5	av = 0.315mg/L max= 0.925mg/L	Objectives met
		May 1-May 30	5	av = 0.041mg/L max= 0.069mg/L	Objectives met
	0600009 at the mouth	Jan 24-Feb21	5	av = 0.184mg/L max= 0.617mg/L	Objectives met
		May 1-May 30	5	av = 0.014mg/L max= 0.023mg/L	Objectives met
	Loon Creek: E207295 d/s Loon Lake	May 2-May 30	5	av = 0.021mg/L max= 0.037mg/L	Objectives met
	0600297 u/s hatchery	Jan 25-Feb22	5	av = 0.011mg/L max= 0.027mg/L	Objectives met
		May 2-May 30	5	av = 0.010mg/L max= 0.015mg/L	Objectives met
	E206110 d/s hatchery	Jan 25-Feb22	5	av = 0.032mg/L max= 0.042mg/L	Objectives met
		May 2-May30	5	av = 0.007mg/L max= 0.008mg/L	Objectives met
	0600336 at the mouth	Jan 25-Feb22	5	av = 0.010mg/L max= 0.016mg/L	Objectives met
		May 2-May 30	5	av < 0.005mg/L max= 0.007mg/L	Objectives met
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Bonaparte River: E207300 u/s 57 Mile Creek	Jan 24-Feb21	5	all <0.005mg/L	Objctvs. met
		May 1-May 30	5	all <0.005mg/L	Objctvs. met

TABLE 14 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Bonaparte River: 0600017 u/s Clinton Creek	Jan 24-Feb21	5	all <0.005mg/L	Objctvs. met
		May 1-May 30	5	all <0.005mg/L	Objctvs. met
	E206646 d/s Clinton Creek	Jan 24-Feb21	5	av = 0.007mg/L max= 0.011mg/L	Objectives met
		May 1-May 30	5	all <0.005mg/L	Objctvs. met
	E207296 u/s Loon Creek	Jan 25-Feb22	5	av = 0.006mg/L max= 0.008mg/L	Objectives met
		May 2-May 30	5	all <0.005mg/L	Objctvs. met
	0600186 u/s Hat Creek	Jan 25-May22	5	av < 0.005mg/L max= 0.005mg/L	Objectives met
		May 2-May 30	5	all <0.005mg/L	Objctvs. met
	E207291 d/s Hat Creek	Jan 25-Feb22	5	all <0.005mg/L	Objctvs. met
		May 2-May 30	5	all <0.005mg/L	Objctvs. met
	E207289 u/s Cache Creek	Jan 25-Feb22	5	all <0.005mg/L	Objctvs. met
		May 2-May 30	5	all <0.005mg/L	Objctvs. met
	E207290 d/s Cache Creek	Jan 25-Feb22	5	all <0.005mg/L	Objctvs. met
		May 2-May 30	5	all <0.005mg/L	Objctvs. met
	0600506 u/s Cache Cr. STP	Jan 25-Feb22	5	all <0.005mg/L	Objctvs. met
		May 2-May 30	5	all <0.005mg/L	Objctvs. met
	0600508 d/s Cache Cr. STP	Jan 25-Feb22	5	av = 0.025mg/L max= 0.048mg/L	Obj. not met Max Obj. met
		May 2-May 30	5	av < 0.005mg/L max= 0.008mg/L	Objectives met
	0600329 at the mouth	Jan 25-Feb22	6	av = 0.011mg/L max= 0.018mg/L	Objectives met

TABLE 14 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Bonaparte River: 0600329 at the mouth	May 2-May 30	5	all <0.005mg/L	Objectives met
	Clinton Creek: E206666 u/s Clinton	Jan 24-Feb21	5	all <0.005mg/L	Objctvs. met
		May 1-May 30	5	all <0.005mg/L	Objctvs. met
	0600503 u/s Clinton STP	Jan 24-Feb21	5	av = 0.008mg/L max= 0.013mg/L	Objectives met
		May 1-May 30	4	max <0.005mg/L	Max obj. met
	0600258 d/s Clinton STP	Jan 24-Feb21	5	av = 0.009mg/L max= 0.016mg/L	Objectives met
		May 1-May 30	5	av = 0.012mg/L max= 0.031mg/L	Objectives met
	0600505 3km d/s Clint STP	Jan 24-Feb21	5	av = 0.014mg/L max= 0.022mg/L	Objectives met
		May 1-May 30	5	av = 0.011mg/L max= 0.013mg/L	Objectives met
	0600009 at the mouth	Jan 24-Feb21	5	av = 0.010mg/L max= 0.016mg/L	Objectives met
		May 1-May 30	5	av < 0.005mg/L max= 0.005mg/L	Objectives met
	Loon Creek: E207295 d/s Loon Lake	May 2-May 30	5	av < 0.005mg/L max= 0.005mg/L	Objective met
	0600297 u/s hatchery	Jan 25-Feb22	5	all <0.005mg/L	Objctvs. met
		May 2-May 30	5	all <0.005mg/L	Objctvs. met

TABLE 14 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Loon Creek: E206110 d/s hatchery	Jan 25-Feb22	5	all <0.005mg/L	Objctvs. met
		May 2-May30	5	all <0.005mg/L	Objctvs. met
	0600336 at the mouth	Jan 25-Feb22	5	av < 0.005mg/L max= 0.005mg/L	Objectives met
		May 2-May 30	5	all <0.005mg/L	Objctvs. met
Chlorophyll-a <50 mg/m2 av	Bonaparte River: E207300 u/s 57 Mile Creek	Aug 4	6	av = 27 mg/m2	Objective met
	0600508 d/s Cache Cr. STP	Aug 15	6	av = 107 mg/m2	Objective not met
	0600329 at the mouth	Jul 19	5	av = 87 mg/m2	Obj. not met
		Aug 15	6	av = 101 mg/m2	Obj. not met
		Sep 29	6	av = 110 mg/m2	Obj. not met
Chlorophyll-a <100 mg/m2 av or 20% increase	Clinton Creek: 0600503 u/s Clinton STP	Aug 4	6	av = 98 mg/m2	Objective met
	0600258 d/s Clinton STP	Aug 4	6	av = 66 mg/m2	Objective met
	0600009 at the mouth	Aug 4	5	av = 106 mg/m2	Objective not met
Diss. Oxygen 7.75 - 11.2 mg/L min depending on fish egg stage	Bonaparte River 0600329 at the mouth	Jan 1-Apr 18	4	10.6-15.0 mg/L	Objective met
		Jul 19-Dec21	5	10.5-14.6 mg/L	Obj. met
	Clinton & Loon Cks	1988	0	no data	Obj not chkd
Diss. Oxygen 5 mg/L min, 5m above bottom	Loon Lake 0603050 at deepest point	Feb 15	1	6.0 mg/L at 5m above bottom	Objective met

TABLE 14 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 8.5	Bonaparte River: E207300 u/s 57 Mile Creek	Jan 24-May30	10	8.1 - 8.4	Objective met
	0600017 u/s Clinton Creek	Jan 24-May30	10	8.0 - 8.3	Objective met
	E206646 d/s Clinton Creek	Jan 24-May30	10	8.1 - 8.4	Objective met
	E207296 u/s Loon Creek	Jan 25-May30	10	8.2 - 8.4	Objective met
	0600186 u/s Hat Creek	Jan 25-May30	10	8.1 - 8.4	Objective met
	E207291 d/s Hat Creek	Jan 25-May30	10	8.1 - 8.5	Objective met
	E207289 u/s Cache Creek	Jan 25-May30	10	8.2 - 8.5	Objective met
	Clinton Creek: E206666 u/s Clinton	Jan 24-May30	9	8.1 - 8.4	Obj. met
		May 16	1	8.6	Obj. not met
	0600503 u/s Clinton STP	Jan 24-Aug 4	9	8.2 - 8.4	Obj. met
		May 16	1	8.6	Obj. not met
	0600258 d/s Clinton STP	Jan 24-Aug 4	10	8.1 - 8.5	Objective met
	0600505 3km d/s Clint STP	Jan 24-May30	10	8.1 - 8.5	Obj. met
		Aug 4	1	8.6	Obj. not met
	0600009 at the mouth	Jan 24-Aug 4	10	8.3 - 8.5	Obj. met
		May 16	1	8.6	Obj. not met

TABLE 14 continued

BONAPARTE RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 9.0	Bonaparte River: E207290 d/s Cache Creek	Jan 25-May30	10	8.1 - 8.4	Objective met
	0600506 u/s Cache Cr. STP	Jan 25-Aug15	11	8.1 - 8.5	Objective met
	0600508 d/s Cache Cr. STP	Jan 25-Aug15	11	8.1 - 8.5	Objective met
	0600329 at the mouth	Jan 20-Oct24	18	8.3 - 8.9	Objective met
	Loon Creek: E207295 d/s Loon Lake	May 2-May 30	5	8.3 - 8.7	Objective met
	0600297 u/s hatchery	Jan 25-Aug 9	11	8.2 - 8.5	Objective met
	E206110 d/s hatchery	Jan 25-Aug 9	11	8.2 - 8.5	Objective met
	0600336 at the mouth	Jan 25-Aug 9	11	8.4 - 8.6	Objective met

TABLE 15

OKANAGAN VALLEY LAKES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total P 0.015 mg/L av long term & 0.040 mg/L av short term at spring overturn	Wood Lake 0500848 lake centre	Mar 2	3	av = 0.050mg/L	Objective not met
Total P 0.008 mg/L av at spring overturn	Kalamalka Lake: 0500246 south end	Mar 2	3	av = 0.007mg/L	Objective met
	0500461 north end	Mar 2	2	av = 0.008mg/L	Objective met
Total P 0.010 mg/L av at spring overturn	Okanagan Lake: 0500239 Armstrong Arm	Mar 28	3	av = 0.021mg/L	Objective not met
	0500238 Vernon Arm	Mar 1	3	av = 0.007mg/L	Objective met
	0500730 north basin	Apr 1	3	av = 0.008mg/L	Objective met
	0500236 central basin	Feb 26	3	av = 0.008mg/L	Objective met
		Mar 18	3	av = 0.008mg/L	Objective met
	0500729 south basin	Feb 24	2	av = 0.006mg/L	Objective met
Total P 0.015 mg/L av at spring overturn	Skaha Lake 0500615 lake centre	Feb 18	2	av = 0.027mg/L	Objective not met
	Osoyoos Lake 0500249 north end	Feb 23	2	av = 0.037mg/L	Objective not met

TABLE 16

SIMILKAMEEN RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc. (np)	Similkameen River: Falls u/s Newmont 0500075	Sep 3	1	12/100 mL	Indefinite result
	u/s Princeton 0500724	Sep 3-Sep 31	5	np = 12/100 mL	Obj. not met
		Jan 20-Oct28	5	<2 - 14/100 mL	Indef result
	d/s Princeton 0500725	Sep 3-Sep 31	5	np = 9/100 mL	Obj. met
		Jan20-Sep 31	10	0 - 12/100 mL	Indef result
	u/s Keremeos 0500692	Jun 16-Sep28	2	2 - 13/100 mL	Indefinite result
	d/s Keremeos 0500693	Mar 16-Sep28	3	<2 -22/100 mL	Indefinite result
	near U.S. border 0500073	Jan 5-Oct 25	14	<2 - 70/100 mL	Indef result
		Jul 6-Aug 2	4	2 - 14/100 mL	Indef result
	Allison Lake,N end 1131013	May 3	1	<2/100 mL	Indefinite result
	Allison Creek near mouth 0500003	Aug 3-Aug 31	5	2 - 36/100 mL np = 27/100 mL	Objective not met
	Osprey & Missezula lakes	1988	0	no data	Objective not checked
Diss. Solids <500 mg/L av	Wolfe Creek: u/s Newmont 0500397	Feb 15	1	238 mg/L	Indefinite result
	d/s Newmont 0500101	Feb 15	1	296 mg/L	Indefinite result
Tot. Cl2 Res. 0.002mg/L max	Similkameen River: Princeton - border	1988	0	no data collected	Objective not checked

TABLE 16 continued

SIMILKAMEEN RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <0.9 mg/L av 4.7 mg/L max at pH = 8.1 temp = 10 C	Similkameen River: d/s Princeton 0500725	Aug 3-Aug 31	5	av=0.015 mg/L max=0.040 mg/L	Objectives met
	u/s Keremeos 0500692	Jul 6-Aug 2	5	av=0.006 mg/L max=0.008 mg/L	Objectives met
	d/s Keremeos 0500693	Jul 6-Aug 2	5	av=0.008 mg/L max=0.015 mg/L	Objectives met
	near U.S. border 0500073	Jul 6-Aug 2	5	av=0.009 mg/L max=0.012 mg/L	Objectives met
		Jan 5-Nov 8	27	<0.005 - 0.007 mg/L	Max obj. met
Total P <0.02 mg/L av at spring overturn	Allison Lake,N end 1131013	May 3:0-6m 16m 20-32m	1 1 1	0.005 mg/L 0.008 mg/L 0.038 mg/L	Indefinite result
	Missezula Lake 0500928	May 3:0-10m 15m 20-45m	1 1 1	0.022 mg/L 0.024 mg/L 0.038 mg/L av = 0.028mg/L	Objective not met
	Osprey Lake E206818	May 5:0-3m 7-9m	1 1	0.019 mg/L 0.016 mg/L av = 0.018mg/L	Objective met
Diss. Oxygen 5.25 mg/L min Apr - Sep	Allison Creek at mouth 0500003	Aug 15-Aug31	3	12.6-13.2 mg/L	Objective met
pH 6.5 - 8.5	Similkameen River: d/s Princeton 0500725	Jan 24-Sep28	21	7.2 - 8.4	Objective met
	u/s Keremeos 0500692	Mar 16-Sep28	8	7.6 - 8.2	Objective met
	d/s Keremeos 0500693	Jan 12-Sep28	21	7.3 - 8.4	Objective met

TABLE 16 continued

SIMILKAMEEN RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 8.5	Similkameen River: near U.S. border 0500073	Jan 5-Nov 8	36	6.7 - 8.2	Objective met
	Wolfe Creek: u/s Newmont 0500397	Feb 15-Sep31	6	8.2 - 8.4	Obj. met
		Sep 3	1	8.6	Obj. not met
	d/s Newmont 0500101	Feb 15-Sep31	7	8.1 - 8.5	Objective met
Dissolved Cu <0.002mg/L av 0.004mg/L max hardness <50 or 20% increase	Similkameen River: Falls,u/s Newmont 0500075	Sep 3-Sep 31	5	<0.001-0.001 mg/L	Control site
	d/s Newmont 0500629	Sep 3-Sep 31	5	all=0.001 mg/L	Objectives met
Dissolved Cu <0.006mg/L av 0.008mg/L max hardness <100 or 20% increase	Wolfe Creek: u/s Newmont 0500397	Sep 3-Sep 31	5	0.002-0.003 mg/L	Control site
	d/s Newmont 0500101	Sep 3-Sep 31	5	av = 0.001mg/L max= 0.002mg/L	Objectives met
Dissolved Fe 0.3 mg/L max or 20% increase	Wolfe Creek: u/s Newmont 0500397	Sep 3-Sep 31	5	0.007-0.016 mg/L	Control site
	d/s Newmont 0500101	Sep 3-Sep 31	5	0.03 - 0.06 mg/L	Objective met
Dissolved Mn 0.20 mg/L max or 20% increase	Wolfe Creek: u/s Newmont 0500397	Sep 3-Sep 31	5	all <0.01 mg/L mg/L	Control site
	d/s Newmont 0500101	Feb17-Oct5	11	0.03-0.06 mg/L	Objective met

TABLE 16 continued

SIMILKAMEEN RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Mo <0.02 mg/L av 0.05 mg/L max or 20% increase May to Sep	Wolfe Creek: u/s Newmont 0500397	Sep 3-Sep 31	5	0.005-0.030 mg/L	Control site
	d/s Newmont 0500101	Sep 3-Sep 31	5	av = 0.058mg/L max= 0.07 mg/L max inc = 246%	Objectives not met
Dissolved Zn <0.05 mg/L av 0.08 mg/L max hardness <50 or 20% increase	Similkameen River: Falls,u/s Newmont 0500075	Sep 3-Sep 31	5	0.005-0.030 mg/L	Control site
	d/s Newmont 0500629	Sep 3-Sep 31	5	all <0.005mg/L	Objectives met
Dissolved Zn <0.05 mg/L av 0.18 mg/L max hardness <100 or 20% increase	Wolfe Creek: u/s Newmont 0500397	Sep 3-Sep 31	5	all <0.005mg/L	Control site
	d/s Newmont 0500101	Sep 3-Sep 31	5	all <0.005mg/L	Objectives met

TABLE 17

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Susp. Solids max increase: 10 mg/L or 10%	Cahill at Hwy E206637	May 4-Jul 26	10	<1 - 3 mg/L	Objective met
	Red Top Gulch,Hwy E206638	May 4-Jul 26	10	<1 - 3 mg/L	Objective met
Susp. Solids max increase: 20 mg/L or 20%	Cahill d/s tailing E206636	May 4-Jul 26	10	<1 - 3 mg/L	Objective met
	Sunset at mouth E206634	Jul 13	1	6 mg/L	Objective met
	Ni Plate Mine,u/s E206632	Jul 13	1	<1 mg/L	Objective met
	Ni Plate Mine,d/s E206633	Jul 13	1	<1 mg/L	Objective met
Turbidity max increase: 5 NTU or 10%	Cahill at Hwy E206637	May 4-Jul 26	10	0.2-1.0 NTU	Objective met
	Red Top Gulch,Hwy E206638	May 4-Jul 26	10	0.1-0.4 NTU	Objective met
Turbidity max increase: 10 NTU or 20%	Cahill d/s tailing E206636	May 4-Jul 26	10	0.2-2.1 NTU	Objective met
	Sunset at mouth E206634	Jul 13	1	1.9 NTU	Objective met
	Ni PLate Mine,u/s E206632	Jul 13	1	0.1 NTU	Objective met
	Ni Plate mine,d/s E206633	Jul 13	1	0.2 NTU	Objective met
Diss. Solids 500 mg/L max	Cahill at Hwy E206637	May 4-Jul 26	10	118-174 mg/L	Objective met
	Cahill d/s tailing E206636	May 4-Jul 26	10	106-196 mg/L	Objective met

TABLE 17 continued

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Diss. Solids 500 mg/L max	Red Top Gulch,Hwy E206638	May 4-Jul 26	10	226-244 mg/L	Objective met
	Ni Plate Mine,u/s E206632	Jul 13	1	106 mg/L	Objective met
	Ni Plate Mine,d/s E206633	Jul 13	1	358 mg/L	Objective met
Sulphate <50 mg/L av 150 mg/L max	Cahill at Hwy E206637	May 4-Jul 26	10	av = 17.8mg/L max = 27.2mg/L	Objective met
	Cahill d/s tailing E206636	May 4-Jul 26	10	av = 15.8mg/L max = 29.3mg/L	Objective met
	Red Top Gulch,Hwy E206638	May 4-Jul 26	10	av = 26.1mg/L max = 28.3mg/L	Objective met
	Ni Plate Mine,u/s E206632	Jul 13	1	3.9 mg/L	Max obj. met
	Ni Plate Mine,d/s E206633	Jul 13	1	59.9 mg/L	Max obj. met
WAD-CN <0.005mg/L av 0.01mg/L max	Cahill at Hwy E206637	May 4-Jul 26	10	av=0.006 mg/L max=0.011 mg/L	Objectives not met
	Red Top Gulch,Hwy E206638	May 4-Jul 26	10	av=0.005 mg/L max=0.005 mg/L	Objectives met
SAD-CN + Thiocyanate as CN 0.20 mg/L max	Cahill at Hwy E206637	May 4-Jul 26	10	<0.016 - 0.025 mg/L	Objective met
	Cahill d/s tailing E206636	May 4-Jul 26	10	<0.016 - 0.117 mg/L	Objective met
	Red Top Gulch,Hwy E206638	May 4-Jul 26	10	<0.016 - 0.018 mg/L	Objective met
Cyanate as CN 0.45 mg/L max	Cahill at Hwy E206637	May 4-Jul 26	10	all <0.03 mg/L	Objective met
	Red Top Gulch,Hwy E206638	May 4-Jul 26	10	all <0.03 mg/L	Objective met

TABLE 17 continued

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total As 0.05 mg/L max	Cahill at Hwy E206637	May 4-Jul 26	10	<0.001-0.009 mg/L	Objective met
	Cahill d/s tailing E206636	May 4-Jul 26	10	0.005-0.009 mg/L	Objective met
	Red Top Gulch,Hwy E206638	May 4-Jul 26	10	0.007-0.019 mg/L	Objective met
Total As 0.5 mg/L max	Ni Plate Mine,u/s E206632	May 4-Jul 26	10	<0.001-0.002 mg/L	Objective met
	Ni Plate Mine,d/s E206633	May 4-Jul 26	10	0.010-0.017 mg/L	Objective met
Ammonia-N <0.370mg/L av 1.93mg/L max at pH = 8.5 temp = 10 C	Cahill at Hwy E206637	May 4-Jul 26	10	av=0.006 mg/L max=0.008 mg/L	Objectives met
	Red Top Gulch,Hwy E206638	May 4-Jul 26	10	av=0.008 mg/L max=0.030 mg/L	Objectives met
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Cahill at Hwy E206637	May 4-Jul 26	10	all<0.005 mg/L	Objectives met
	Red Top Gulch,Hwy E206638	May 4-Jul 26	10	all<0.005 mg/L	Objectives met
Nitrite-N 1 mg/L max	Cahill d/s tailing E206636	May 4-Jul 26	10	<0.005 - 0.014 mg/L	Objective met
Nitrite-N 10 mg/L max	Ni Plate Mine,u/s E206632	May 4-Jul 26	10	max<0.005 mg/L	Objective met
	Ni Plate Mine,d/s E206633	May 4-Jul 26	10	max<0.005 mg/L	Objective met
Nitrate-N 10 mg/L max	Cahill at Hwy E206637	May 4-Jul 26	10	0.020 - 0.650 mg/L	Objective met
	Cahill d/s tailing E206636	May 4-Jul 26	10	0.070 - 0.760 mg/L	Objective met

TABLE 17 continued

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrate-N 10 mg/L max	Red Top Gulch,Hwy E206638	May 4-Jul 26	10	0.020 - 0.080	Objective met
Nitrate-N 100 mg/L max	Ni Plate Mine,u/s E206632	May 4-Jul 26	10	<0.020 - 0.050 mg/L	Objective met
	Ni Plate Mine,d/s E206633	May 4-Jul 26	10	3.95 - 8.05 mg/L	Objective met
pH 6.5 - 8.5	Cahill at Hwy E206637	May 4-Jul 26	18	7.35 - 8.50	Obj. met
		Jul 13	1	8.55	Obj. not met
	Cahill d/s tailing E206636	May 4-Jul 26	18	7.22 - 8.50	Obj. met
		Jul 13	1	8.55	Obj. not met
	Red Top Gulch,Hwy E206638	May 4-Jul 26	16	7.33 - 8.50	Obj. met
		Jun 29, Jul 7,13	3	8.55 - 8.70	Obj. not met
	Ni Plate Mine,u/s E206632	May 4-Jul 20	9	7.6 - 8.1	Objective met
	Ni Plate Mine,d/s E206633	May 4-Jul 20	9	8.2 - 8.4	Objective met
Total Al 0.3 mg/L max or 20% increase at pH>7.0	Cahill at Hwy E206637	May 4-Jul 26	10	0.02-0.11 mg/L	Objective met
	Red Top Gulch,Hwy E206638	May 4-Jul 26	9	<0.01-0.09mg/L	Obj. met
		Jun 1	1	1.00 mg/L	Indef result
Total Cd 0.0002 mg/L max	Cahill at Hwy E206637	May 4-Jul 26	9	all<0.0005mg/L	Indef result
		Jul 7	1	0.0005 mg/L	Obj. not met
	Red Top Gulch,Hwy E206638	Jul 6-Aug 4	5	all <0.0005 mg/L	Indefinite result
Total Cd 0.005mg/L max	Cahill d/s tailing E206636	May 4-Jul 26	10	all <0.0005 mg/L	Objective met

TABLE 17 continued

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Cd 0.02 mg/L max	Ni Plate Mine,u/s E206632	May 4-Jul 26	10	all <0.0005 mg/L	Objective met
	Ni Plate Mine,d/s E206633	Jul 6-Aug 4	5	<0.0005-0.0008 mg/L	Objective met
Total Cu <0.005mg/L av 0.007mg/L max or 20% increase	Cahill at Hwy E206637	May 4-Jul 26	10	av=0.002 mg/L max=0.004 mg/L	Objectives met
	Red Top Gulch,Hwy E206638	May 4-Jun 1	5	av=0.003 mg/L max=0.007 mg/L	Objectives met
		Jun 29-Jul26	5	av=0.010 mg/L max=0.050 mg/L	Objectives not met
Total Cu 0.2 mg/L max	Cahill d/s tailing E206636	May 4-Jul 26	10	<0.001 - 0.003 mg/L	Objective met
Total Cu 0.3 mg/L max	Ni Plate Mine,u/s E206632	May 4-Jul 26	10	<0.001 - 0.009 mg/L	Objective met
	Ni Plate Mine,d/s E206633	May 4-Jul 26	10	<0.001 - 0.002	Objective met
Dissolved Fe 0.3 mg/L max	Cahill at Hwy E206637	May 4-Jul 26	11	<0.01-0.06mg/L	Objective met
	Cahill d/s tailing E206636	May 4-Jul 26	11	0.01-0.14mg/L	Objective met
	Red Top Gulch,Hwy E206638	May 4-Jul 26	11	<0.005 - 0.290 mg/L	Objective met
	Ni Plate Mine,u/s E206632	Jul 13	1	<0.005 mg/L	Objective met
	Ni Plate Mine,d/s E206633	Jul 13	1	0.005 mg/L	Objective met
Total Pb <0.005mg/L av 0.015mg/L max or 20% increase	Cahill at Hwy E206637	May 4-Jul 26	10	av=0.002 mg/L max=0.003 mg/L	Objectives met
	Red Top Gulch,Hwy E206638	May 4-Jul 26	10	av=0.002 mg/L max=0.004 mg/L	Objectives met

TABLE 17 continued

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Pb 0.05 mg/L max	Cahill d/s tailing E206636	May 4-Jul 26	10	<0.001 - 0.002 mg/L	Objective met
Total Pb 0.1 mg/L max	Ni Plate Mine,u/s E206632	May 4-Jul 26	10	<0.001 - 0.002 mg/L	Objective met
	Ni Plate Mine,d/s E206633	May 4-Jul 26	10	<0.001 - 0.005 mg/L	Objective met
Total Hg 0.0001 mg/L max	Cahill at Hwy E206637	May11-Jul 26	8	max = 0.00005 mg/L	Objective met
		May 4	1	0.00019 mg/L	Obj. not met
	Red Top Gulch,Hwy E206638	May11-Jul 26	9	all <0.00005 mg/L	Objective met
		May 4	1	0.00018 mg/L	Obj. not met
Total Hg 0.001mg/L max	Cahill d/s tailing E206636	May11-Jun 29	5	all <0.00005 mg/L	Objective met
Total Hg 0.003mg/L max	Ni Plate Mine,u/s E206632	May 4-Jul 26	10	max = 0.00018 mg/L	Objective met
	Ni Plate Mine,d/s E206633	May 4-Jul 26	10	max = 0.00019 mg/L	Objective met
Total Hg in fish 0.5 ug/g wet wt. (muscle) max	Cahill at Hwy & Red Top Gulch,Hwy	1988	0	no data collected	Objective not checked
Total Mo <0.01 mg/L av 0.05 mg/L max or 20% increase (May - Sep)	Cahill at Hwy E206637	Jun 29-Jul26	5	av=0.01 mg/L max=0.02 mg/L	Objectives met
	Red Top Gulch,Hwy E206638	May 4-Jul 26	10	av=0.02 mg/L max=0.02 mg/L	Av indef. Max obj. met
	Cahill d/s tailing E206636	Jul 6-Aug 4	5	av<0.01 mg/L max=0.01 mg/L	Objectives met

TABLE 17 continued

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Mo 0.05 mg/L max	Ni Plate Mine,u/s E206632	May 4-Jul 26	11	<0.01-0.02mg/L	Objective met
	Ni Plate Mine,d/s E206633	May 4-Jul 26	10	<0.01-0.03mg/L	Objective met
Total Se 0.001mg/L max or 20% increase	Cahill at Hwy & Red Top Gulch,Hwy	1988	0	no data collected	Objective not checked
Total Se 0.01 mg/L max	Cahill d/s tailing & Red Top Gulch u/s Hwy	1988	0	no data collected	Objective not checked
Total Se 0.05 mg/L max	Ni Plate Mine	1988	0	no data collected	Objective not checked
Total Ag 0.0001 mg/L max or 20% increase	Cahill at Hwy E206637	May 4-Jul 26	9	all <0.0005 mg/L	Indefinite result
	Red Top Gulch,Hwy E206638	May 4-Jul 26	9	all <0.0005 mg/L	Indefinite result
Total Ag 0.05 mg/L max or 20% increase	Cahill d/s tailing E206636	May 4-Jul 26	9	all <0.0005 mg/L	Objective met
	Ni Plate Mine,u/s E206632	May 4-Jul 26	9	all <0.0005 mg/L	Objective met
	Ni Plate Mine,d/s E206633	May 4-Jul 26	9	all <0.0005 mg/L	Objective met
Total Zn 0.05 mg/L max	Cahill at Hwy E206637	May 4-Jul 13	7	<0.01-0.01mg/L	Objective met
	Cahill d/s tailing E206636	May 11-Jun29	5	all <0.01 mg/L	Objective met
	Red Top Gulch,Hwy E206638	May 4-Jun 29	6	<0.01-0.01mg/L	Objective met

TABLE 17 continued

CAHILL CREEK AND TRIBUTARIES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Zn 0.05 mg/L max	Ni Plate Mine,u/s E206632	May 4-Jul 26	11	all <0.01 mg/L	Objective met
	Ni Plate Mine,d/s E206633	May 4-Jul 26	10	all <0.01 mg/L	Objective met

TABLE 18

COLUMBIA AND WINDERMERE LAKES WATER QUALITY OBJECTIVES -1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc. (np) near water intakes	Windermere Lake: E207044 Windermere	Jul 20,26, Aug 2,8,15	5	all <2/100 mL np < 2/100 mL	Objective met
	E207045 Akiskinook	Jul 20,26, Aug 2,8,15	5	<2 - 2/100 mL np < 2/100 mL	Objective met
	E207046 Terravista	Jul 20,26, Aug 2,8,15	5	all <2/100 mL np < 2/100 mL	Objective met
	E207047 Wind. Holdings	Jul 20,26, Aug 2,8,15	5	<2 - 2/100 mL np < 2/100 mL	Objective met
	E207048 Parr Utilities	Jul 20,26, Aug 2,8,15	5	all <2/100 mL np < 2/100 mL	Objective met
	E207049 Timber Ridge	Jul 20,26, Aug 2,8,15	5	<2 - 2/100 mL np < 2/100 mL	Objective met
	Columbia Lake: E207486 Columere	Jul 20,26, Aug 2,8,15	5	all <2/100 mL np < 2/100 mL	Objective
Fecal Coliforms <200/100 mL geometric mean (gm) at beaches	Windermere Lake: E207050 Invermere	Jul 20,26, Aug 2,8,15	5	<2 - 14/100 mL gm = 3.7/100mL	Objective met
	E207051 Athalmer	Jul 20,26, Aug 2,8,15	5	<2 - 11/100 mL gm = 3.7/100mL	Objective met
	E207052 Timber Ridge	Jul 20,26, Aug 2,8,15	5	<2 - 10/100 mL gm = 4.4/100mL	Objective met
	E207053 Terravista	Jul 20,26, Aug 2,8,15	5	all <2/100 mL gm < 2/100 mL	Objective met
	E207054 Akiskinook	Jul 20,26, Aug 2,8,15	5	<2 - 16/100 mL gm = 4.2/100mL	Objective met
	E207055 Tretheway	Jul 20,26, Aug 2,8,15	5	<2 - 2/100 mL gm < 2/100 mL	Objective met

TABLE 18 continued

COLUMBIA AND WINDERMERE LAKES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Col. <200/100 mL geo mean (gm) at beaches	Columbia Lake: E207487 Columere	Jul 20,26, Aug 2,8,15	5	<2 - 4/100 mL gm = 2.3/100mL	Objective met
Turbidity 1 NTU av 5 NTU max during non-freshet	Windermere Lake water intake sites				
	E207044 Windermere	Jul 20,26, Aug 2,8,15	5	av = 0.36 NTU max = 0.50 NTU	Objectives met
	E207045 Akiskinook	Jul 20,26, Aug 2.8,15	5	av = 0.44 NTU max = 1.00 NTU	Objectives met
	E207046 Terravista	Jul 20,26, Aug 2,8,15	5	av = 0.32 NTU max = 0.40 NTU	Objectives met
	E207047 Wind. Holdings	Jul 20,26, Aug 2,8,15	5	av = 0.34 NTU max = 0.50 NTU	Objectives met
	E207048 Parr Utilities	Jul 20,26, Aug 2,8,15	5	av = 0.34 NTU max = 0.40 NTU	Objectives met
	E207049 Timber Ridge	Jul 20,26, Aug 2,8,15	5	av = 0.32 NTU max = 0.40 NTU	Objectives met
	Columbia Lake	1988	0	no data collected	Obj. not checked
Total - P <0.010 mg/L av at spring overturn	Windermere Lake: 0200051 centre	Apr 20	1 1	0.5m:0.006mg/L 3.0m:0.010mg/L av = 0.008mg/L	Objective met
	0200052 north	Apr 20	1 1	0.5m:0.005mg/L 4.5m:0.008mg/L av = 0.007mg/L	Objective met
Total - P <0.008 mg/L av at spring overturn	Columbia Lake: 0200433 south	Apr 20	1 1	0.5m:0.007mg/L 3.0m:0.007mg/L av = 0.007mg/L	Objective met

TABLE 18 continued

COLUMBIA AND WINDERMERE LAKES WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total - P <0.008 mg/L av at spring overturn	Columbia Lake: 0200434 north	Apr 20	5	0.5m:0.005mg/L 3.0m:0.007mg/L av = 0.006mg/L	Objective met

TABLE 19

TOBY CREEK AND UPPER COLUMBIA RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <10/100 mL 90th perc. (np)	Toby Creek: 0200224 d/s Invermere	1988	0	no data collected	Objective not checked
	0200333 u/s Panorama	Jul 5,11,17, 21,28	5	<2 - 2/100 mL np < 2/100 mL	Objective met
	0200334 d/s Panorama	Jul 5,11,17, 21,28	5	<2 - 2/100 mL np < 2/100 mL	Objective met
	Columbia River: 0200232 u/s Radium	Jul 5,13 19, 25, Aug 3	5	2 - 37/100 mL np = 15/100 mL	Objective not met
Fecal Coliforms <200/100 mL geometric mean (gm) <400/100 mL 90 th perc. (np)	Columbia River: 0200233 d/s Radium	Jul 5 Jul 13 Jul 19 Jul 25 Aug 3	1 1 1 1 1	81000/100 mL 25/100 mL 4/100 mL 146/100 mL 196/100 mL gm = 187/100mL np=40000/100mL	gm Objective met np Objective not met
Turbidity max increase: 5 NTU or 10%	Toby Creek: 0200224 d/s Invermere	1988	0	no data collected	Objective not checked
	0200333 u/s Panorama	Jul 5,11,17 21,28	5	9.5 - 20 NTU	Control site
	0200334 d/s Panorama	Jul 5,11,17 21,28	5	8.6 - 20 NTU max inc = 2NTU	Objective met
Suspended Solids max increase: 10 mg/L or 10%	Toby Creek: 0200224 d/s Invermere	1988	0	no data collected	Objective not checked
	0200333 u/s Panorama	Jul 5,11,17, 21,28	5	13 - 48 mg/L	Control site
	0200334 d/s Panorama	Jul 5,11,17 21,28	5	11 - 47 mg/L max inc=2 mg/L	Objective met

TABLE 19 continued

TOBY CREEK AND UPPER COLUMBIA RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Chlorophyll-a <50 mg/m2 av	Toby Creek: d/s Invermere & d/s Panorama	1988	0	no data collected	Objective not checked
Ammonia-N <1.23 mg/L av 4.7 mg/L max at pH = 8.1 temp = 10 C	Toby Creek: 0200224 d/s Invermere	1988	0	no data collected	Objectives not checked
	0200333 u/s Panorama	Jul 5,11,17 28	4	<0.005 - 0.012 mg/L	Max obj met
	0200334 d/s Panorama	Jul 5,11,17 28	4	<0.005 - 0.030 mg/L	Max obj met
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Toby Creek: 0200224 d/s Invermere	1988	0	no data collected	Objectives not checked
	0200333 u/s Panorama	Jul 5,11,17, 28	4	all <0.005 mg/L	Max obj met
	0200334 d/s Panorama	Jul 5,11,17 28	4	all <0.005 mg/L	Max obj met
Total Ba 1.0 mg/L max	Toby Creek: E206170 d/s Mntn Minerals	Jul 5,11,28	3	all <0.5 mg/L	Objective met
Total Cd 0.002 mg/L max	Toby Creek: E206170 d/s Mntn Minerals	Jul 5,11,28	3	all < 0.0005 mg/L	Objective met
Dissolved Cu 0.002 mg/L max	Toby Creek: E206170 d/s Mntn Minerals	Jul 5,11	2	0.001 - 0.002 mg/L total	Objective met
		Jul 28	1	0.003 mg/L total	Indefinite result

TABLE 19 continued

TOBY CREEK AND UPPER COLUMBIA RIVER WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Pb 0.005 mg/L max hardness <95	Toby Creek: E206170 d/s Mntn Minerals	Jul 5,11,28	3	0.001 - 0.002 mg/L	Objective met
Total Zn 0.05 mg/L max	Toby Creek: E206170 d/s Mntn Minerals	Jul 5,11,28	3	0.005 - 0.014 mg/L	Objective met

TABLE 20

FRASER RIVER (HOPE TO KANAKA CREEK) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <1000/100 mL geometric mean (gm) Apr - Oct	Fraser River: 0301506 u/s Chilliwack STP	Aug 24-Sep22	5	gm = 125/100mL	Objective met
	0301507 100m d/s Chlwk STP	Aug 24-Sep22	5	gm = 36/100 mL	Objective met
	E207391 u/s MSA STP	Aug 30-Sep19	4	29 - 164/100mL	Indefinite result
	E207602 100 m d/s MSA STP	Aug 23-Sep19	5	gm = 23/100 mL	Objective met
	0301548 u/s Aldergrove STP	Aug 23-Sep19	5	gm = 454/100mL	Objective met
	0301550 100m d/s Adgve STP	Aug 30-Sep19	4	12 - 560/100mL	Indefinite result
	E207393 u/s Kent STP	Aug 24-Sep22	5	gm = 92/100 mL	Objective met
	E207603 100 m d/s Kent STP	Aug 24-Sep22	5	gm = 82/100 mL	Objective met
	Hope Slough 0300141 at Young Road	Aug 24-Sep22	5	gm = 49/100 mL	Objective met
	Atchelitz Creek E207623 near mouth	Aug 24-Sep22	5	gm = 188/100mL	Objective met
	Luckakuck Creek 0300036 at Yale Road	Aug 24-Oct 3	5	330-1900/100mL	Indefinite result
	Chilliwack Creek 0300040 at Wolfe Road	Aug 24-Sep22	5	gm = 51/100 mL	Objective met

TABLE 20 continued

FRASER RIVER (HOPE TO KANAKA CREEK) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <1000/100 mL geometric mean (gm) Apr - Oct	Elk Creek 0300046 at Yale Road	Aug 24-Sep22	5	gm =1833/100mL	Objective not met
	Salmon River E207612 d/s Trinity	Aug 24-Sep22	5	gm = 89/100 mL	Objective met
	Bertrand Creek Sumas River Saar Creek	1988	0	no data collected	Objective not checked
Fecal Col. <100/100 mL 90th perc. (np)	Chilliwack River 0300033 at Vedder Canal	Aug 24-Sep22	5	np = 90/100 mL	Objective met
Fecal Col. <200/100 mL geo mean (gm) at beaches	Cultus Lake: E207095 N end	Aug 24-Sep22	5	gm = 10/100 mL	Objective met
	E207096 E side	Aug 24-Sep22	5	gm = 3 /100 mL	Objective met
	E207098 S end	Aug 24-Sep22	5	gm = 2 /100 mL	Objective met
Fecal Col. <10/100 mL 90th perc. water intakes	Cultus Lake	1988	0	no data collected	Objective not checked
Tot. Cl2 Res. 0.002mg/L max	Fraser River	1988	0	no data collected	Objective not checked
Ammonia-N <1.04 mg/L av 6.67 mg/L max at pH = 7.9 temp = 18 C	Fraser River: E207391 u/s MSA STP	Feb 10-Mar 9	5	av = 0.048mg/L max= 0.062mg/L	Objectives met
	E207602 100 m d/s MSA STP	Aug 23-Sep12	4	<0.005 - 0.009 mg/L	Max obj. met
	0301506 u/s Chilliwack STP	Jan 19-Feb18	5	av = 0.015mg/L max= 0.023mg/L	Objectives met

TABLE 20 continued

FRASER RIVER (HOPE TO KANAKA CREEK) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <1.04 mg/L av 6.67 mg/L max at pH = 7.9 temp = 10 C	Fraser River: 0301506 u/s Chilliwack STP	Feb 25-Mar22	5	av = 0.018mg/L max= 0.025mg/L	Objectives met
		Aug 24-Sep22	5	av = 0.017mg/L max= 0.060mg/L	Objectives met
	0301507 100m d/s Chlwk STP	Jan 19-Feb18	6	av = 1.27 mg/L max= 2.29 mg/L	Max obj. met av not met
		Feb 25-Mar22	5	av = 2.36 mg/L max= 3.84 mg/L	Max obj. met av not met
		Aug 24-Sep22	5	av = 0.59 mg/L max= 1.30 mg/L	Objectives met
	0301548 u/s Aldergrove STP	Feb 10-Mar 9	5	av = 0.072mg/L max= 0.097mg/L	Objectives met
		Aug 23-Sep12	4	0.010 - 0.013 mg/L	Max obj. met
	0301550 100m d/s Adgve STP	Aug 23-Sep12	4	<0.005 - 0.013 mg/L	Max obj. met
	E207393 u/s Kent STP	Feb 3-Mar 1	5	av = 0.015mg/L max= 0.023mg/L	Objectives met
		Aug 24-Sep22	5	av = 0.014mg/L max= 0.050mg/L	Objectives met
	E207603 100 m d/s Kent STP	Aug 24-Sep22	5	av = 0.018mg/L max= 0.050mg/L	Objectives met
Ammonia-N <1.23 mg/L av 15.1 mg/L max at pH = 7.3 temp = 20 C	Hope Slough 0300141 at Young Road	Aug 24-Sep22	5	av = 0.045mg/L max= 0.050mg/L	Objectives met
	Atchelitz Creek E207623 near mouth	Aug 24-Sep22	5	av = 0.083mg/L max= 0.110mg/L	Objectives met

TABLE 20 continued

FRASER RIVER (HOPE TO KANAKA CREEK) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <1.23 mg/L av 15.1 mg/L max at pH = 7.3 temp = 20 C	Luckakuck Creek 0300036 at Yale Road	Aug 24-Oct 3	5	0.028 - 0.438 mg/L	Max obj. met
	Chilliwack Creek 0300040 at Wolfe Road	Aug 24-Sep22	5	av = 0.124mg/L max= 0.320mg/L	Objectives met
	Elk Creek 0300046 at Yale Road	Aug 24-Sep22	5	av = 0.49 mg/L max= 0.90 mg/L	Objectives met
	Salmon River E207612 d/s Trinity	Aug 24-Sep22	5	av = 0.03 mg/L max= 0.05 mg/L	Objectives met
	Bertrand Creek	1988	0	no data collected	Objective not checked
Total P <0.01 mg/L av at spring overturn	Cultus Lake 0300037 at lake centre	Feb 10	2	0.006 - 0.007 mg/L	Objective met
Diss. Oxygen 7.75 mg/L min	Fraser River: 0301506 u/s Chilliwack STP	Aug 24-Sep22	5	8.0 - 9.0 mg/L	Objective met
	0301507 100m d/s Chlwk STP	Aug 24-Sep22	4	8.4 - 9.9 mg/L	Obj. met
		Aug 31	1	7.7 mg/L	Obj. not met
	E207391 u/s MSA STP	Aug 23-Sep19	5	8.6 - 9.5 mg/L	Objective met
	E207602 100 m d/s MSA STP	Aug 23-Sep19	5	8.6 - 9.2 mg/L	Objective met
	0301548 u/s Aldergrove STP	Aug 23-Sep19	5	8.5 - 9.4 mg/L	Objective met
	0301550 100m d/s Adgve STP	Aug 23-Sep19	5	8.6 - 9.4 mg/L	Objective met

TABLE 20 continued

FRASER RIVER (HOPE TO KANAKA CREEK) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Diss. Oxygen 7.75 mg/L min	Fraser River: E207393 u/s Kent STP	Aug 24-Sep14	4	8.5 - 10.2mg/L	Objective met
	E207603 100 m d/s Kent STP	Aug 24-Sep22	5	8.2 - 10.2mg/L	Objective met
Diss. Oxygen 8.0-11.2 mg/L min depending on fish egg stage 6.0 mg/L min other times	Hope Slough: 0300141 at Young Road	Aug 24-Aug31	2	5.5 - 5.7 mg/L	Obj. not met
		Sep 8-Sep 22	3	6.2 - 8.4 mg/L	Obj. met
	Atchelitz Creek E207623 near mouth	Aug 24-Sep22	5	6.6 - 8.5 mg/L	Objective met
	Luckakuck Creek 0300036 at Yale Road	Sep 8-Oct 3	4	8.0 - 9.0 mg/L	Obj. met
		Aug 24	1	3.3 mg/L	Obj. not met
	Chilliwack Creek 0300040 at Wolfe Road	Aug 24-Aug31	2	6.8 - 7.2 mg/L	Obj. met
		Sep 8-Sep 22	3	5.3 - 5.8 mg/L	Obj. not met
	Salmon River: 0300023 at Glover Road	Sep 22	1	7.9 mg/L	Objective met
	E207612 d/s Trinity	Aug 24-Sep22	5	6.7 - 9.2 mg/L	Objective met
	Elk Creek 0300046 at Yale Road	Aug 24-Sep22	5	3.2 - 4.2 mg/L	Objective not met
	Bertrand Creek Sumas River Saar Creek	1988	0	no data collected	Objective not checked
Diss. Oxygen as above but 7.75 mg/L min other times	Chilliwack River 0300033 at Vedder Canal	Aug 24-Sep22	5	8.7 - 10.5mg/L	Objective met

TABLE 20 continued

FRASER RIVER (HOPE TO KANAKA CREEK) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Diss Oxygen 5.0 mg/L min hypolimnion	Cultus Lake 0300037 at centre	Feb 10	1	10.7 mg/L at 15m	Objective met
pH 6.5 - 8.5	Fraser River: 0301506 u/s Chilliwack STP	Jan 5-Sep 22	17	7.5 - 8.0	Objective met
	0301507 100m d/s Chlwk STP	Jan 5-Sep 22	18	7.2 - 7.9	Objective met
	E207391 u/s MSA STP	Feb 10-Sep19	8	7.7 - 8.3	Objective met
	E207602 100m d/s MSA STP	Aug 23-Sep19	4	7.9 - 8.2	Objective met
	0301548 u/s Aldergrove STP	Feb 10-Sep12	8	7.5 - 8.2	Objective met
	0301550 100m d/s Adgve STP	Aug 30-Sep12	3	8.1 - 8.3	Objective met
	E207393 u/s Kent STP	Feb 3-Sep 22	10	7.6 - 8.0	Objective met
	E207603 100 m d/s Kent STP	Aug 24-Sep22	5	7.6 - 8.0	Objective met
	Hope Slough 0300141 at Young Road	Aug 24-Sep22	5	7.5 - 7.6	Objective met
	Atchelitz Creek E207623 near mouth	Aug 24-Sep22	5	7.2 - 7.5	Objective met
	Luckakuck Creek 0300036 at Yale Road	Aug 24-Oct 3	5	6.8 - 7.3	Objective met
	Chilliwack Creek 0300040 at Wolfe Road	Aug 24-Sep22	5	7.0 - 7.5	Objective met

TABLE 20 continued

FRASER RIVER (HOPE TO KANAKA CREEK) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 8.5	Elk Creek 0300046 at Yale Road	Aug 24-Sep22	5	7.1 - 7.3	Objective met
	Salmon River: 0300023 at Glover Road	Sep 22	1	7.1	Objective met
	E207612 d/s Trinity	Aug 24-Sep22	4	7.1 - 7.6	Objective met
	Bertrand Creek	1988	0	no data collected	Objective not checked

TABLE 21

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <1000/100 mL geometric mean (gm) 4000/100 mL max Apr - Oct	Main Stem: GVRD 15 d/s Brunette confl	May 10-Sep13	9	40-1700/100 mL	Max obj. met
	GVRD 14 Pattullo Bridge	May 10-Sep13	9	<20-700/100 mL	Max obj. met
	0300005 Pattullo Bridge	Aug 22-Sep19	5	gm = 124/100mL max= 590/100mL	Objectives met
	GVRD 13 u/s N Arm confl	May 10-Sep13	9	20 -700/100 mL	Max obj. met
	GVRD 12 u/s N Arm confl	May 10-Sep13	9	20 -700/100 mL	Max obj. met
	Main Arm: GVRD 1 u/s Annacis	Apr 19-Oct 5	4	40 -300/100 mL	Max obj. met
	0301308 u/s Annacis	Aug 22-Sep19	6	gm = 165/100mL max= 770/100mL	Objectives met
	GVRD 2 d/s Annacis	Apr 19-Oct 5	4	80 -1400/100mL	Max obj. met
	0301311 d/s Annacis	Aug 22-Sep12	5	gm = 102/100mL max= 600/100mL	Objectives met
	GVRD 3 12 km d/s Annacis	Apr19 - Oct5	2	5000 - 13000/ 100 mL	Max obj. not met
		Jun 20-Aug17	2	70 -1700/100mL	Max obj. met
	E207624 Deas Slough	Aug 22-Sep19	6	gm = 247/100mL max=1200/100mL	Objectives met
	E207604 Ladner Sl.,bridge	Aug 22-Sep19	5	gm = 219/100mL max= 770/100mL	Objectives met
	E207605 Ladner Sl., mouth	Aug 29-Sep19	4	136 -430/100mL	Max obj. met

TABLE 21 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <1000/100 mL geometric mean (gm) 4000/100 mL max Apr - Oct	Main Arm: E105892 u/s Lulu	Aug 22-Sep19	5	gm = 184/100mL max= 590/100mL	Objectives met
	E105893 d/s Lulu	Aug 22-Sep19	5	gm = 190/100mL max= 640/100mL	Objectives met
	GVRD 4 d/s Lulu	Apr 19-Oct 5	2	8000 - 13000/ 100 mL	Max obj. not met
		Jun 20-Aug17	2	230-800/100 mL	Max obj. met
	GVRD 5 d/s Steveston	Apr 19-Oct 5	2	8000 - 30000/ 100 mL	Max obj. not met
		Jun 20-Aug17	2	40-300/100 mL	Max obj. met
	North Arm: E207398 u/s Scott	Aug 22-Sep19	5	gm = 97/100mL max= 540/100mL	Objectives met
	E207399 d/s Scott	Aug 22-Sep19	5	gm = 101/100mL max= 540/100mL	Objectives met
	GVRD 11 Queensborough Br.	May 5-Sep 13	9	40 -1100/100mL	Max obj. met
	E207396 u/s Belkin	Aug 22-Sep19	4	32 - 350/100mL	Max obj. met
	E207397 d/s Belkin	Aug 22-Sep19	5	gm = 76/100mL max= 220/100mL	Objectives met
	GVRD 10 ~5km d/s Belkin	May 5-Sep 13	9	<20-1700/100mL	Max obj. met
	GVRD 9 Mitchell Island	May 5-Sep 13	9	40 - 500/100mL	Max obj. met
	GVRD 7 Oak Street Bridge	May 5-Sep 13	9	20 - 900/100mL	Max obj. met
	0300002 Oak Street Bridge	Sep 7-Sep 19	3	350-460/100 mL	Max obj. met

TABLE 21 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <1000/100 mL geometric mean (gm) 4000/100 mL max Apr - Oct	North Arm: GVRD 6 Sea Island-east	May 5-Sep 13	9	20 - 800/100mL	Max obj. met
	GVRD 5 Sea Island-west	May 5-Sep 13	9	20 -1300/100mL	Max obj. met
	Middle Arm: GVRD 8 at entrance	May 5-Sep 13	9	40 -1300/100mL	Max obj. met
	E207601 100m d/s North Arm	Aug 29-Sep19	4	170 -920/100mL	Max obj. met
	E207600 Dinsmore Bridge	Aug 29-Sep19	4	220 -350/100mL	Max obj. met
Fecal Coliforms <200/100 mL geometric mean (gm) at beaches Jun - Aug	Iona Beach: every 200ft along jetty,east to west GVRD 4	Jun 21-Jul18 Jul 26-Aug22	5 5	gm = 23/100 mL gm = 23/100 mL	Obj. met Obj. met
	GVRD 6	Jun 21-Jul18 Jul 26-Aug22	5 5	gm = 33/100 mL gm = 20/100 mL	Obj. met Obj. met
	GVRD 8	Jun 21-Jul18 Jul 26-Aug22	5 5	gm = 44/100 mL gm < 20/100 mL	Obj. met Obj. met
	GVRD 10	Jun 21-Jul18 Jul 26-Aug22	5 5	gm = 26/100 mL gm = 26/100 mL	Obj. met Obj. met
	GVRD 12	Jun 21-Jul18 Jul 26-Aug22	5 5	gm = 23/100 mL gm < 20/100 mL	Obj. met Obj. met
	GVRD 14	Jun 21-Jul18 Jul 26-Aug22	5 5	gm = 38/100 mL gm = 20/100 mL	Obj. met Obj. met
	Tsawwassen Beach: MOH 11 3rd Avenue	Jun 21-Jul19 Jul 25-Aug22	5 6	gm = 36/100 mL gm = 23/100 mL	Obj. met Obj. met
	MOH 12 Causeway-east	Jun 21-Jul19 Jul 25-Aug22	5 6	gm = 39/100 mL gm = 42/100 mL	Obj. met Obj. met

TABLE 21 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Col. geo mean (gm) <200/100mL at beaches Jun - Aug	Tsawwassen Beach MOH 13 Causeway-west	Jul 25-Aug22	6	gm = 11/100 mL	Objective met
Susp. Solids max increase: 10mg/L or 10%	North Arm Middle Arm	1988	0	no data collected	Objective not checked
Ammonia-N <0.76 mg/L av 5.6 mg/L max at pH = 8.0 temp = 20 C	Main Arm: GVRD 1 u/s Annacis	Feb 26-Dec20	6	<0.02-0.07mg/L	Max obj. met
	GVRD 2 d/s Annacis	Feb 26-Dec20	6	<0.02-0.09mg/L	Max obj. met
	GVRD 3 12 km d/s Annacis	Feb 26-Dec20	6	0.03-0.10 mg/L	Max obj. met
	E207604 Ladner Sl., bridge	Aug 22-Sep19	5	av = 0.032mg/L max <0.050mg/L	Objectives met
	E207605 Ladner Sl., mouth	Aug 22-Sep19	5	av = 0.024mg/L max <0.050mg/L	Objectives met
	GVRD 4 d/s Lulu	Feb 26-Dec20	6	0.04-0.08 mg/L	Max obj. met
	GVRD 5 d/s Steveston	Feb 26-Dec20	6	0.04-0.09 mg/L	Max obj. met
	North Arm Sturgeon Bank Roberts Bank	1988	0	no data collected	Objectives not checked
	Middle Arm: E207601 100m d/s North Arm	Aug 22-Sep19	5	av = 0.020mg/L max <0.050mg/L	Objectives met
	E207600 Dinsmore Bridge	Aug 22-Sep19	5	av = 0.018mg/L max <0.050mg/L	Objectives met

TABLE 21 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Cl2 Residual 0.002mg/L max	Main Arm Sturgeon Bank Roberts Bank	1988	0	no data collected	Objective not checked
Dissolved Oxygen 7.75 mg/L min	Main Stem: GVRD 15 d/s Brunette confl	May 10-Aug30	4	9.1-11.1 mg/L	Objective met
	GVRD 14 Pattullo Bridge	May 20-Sep13	5	9.6-11.2 mg/L	Objective met
	0300005 Pattullo Bridge	Aug 29-Sep19	4	8.4- 9.3 mg/L	Objective met
	GVRD 13 & 12 u/s N Arm confl	May 10-Sep13	9	9.2-11.4 mg/L	Objective met
	Main Arm: GVRD 1 u/s Annacis	Feb 26-Dec20	6	9.4-12.5 mg/L	Objective met
	GVRD 2 d/s Annacis	Feb 26-Dec20	6	9.4-12.6 mg/L	Objective met
	0301308 u/s Annacis	Aug 22-Sep19	6	8.4-10.0 mg/L	Objective met
	0301311 d/s Annacis	Aug 22-Sep19	5	8.3-10.0 mg/L	Objective met
	GVRD 3 12 km d/s Annacis	Feb 26-Dec20	6	9.1-12.0 mg/L	Objective met
	E207624 Deas Slough	Aug 22-Sep19	5	8.2- 9.7 mg/L	Objective met
	E207604 Ladner Sl., bridge	Aug 29-Sep12	3	6.8- 7.6 mg/L	Objective not met
	E207605 Ladner Sl., mouth	Aug 29-Sep12	3	8.5- 9.2 mg/L	Objective met
	E105892 u/s Lulu	Aug 29-Sep19	4	8.3-10.4 mg/L	Objective met

TABLE 21 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen 7.75 mg/L min	Main Arm: E105893 d/s Lulu	Aug 29-Sep19	4	8.2- 9.5 mg/L	Objective met
	GVRD 4 d/s Lulu	Feb 26-Dec20	6	9.3-11.6 mg/L	Objective met
	GVRD 5 d/s Steveston	Feb 26-Dec20	6	8.6-11.3 mg/L	Objective met
	North Arm: E207398 u/s Scott Paper	Aug 29-Sep19	4	8.1- 9.8 mg/L	Objective met
	E207399 d/s Scott Paper	Aug 29-Sep19	4	8.1- 9.5 mg/L	Objective met
	GVRD 11 Queensborough Br.	May 10-Aug30	4	9.1-10.9 mg/L	Objective met
	E207396 u/s Belkin	Aug 29-Sep19	4	8.1- 9.8 mg/L	Objective met
	E207397 d/s Belkin	Aug 29-Sep19	4	8.2- 9.7 mg/L	Objective met
	GVRD 10 ~ 5km d/s Belkin	May 20-Sep13	5	9.2-11.0 mg/L	Objective met
	GVRD 9 Mitchell Island	May 10-Aug30	4	9.0-10.6 mg/L	Objective met
	GVRD 7 Oak Street Bridge	May 20-Sep13	7	9.3-10.8 mg/L	Objective met
	0300002 Oak Street Bridge	Aug 22-Sep19	4	8.0- 9.1 mg.L	Objective met
	GVRD 1,2,3,4 N Arm Jetty	May 10-Sep13	18	7.8-10.8 mg/L	Objective met
	GVRD 5 & 6 Sea Island	May 10-Sep13	9	8.4-11.0 mg/L	Objective met

TABLE 21 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Diss. Oxygen 7.75 mg/L min	Middle Arm: GVRD 8 at entrance	May 10-Aug30	3	8.6-10.5 mg/L	Objective met
	E207601 100m d/s North Arm	Aug 29-Sep19	4	7.8- 8.7mg/L	Objective met
	E207600 Dinsmore Bridge	Aug 29-Sep12	3	8.4- 9.2 mg/L	Objective met
		Sep 19	1	7.7 mg/L	Obj. not met
Diss. Oxygen 9.0 mg/L min	Sturgeon Bank & Roberts Bank	1988	0	no data collected	Objective not checked
pH 6.5 - 8.5	Main Stem	1988		no data collected	Objective not checked
	Main Arm: GVRD 1,2,3,4,5	Feb 26-Dec20	30	7.3 - 7.9	Obj. met
	0300005 Pattullo Bridge	Aug 29-Sep19	4	7.9 - 8.0	Objective met
	0301308 u/s Annacis	Aug 22-Sep19	6	7.7 - 8.2	Objective met
	0301311 d/s Annacis	Aug 22-Sep19	5	7.9 - 8.1	Objective met
	E207604 Ladner Sl., bridge	Aug 22-Sep19	5	7.5 - 8.0	Objective met
	E207605 Ladner Sl., mouth	Aug 22-Sep19	5	7.5 - 8.0	Objective met
	E105892 u/s Lulu	Aug 29-Sep19	4	7.9 - 8.2	Objective met
	E105893 d/s Lulu	Aug 29-Sep19	4	7.8 - 8.2	Objective met

TABLE 21 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 8.5	North Arm: E207398 u/s Scott	Aug 29-Sep19	4	7.7 - 8.0	Objective met
	E207399 d/s Scott	Aug 29-Sep19	4	7.7 - 8.0	Objective met
	E207396 u/s Belkin	Sep 8-Sep 19	3	7.8 - 8.0	Objective met
	E207397 d/s Belkin	Aug 29-Sep19	4	7.8 - 8.0	Objective met
	0300002 ak Street Bridge	Aug 22-Sep19	4	7.2 - 8.3	Objective met
	Middle Arm E207601 10m d/s North Arm	Aug 22-Sep19	5	7.5 - 8.0	Objective met
	E207600 Dinsmore Bridge	Aug 22-Sep19	5	7.5 - 8.0	Objective met
Total Cu <0.004mg/L av 0.006mg/L max hardness >35 or 20% increase	Main Arm: E207604 Ladner Sl., bridge	Aug 22-Sep19	5	av=0.002 mg/L max<0.005 mg/L	Objectives met
	E207605 Ladner Sl., mouth	Aug 22-Sep19	5	av=0.002 mg/L max<0.005 mg/L	Objectives met
	North Arm	1988	0	no data collected	Objectives not checked
	Middle Arm: E207601 100m d/s North Arm	Aug 22-Sep19	5	av<0.002 mg/L max=0.004 mg/L	Objectives met
	E207600 Dinsmore Bridge	Aug 22-Sep19	5	av<0.002 mg/L max=0.002 mg/L	Objectives met
Total Pb <0.003mg/L av 0.01 mg/L max	Main Arm: E207604 Ladner Sl., bridge	Aug 22-Sep12	4	<0.001 - 0.002 mg/L	Max obj. met

TABLE 21 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Total Lead <0.003mg/L av 0.01 mg/L max	Main Arm: E207605 Ladner Sl., mouth	Aug 22-Sep12	4	<0.001 - 0.001 mg/L	Max obj. met
	North Arm	1988	0	no data collected	Objectives not checked
	Middle Arm: E207601 100m d/s North Arm	Aug 22-Sep12	5	av<0.001 mg/L max=0.002 mg/L	Objectives met
	E207600 Dinsmore Bridge	Aug 22-Sep12	5	av<0.001 mg/L max=0.002 mg/L	Objectives met
Total Zn <0.05 mg/L av 0.10 mg/L max	Main Arm: E207604 Ladner Sl., bridge	Aug 22-Sep19	5	av=0.015 mg/L max=0.033 mg/L	Objectives met
	E207605 Ladner Sl., mouth	Aug 22-Sep19	5	av=0.007 mg/L max=0.015 mg/L	Objectives met
	North Arm:	1988	0	no data collected	Objectives not checked
	Middle Arm: E207601 100m d/s North Arm	Aug 22-Sep19	5	av<0.004 mg/L max=0.006 mg/L	Objectives met
	E207600 Dinsmore Bridge	Aug 22-Sep19	5	av<0.004 mg/L max=0.007 mg/L	Objectives met
Chlorophenols (tri, tetra, penta) in water 0.2 ug/L max	Main Stem: E206965 d/s Barnston Isl.	Feb 18	1	<0.3 ug/L	Indefinite result
	E206966 Sapperton Chnl.	Feb 18	1	<0.3 ug/L	Indefinite result
	Main Arm: E207404 E207405 u/s & d/s Annacis	Feb 18 Feb 18	1 1	<0.3 ug/L <0.3 ug/L	Indef result Indef result

TABLE 21 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Chlorophenols (tri, tetra, penta) in water 0.2 ug/L max	Main Arm: E207406 E207407 u/s & d/s Lulu	 Feb 18 Feb 18	 1 1	 <0.3 ug/L <0.3 ug/L	 Indef result Indef result
	E206970 Ewen Slough	Feb 18	1	<0.3 ug/L	Indefinite result
	North Arm: E207399 d/s Scott	Feb 18	1	<0.3 ug/L	Indefinite result
	E207396 E207397 u/s & d/s Belkin	Feb 18 Feb 18	1 1	<0.3 ug/L <0.3 ug/L	Indef result Indef result
	u/s Richmd Recycle	Feb 18	1	<0.3 ug/L	Indef result
	E207403 d/s Richmd Recycle	Feb 18	1	<0.3 ug/L	Indefinite result
	E207401 d/s Mitchell Isl.	Feb 18	1	TCP < 0.1ug/L TTCP = 0.1ug/L PCP = 0.1ug/L	Objective not met
	E206968 MacDonald Slough	Feb 18	1	<0.3 ug/L	Indefinite result
	Middle Arm	1988	0	no data collected	Objective not checked
Chlorophenols (tri, tetra, penta) in sediments 0.01 ug/g max (dry weight)	Main Stem: E206965 d/s Barnston Isl.	Feb 18	3	all <0.02 ug/g	Indefinite result
	E206966 Sapperton Chnl.	Feb 18	3	all <0.02 ug/g	Indefinite result
	Main Arm: E207404 E207405 u/s & d/s Annacis	 Feb 18 Feb 18	 3 3	 all <0.03 ug/g all <0.02 ug/g	 Indef result Indef result

TABLE 21 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Chlorophenols (tri, tetra, penta) in sediments 0.01 ug/g max (dry weight)	Main Arm: E206970 Ewen Slough	Feb 18	3	all <0.03 ug/g	Indefinite result
	North Arm: E207399 d/s Scott	Feb 18	3	all <0.04 ug/g	Indefinite result
	E207396 E207397 u/s & d/s Belkin	Feb 18 Feb 18	3 3	all <0.04 ug/g all <0.03 ug/g	Indef result Indef result
	u/s Richmd Recycle	Feb 18	3	all <0.02 ug/g	Indef result
	E207403 d/s Richmd Recycle	Feb 18	3	all <0.03 ug/g	Indefinite result
	E207401 d/s Mitchell Isl.	Feb 18	3	all <0.02 ug/g	Indefinite result
	E206968 MacDonald Slough	Feb 18	3	all <0.02 ug/g	Indefinite result
	Middle Arm	1988	0	no data	Obj not chkd
	Sturgeon Bank: EP 23 EP WI-3 EP SB2 EP 28	 Feb Feb Feb Feb	 3 1 3 3	 max <0.004ug/g max <0.004ug/g max <0.003ug/g max <0.004ug/g	 Obj. met Obj. met Obj. met Obj. met
	Roberts Bank: EP RB1 EP RB2	 Feb Feb	 3 3	 max <0.003ug/g max <0.003ug/g	 Obj. met Obj. met
PCBs in sediments 0.03 ug/g max (dry weight)	Main Stem: E206965 d/s Barnston Isl.	Feb 18	3	all <0.03 ug/g	Objective met
	E206966 Sapperton Chnl.	Feb 18	3	all <0.03 ug/g	Objective met

TABLE 21 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
PCBs in sediments 0.03 ug/g max (dry weight)	Main Arm: E207404 E207405 u/s & d/s Annacis	 Feb 18 Feb 18	 3 3	 all <0.03 ug/g all <0.03 ug/g	 Obj. met Obj. met
	E206970 Ewen Slough	Feb 18	3	all <0.04 ug/g	Indefinite result
	North Arm: E207399 d/s Scott	Feb 18	3	all <0.05 ug/g	Indefinite result
	E207396 E207397 u/s & d/s Belkin	Feb 18 Feb 18	3 3	all <0.06 ug/g all <0.04 ug/g	Indef result Indef result
	u/s Richmd Recycle	Feb 18	3	all <0.03 ug/g	Obj. met
	E207403 d/s Richmd Recycle	Feb 18	3	all <0.03 ug/g	Objective met
	E207401 d/s Mitchell Isl.	Feb 18	3	all <0.03 ug/g	Objective met
	E206968 MacDonald Slough	Feb 18	3	all <0.03 ug/g	Objective met
	Middle Arm	1988	0	no data	Obj not chkd
Chlorophenols (tri, tetra, penta) in fish 0.10 ug/g max (wet weight)	Main Stem E206965 d/s Barnston Isl.	Aug	19	0.006 - 0.043 ug/g max (4 species)	Objective met
	Main Arm E206970 Ewen Slough	Aug	42	0.001 - 0.024 ug/g max (5 species)	Objective met
	North Arm E206968 MacDonald Slough	Aug	59	<0.0006- 0.014 ug/g max (6 species)	Objective met
	Middle Arm	1988	0	no data collected	Objective not checked

TABLE 21 continued

FRASER RIVER (KANAKA CREEK TO THE MOUTH) WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
PCBs in fish 0.50 ug/g max (wet weight)	Main Stem E206965 d/s Barnston Isl.	Aug	22	0.015 - 0.12 ug/g max (4 species)	Objective met
	Main Arm E206970 Ewen Slough	Aug	43	0.03 - 0.06 ug/g max (5 species)	Objective met
	North Arm E206968 MacDonald Slough	Aug	56	0.02 - 0.26 ug/g max (6 species)	Objective met
	Middle Arm	1988	0	no data collected	Objective not checked

TABLE 22

BOUNDARY BAY WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <200/100 mL geometric mean (gm) <400/100 mL 90th perc. (np) Apr - Oct	Boundary Bay: MOH 1 Beach Road White Rock	Jun 21-Jul19	5	gm = 59/100 mL np= 400/100 mL	Objectives met
		Jul 25-Aug22	9	gm = 17/100 mL np = 50/100 mL	Objectives met
	MOH 2 Parker Street White Rock	Jun 21-Jul19	5	gm = 25/100 mL np =140/100 mL	Objectives met
		Jul 19-Aug22	9	gm = 33/100 mL np = 50/100 mL	Objectives met
	MOH 3 Balsam Street White Rock	Jun 21-Jul19	5	gm = 56/100 mL np =200/100 mL	Objectives met
		Jul 25-Aug22	8	gm = 44/100 mL np =240/100 mL	Objectives met
	MOH 4 Vidal Street White Rock	Jun 21-Jul19	5	gm = 56/100 mL np =550/100 mL	Av obj. met Max not met
		Jul 25-Aug22	7	gm = 34/100 mL np = 90/100 mL	Objectives met
	MOH 5 High Street White Rock	Jun 21-Jul19	5	gm = 28/100 mL np =125/100 mL	Objectives met
		Jul 25-Aug22	9	gm = 29/100 mL np =375/100 mL	Objectives met
	MOH 6 Beecher Street Crescent Beach	Jun 21-Jul19	5	gm = 15/100 mL np =130/100 mL	Objectives met
		Jul 25-Aug22	9	gm = 62/100 mL np =375/100 mL	Objectives met
	MOH 7 Sullivan Street Crescent Beach	Jun 21-Jul19	5	gm = 11/100 mL np= =30/100 mL	Objectives met
		Jul 25-Aug22	8	gm = 15/100 mL np = 93/100 mL	Objectives met

TABLE 22 continued

BOUNDARY BAY WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <200/100 mL geometric mean (gm) <400/100 mL 90th perc. (np) Apr - Oct	Boundary Bay: MOH 8 Centennial Beach North	Jun 7-Jul 4	5	gm = 40/100 mL np =200/100 mL	Objectives met
		Jul 25-Aug22	9	gm = 29/100 mL np = 50/100 mL	Objectives met
	MOH 9 Centennial Beach South	Jul 25-Aug22	9	gm = 73/100 mL np =120/100 mL	Objectives met
	MOH 10 Boundary Bay Beach (1st Ave)	Jun 21-Jul19	5	gm = 39/100 mL np =500/100 mL	Av obj. met Max not met
		Jul 25-Aug22	9	gm = 17/100 mL np = 90/100 mL	Objectives met
	GVRD 27 Balsam Street White Rock	Jul 29-Aug26	6	gm = 20/100 mL np = 20/100 mL	Objectives met
	GVRD 28 end of Pier White Rock	Jul 29-Aug26	6	gm = 25/100 mL np = 30/100 mL	Objectives met
	GVRD 29 Oxford Street White Rock	Jul 29-Aug26	6	gm = 31/100 mL np = 50/100 mL	Objectives met
	GVRD 30 High St. WhiteRock	Jul 29-Aug26	6	gm = 59/100 mL np =250/100 mL	Objectives met
	Little Campbell R: 0300066 near source	Oct 19-Nov17	5	gm =100/100 mL np =200/100 mL	Objectives met
	0300065 near mouth	Oct 19-Nov17	4	72-620 /100 mL	Indefinite result
Fecal Col. <1000/100 mL geo mean (gm) 4000/100 mL max Apr - Oct	Nicomekl River: 0300062 near source	Oct 19-Nov17	5	gm = 220/100mL max=2500/100mL	Objectives met
	0300060 near mouth	Oct 19-Nov17	5	gm = 393/100mL max=3100/100mL	Objectives met

TABLE 22 continued

BOUNDARY BAY WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Fecal Coliforms <1000/100 mL geometric mean (gm) 4000/100 mL max Apr - Oct	Anderson Creek: E207028 near source	Oct 19-Nov17	5	gm = 164/100mL max= 330/100mL	Objectives met
	0300063 near mouth	Oct 19-Nov17	5	gm = 218/100mL max= 350/100mL	Objectives met
	Murray Creek: E207031 near source	Oct 19-Nov17	5	gm = 205/100mL max=4500/100mL	Av obj. met Max not met
	0300064 near mouth	Oct 19-Nov17	5	gm = 292/100mL max=2000/100mL	Objectives met
	Serpentine River: 0300059 near source	Oct 20-Nov17	5	gm = 105/100mL max=1800/100mL	Objectives met
	0300057 near mouth	Oct 20-Nov17	5	gm = 257/100mL max=1490/100mL	Objectives met
	Mahood Creek: E207717 near source	Oct 20-Nov17	5	gm = 361/100mL max=3650/100mL	Objectives met
	0300056 near mouth	Oct 20-Nov17	5	gm = 520/100mL ma=10600/100mL	Av obj. met Max not met
	Latimer Creek: E207720 near source	Oct 20-Nov17	5	gm = 281/100mL max=2710/100mL	Objectives met
	E207716 near mouth	Oct 20-Nov17	5	gm = 909/100mL max=4300/100mL	Av Obj. met Max not met
	Hyland Creek: E207718 near source	Oct 20-Nov17 Nov 8	3 1	62-1280 /100mL 9700 /100mL	Max obj. met Max not met
	E207719 near mouth	Oct 20-Nov17	4	210-3500/100mL	Max obj. met

TABLE 22 continued

BOUNDARY BAY WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended solids max increase: 10 mg/L or 10%	Little Campbell R: 0300066 near source	Oct 19,Nov2, 8,17	4	3,2,3,1 mg/L	Control site
	0300065 near mouth	Oct19, Nov17 Nov 2 & 8	2 2	inc = 5 mg/L inc=11-16 mg/L	Obj. met Obj. not met
	Nicomekl River: 0300062 near source	Oct 19,27, Nov 2,8,17	5	10,4,12,28,5 mg/L	Control site
	0300060 near mouth	Oct 19 & 27 Nov 2,8,17	2 3	inc=15-83 mg/L inc = 0-9 mg/L	Obj. not met Obj. met
	Anderson Creek: E207028 near source	Oct 19,27, Nov 2,8,17	5	<1,2,2,12,2 mg/L	Control site
	0300063 near mouth	Oct 19,27, Nov 2,8,17	5	inc = 1-2 mg/L	Objective met
	Murray Creek: E207031 near source	Oct 19,27, Nov 2,8,17	5	7,2,6,17,5 mg/L	Control site
	0300064 near mouth	Oct 19,27, Nov 2,8,17	5	inc = 0-8 mg/L	Objective met
	Serpentine River: 0300059 near source	Oct 20,27, Nov 2,8,17	5	22,16,18,17,13 mg/L	Control site
	0300057 near mouth	Oct 20,27, Nov 2,8,17	5	inc = 0-6 mg/L	Objective met
	Mahood Creek: E207717 near source	Oct 20,27, Nov2,8,17	5	<1,<1,35,25,1 mg/L	Control site
	0300056 near mouth	Oct 20-Nov17 Nov 2,8	3 2	inc = 1-3 mg/L inc=105,56mg/L	Obj. met Obj. not met

TABLE 22 continued

BOUNDARY BAY WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Suspended solids max increase: 10 mg/L or 10%	Latimer Creek: E207720 near source	Oct 20,27, Nov 2,8,17	5	2,<1,203,20,3 mg/L	Control site
	E207716 near mouth	Oct 27-Nov17 Oct 20	4 1	inc = 0-3 mg/L inc = 12 mg/L	Obj. met Obj. not met
	Hyland Creek: E207718 near source	Oct 20,27, Nov 8,17	4	4,1,32,7 mg/L	Control site
	E207719 near mouth	Oct 20-Nov17 Nov 8	3 1	inc = 1-4 mg/L inc = 15 mg/L	Obj. met Obj. not met
	Boundary Bay	1988	0	no data	Obj not chkd
Substrate Sedimentation no increase in weight of particles <3 mm dia	Anderson Creek: E207028 near source	Oct - Nov	3	av = 1025 g	Control site
	0300063 near mouth	Oct - Nov	1	av = 990 g no increase	Objective met
	Little Campbell R. Nicomekl River Murray Creek Serpentine River Mahood Creek Latimer Creek Hyland Creek Boundary Bay	1988	0	data incomplete	Indefinite result
Turbidity max increase: 5 NTU or 10%	Little Campbell R: 0300066 near source	Oct 19, Nov 2,8,17	4	0.9 - 1.4 NTU	Control site
	0300065 near mouth	Oct 19,Nov17 Nov 2,8	2 2	inc=5.0,4.1NTU inc=8.6,9.0NTU	Obj. met Obj. not met
	Nicomekl River: 0300062 near source	Oct 19,27, Nov 2,8,17	5	3.0 - 15 NTU	Control site

TABLE 22 continued

BOUNDARY BAY WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity max increase: 5 NTU or 5%	Nicomekl River: 0300060 near mouth	Nov 8 Oct 19-Nov17	1 4	inc = 0 NTU inc=7.2-15 NTU	Obj. met Obj. not met
	Anderson Creek: E207028 near source	Oct 19-Nov17	5	1.6 - 4.6 NTU	Control site
	0300063 near mouth	Oct 19-Nov17	5	max inc=2.1NTU	Objective met
	Murray Creek: E207031 near source	Oct 19-Nov17	5	1.7 - 6.4 NTU	Control site
	0300064 near mouth	Oct 19-Nov17 Nov 2	4 1	inc=0-4.6 NTU inc = 8.4 NTU	Obj. met Obj. not met
	Serpentine River: 0300059 near source	Oct 20-Nov17	5	11 - 24 NTU	Control site
	0300057 near mouth	Oct 20-Nov17 Nov 2	4 1	inc = 0 NTU inc = 11 NTU	Obj. met Obj. not met
	Mahood Creek: E207717 near source	Oct 20-Nov17	5	1.0 - 28 NTU	Control site
	0300056 near mouth	Oct 20-Nov17 Nov 2,8	3 2	inc=1-2.4 NTU inc=37,27 NTU	Obj. met Obj. not met
	Latimer Creek: E207720 near source	Oct 20-Nov17	5	2.2 64 NTU	Control site
	E207716 near mouth	Oct 20-Nov17 Nov 8	4 1	inc=0-4.9 NTU inc = 9.8 NTU	Obj. met Obj. not met
	Hyland Creek: E207718 near source	Oct 20-Nov17	4	2.9 - 17 NTU	Control site

TABLE 22 continued

BOUNDARY BAY WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Turbidity max increase: 5 NTU or 10%	Hyland Creek: E207719 near mouth	Oct 20-Nov17 Nov 8	3 1	inc=0-2.5 NTU inc = 13 NTU	Obj. met Obj. not met
	Boundary Bay	1988	0	no data	Obj not chkd
Ammonia-N <0.76 mg/L av 5.6 mg/L max at pH = 8.0 temp = 20 C	Little Campbell R: 0300066 near source	Oct 19-Nov17	5	av = 0.027mg/L max= 0.038mg/L	Objectives met
	0300065 near mouth	Oct 19-Nov17	5	av = 0.086mg/L max= 0.141mg/L	Objectives met
	Nicomekl River: 0300062 near source	Oct 19-Nov17	5	av = 0.124mg/L max= 0.177mg/L	Objectives met
	0300060 near mouth	Oct 19-Nov17	5	av = 0.251mg/L max= 0.398mg/L	Objectives met
	Anderson Creek: E207028 near source	Oct 19-Nov17	5	av = 0.063mg/L max= 0.111mg/L	Objectives met
	0300063 near mouth	Oct 19-Nov17	5	av = 0.023mg/L max= 0.040mg/L	Objectives met
	Murray Creek: E207031 near source	Oct 19-Nov17	5	av = 0.122mg/L max= 0.195mg/L	Objectives met
	0300064 near mouth	Oct 19-Nov17	5	av = 0.092mg/L max= 0.273mg/L	Objectives met
	Serpentine River: 0300059 near source	Oct 20-Nov17	5	av = 0.182mg/L max= 0.429mg/L	Objectives met
	0300057 near mouth	Oct 20-Nov17	5	av = 0.490mg/L max= 0.925mg/L	Objectives met
	Mahood Creek: E207717 near source	Oct 20-Nov17	5	av = 0.043mg/L max= 0.105mg/L	Objectives met

TABLE 22 continued

BOUNDARY BAY WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Ammonia-N <0.76 mg/L av 5.6 mg/L max at ph = 8.0 temp = 20 C	Mahood Creek: 0300056 near mouth	Oct 20-Nov17	5	av = 0.043mg/L max= 0.080mg/L	Objectives met
	Latimer Creek: E207720 near source	Oct 20-Nov17	5	av = 0.025mg/L max= 0.044mg/L	Objectives met
	E207716 near mouth	Oct 20-Nov17	5	av = 0.229mg/L max= 0.352mg/L	Objectives met
	Hyland Creek: E207718 near source	Oct 20-Nov17	4	0.009 - 0.037 mg/L	Max obj. met
	E207719 near mouth	Oct 20-Nov17	5	av = 0.040mg/L max= 0.051mg/L	Objectives met
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Little Campbell R: 0300066 near source	Oct 19-Nov17	5	av = 0.007mg/L max= 0.008mg/L	Objectives met
	0300065 near mouth	Oct 19-Nov17	5	av = 0.025mg/L max= 0.032mg/L	Av not met Max obj. met
	Nicomekl River: 0300062 near source	Oct 19-Nov17	5	av = 0.030mg/L max= 0.043mg/L	Av not met Max obj. met
	0300060 near mouth	Oct 19-Nov17	5	av = 0.041mg/L max= 0.058mg/L	Av not met Max obj. met
	Anderson Creek: E207028 near source	Oct 19-Nov17	5	av = 0.022mg/L max= 0.038mg/L	Av not met Max obj. met
	0300063 near mouth	Oct 19-Nov17	5	av = 0.011mg/L max= 0.015mg/L	Objectives met
	Murray Creek: E207031 near source	Oct 19-Nov17	5	av = 0.023mg/L max= 0.034mg/L	Av not met Max obj. met

TABLE 22 continued

BOUNDARY BAY WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Nitrite-N <0.02 mg/L av 0.06 mg/L max	Murray Creek: 0300064 near mouth	Oct 19-Nov17	5	av = 0.020mg/L max= 0.026mg/L	Objectives met
	Serpentine River: 0300059 near source	Oct 20-Nov17	5	av = 0.056mg/L max= 0.171mg/L	Objectives not met
	0300057 near mouth	Oct 20-Nov17	5	av = 0.041mg/L max= 0.073mg/L	Objectives not met
	Mahood Creek: E207717 near source	Oct 20-Nov17	5	av = 0.011mg/L max= 0.018mg/L	Objectives met
	0300056 near mouth	Oct 20-Nov17	5	av = 0.010mg/L max= 0.012mg/L	Objectives met
	Latimer Creek: E207720 near source	Oct 20-Nov17	5	av = 0.008mg/L max= 0.012mg/L	Objectives met
	E207716 near mouth	Oct 20-Nov17	5	av = 0.018mg/L max= 0.023mg/L	Objectives met
	Hyland Creek: E207718 near source	Oct 20-Nov17	4	<0.005 - 0.011 mg/L	Max obj. met
	E207719 near mouth	Oct 20-Nov17	5	av = 0.011mg/L max= 0.015mg/L	Objectives met
Chlorophyll-a 50 mg/m2 av	Little Campbell R.	1988	0	no data collected	Objective not checked
Chlorophyll-a 100 mg/m2 av	Serpentine River Mahood Creek Latimer Creek Hyland Creek Nicomekl River Anderson Creek Murray Creek	1988	0	no data collected	Objective not checked

TABLE 22 continued

BOUNDARY BAY WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen 6 mg/L min Jun - Oct	Little Campbell R: 0300066 near source	Oct 20-Nov 8 Nov 17	4 1	2.1 - 4.8 mg/L 6.0 mg/L	Obj. not met Obj. met
	0300065 near mouth	Oct 20-Nov17	5	8.2 - 10.6mg/L	Objective met
	Nicomekl River: 0300062 near source	Oct 20-Nov17	5	8.2 - 10.7mg/L	Objective met
	0300060 near mouth	Oct 20 Oct 27-Nov17	1 4	5.5 mg/L 6.5 - 8.8 mg/L	Obj. not met Obj. met
	Serpentine River: 0300059 near source	Oct 20-Nov17	5	6.3 - 9.2 mg/L	Objective met
	0300057 near mouth	Oct 20-Nov17 Nov 2,8	3 2	4.8 - 5.6 mg/L 6.4 - 8.0 mg/L	Obj. not met Obj. met
Dissolved Oxygen 8 mg/L min Jun - Oct	Anderson Creek: E207028 near source	Oct 20-Nov17	5	8.8 - 10.5mg/L	Objective met
	0300063 near mouth	Oct 20-Nov17	5	9.4 - 11.0mg/L	Objective met
	Murray Creek: E207031 near source	Oct 20-Nov17	5	9.8 - 11.8mg/L	Objective met
	0300064 near mouth	Oct 20-Nov17	5	9.6 - 11.5mg/L	Objective met
	Mahood Creek: E207717 near source	Oct 20-Nov17	5	9.3 - 11.2mg/L	Objective met
	0300056 near mouth	Oct 20-Nov17	5	9.3 - 11.0mg/L	Objective met

TABLE 22 continued

BOUNDARY BAY WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
Dissolved Oxygen 8 mg/L min Jun - Oct	Latimer Creek: E207720 near source	Oct 20-Nov17	5	10 - 10.9 mg/L	Objective met
	E207716 near mouth	Oct 20-Nov17	5	8.0 - 10.0mg/L	Objective met
	Hyland Creek: E207718 near source	Oct 20-Nov17	4	9.3 - 10.6mg/L	Objective met
	E207719 near mouth	Oct 20-Nov17	5	8.3 - 11.0mg/L	Objective met
Dissolved Oxygen 6.5 mg/L min	Boundary Bay: 0300070 East	Oct 24-Dec 6	29	6.6 - 9.4 mg/L	Objective met
	0300071 West	Oct 24-Dec 6	27	7.8 - 9.7 mg/L	Objective met
pH 6.5 - 8.5	Little Campbell R: 0300066 near source	Oct 19-Nov17	5	6.5 - 6.9	Objective met
	0300065 near mouth	Oct 19-Nov17	4	7.1 - 7.2	Objective met
pH 6.6 - 8.5 or 0.2 max increase	Nicomekl River: 0300062 near source	Oct 19-Nov17	5	7.1 - 7.4	Objective met
	0300060 near mouth	Oct 19-Nov17 Oct 27-Nov 8	2 3	6.4 6.6 - 7.1	Obj. not met Obj. met
	Anderson Creek: E207028 near source	Oct 19-Nov17	5	7.1 - 7.3	Objective met
	0300063 near mouth	Oct 19-Nov17	5	7.4 - 7.6	Objective met

TABLE 22 continued

BOUNDARY BAY WATER QUALITY OBJECTIVES - 1988

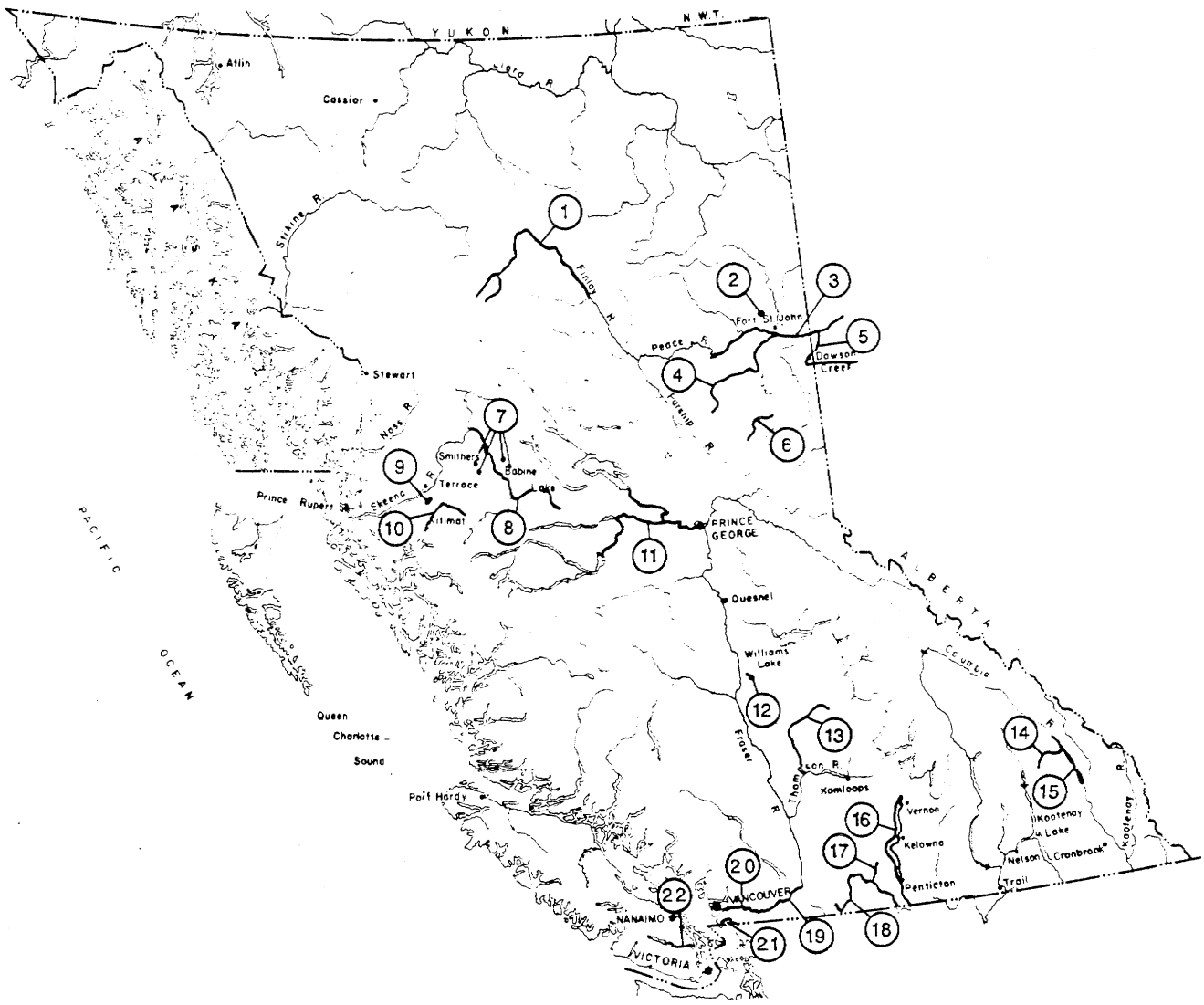
VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
pH 6.5 - 8.5 or 0.2 max increase	Murray Creek: E207031 near source	Oct 19-Nov17	5	7.1 - 7.4	Objective met
	0300064 near mouth	Oct 19-Nov17	5	7.2 - 7.5	Objective met
	Serpentine River: 0300059 near source	Oct 20-Nov17 Oct 27-Nov 8	2 3	5.8 - 6.4 6.9 - 7.0	Obj. not met Obj. met
	0300057 near mouth	Oct 20-Nov17 Oct 27-Nov 8	2 3	6.1 - 6.3 6.6	Obj. not met Obj. met
	Mahood Creek: E207717 near source	Oct 20-Nov17	5	7.1 - 7.5	Objective met
	0300056 near mouth	Oct 20-Nov17	5	7.1 - 7.6	Objective met
	Latimer Creek: E207720 near source	Oct 20-Nov17	5	6.8 - 7.5	Objective met
	E207716 near mouth	Oct 20-Nov17	5	6.7 - 7.2	Objective met
	Hyland Creek: E207718 near source	Oct 20-Nov17	4	7.4 - 7.7	Objective met
	E207719 near mouth	Oct 20-Nov17	4	7.2 - 7.4	Objective met
Total Lead <0.005mg/L av 0.010mg/L max	Nicomekl River: 0300062 near source	Oct 19-Nov17	5	av < 0.001mg/L max= 0.001mg/L	Objectives met
	0300060 near mouth	Oct 19-Nov17	5	av = 0.001mg/L max= 0.002mg/L	Objectives met

TABLE 22 continued

BOUNDARY BAY WATER QUALITY OBJECTIVES - 1988

VARIABLE & OBJECTIVE	MEASUREMENTS				CONCLUSION
	SITE	DATE	n	VALUE	
PCBs 0.001ug/L max in water	Serpentine River 0300057 near mouth	Oct 20	1	<0.4 ug/L	Indefinite result
	Mahood Creek 0300056 near mouth	Oct 20	1	<0.4 ug/L	Indefinite result
	Latimer Creek E207716 near mouth	Oct 20	1	<0.4 ug/L	Indefinite result
	Hyland Creek E207719 near mouth	Oct 20	1	<0.4 ug/L	Indefinite result
PCBs <0.1-0.5 ug/g wet weight in fish	Serpentine River Mahood Creek Latimer Creek Hyland Creek	1988	0	no data collected	Objective not checked
PCBs <0.03 ug/g dry weight in sediments	Boundary Bay: 0300070 East	Nov 30	3	all <0.02 ug/g	Objective met
	0300071	Nov 30	3	all <0.02 ug/g	Objective met
	Serpentine River Mahood Creek Latimer Creek Hyland Creek	1988	0	no data collected	Objective not checked

FIGURE 1 Water Basins Where Water Quality Objectives Have Been Set



1. Upper Finlay R.
2. Charlie L.
3. Peace R.
4. Pine R.
5. Pouce Coupe R.
6. Bullmoose Cr.
7. Kathlyn, Seymour, Round, and Tyhee L's.
8. Bulkley R.
9. Lakelse L.
10. Lower Kitimat R. and Arm
11. Nechako R.
12. Williams L.
13. Bonaparte R.
14. Toby Cr.
15. Columbia and Windermere L.
16. Okanagan Valley L.
17. Cahill Cr.
18. Similkameen R.
19. Lower Fraser R.
20. Lower Fraser R.
21. Boundary Bay
22. Cowichan - Koksilah R.

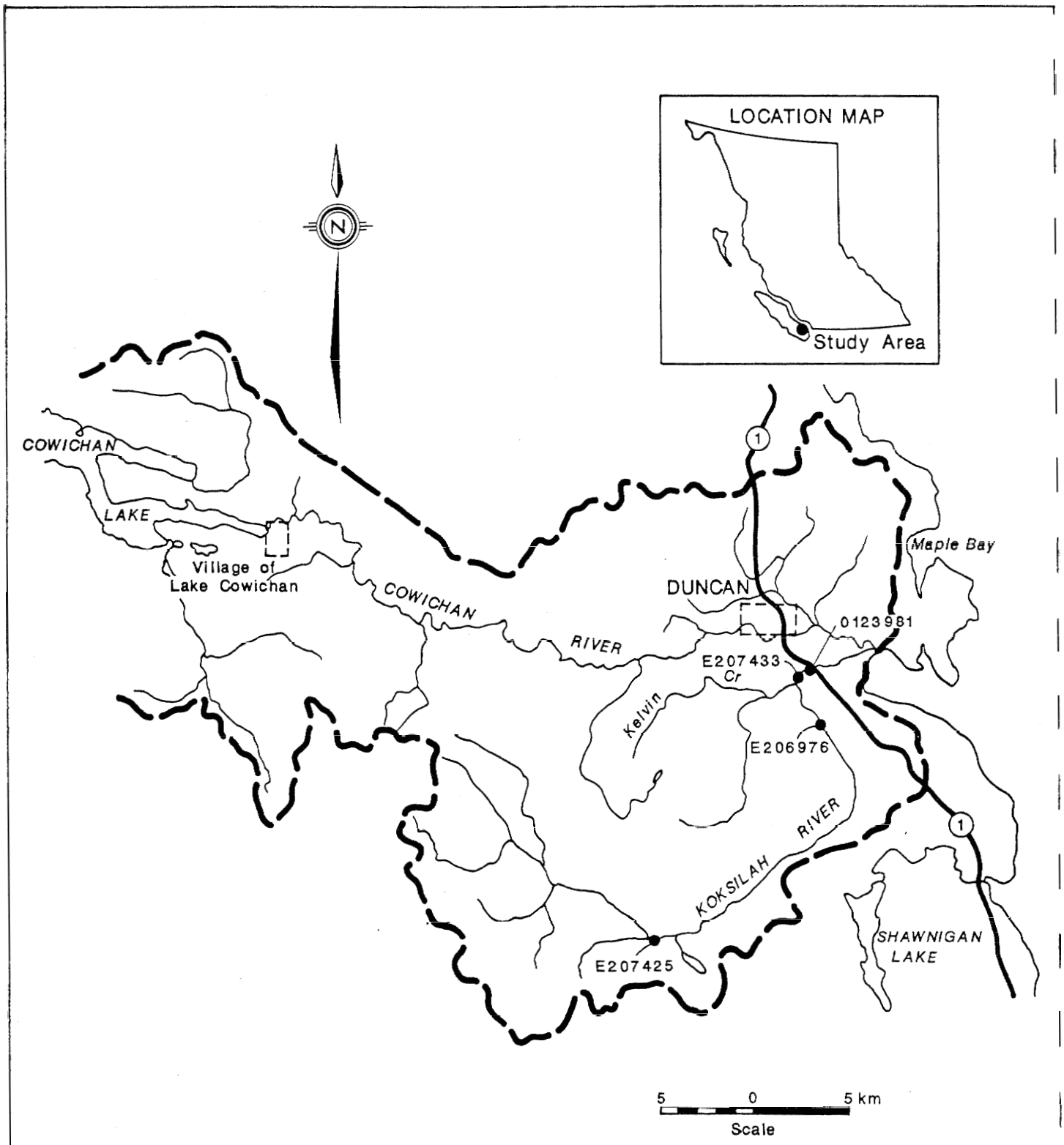


FIGURE 2 Cowichan – Koksilah Rivers

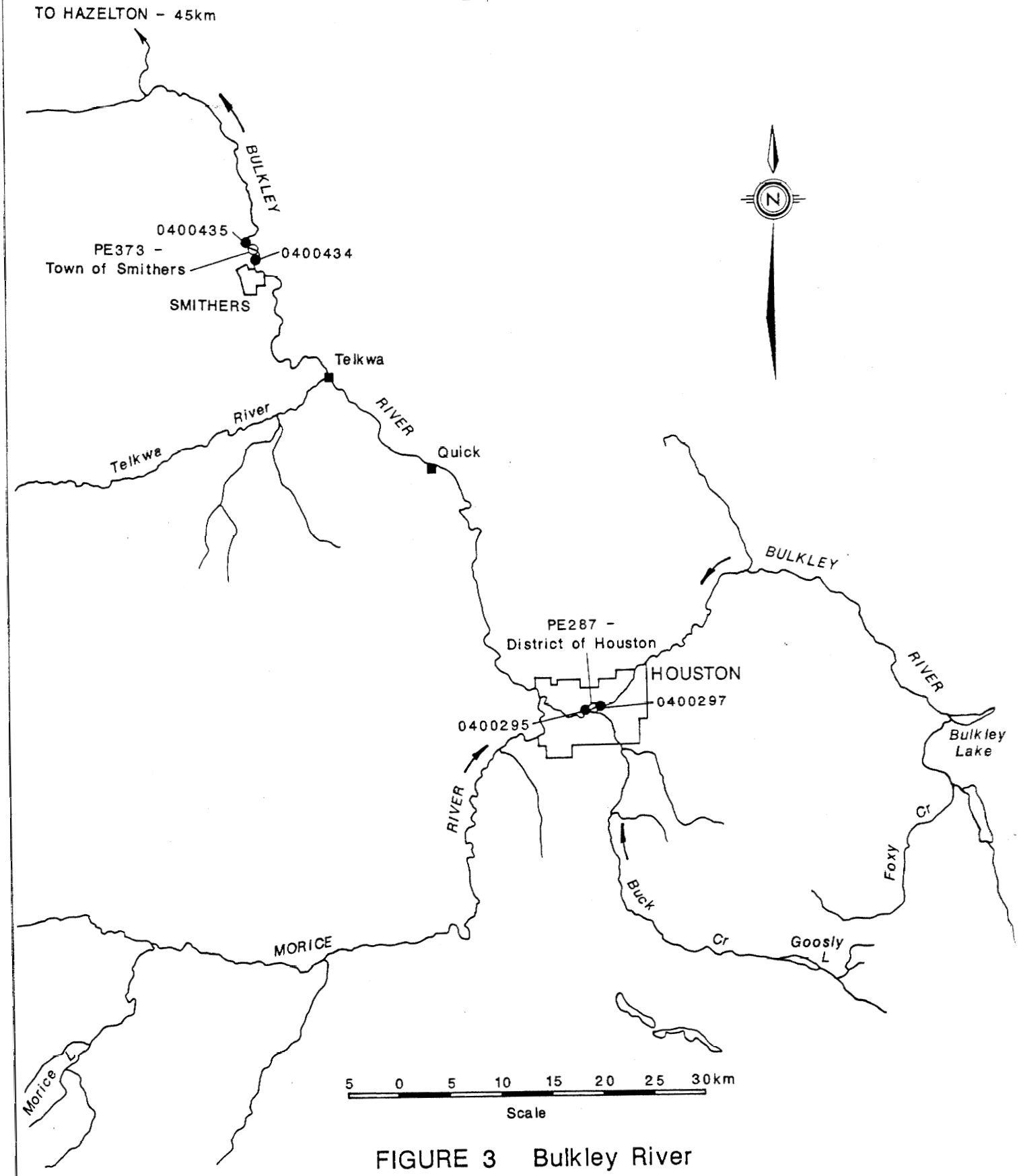


FIGURE 3 Bulkley River

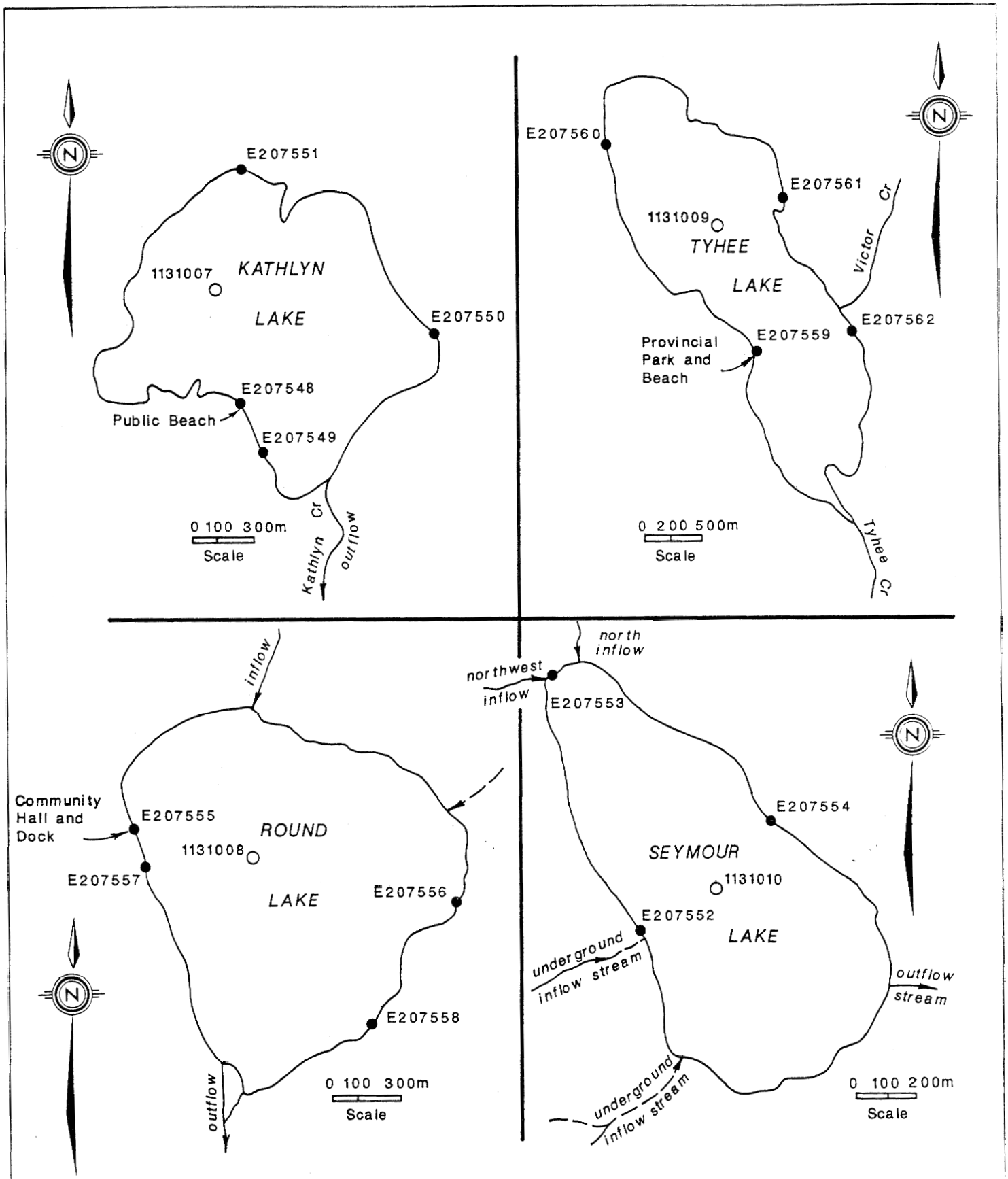


FIGURE 4 Kathlyn, Seymour, Round and Tyhee Lakes

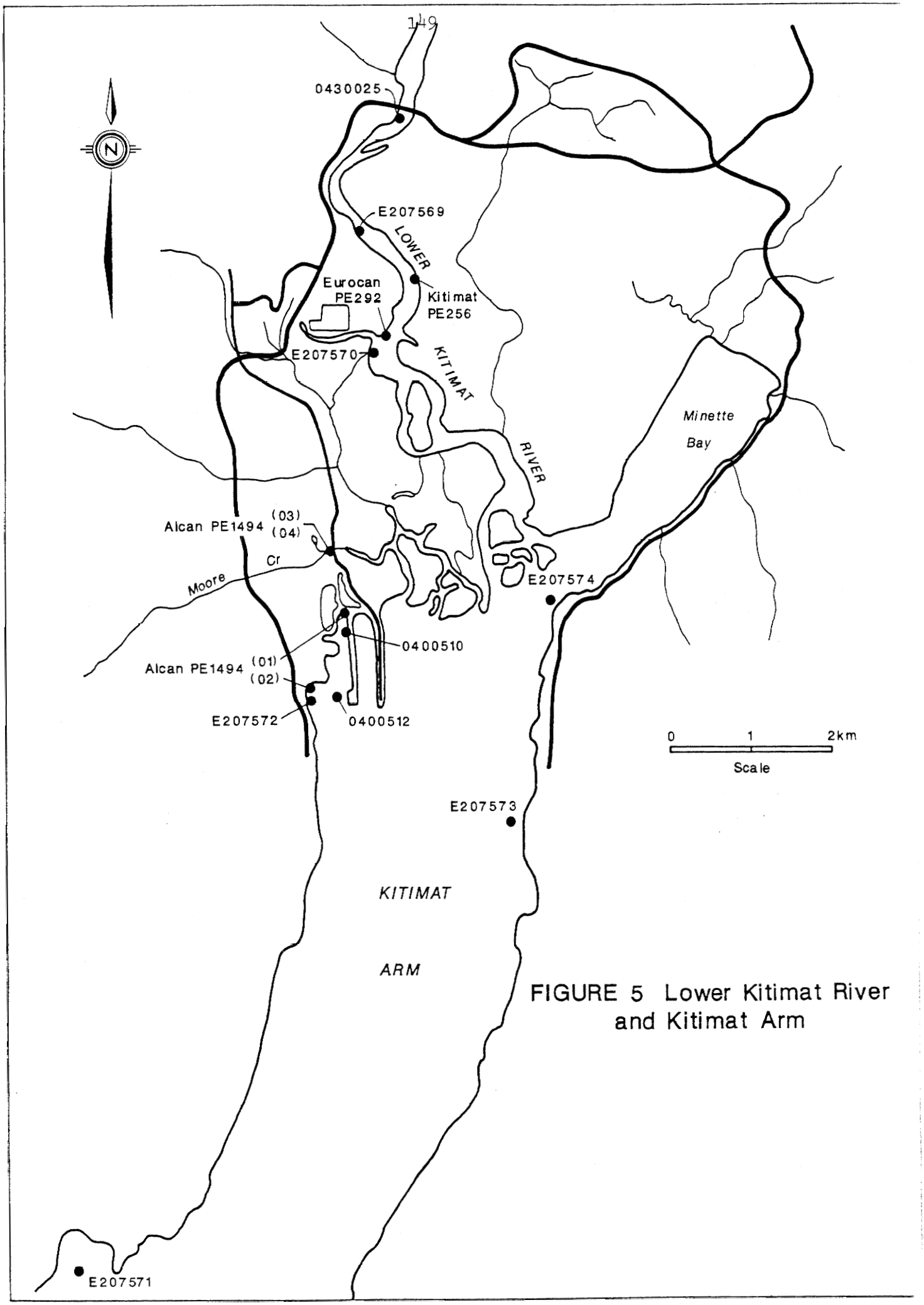


FIGURE 5 Lower Kitimat River and Kitimat Arm

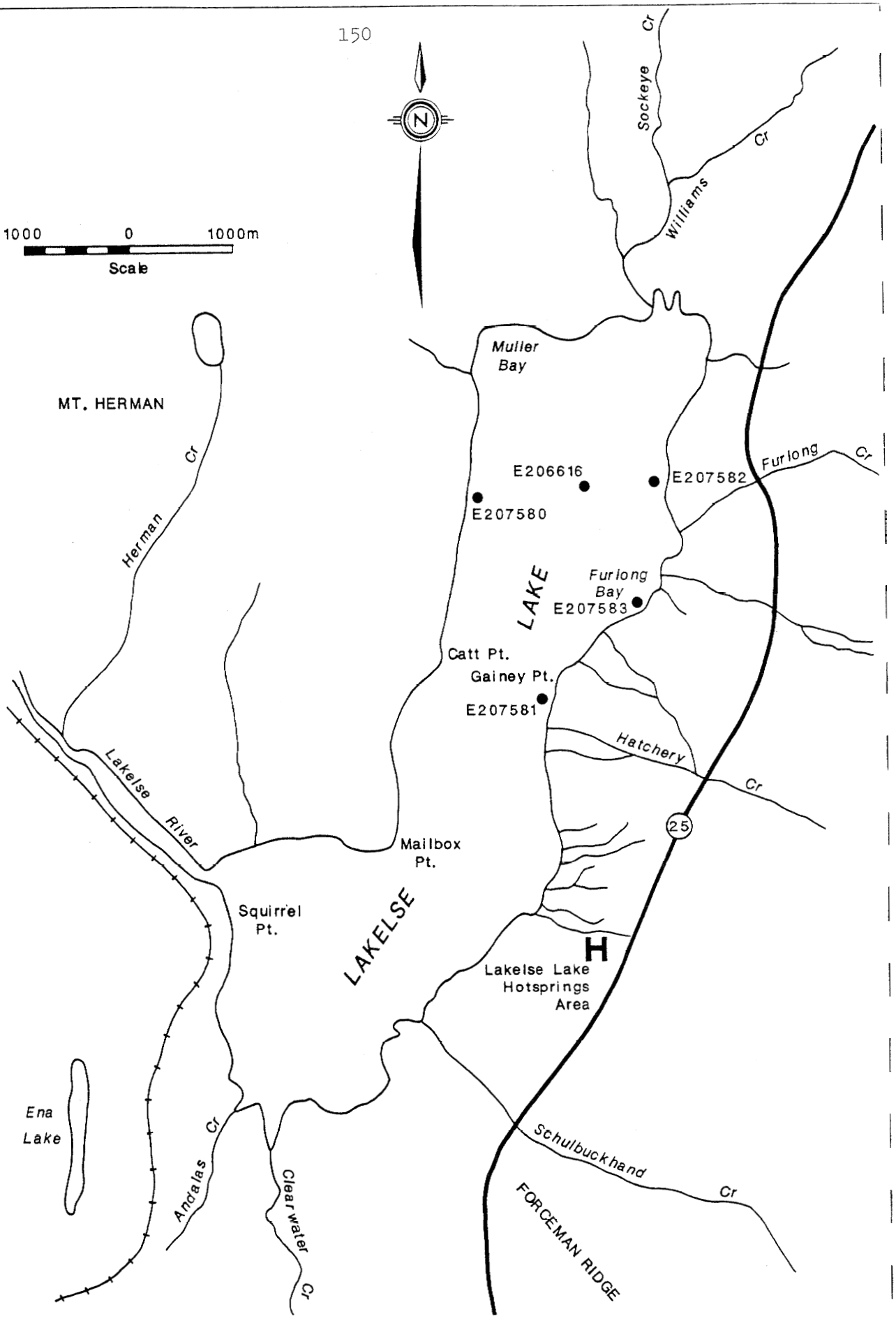


FIGURE 6 Lakelse Lake

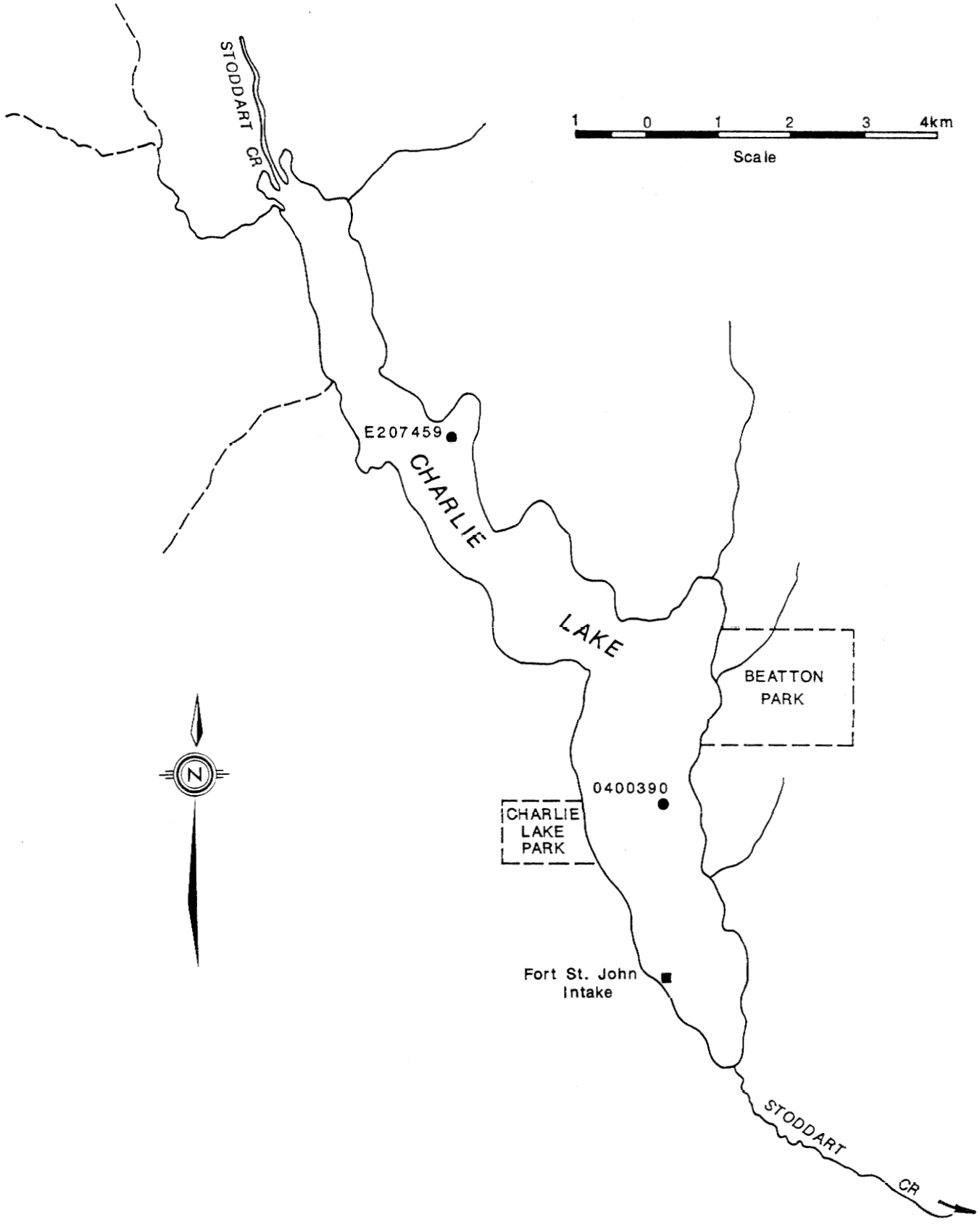


FIGURE 7 Charlie Lake

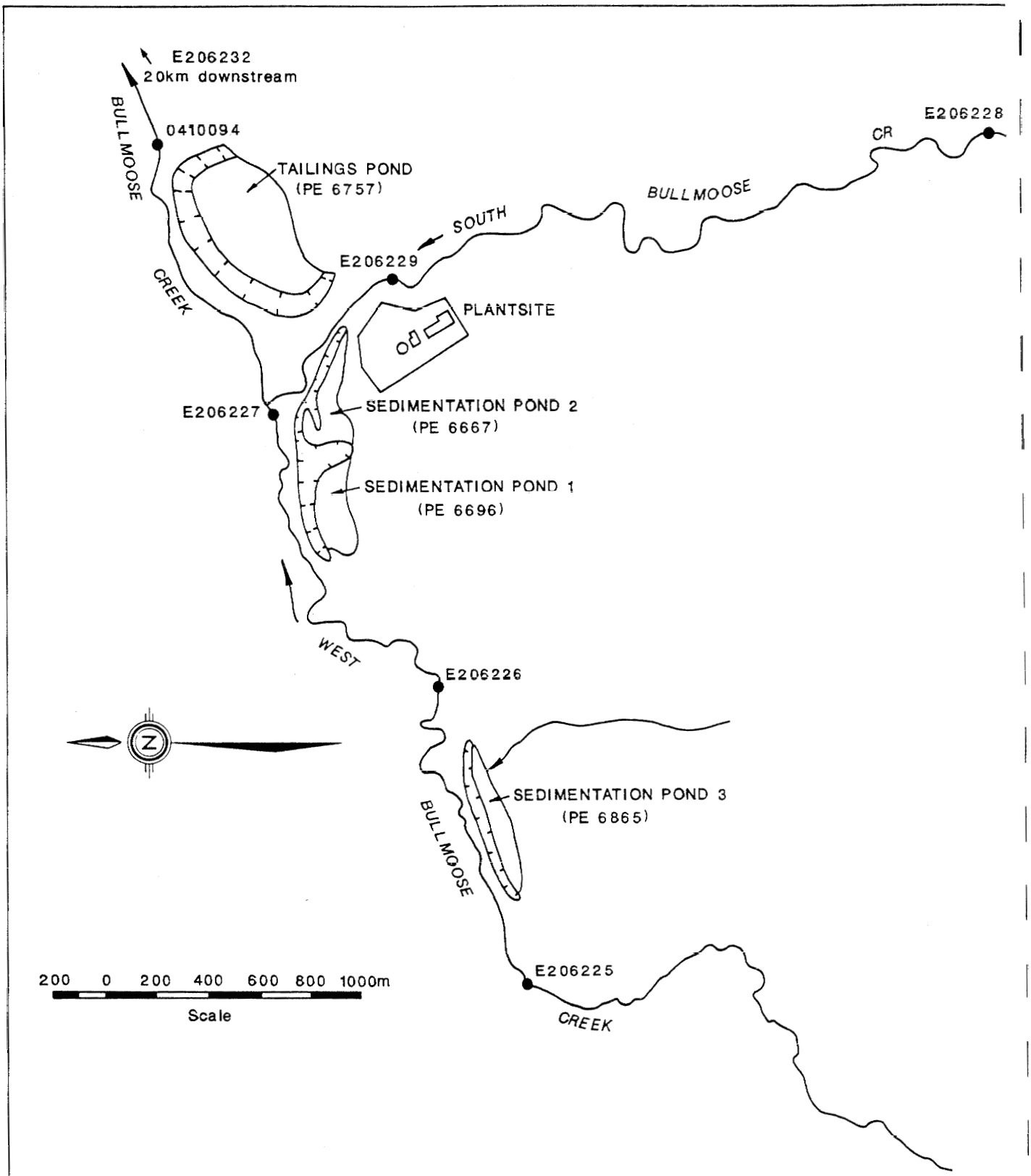


FIGURE 8 Bullmoose Creek

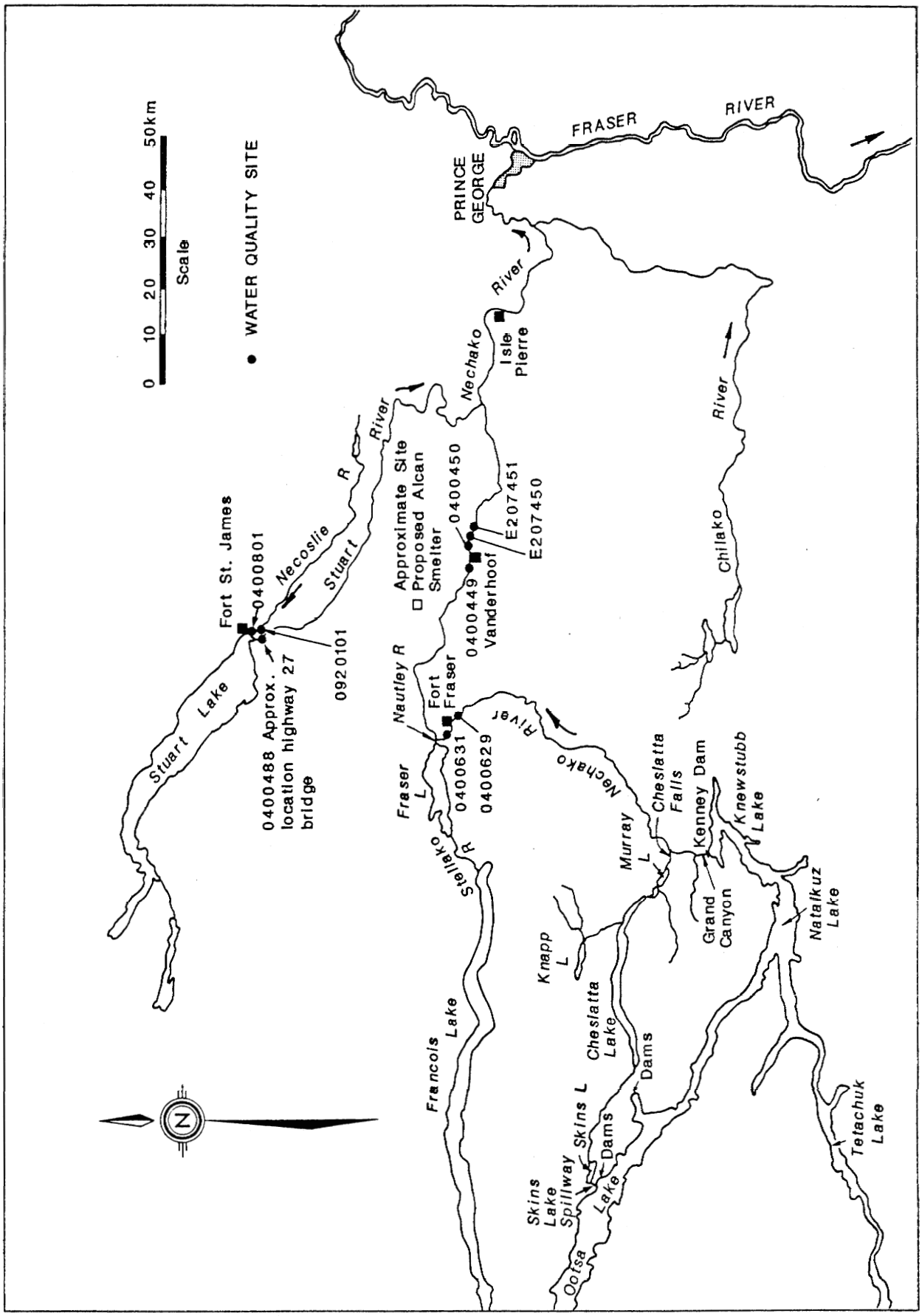


FIGURE 9 Nechako River

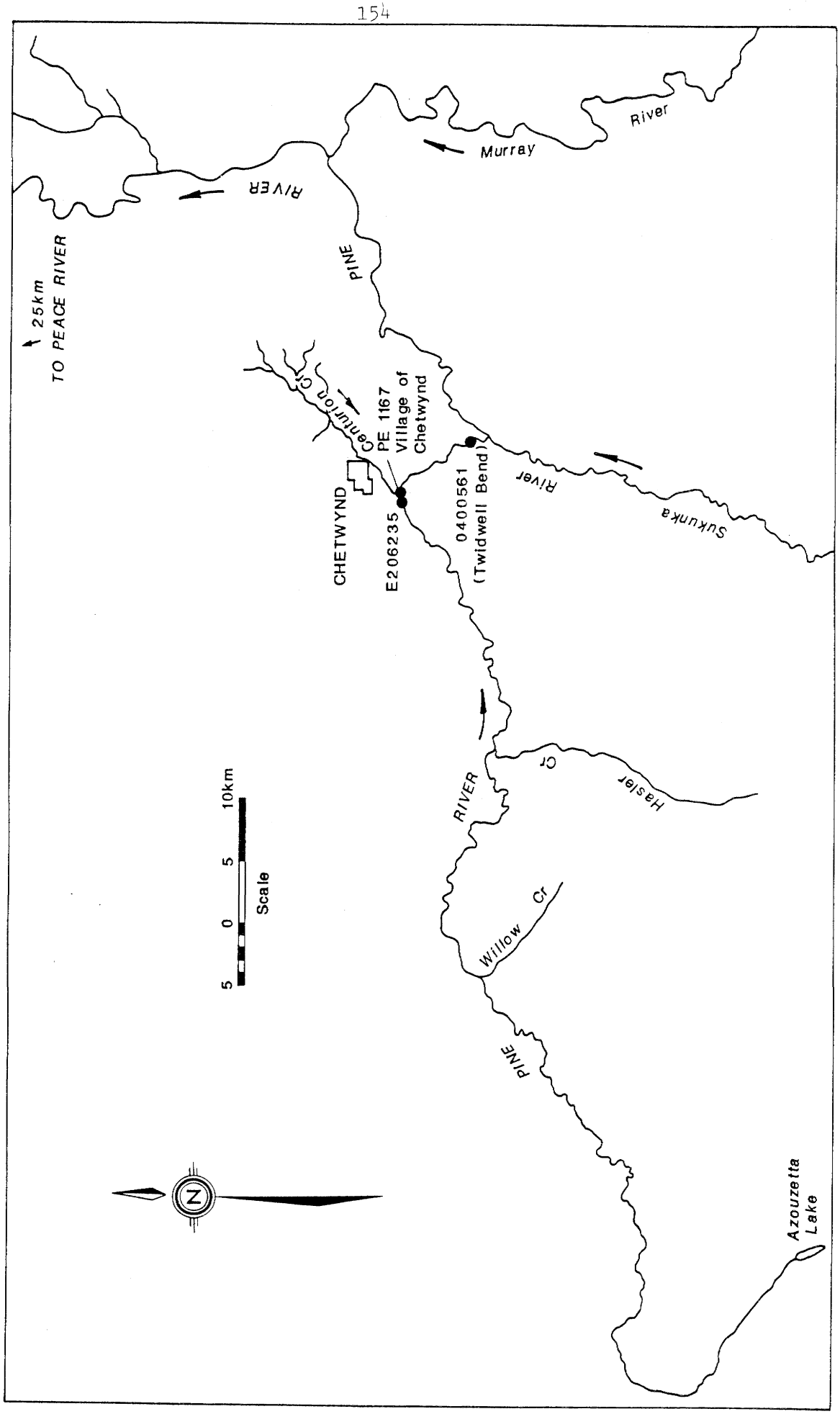


FIGURE 10 Pine River

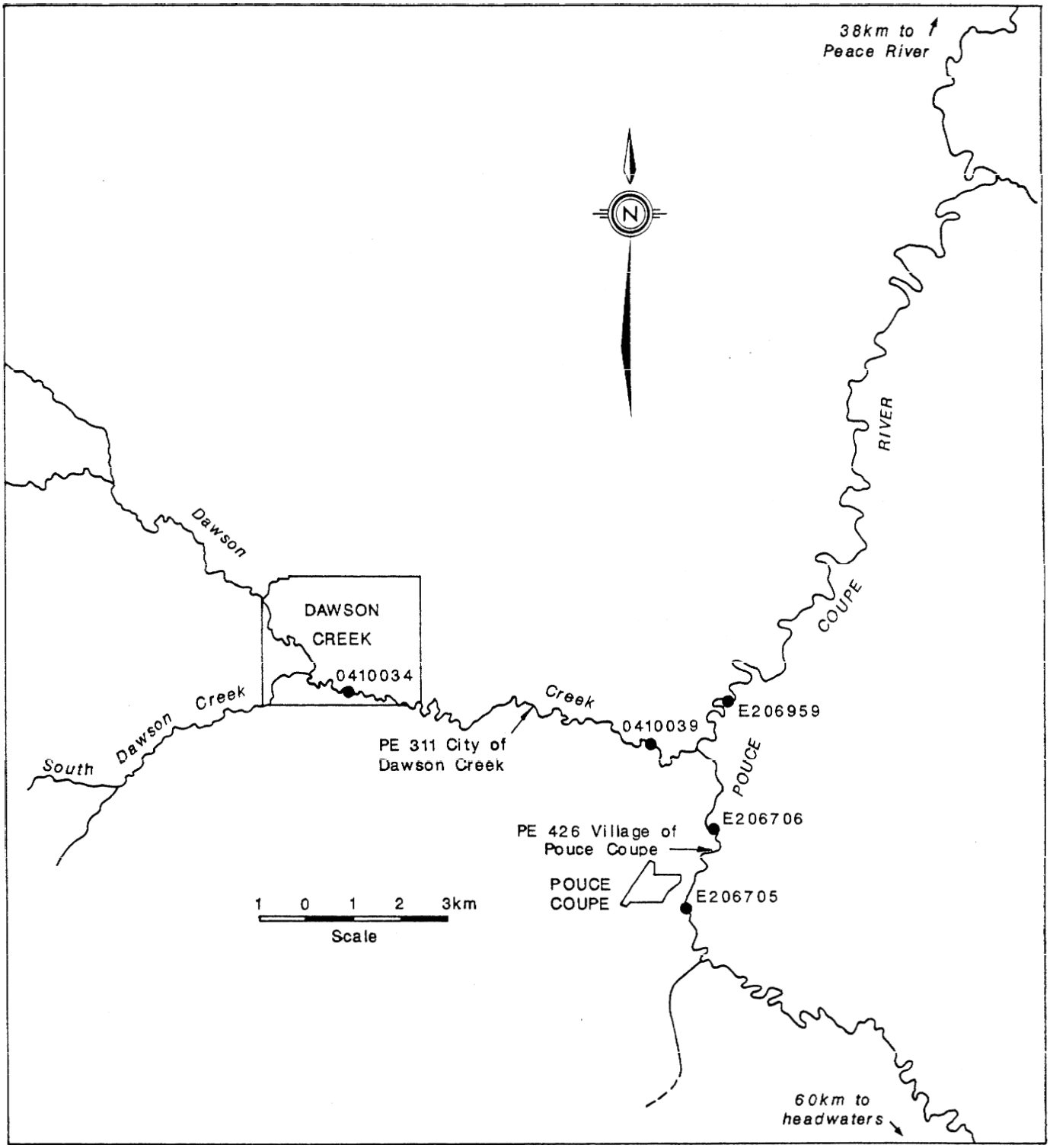


FIGURE 11 Pouce Coupe River

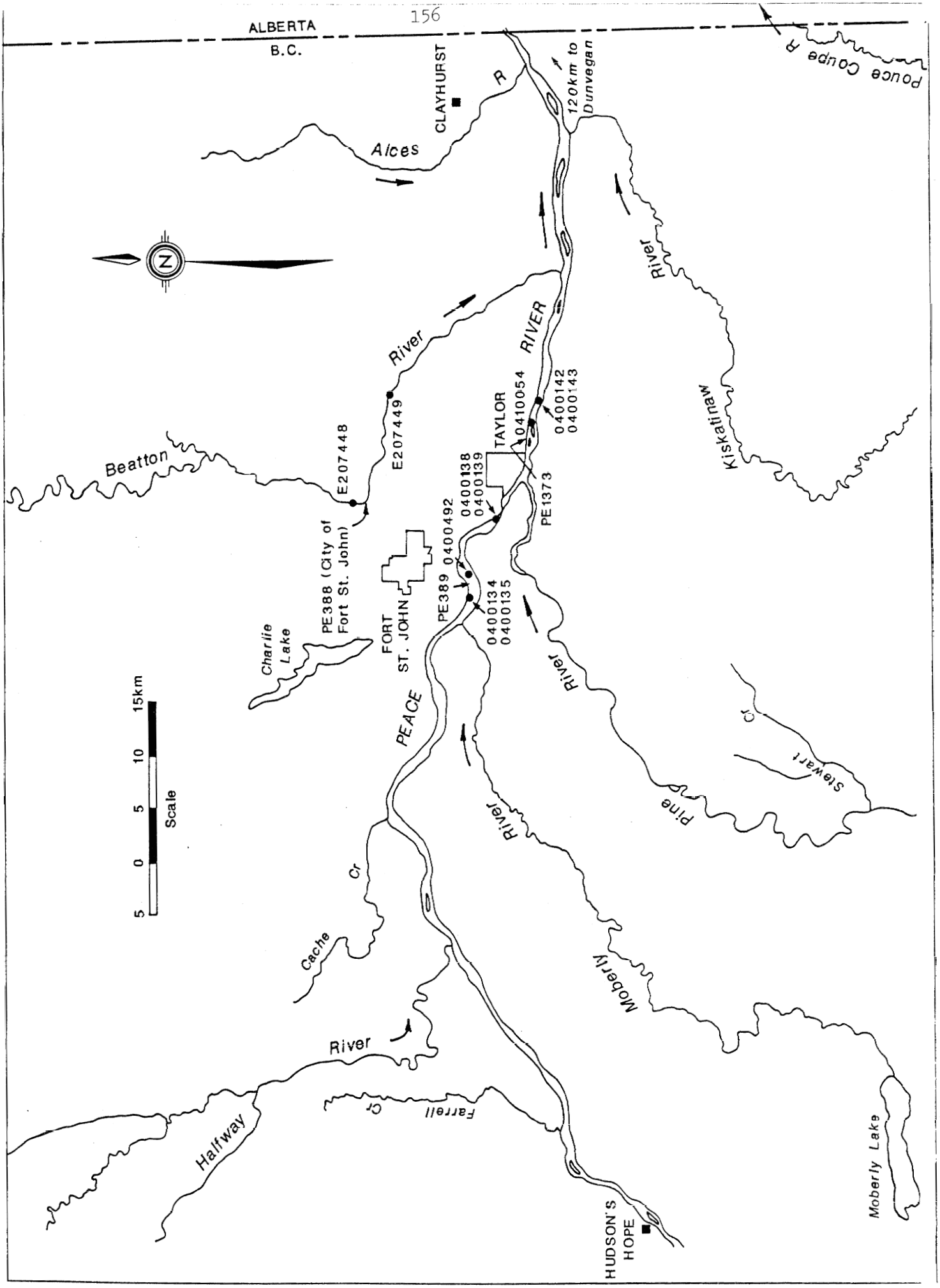


FIGURE 12 Peace River Mainstream

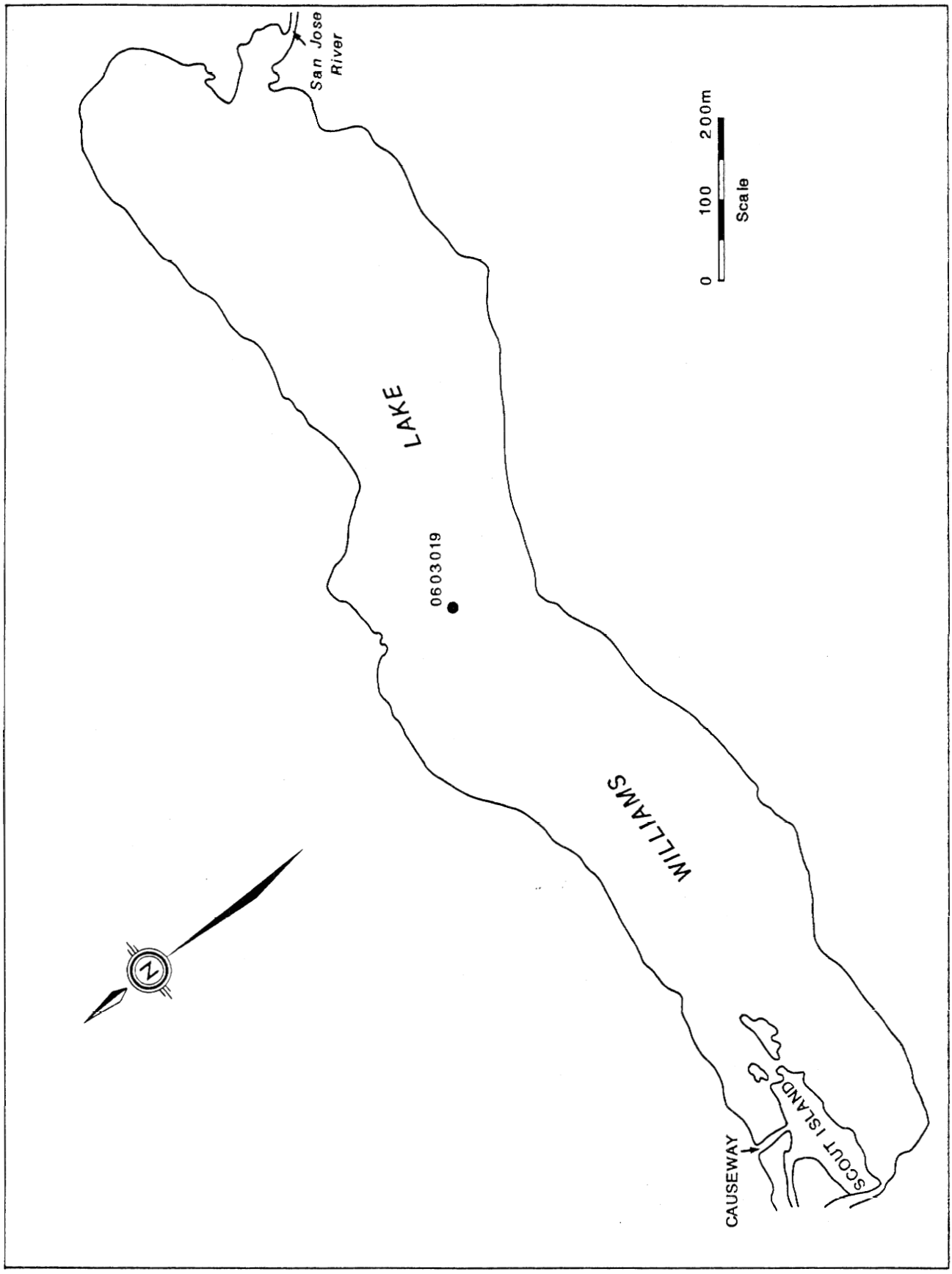


FIGURE 13 Williams Lake

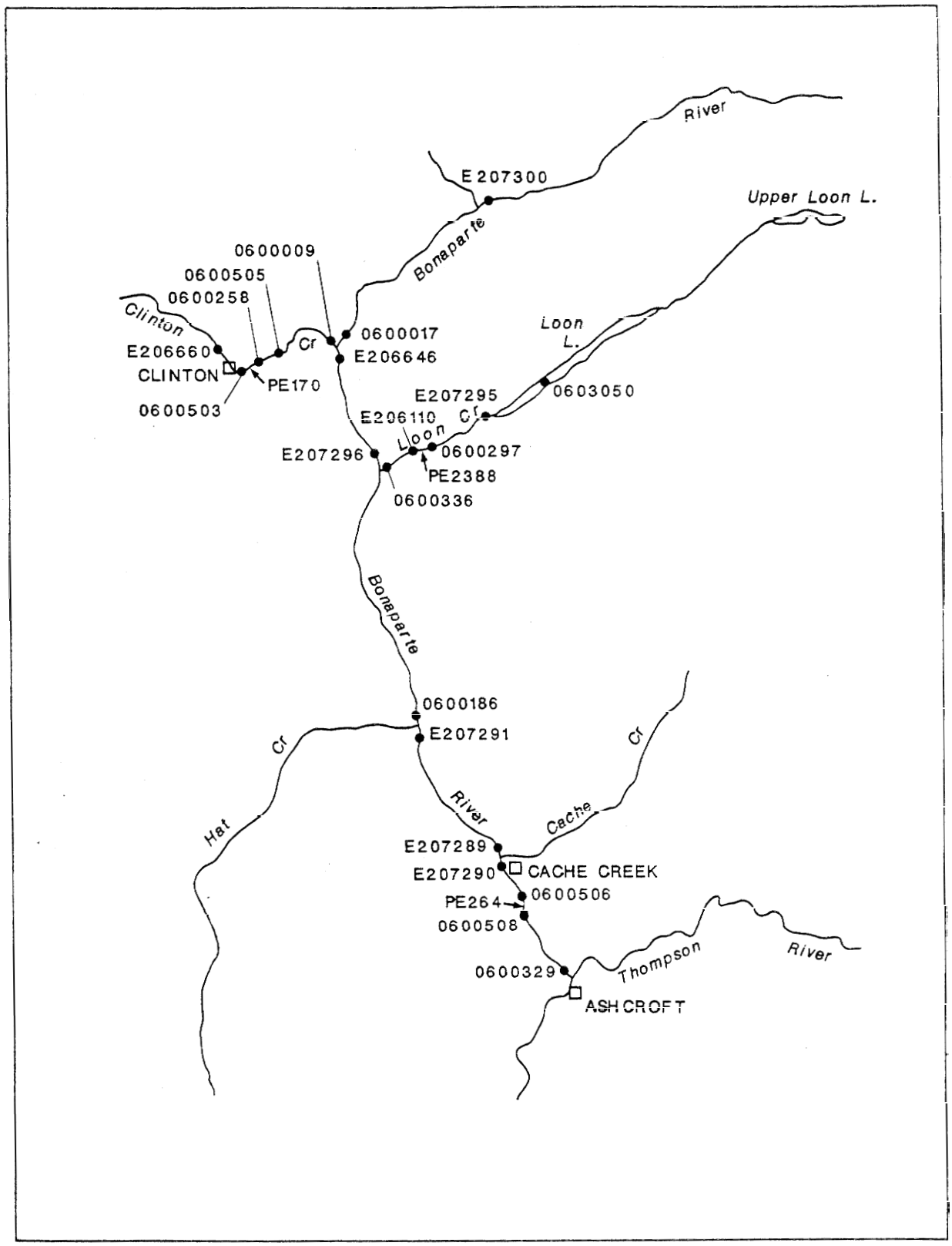


FIGURE 14 Bonaparte River

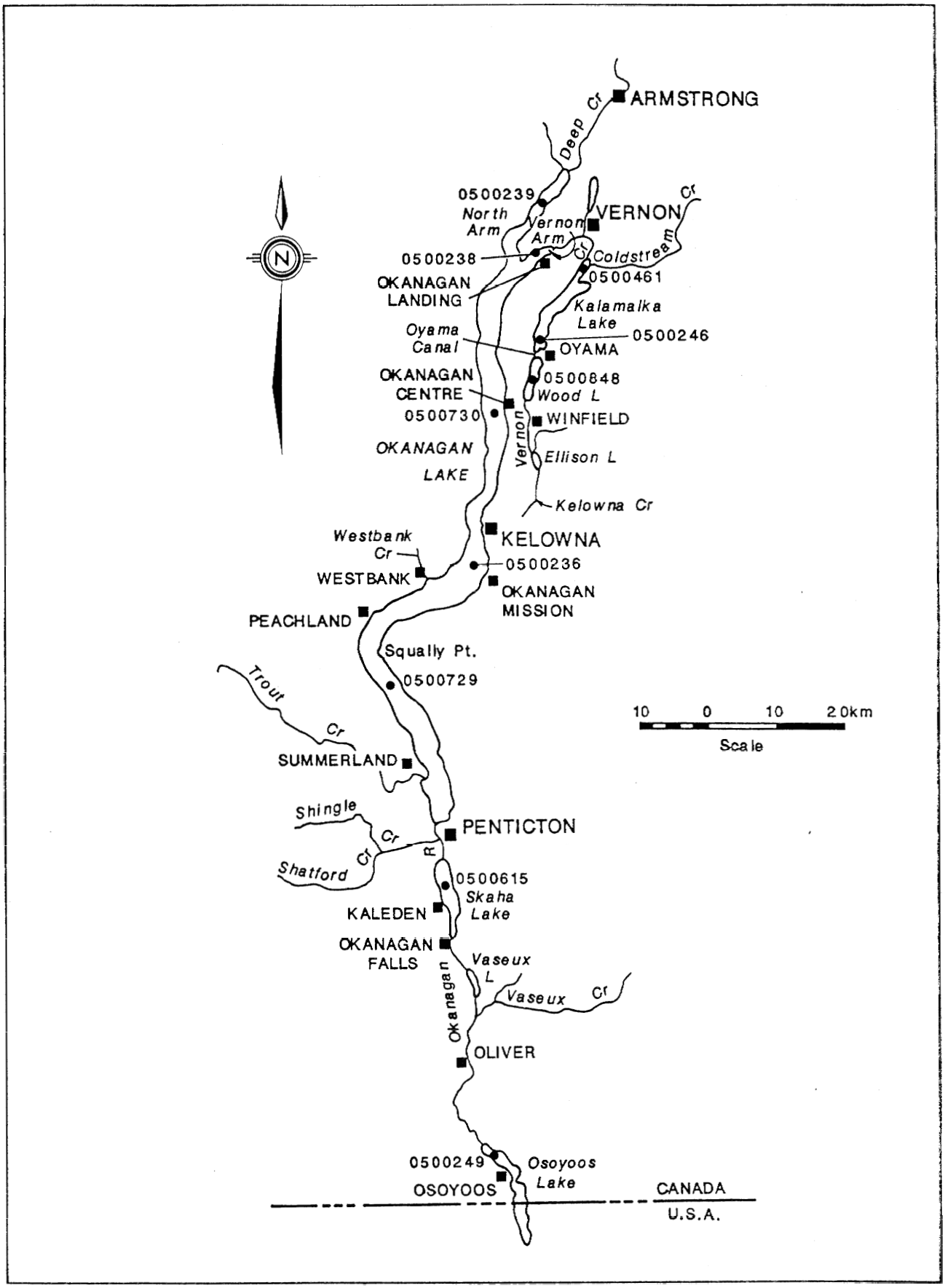


FIGURE 15 Okanagan Valley Lakes

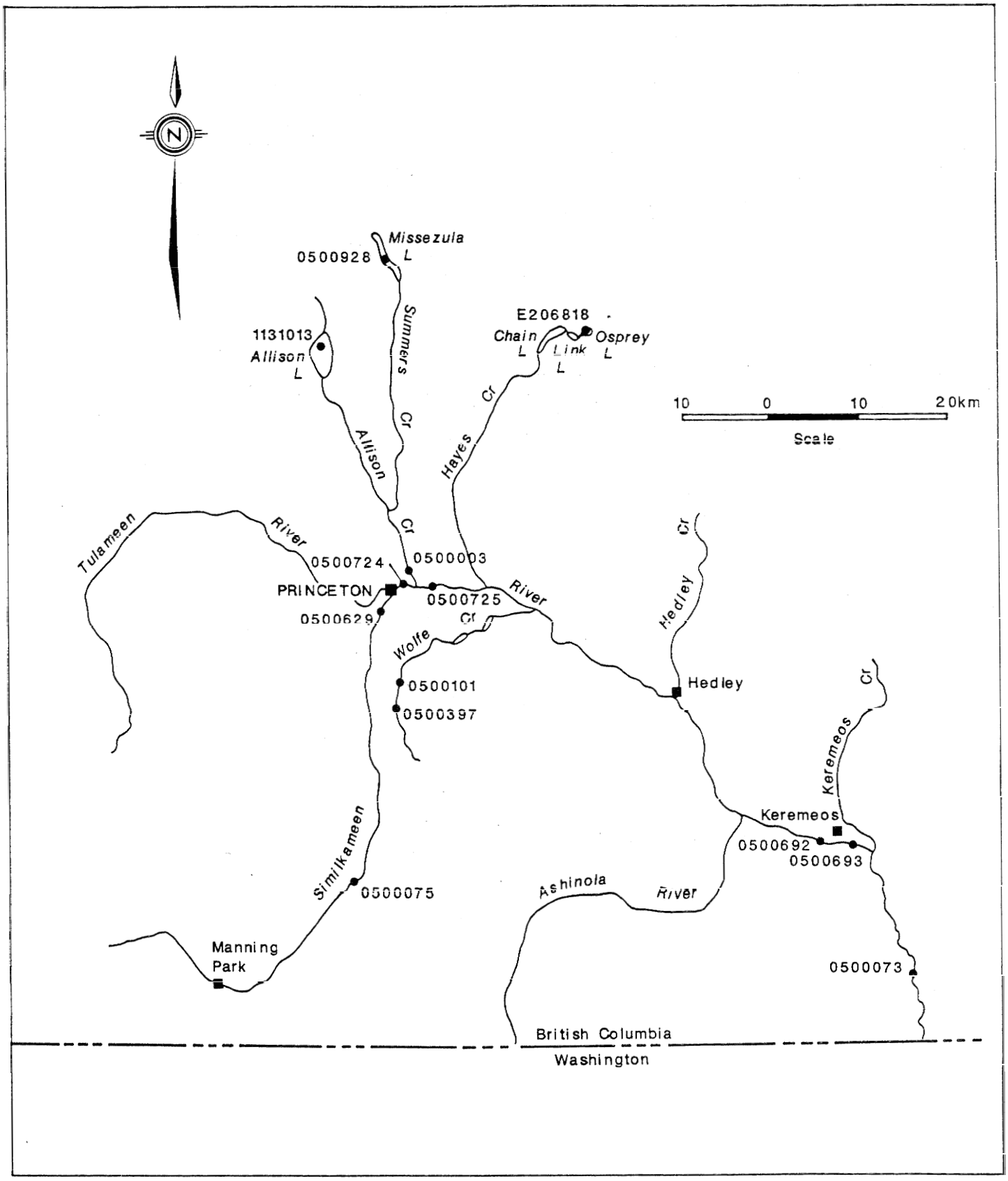


FIGURE 16 Similkameen River

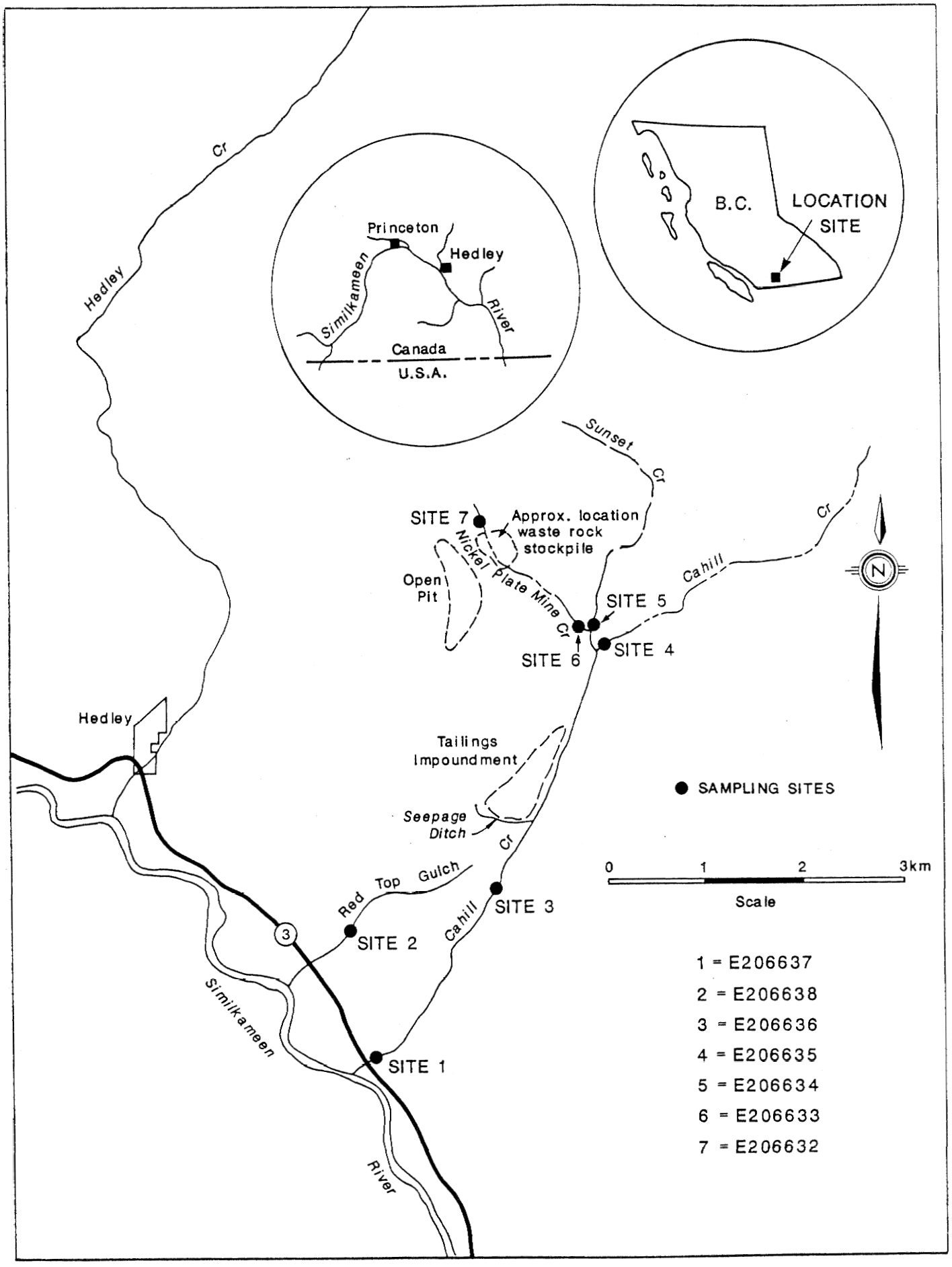


FIGURE 17 Cahill Creek

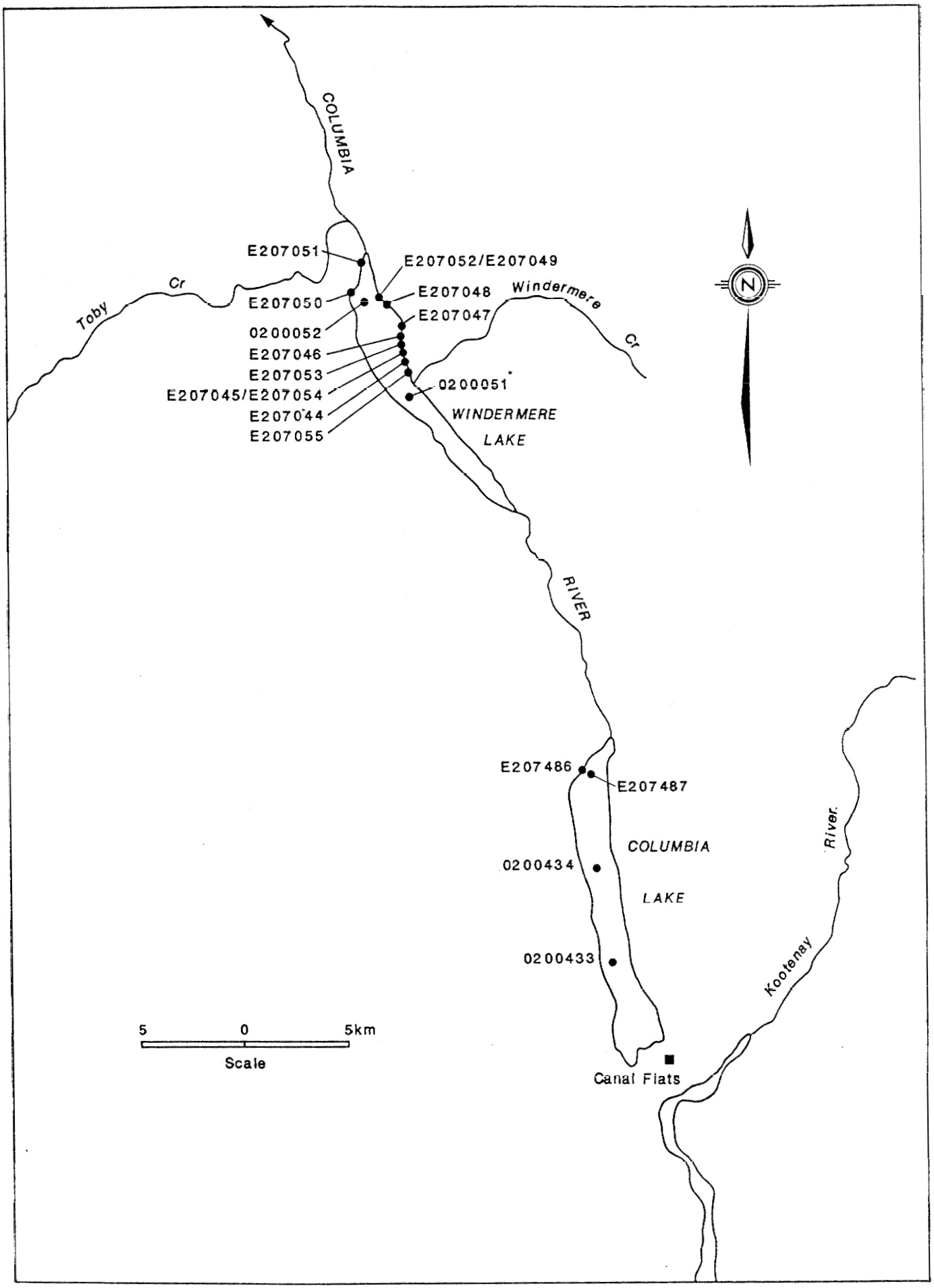


FIGURE 18 Columbia and Windermere Lakes

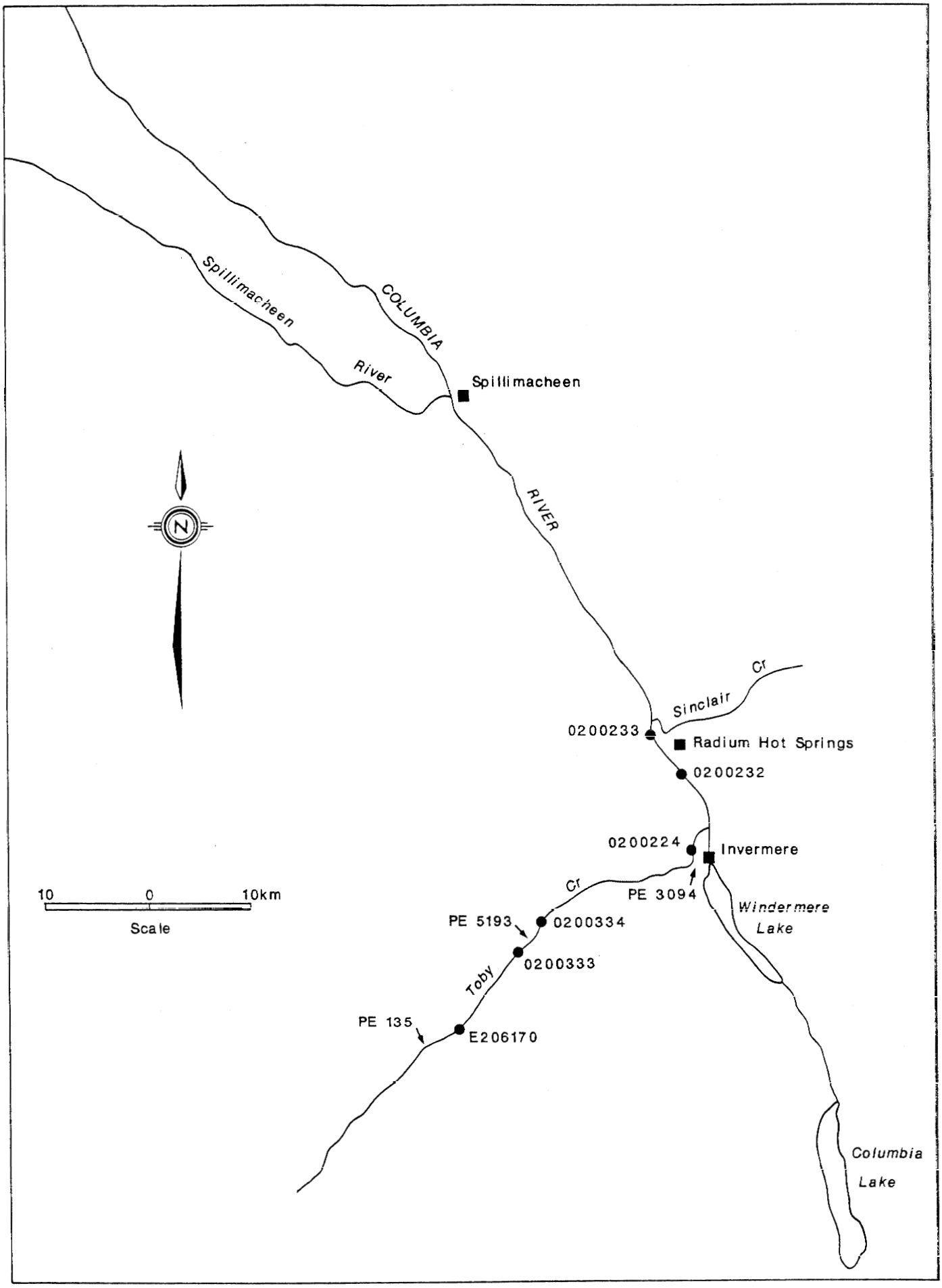


FIGURE 19 Toby Creek and the Upper Columbia River

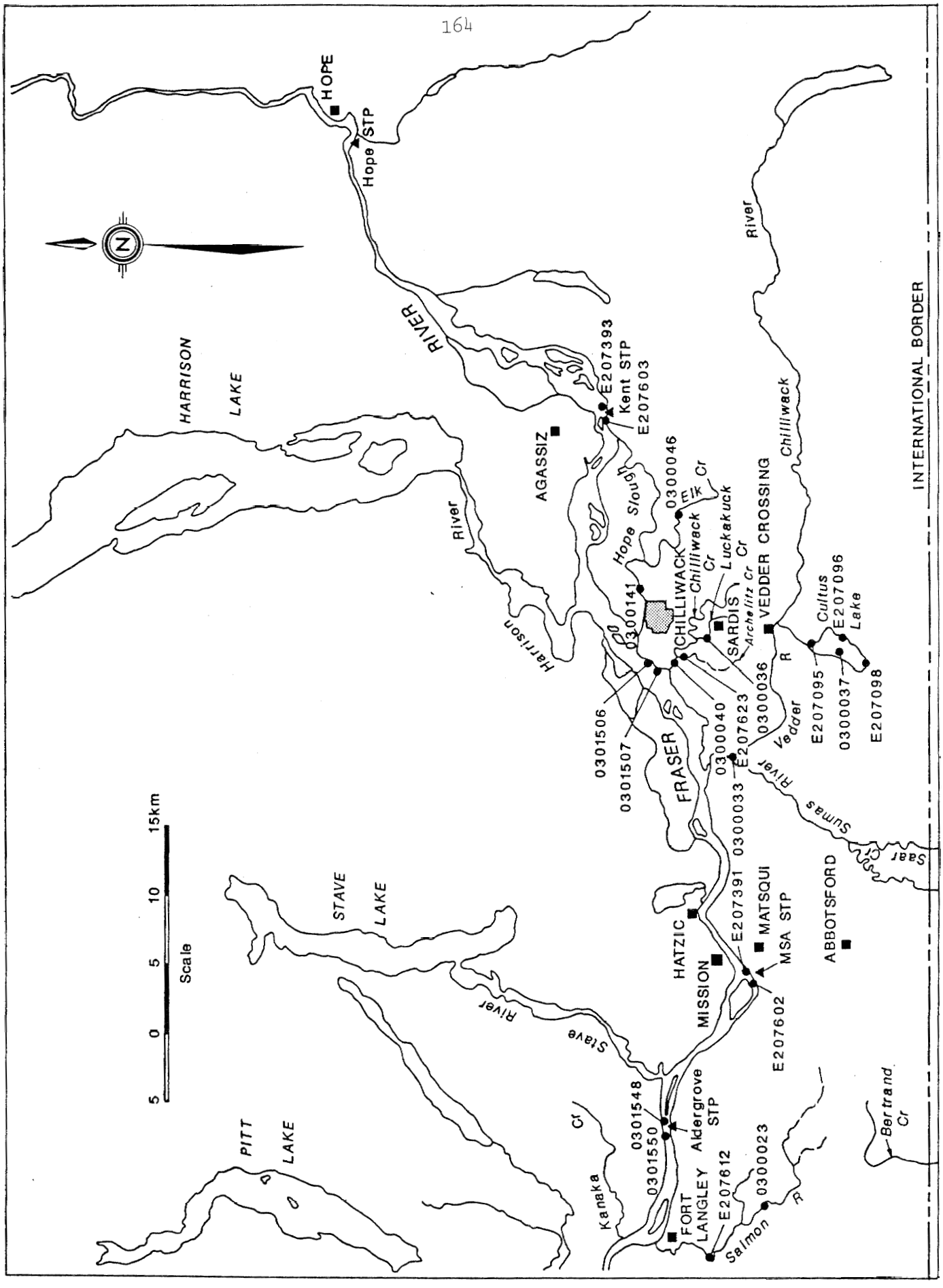


FIGURE 20 Fraser River from Hope to Kanaka Creek

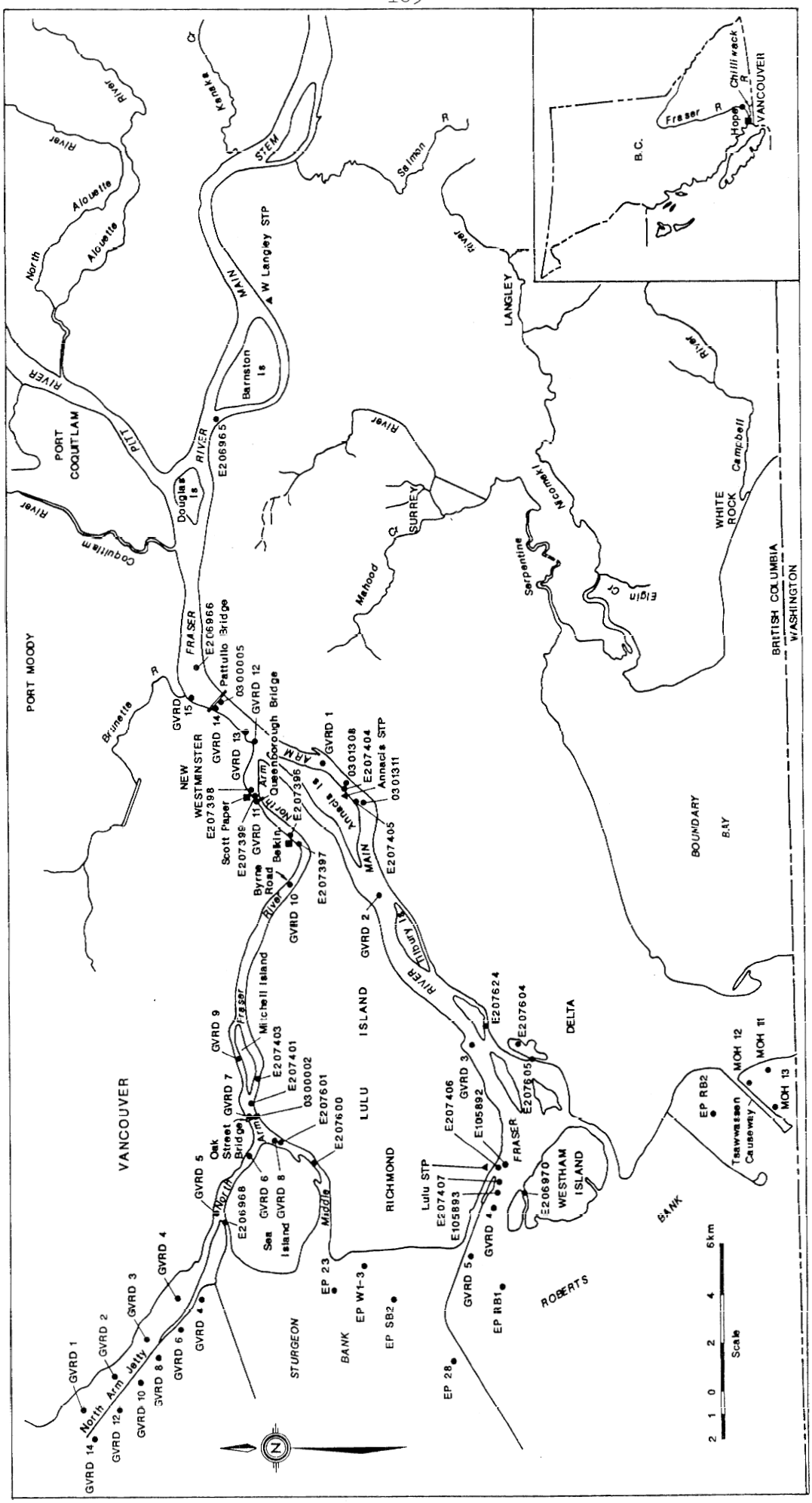


FIGURE 21 Fraser River from Kanaka Creek to the mouth

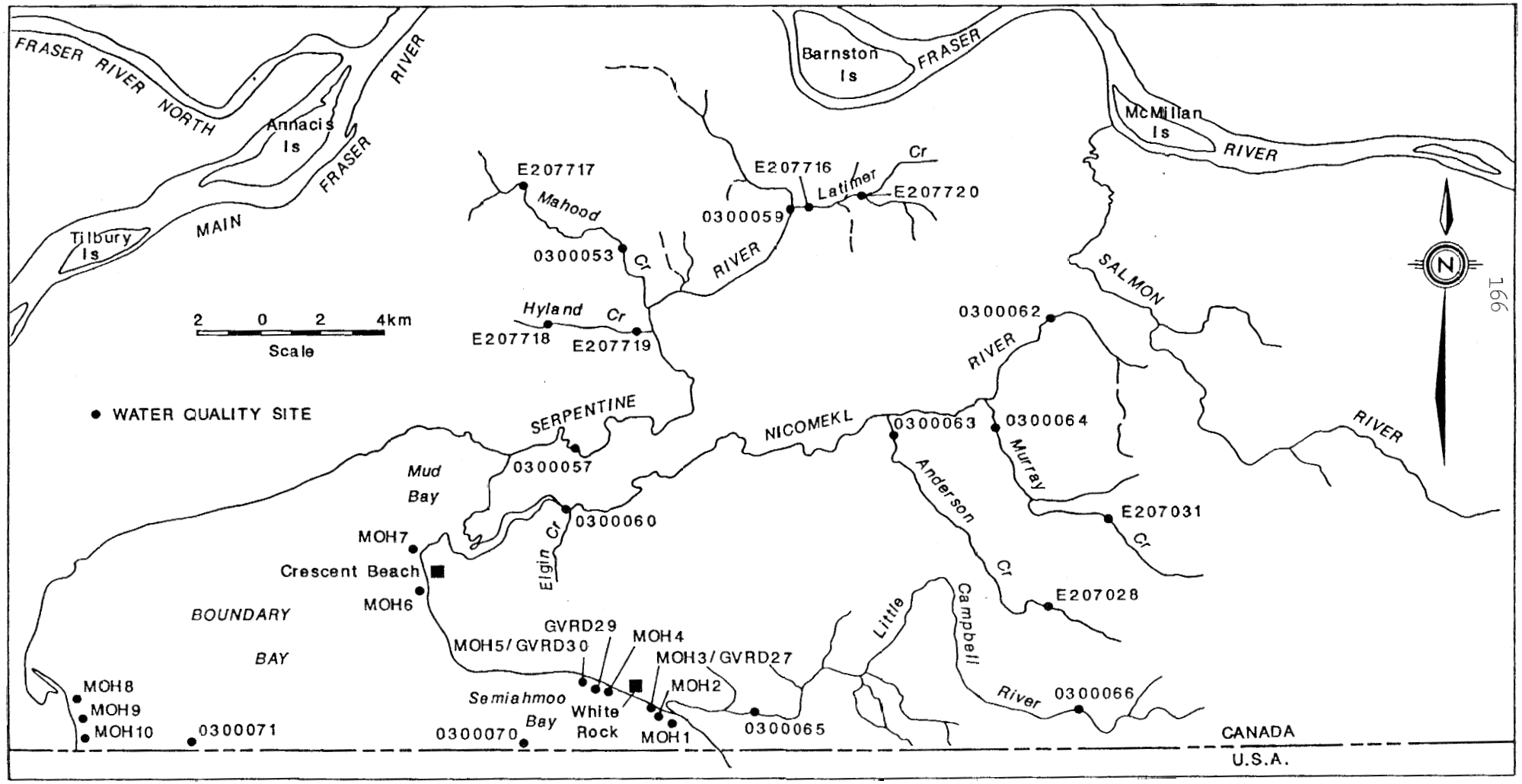


FIGURE 22 Boundary Bay